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Hi-Tech And Eye-Catching Alike: Information In The Multiplatform Era

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Abstract
The information revolution and the electronization of communication have brought with them several trends that have significantly changed not only our perception of information, but also their ways of creation, presentation and distribution. This fact was also caused by the fact that under the influence of information and communication technologies, information began to be handled differently than was previously used in journalistic practice. Digitization was one of the basic preconditions for the emergence of multimedia and a determinant of what we call „convergence". It affected several fields of society, but the work in the media field was marked, both in the process of creating and presenting and distributing media content. Technological innovations are interconnected, supportive and jointly intervene in various types of communication - not excluding the journalistic. Editorial offices create multimedia content to get the attention of recipients through mobile phones, social media and other channels.

Key words
Digitization, infographics, information, convergence, multimedia, visualization

Introduction

The basic pillar in thinking about the media in the context of current information and communication technologies (ICT) is the status of a company that has acquired the character of information and is gradually transforming into digital. As P. Rankov points out in connection with information society, the preconditions for the information and communication revolution were born in the second industrial revolution at the end of the 19th century, which arrived via the inventions of the telegraph and telephone. Since then, humanity has witnessed several information and communication revolutions. A sign of the information revolution of the end of the 20th century is that individual technologies do not interfere with human communication in isolation, but support and interconnect with each other.[1] Technologies create more complex configurations that result in new multifunction devices. Image, sound and text carriers, which in the past were usually separate, are integrated into the same devices. When information is digitized (image, sound or

text), no special device or special medium is needed. In defining information society, in addition to the information revolutions mentioned, we must also work with the thesis of the knowledge economy, in which knowledge, research and innovation have become key factors in the economy and are now a more important source of wealth than material property.[2] In the last quarter of the 20th century, the production and distribution of information became the main sector of the economy. From the point of view of examining media changes, we agree with D. McQuail's view that the birth of the information age, which foreshadowed the development of mass communication, defines a new historical path. The mass media functioned effectively before the information revolution, and it is better to consider them as part of the industrial age rather than as a successor.[3] Today, however, we know that the influence of contemporary media is much wider than we expected, affecting not only society and its structures, but also human beings, their physiognomy, thinking and behaviour.[4] According to P. Rankov, the astronomical progress of the development and implementation of ICT to various levels of communication determines the dictates of the

information society, in which the media in parallel bring us unrelated information and shatter our attention. In this context, he pointed out, for example, that watching and understanding the mosaic structure of news television requires a fairly good multitasking capability, which is complicated by television with a collage of images and sound with unrelated text on the bottom and/or top bar.[5] In the practices of today's media, we find many similar examples. A major factor affecting almost all types of media today is digitization, which has expanded the possibilities for broadcasting and receiving content to a level unparalleled in the current existence of the media.

1 Looking Back: The Milestones of Media Digitalisation

D. Prokop also perceives digital compression and digital broadcasting as dramatic changes, attributing them mainly to the activities of electrical groups and their investments in ICT development. Major corporations and market leaders in innovations such as Siemens, Philips, AT&T, Westinghouse, Sony and other companies developed media technology especially in the 1990s, investing in digital technology. Initially, digital transmission techniques were applied to the possibilities of transmitting radio broadcasts and data, but at first, powerful computers were not yet commonly available that would be able to process and transmit audiovisual information. Digital compression has been developed since 1990 by General Instruments.

Only those parts of the image that changed compared to the previous image were transmitted. Stable parts of the image, e.g. static backgrounds or photographs were transmitted only once instead of 25 times per second, along with information on how long the image should remain on the recipient's screen. Based on this principle, it was suddenly possible to transmit movies via a telephone cable. This digital compression technique led in 1994 to MPEG-2, which is the world standard for digitally compressed television. MPEG-2 can transmit 125 to 1 million megabits per second, which can be compressed to 2 to 8 megabits per second, depending on the quality setting criteria. The transmission capacity of satellites has thus increased tenfold and the costs associated with transmission have fallen. Direct broadcast satellite systems have become major business items. The entire retail chain began to develop in the US with DirecTV, a Hughes Electronics satellite system (this company belongs to a consortium of General Motors). In the development of MPEG-2 devices, corporations competed in the possibilities and types of end receivers and in what service they are able to offer their customers – at that time the possibilities applied to radio and television, pay TV, video on-demand or online services such as internet and e-mail.[6] In this context, we note the marked influence of the main carriers of the information society on the dissemination of content through the change of broadcasting from analogue to digital, as well as the support of broadcasting through separate Internet media portals.[7]

1   RANKOV, P.: *Informačná spoločnosť – perspektívy, problémy, paradoxy*. Levice : KK Bagala, 2005, p. 17-18.

2   ZAUŠKOVÁ, A., MADLEŇÁK, A.: *Communication for Open Innovation: Towards Technology Transfer and Knowledge Diffusion*. Łódź : Księży Młyn Dom Wydawniczy Michał Koliński, 2014, p. 18.

3   MCQUAIL, D.: *Úvod do teorie masové komunikace*. Prague : Portál, 2009, p. 117-120.

4   See: PRAVDOVÁ, H., HUDÍKOVÁ, Z., PANASENKO, N.: Homo Corporalis as the Communicated Muse and Centrepiece of Commercialized Culture. In *European Journal of Media, Art and Photography*, 2020, Vol. 8, No. 1, p. 68-84; GÁLIK, S., GÁLIKOVÁ TOLNAIOVÁ, S.: Influence of the Internet on the Cognitive Abilities of Man. Phenomenological and Hermeneutical Approach. In *Communication Today*, 2015, Vol. 6, No. 1, p. 4-15.

5   RANKOV, P.: Mediálny multitasking ako percepčná stratégia. In *Communication Today*, 2013, Vol. 4, No. 2, p. 25.

6   PROKOP, D.: *Boj o média*. Prague : Karolinum, 2005, p. 341-342.

7   HURAJOVÁ, A., MINÁRIKOVÁ, J.: *TV*

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This is also made possible by the increasing transmission speed of the Internet, when at present modern optical networks transmit the Internet at a speed of 60Mbit per second.

We understand digitization as the conversion of analog information into digital (numerical) information. The digitization process consists in coding numerical values to the values of a continuous quantity. The conversion into digital form must be such that it is possible to convert the information back with sufficient accuracy. Primary digitization consists in the direct collection of analogue information (measurement, scanning) and its conversion to digital. Secondary digitization is the conversion of already measured analogue information into a more suitable digital form. The term „digitization" is used in connection with technology such as the conversion of information (signals, text, graphics, sound) from analogue to digital and is also used in connection with library and archiving of documents as the conversion of printed media into digital (computer files) for the purpose of archiving or spreading.[8]

In our context, it is adequate to mention the definition of a medium operating on the digital principle and which can be interpreted in two ways: 1. it can be a means that uses the latest information and communication technologies to disseminate content (media products, outputs), provided to the recipient: the content thus distributed has the required technological equipment; 2. digital

medium as a carrier which, thanks to the digital method of coding information, can contain and store a large amount of information (audio, video, audio-visual, textual). The semantic definition of this term primarily refers to the word „digital", which can be explained as a way of transmitting and receiving information, in which the information is encoded using the numbers one and zero (the so-called binary/binary number system).[9]

From the point of view of the chronology of the development of means of mass communication, we classify digital media into the category of quartet or substitution media, which require technical support on the part of both the sender and the recipient for effective transmission and reception of content with the possibility of feedback. According to T. Harcup, digital media include news / information websites, blogs and other media publishing options provided by the Internet, using mobile phones or other devices capable of decoding digital content to access this media content.[10] The term digital medium is associated with, among other things, media categories, such as digital photography, digital recording, digital television, etc.

In this context, Z. Hudíková, H. Pravdová and A. Gažicová stated that „digitalisation has improved the overall quality of television broadcasting and expanded the availability of different programmes and ancillary services to viewers. Television has been transformed from a passive medium to a multi-medium, compatible with other

technologies that are commonly found and used in households, especially the computer and mobile phone."[11] The term „multimedia" is used to describe the technological way of connecting radio, television, telephone and computer - which in practice means that image, sound and text carriers, which used to be generally separate, have been integrated in the same devices. Information that was originally stored in books, films or gramophone records or broadcast by radio and television is transmitted in digitized form by single and unified multimedia channels.[12]

To gain a clearer understanding of human progress and exponential developments in the field of information technology, Moore's Law, named after Intel's co-founder, said in 1965 that the number of transistors in an integrated circuit would double every two years. This prediction is really true to this day. Among other things, this development is responsible for the fact that the current smartphone is about a million times cheaper and about a thousand times more powerful than the best super computer in 1970.[13]

2 Beyond Technological (R) Evolution, or the New Implications of Media Convergence

Working with multimedia platforms, increasing media interactivity and

the increasing use of the Internet are also reflected in changes in the perception of traditional electronic media. The implementation of the above attributes means a challenge for broadcasters and producers, to which they respond mainly by expanding the range of their services, but also the formats found in broadcasting. Today's media provide their recipients with entertaining experiences in exchange for financial consideration.[14] Using the potential of multimedia, interactive television and strong internetisation are behind the essence of the process we are currently witnessing, which is also one of the most obvious trends in the production and reception of media content, which is convergence. J. Radošinská broadly defines convergence as naming the process of integration of once clearly distinguishable and defined telecommunication, digital (or computer) and broadcasting technologies. Convergence also represents the process of integration of previously incompatible production models and various segments of the media market. The impact of convergence can also be seen in the sphere of media production, in which various data networks are interconnected through digitization and traditional models of media production are losing their relevance.[15] Convergence as a phenomenon of media interconnection (especially television, print and computer media) emerged in the 1970s.

J. Višňovský and S. Tomčalová dealt with the characteristics of convergence and the contribution of the theorist H. Jenkins to this area.[16] H. Jenkins defines media convergence as a continuous process in which content, technology, audience and industry intersect. It also lists other processes to better describe media convergence, which are technological, economic, social (organic), cultural and global convergence.[17] At the same time, convergence combines the Internet with simpler forms of media such as print and television only to satisfy the public's desire for various news. By merging e. g. print, radio and television on the web, new versions of formats for various media are being created. However, as stated by V. Moravec, even according to European institutions, headed by the European Commission, the convergence process is not over. Producers and technology makers seize the opportunity to supply the growing market with innovative devices using user-friendly interfaces and solutions that facilitate the availability of content and services.[18] While technological convergence is a digital change in media content, when words, images and sounds are transformed into digital information and cultural convergence is the intersection of different technologies, industries

and consumers.[19] New ways of distributing audiovisual content have disrupted the traditional modes of production quite significantly. For instance, predetermined programme schedules and other tools of broadcast programming have been replaced by digital distribution platforms, at least in case of many (mostly younger and highly media literate) consumers. For many recipients, the instant availability of these services, personalisation of user interfaces and possibility of 'marathon-watching' are indeed very attractive.[20]

Convergence itself also has an impact on the creative journalistic process, the way of production, rendering and dissemination of audiovisual communications, among which we can include the outputs of not only traditional electronic media, but also content that is disseminated in the online environment. E. Klinenberga stated that digital technologies have changed journalistic editorial work, but it is debatable how they affected the quality of journalistic outputs. In relation to this issue, it states that when conglomerates entered the journalistic business, they imported their own management techniques into the editorial offices and developed new strategies to ensure increased productivity, efficiency and profitability of the industry. Many journalists and media critics have pointed out that convergence is „undermining" journalistic work,

and Broadcasting: Basic Outlines and Current Position. Trnava : FMK UCM in Trnava, 2018, p. 101.

8   HALENÁR, R.: Digitalizácia. In PRAVDOVÁ, H., RADOŠINSKÁ J., VIŠŇOVSKÝ, J. (eds.): *Slovník vybraných pojmov z mediálnych štúdií.* Trnava : FMK UCM in Trnava, 2016, p. 43.

9   HURAJOVÁ, A., MINÁRIKOVÁ, J.: *TV and Broadcasting: Basic Outlines and Current Position.* Trnava : FMK UCM in Trnava, 2018, p. 102-109.

10   HARCUP, T.: *A Dictionary of Journalism.* Oxford : Oxford University Press, 2014, p. 86.

11   HUDÍKOVÁ, Z., PRAVDOVÁ, H., GAŽI-COVÁ, A.: The Pragmatism of Hybridisation Logic of Television News in Slovakia. In *Communication Today,* 2020, Vol. 11, No. 1, p. 91-92.

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15   RADOŠINSKÁ, J.: Konvergencia médií a kultúry. In PRAVDOVÁ, H., RADOŠINSKÁ J., VIŠŇOVSKÝ, J. (eds.): *Slovník vybraných pojmov z mediálnych štúdií.* Trnava : FMK UCM in Trnava, 2016, p. 108.

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17   JENKINS, H.: *Convergence? I Diverge.* [online]. [2020-10-04]. Available at: ‹https://www.technologyreview.com/s/401042/convergence-i-diverge/›.

18   MORAVEC, V.: *Média v tekutých časech: Konvergence audiovizuálních médií v ČR.* Pragué : Academia, 2016, p. 35.

19   VIŠŇOVSKÝ, J., TOMČALOVÁ S.: K problematike konvergencie mediálnych obsahov v tlači a na webe. In PETRANOVÁ, D., SOLÍK, M., MINÁRIKOVÁ, J. (eds.): *Megatrendy a médiá 2017: Budúcnosť médií I.* Trnava : FMK UCM in Trnava, 2017, p. 236.

20   RADOŠINSKÁ, J.: New Trends in Production and Distribution of Episodic Television Drama: Brand Marvel-Netflix in the Post-television Era. In *Communication Today,* 2017, Vol. 8, No. 1, p. 26.

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in particular by reducing the time spent gathering information, creating and evaluating social events.[21]

Convergence also determines the creative journalistic process, which was characterized by the search for information, its processing, content creation, dissemination, influence on the recipient and the search for feedback on the media output. M. Švecová complements the process of online editing with the processing of accompanying material (videos, information graphics, etc.), publishing outputs on all platforms (mobile application, web) and its sharing on social networks.[22] Contemporary journalism is characterized by its multiplatform nature, which means that one content is spread through different distribution channels (print, web, application, social networks), while it is characterized by a design that allows you to make the most of the benefits of the medium. While in print, the content is textual or visual, and videos or interactive information graphics are added to it on the web. Media content producers need to cope with some of the changes or challenges that occur, in particular in relation to the introduction of new technologies and their manifestations at the level of work organization in a media institution; acceleration of the creative process (accumulation of functions, change in the structure of the production day, which may result in a decrease in the quality of the content); convergence of

traditional and online media and interactivity, within which the media agenda is set by their end user.[23] High demands are also placed on the performance of the journalistic profession. A multimedia journalist works in an information-saturated environment, so his quality of work begins to be judged not by whether they can estimate which information to use, but rather by which to omit.[24] Computer literacy is a basic factor needed to practice journalism.

3 Visually Spectacular, Spectacularly Visual: Information in Pictures

Just as digitization affects journalistic work, it has also affected the very „look" of the information provided. The modification of the communication brought a change in the form of data visualization and infographics, which we will discuss in more detail below.

These two groups of visual tools have their specificities, but there are also common intersections, as mentioned by J. Hagley.[25] From the etymological point of view, the word infographics is a combination of two words with a clear meaning. Bring information using graphic tools with artistic or design expression of its author. When creating infographics, morphemography is used, i. e. word writing, which, according to

J. Lohiss, consists of pictograms - iconographic cartoon motifs, and ideograms - abstract cartoon motifs. In the case of pictograms, the graphic motif is close to nature and the recognition of the thing in question may be relatively simple, in contrast to the ideogram, where, on the contrary, the graphic motif is aimed at arbitration and formality.[26] What is the benefit of infographics and data visualization for the percipient? One of the main benefits can be considered the fact that it can present large data in a small space, compressed into an understandable and clear structure. It uses colours, typographic means and in the electronic environment also interactivity and movement. As J. Proner notes, in both ways we can speak of a visual language that expresses a certain context, content, and interrelationships. Through visualization, various values, data and information are displayed, which are compared with each other and give the reader a clear overview of the issue.[27] The design of the final shape is significantly interfered with by the designer or graphic designer, whose task is to transfer the input data into a unit corresponding to the assignment in a simple and comprehensible form. Clarity and quick orientation between the individual components of the infographics is important. From a visual point of view, it is important to follow a uniform layout when working with partial graphic elements. Numeric values in conjunction with an image

component or pictogram must capture what has been broken down into several lines in text form. Infographics can be divided into two basic types: static and dynamic. Such a division is primarily determined by the carrier in which it is used. Print media use static infographics processing and electronic ones can use the advantages of dynamic infographics in addition to static. A specific form was a kind of hybrid model in the print area, where augmented reality technology was used to display dynamic content. In short, we can define augmented reality as adding additional information to an alreadycaptured image. This added information can be in various forms from simple textual information to the addition of realistic 3D objects or character animations. It is also possible to add an audio track and thus complete the necessary multimedia content.[28] In this case, however, an application on a smartphone or tablet that displayed external content was required. In today's world of constant network connection, it is therefore easier to go to the online content of the print media, where it is not a problem to use and take advantage of dynamic infographics. The way you grasp dynamic infographics is really diverse. In the online application of infographics, we are currently not limited by technical aspects that have been an obstacle until recently. Therefore, not only 2D display is increasingly used, but 3D graphics and animation are also used quite extensively. As noted by L. Manchovich, the representation of 3D graphics is more progressive and more modular

than 2D images, opens up real independence of elements, can replace photos, 2D drawing or video, whether static or moving sequences, and makes it easier for designers to edit scenes at any time.[29] From simple visualizations with a focus on essential aspects of information, such as enlarging selected parts, to storytelling techniques in elucidating complicated processes and events.[30] We can also apply this technique when presenting products and their benefits, from banking products to cooking recipes. The use of storytelling makes it possible to handle several tasks at once: to provide high-quality knowledge transfer in a simple way, from a trustworthy relationship between the host and the audience, to simplify the understanding or memorization of the topic. It can also provide an opportunity for the recipient to compare theoretical knowledge with his or her experience of everyday life.[31] Another undeniable advantage of infographics and data visualization is speed, in terms of the absorption of information that would be scattered in several places in the text and faster interconnection of partial values into the final whole. Here we also come to the differences in communication on the Internet and time, as a factor influencing visual communication. S. Gálik notes that in communication on the Internet there is no beginning and end of communication, which is typical

for linear time and there are no physical support points in the form of countable movements. Such communication is accompanied by the decomposition of time linearity, in which the perception and experience of time within Internet communication is described as simultaneous.[32] As in other areas, in infographics and data visualization, by selecting inappropriate data and misinterpreting them, we get to distort reality and distort real data. Therefore, it is up to the author to thoroughly verify the information and data used. We can also accept the topic concerning the new media of L. Likavčan, that even in such platforms we find a specific nexus between perception, abstraction and the transformation of reality. The simulation or model created by data collection is not only an analytical tool, but a driving force for the infrastructure of platforms.[33]

Conclusion

The mentioned assumption of an exponential increase in the information technology sector can also be applied in the field of mass media, which is confirmed by T. Chudý who further talks about information surplus, which contains several pages: the supply width reaches a new order, scientific production and technical mastery of theoretically achieving the degree of science and technology create the need for a special sector of information

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27 PRONER, J.: Vizualizácia dát a infografika. In BUČKOVÁ, Z., RUSŇÁKOVÁ, L., RYBANSKÝ, R., SOLÍK, M. (eds.): *Megatrendy a médiá 2018: Realita a mediálne bubliny.* Trnava : FMK UCM in Trnava, 2018, p. 184.

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29 MANCHOVICH, L.: *Jazyk nových medií.* Prague : Karolinum, 2018, p. 170.

30 SOLÍK, M.: *Semiotické univerzum.* Trnava : FMK UCM in Trnava, 2018, p. 35-36.

31 PANIUKOVA, S.: Storytelling Method in Popular Science Journalism. In BUČKOVÁ, Z., RUSŇÁKOVÁ, L., SOLÍK, M. (eds.): *Megatrends and Media 2019: Digital Universe.* Trnava : FMK UCM in Trnava, 2019, p. 116-117.

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processing.[34] The relationships between media producers and their audiences have changed as well. In fact, content-related updates or revisions, seemingly based on 'new creative ideas', are way too often just aggressively pushed audience opinions drawn from online questionnaires, social media monitoring or comments posted under streamed contents or trailers. Today, any original creative idea has to face not only technological challenges but also a plethora of economically driven calculations associated with meeting the target audience's expectations.[35]

In this paper, we have defined three concepts related to working with information in a new way of communication, which are interconnected. Digitization has affected the processing, transmission and reception of information and caused the emergence of multimedia. As a result, a significant current trend in the media field, which is coming to the foreground, is convergence. Infographics are one of the consequences of this process, which offers a new way of distributing information to the recipient, which reflects the current time with an enormous increase in information and the need to present information in a compact and understandable form in a short time.[36]

The Digital News Report: Journalism, Media, and Technology Trends and Predictions 2020, produced by N. Newman, a researcher at the Reuters Institute for the Study of Journalism, provided interesting results in predicting the development of journalism in the context of ICT. The report showed that:

• More websites will demand registration details in return for content this year. Collecting first-party data will become a key focus for publishers, following reduced cookie support from leading browsers and tightening privacy regulations.
• Elections around the world will be another chance for purveyors of misinformation and disinformation to try new tactics, including AI technologies, to overwhelm platform defences.
• Better, more immersive, feature-rich headphones (e.g. AirPod Pro and similar devices) will prove the big tech hit of the year and give a further boost to audio formats.
• 5G networks will continue to roll out in cities around the world this year, though handset availability remains limited. Ultimately 5G will enable faster and more reliable smartphone connectivity, making it easier to access multimedia content on the go.
• Transcription, automated translation, and speech-to-text text-to-speech services will be some of the first AI-driven technologies to reach mass adoption this year, opening up new frontiers and opportunities for publishers.[37]

The influence of the Internet on content is an important factor in the work of the Internet journalist and the online medium as such. However, the present has also pointed to other aspects of multimedia journalism. During the pandemic, interest in online and television news increased, while weaknesses in media organizations were revealed at this time. These include incompetence and unpreparedness in notifying about medical topics due to the absence of specialized reporters in this area, but also the publication of misinformation and hoaxes, which is reflected in the decline in the credibility of the news as such. And since developments in the media field are generally evolutionary, not revolutionary, until the future shows how the media can cope with the many challenges of the digital age. These include, for example, the effective use of robots or artificial intelligence software in the reporting process.

Acknowledgement

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