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THE COURSE OF THE INFORMATION FROM THE ACTION TO THE PUBLIC MIND. HOW COMPUTERS INFLUENCE INFORMATION SELECTION?

ABSTRACT: For hundreds of years, the news values have remained unchanged. There was a particular and unchanged process of transforming the information in the news. The data was gathered by reporters, turned into the news by the editors, and published by the editor in chiefs. The selection criteria appear to be the same, but the distribution has changed with technological developments. This paper tries to identify the changes in the process of gathering information, news selection, and news broadcasting. We will analyze how the roles have changed and how the new news values appear. In addition, it is essential to examine the ranking of the news values influenced by the digital platforms. We will examine the role of new technology in information gathering and news diffusion. The paper will explain how roles changes affect news values. Based on the theory, we will see how the new technology influences the newsgathering process and how it influences the persons involved.

KEYWORDS: fake news, news values, digital platforms, algorithm, social media

OBIEG INFORMACJI OD DZIAŁANIA DO UMYSŁU SPOŁECZNEGO. W JAKI SPOSÓB KOMPUTER WPŁYWA NA WYBÓR INFORMACJI?

ABSTRAKT: Od setek lat wartość informacji pozostaje niezmienna. Następuje szczególny i niezmienny proces przekształcania informacji w wiadomościach. Dane są zbierane przez reporterów, redagowane w wiadomości i publikowane przez redaktora naczelnego. Kryteria wyboru wydają się być takie same, ale dystrybucja zmieniła się wraz z rozwojem technologicznym. W niniejszym artykule podjęto próbę identyfikacji zmian w procesie zbierania informacji, selekcji wiadomości i nadawania wiadomości. Przeanalizowano to, jak zmieniły się role i jak pojawiają się nowe wartości informacji. Ponadto konieczne było zbadanie rankingu wartości wiadomości, na które wpływają platformy cyfrowe. Zbadano również rolę nowych technologii w gromadzeniu i rozpowszechnianiu informacji. Artykuł wyjaśnia, w jaki sposób zmiany ról wpływają na wartości informacyjne. W oparciu o teorię opisano, jak nowa technologia oddziałuje na proces zbierania wiadomości i jak wpływa na zaangażowane osoby.

SŁOWA KLUCZOWE: fake newsy, wartość informacji, platformy cyfrowe, algorytm, media społecznościowe

INTRODUCTION

Even if TV stations, newspapers, and radios remain essential information sources, digital platforms develop fast, and more and more people use them as the main information source. This also changes the quality and type of information available at a certain time.

A fact that was considered important in the past and was transformed into news and published will no longer be considered important. We propose to analyze the main factors that influence this process. Social media transformed the communication paradigm[1] and also the standards of news diffusion.

This was done by integrating digital platforms in the chain of news diffusion. We want to see what are the changes determined by this modification and what is the influence of digital platforms in the selection of news. Last, but not least, we want to take a brief look at the risk raised by new changes.

TRADITIONAL NEWS VALUES

At the end of the last century, the main criteria used by journalists to decide which news would be published have been established. The primary standard was temporal proximity. "The news has to be new. When you read it or heard about it has to be new," sustain Ken Melzer[2]. His book was published three years before the European Organization for Nuclear Research put the base of what we call now "The internet."

The second standard for classifying information was space proximity. An event that is happening in a small city will be widely covered by the local newspaper and barely covered by a national newspaper[3]. The closer an event took place, the more interested will be the readers in it. The rarity of information was a third standard taken into consideration when analyzing a piece of information. Monika Bednarek and Helen Caple describe this news value in "The Discourse of News Values: How News Organizations Create Newsworthiness."[4] The rarity of information contrasts with what is usual and what people are used to.

The notoriety of the people involved is, in turn, significant in selecting information that becomes news. Some scholars call that news value elitism[5]; others call it power elite[6]. This value of information refers to the prominence of the characters involved, whether they are people, institutions, or countries. A regular event can become news if well-known personalities are involved. A minor car accident would not be reported by any media institution, but would become news if one of the involved characters is notorious.

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[1] F. Avorgbedor, J. Liu, *Enhancing User Privacy Protection by Enforcing Clark-Wilson Security Model on Facebook*, IEEE International Conference on Electro Information Technology (EIT) 2020.
[2] K. Melzer, *Newsgathering*, Prentice-Hall 1986, p. 23.
[3] Ibidem, p. 24.
[4] M. Bednarek, H. Caple, *The discourse of news values: how news organizations create newsworthiness*, Oxford University Press 2017, p. 66.
[5] Ibidem, p. 58.
[6] T. Harcup, D. O'Neill, *What is News?*, "Journalism Studies" 18(12) 2016 , pp. 1470–1488.

Other researchers believe that impact is what makes a news story relevant. The impact is related to the construction and has significant effects or consequences without limiting these effects to the lives or experiences of the target audience[7]. Increasing taxes on stock market transactions has a more negligible impact than raising value-added tax because all people are affected by the increase in VAT. Only a tiny part of them carry out stock exchange transactions.

Some scholars introduce other values of the news. In addition to temporal proximity, relevance, and spatial proximity, Ida Schultz talks about sensation and conflict. "The sensation is unusual, spectacular, extraordinary and all the more sensational, all the more noteworthy and a widely used example of the criterion in Anglo-American literature is 'man-bite-dog.' It's not uncommon for a dog to bite a man, but a man biting a dog is quite a sensation."[8] The same author defines conflict as a criterion used in selecting news for conflicts of interest between people, organizations, or causes.

The preferences and sympathies of the people who choose the news or the organizations that publish it need interest. The personal involvement of journalists who decide the information to turn into news has been studied by some researchers.[9] News covering politics and social issues are the most affected by the personal involvement of journalists or news organizations.[10]

In the final years of the last century, another problem was detected. Marvin Kalb revealed the tabloidization of news in 1998 as an effort of the news organizations to attract a younger audience.[11] Success counted as the audience is the most crucial factor in media product evaluation. Even news programs are evaluated regarding the number of viewers. Kalb sees that as a consequence of the corporatization of the news organization. One year later, Esser considered tabloidization as the direct result of the commercialization of media organizations.[12] The publication gives to the public what the public seems to like, and, at the same time, the public is educated in that way.

In 2004, Donsbach drew attention to echo chambers created within the profession. The community of journalists reached a uniformity called consensus. "Reporting from a certain press conference what no one has reported or not reporting what everyone has reported can be embarrassing and can jeopardize the journalist's professional position."[13]

All researchers believe that in the days when traditional media were ruling, information was selected by reporters and filtered by editors and publishers based on features that may sometimes differ, but which are similar. The values of the news were increasingly confirmed by the audience/circulation as the number of media institutions became higher and the compe-

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[7] M. Bednarek, H. Caple, *The Discourse of News Values: How News Organizations Create Newsworthiness*, Oxford University Press 2017, p. 60.

[8] I. Schultz, *The Journalistic Gut Feeling*, "Journalism Practice" 1(2) 2007, p. 198.

[9] J.F. Staab, *The Role of News Factors in News Selection: A Theoretical Reconsideration*, 'European Journal of Communication" 5(4) 1990, p. 427.

[10] H.M. Kepplinger, *Reviews*, "European Journal of Communication" 4(4) 1989, pp. 508–509.

[11] M. Kalb, *Editorial*, "Harvard International Journal of Press/Politics" 3(1) 1998, pp. 1–4.

[12] F. Esser, *Tabloidization' of News*, "European Journal of Communication" 14(3) 1999, pp. 291–324.

[13] W. Donsbach, *Psychology of News Decisions*. "Journalism: Theory, Practice & Criticism" 5(2) 2004, p 10.

tition became higher. This has led to tabloidization in an attempt to attract more audiences to newspapers and television.

NEWS VALUES IN DIGITAL ERA

Bednarek and Caple show that the three main values of the news published on Facebook and Twitter were notoriety (33%), spatial proximity (29%), and personalization (29%). The study was conducted by analyzing 50 posts made by 22 media institutions. The same study indicated negativity as having a share of 26% in the analyzed news.[14] Harcup and O'Neill also conducted a study in 2014 that included an analysis of 711 posts from ten UK publications[15].

Negative news came first in number, followed by spectacular or rare news and entertainment news. Like Bednarek and Caple in 2016, Harcup and O'Neill establish a close connection between posts and images.

Harcup and O'Neill's conclusions include that exclusivity is an essential value of information in the Internet age. Exclusivity can be a transformation of the traditional value of temporal proximity. Virtually any news item quickly posted on the Internet has a higher value than a news item published long after it has already become known to the public.

Gradually, as Kasper Welbers pointed out in 2015, journalists are beginning to weigh the traditional values of the news and choose the information according to how it performs online.[16] The same conclusion has a 2019 study showing that publishers' news choices differ from readers' choices. Many of the news considered important by publishers are less read than other news considered by publishers less critical.[17]

This trend is also influenced by the fact that more and more people read the news on social networks. A 2018 study by the Pew Research Center in the United States found that two-thirds of adult Americans read news on social media.[18] This trend causes media institutions to seek to attract more followers on social media in order to get more distribution for their news.[19] The same study found that the number of subscribers to a social media account is correlated with the number of reactions a social media account receives from the reading public. A media institution with a Facebook or Twitter account with many followers will have a larger audience and, implicitly, a more significant number of reactions. Among these reactions, the distribution, in turn, increases the audience. The number of comments and responses to

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[14] M. Bednarek, H. Caple, *The Discourse of News Values: How News Organizations Create Newsworthiness*, Oxford University Press 2017, p. 182.

[15] T. Harcup, D. O'Neill, *What is news?* "Journalism Studies" 18(12) 2016, pp. 1470-1488.

[16] K. Welbers, *News Selection Criteria in the Digital Age: Professional Norms Versus Online Audience Metrics*, Sage 2015, p. 13.

[17] A. Chakraborty, S. Ghosh, N. Ganguly, K.P. Gummadi, *Editorial Versus Audience Gatekeeping: Analyzing News Selection and Consumption Dynamics in Online News Media*, IEEE Transactions on Computational Social Systems, 2019, pp. 1–12. 0

[18] Pew Research Center, *News Use Across Social Media Platforms 2018*, September 2018, https://www.journalism.org/2018/09/10/news-use-across-social-media-platforms-2018//

[19] P. Rajapaksha, R. Farahbakhsh, N. Crespi, *Scrutinizing News Media Cooperation in Facebook and Twitter*, IEEE Access 2019 1–1.

comments is considered directly related to the audience on the Tweeter social network, as researchers find.[20]

INFLUENCE OF THE ALGORITHMS

However, the audience on social networks is filtered by algorithms developed by the companies that manage those networks. "Online social platforms such as Twitter and Facebook profit from our engagement with their systems. Thus, optimizing our experience is a key part of their business model. To this end, they adopt algorithmic personalization, which broadly describes a range of automated methods that filter the information to which we are exposed to. The filtering is not random, but targeted to stimulate our interest and online activity. Generally speaking, the aims of algorithmic filtering are benign" say as conclusions Perra and Rocha in 2019.[21] They conclude that algorithms influence public perception and could lead to polarization.

Scholars use Noddle Theory to determine how social media networks could change public perception. The theory said that human behavior could be changed using indirect suggestions. The conclusions underlined by Perra and Rocha are firm: „The study of the nudging scenario shows how the dominant opinion in the population can completely switch within a short time by moderately pushing the desired opinion" shows the study that was based upon work supported by, or in part by, the U. S. Army Research Laboratory and the U.S. Army Research Office under contract/grant number W911NF-18-1-0376.[22]

The traditional values of the news as they were known before the advent of the Internet or in the early days of social media no longer matter. Algorithms control the information that appears before each user, and external factors can influence these algorithms. Another study shows that robots use messages posted on social networks to influence the algorithms used by Google or other search engines. This method is used to promote certain news.[23]

A search engine uses a crawler to gather data about each page, and, based on that data, the customer search also provides specific results. An essential parameter of the Google search algorithm is the page rank according to which an internet page is located above or below the user's searches and, by default, gets more or less traffic. Broadly speaking, page rank is determined by the number of pages that link to that page and the rank of those pages[24]. The simplistic description was made in a study published in 1998. Since then, the algorithm

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[20] C. Orellana-Rodriguez, D. Greene, M. Keane, *Spreading One's Tweets: How Can Journalists Gain Attention for their Tweeted News?* "Journal of Web Science" 3(1) 2017, pp. 16–31.

[21] N. Perra, L. Rocha, *Modelling Opinion Dynamics in the Age of Algorithmic Personalization*, "Scientific Reports" 9(1) 2019, p. 2.

[22] Ibiem, p. 21.

[23] D. Stukal, S. Sanovich, R. Bonneau, J.A. Tucker, *Detecting Bots on Russian Political Twitter,* "Big Data" 5(4), 2017, pp. 310–324.

[24] S. Brin, L. Page, *The Anatomy of a Large-Scale Hypertextual Web Search Engine*, Computer Networks and ISDN Systems 30(1–7), April 1998, pp. 107-117.

has been modified several times to respond to the growing number of web pages that needed to be indexed and the growing number of users that generated searches.

After 20 years, a case study by three researchers indicated that the number of links to a page is an essential parameter for search engines. "For this study, the most relevant optimization factors are the content of the page and the construction of links. The presence of keywords in the title of the article is also important," the study shows[25]. The researchers point out that the algorithm used by search engines is not public, and assumptions are made based on codes of good practice published by corporations. The same conclusion was also underlined in 2017 by Yuniarthe, who observed the impact of using artificial intelligence in optimizing search engines[26]. The researcher concludes that mysterious criteria used by digital platforms and secret algorithms influence artificial intelligence.

Other researchers have indicated back-links as a vital factor inside the algorithm that influences the results returned by a digital platform when a user performs a search.[27] This was considered obsolete by Sharma, who studied the limitations of algorithms.[28] The study shows that page hierarchy can be based on links that link to a particular page, based on the title length, user behavior, time spent by a user on a site, or the number of links that leave a specific page. Accurate knowledge of an algorithm causes certain pages to be designed specifically to meet the demands of search engines. Thus, by stimulating the search engines, you get a better position in the hierarchy and implicitly higher traffic.

THE NEW PARADIGM IN NEWS SELECTION

The traditional news selection process was dominated by reporters and editors who selected the news based on specific criteria known as news values. Reporters decide which information will be transformed into a piece of news. The editors decided on similar criteria which news was going to be published. The audience was influenced by the public of a particular news organization.

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[25] S. Krrabaj, F. Baxhaku, D. Sadrijaj, *Investigating Search Engine Optimization Techniques for Effective Ranking: A Case Study of an Educational Site*, 6th Mediterranean Conference on Embedded Computing (MECO) 2017.

[26] Y. Yuniarthe, *Application of Artificial Intelligence (AI) in Search Engine Optimization (SEO)*, International Conference on Soft Computing, Intelligent System and Information Technology (ICSIIT) 2017.

[27] A. Dramilio, C. Faustine, S. Sanjaya, B. Soewito, *The Effect and Technique in Search Engine Optimization*, International Conference on Information Management and Technology (ICIMTech) 2020.

[28] D.K. Sharma et al., *A Comparative Analysis of Web Page Ranking Algorithms*, "International Journal on Computer Science and Engineering" 2(8) 2010, pp. 2670-2676.
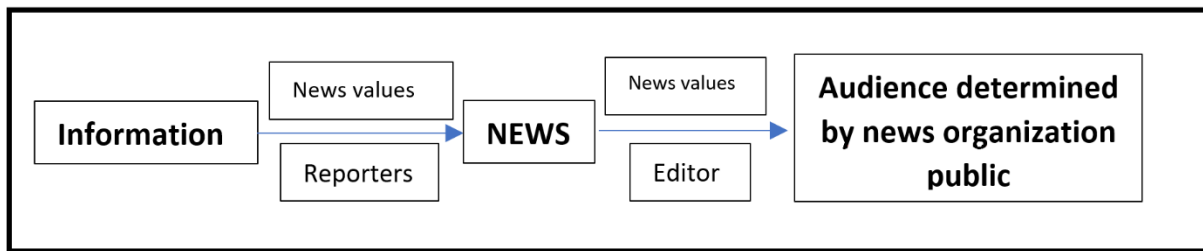
Picture 1. Traditional news selection process
The traditional process of transforming information into news

As we can observe in Picture 1, the reporter and the editor are the main important factors that decide if a piece of information should be presented to the public. In the past, there was no control over the reaction of the readers of a particular newspaper related to one specific story published there. The reporter and the editor could presume that the readers read certain news. If a piece of news was on the front page, the probability of being read was higher, and the editor took the placement decisions.

A reporter could decide to follow up a story or cover a subject again if he observes public reactions after the first article. Those public relations could be represented by official statements, other newspapers, or radios quoting that article or letters sent to the newspaper.
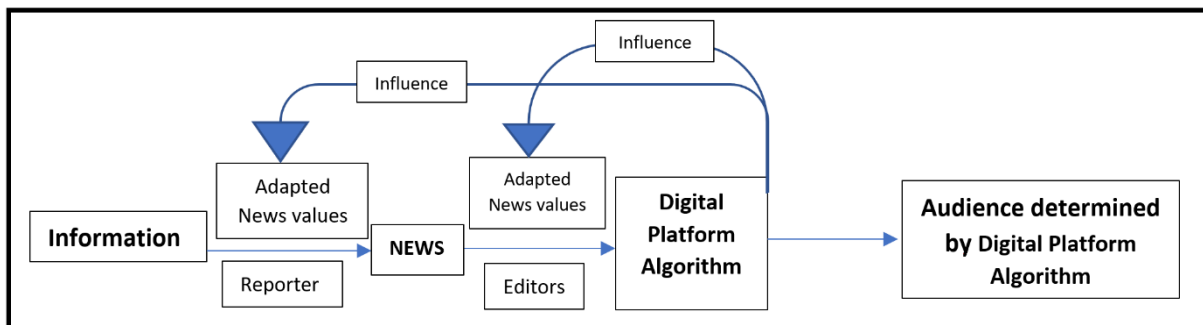
Picture 2. Modern News Selection Process
Digital platform algorithms influence the reporters, the editors,
and decide which news will be presented to the public.

In modern times, the decision of a reporter is influenced by a digital platform algorithm. A reporter will think about termed most searched on Google or 'trending' keywords on Twitter.

The difference between paper-based newspapers and digital newspapers is that, in the first case, the leading news was chosen by editors and put on the newspaper's front page or as a main page article. A piece of information that the editors put in a privileged position has more readers. In the digital era, algorithms decide which news will be the first on the digital platform, and that will gain more audience.

The editors and journalists determined the hot topics from letters received in the old time. In the modern era, algorithm involvement in the business decreased the editor's decisions to minimal. A widely covered topic could reach a few readers if the algorithm decides to 'send' that news in front of many more readers.

Because of this process, the editors and reporters will choose the subjects that performed well in the past as topics for the future.

The same thoughts will also affect the editor's decision. Nevertheless, the final decision belongs to the digital platform's algorithms.

As we can see in Picture 2, the audience is determined by the algorithm. The direct audience of a media organization does not matter. If a vast transnational digital platform redirects a specific piece of news to billions of users worldwide, that piece of information will get an enormous boost in audience. For this reason, reporters and editors start to adapt their decision to what they think will determine the algorithm to help their organization. Welbers in 2015 showed that news with more clicks receives future coverage.[29] Chakraborty in 2019 reveals the same thing showing that media organizations are adapting to the complex landscape of digital platforms.[30]

Without knowing the actual process behind the digital platform algorithm, reporters and editors could only try to cover what they think is better and wait for the results. In modern days, they could know immediately if an article is widely distributed by a digital platform or not. Even if they saw that an article become viral, they are not able to influence the process. They do not know what determines the algorithm to promote a certain story, and the only thing that they can do is to try again to cover a story with the same topic.

They receive data on the sex, age, and location of their readers. They also receive information about time spent on a specific story. That information will influence their decision about publishing or not publishing a subject in the future.

CONCLUSIONS

A century ago, the newspaper was delivered by children running down the street and shouting headlines without interpreting their content at all. Now the news is brought by digital platforms. There is so much information there that they have to sort it out and offers they think we need or think readers need.

The news values used by reporters and editors to convert information into news were influenced by this news delivery. Anyway, the decision of showing specific news to a potential reader is taken absolutely by the digital platform algorithm. This raises various risks. First is the risk that an external factor could influence the algorithm to gain economic or political advantages. Second is the risk that the uncontrolled and unknown corporation can control the algorithm because, after all, it is a corporation that is looking for profit.

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[29] K. Welbers, *News selection criteria in the digital age: Professional norms versus online audience metrics*, Sage 2015, p. 13.

[30] A. Chakraborty, S. Ghosh, N. Ganguly, K.P. Gummadi, *Editorial Versus Audience Gatekeeping: Analyzing News Selection and Consumption Dynamics in Online News Media*, IEEE Transactions on Computational Social Systems, 2019, pp. 1–12.

A public debate about what news is presented to the public or what companies offer is the first when a user search for a service will be necessary. Also, this domain's state rules or international laws are a must-have shortly. An information diffusion algorithm constructed by all factors involved should mitigate the risk of manipulation and make mandatory the control over the algorithm. A foreign power could use the algorithm to influence elections in other countries. A criminal organization can manipulate the algorithm to cause panic on the stock exchange. A company that will disappear in search engine results due to a damaged algorithm can go bankrupt in a few months. Those are just some of the main reasons why an entire society should rule such an essential factor of civilization with transparency instead of the secrecy used now by companies operating the digital platforms.

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