CHARLES UNIVERSITY
FACULTY OF SOCIAL SCIENCES
Institute of Communication Studies and Journalism

Master Thesis

CAMILLE GASNIER

CHARLES UNIVERSITY
FACULTY OF SOCIAL SCIENCES
Institute of Communication Studies and Journalism

Camille Gasnier

Impact of AI-Generated Images in the Work Field of Journalism

Master Thesis

Prague 2024

Author: Camille Gasnier
Supervisor: Mgr. Sandra Lábová

Academic year: 2023/2024

Bibliographic note

Abstract

Generative image by artificial intelligence technology has recently developed an important growth within our society. Its expansion into our everyday lives has raised interrogations on limits, capability and controvercy. Image as a media spectrum in news relies on photojournalism practices and generative imagery tools have the capacity to innovate and modify work habits. Since the digitalization of news on the Internet, artificial intelligence offers rooms to automatised media's activities. This master thesis wants to explore the tangible impact of AI-Generative Images in journalism through the lens of professionals in journalism. The study research relies on qualitative analysis through semi-structured interviews of seven participants: journalists and photojournalists. The thesis develops concepts of the importance of image in digital media, the current use of generated images in journalism, information bias and ethics in journalism. Results showed that generative image is a powerful creative tool, however in constant evolution, and requires legal structure to be used ethically in journalism. Also heavily relying on editorial decisions, the implementation of generative images is not yet secured as its conduct to an adaptation of work habits.

Keywords

Journalism, artificial intelligence, generated images, media, digitalization, social media, generative AI, current challenges, journalist, photo-journalism

Abstrakt in Czech

Generativní obraz pomocí technologie umělé inteligence zaznamenal v poslední době v naší společnosti důležitý růst. Jeho rozšíření do našich každodenních životů vyvolalo otázky ohledně limitů, schopností a kontroverze. Obraz jako mediální spektrum ve zprávách se opírá o postupy fotožurnalistiky a nástroje generativního zobrazování mají schopnost inovovat a upravovat pracovní návyky. Od digitalizace zpráv na internetu nabízí umělá inteligence prostory pro aktivity automatizovaných médií. Tato diplomová práce chce prozkoumat hmatatelný dopad AI-Generative Images v žurnalistice objektivem profesionálů v

žurnalistice. Výzkumná studie se opírá o kvalitativní analýzu prostřednictvím polostrukturovaných rozhovorů sedmi účastníků: novinářů a fotoreportérů. Práce rozvíjí koncepty významu obrazu v digitálních médiích, současného využití generovaných obrazů v žurnalistice, informační zaujatosti a etiky v žurnalistice. Výsledky ukázaly, že generativní image je mocným kreativním nástrojem, nicméně v neustálém vývoji a vyžaduje, aby právní struktura byla v žurnalistice používána eticky. Také implementace generativních obrázků, která se silně spoléhá na redakční rozhodnutí, ještě není zajištěna, protože vede k přizpůsobení pracovních návyků.

Klíčová slova

Žurnalistika, umělá inteligence, generované obrázky, média, digitalizace, sociální média, generativní AI, aktuální výzvy, novinář, fotožurnalistika

Range of thesis: 67 pages and 121 314 characters

Compared to the approved research proposal, the final master thesis has improved research questions, as it reflects more accurately the results of the research

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague 20/04/2024   Camille Gasnier

Institute of Communication Studies and Journalism
Approved research proposal

Institute of Communication Studies and Journalism FSV UK
Institut komunikačních studií a žurnalistiky FSV UK
Research proposal for MARS M.A. Thesis
Teze MAGISTERSKÉ diplomové práce studijního programu MARS

THIS PART TO BE FILLED BY STUDENT:

Student's surname and given name: CAMILLE GASNIER	**Registry stamp: / Razítko podatelny:**
Start of studies for MARS (Immatriculation date): 2021/2023	Univerzita Karlova Fakulta sociálních věd Došlo dne: 3 0 -06- 2023 -1- Čj. 152 Příloh: Přidělená
Your faculty e-mail: 87535861@fsv.cuni.cz	
Study program/form of study: MARS	

Thesis title in English:
Impact of AI genereated images in the work field of journalism

Expected date of submission (semester, academic year – example: *SS 2021/2022*)
(Thesis can be submitted no sooner than <u>eight months</u> after acceptance of the research proposal)
Winter semester 2023/2024

Main research question(s) (max. 250 characters):

This thesis aims to understand the potential impact of AI photos in digital journalism, both challenges and opportunities. The diploma thesis will apply semi-structured interviews with journalists and photojournalists to answer three research questions.

RQ1: Do AI-generated images used in news coverage support, change or deviate from the aim of information in a democratic society?

RQ2: What are the main challenges and opportunities brought by AI-generated images in photojournalism?

RQ3: How do the AI-generated images question the veracity and ethics of visual new coverage? ethics and AI-generated images

Current state of research on the topic (max. 1800 characters

The Internet boom since the 90s has given rise to new habits, jobs, and consumption methods. Its fast-moving technology requires constant adaptation (Clark David. 2009). The world of journalism has not been spared since the digitalalisation of journalistic information has impacted the industry of paper newspapers (Valentina Vivona and Niccolò Caranti. 2020). With the ease of access and distribution on the Internet, information platforms have increased and challenged the main traditional information channels (Martijn Suijkerbuij, 2014). It also raises new debates such as sources of information, veracity and questions of ethics, particularly since the development of artificial intelligence in journalism (Lee

Rainie, Janna Anderson, Emily. A Vogels, 2021). According to (Charlie Beckett, 2019), AI encompasses a collection of ideas, technologies, and techniques related to the ability of computer systems or software to perform tasks that normally require human intelligence (2019). Digital journalists must respond to competition by producing articles that are ever more relevant and up-to-date (Wilding, D., Fray, P., Molitorisz, S. & McKewon, E. 2018). This technology raises interrogations about the quality of the outputs created by AI (Manfredi-Sánchez & Ufarte-Ruiz, 2020) and the likelihood of these tools eroding ethical principles and the core values of journalism (Ufarte-Ruiz, Calvo-Rubio & Murcia-Verdú, 2021). Particularly the photos generated by AI (Burkhard Schafer, 2020), this tool transcribes a digital reality that increases a close perception of reality. However, the impact on the media because of the dissemination of AI-generated images has not yet been sufficiently studied as it is a recent debate. Indeed it is a very niche topic which deserves greater attention. This new tool could change journalism's codes, ethics, work, and perception by journalists themselves. Indeed a deeper analysis is needed to read through the potential impact of photos generated by AI and journalism.

Expected theoretical framework (max. 1800 characters):

To develop this thesis, I will analyse several concepts to determine the importance of AI as a tool in journalism. First, the theoretical framework (TF) will re-contextualise media's construction of reality (William A. Gamson, David Croteau, William Hoynes and Theodore Sasson, 1992). Second, (TF) will examine the process of digitalisation and the way it has transformed news production and its dissemination (Tadej Praprotnik, 2016). Democratisation of access and diffusion of media will be discussed. (David J. Atkin, Daniel S. Hunt & Carolyn A. Lin. 2015). Furthermore, TF will describe AI's expansion as a tool that might question journalistic integrity and credibility (Zvi Reich, 2011).

Expected methodology, and methods for data gathering and analysis (max. 1800 characters):

The method I will use for data collection will be mainly semi-structured interviews with open-ended questions. From it, I would like to obtain journalists' opinions and analyse their answers. The advantage will be direct contact with journalists of newspapers.

The method of data analysis I am going to use is thematic analysis. The aim is to analyse answers to build groups of opinion. The advantage is the open discussion through the questionnaire. The subjectivity of gathered data indeed might be a limitation.

Expected research design (data to be analyzed, for example, the titles of analyzed newspapers and selected time period):

Regarding the expected research design, the aim is to collect journalist opinions according to several criteria. I will focus on francophone European countries to do this research, such as France, Belgium, Luxembourg and Switzerland. First, I will search for digital news organizations that already use artificial intelligence, such as regional newspapers, national newspapers, and international-orientated news organizations. They must have at least 100 00 monthly viewers. After the initial selection, I will contact editor journalists and photojournalists and arrange interviews with them. If possible, semi-structured interviews will be conducted online and face-to-face using a chat platform. If not possible, a questionnaire will be distributed as an e-mail attachment. The aim is to have direct contact with journalists. Ideally, at least two journalists from each category mentioned above will be included in the research. The aim is to collect between 8 to 15 semi-structured interviews. I will design a questionnaire for semi-structured interviews consisting of a maximum of ten questions relating to AI-generated images in journalism. The questions will address these main issues: the veracity of

information, control, opportunities and the impact on their work, distribution channels and reader confidence. The goal is to obtain general opinions and perceptions accordingly to respondents' working positions. I will highlight a few concepts: direct opinion, open conversation about their work, tools they used, and a subjective opinion about AI-generated photos in journalism. I will compare sentences and words used to understand how AI-generated images influence journalists' working patterns and if it does change their perception of their work.

Expected thesis structure (chapters and subchapters with brief description of their content):

Introduction
Theoretical research and literature review
- Media construction of reality
- Journalism and digitalization
- Artificial intelligence and generated images as a new tool used in journalism
- Veracity, credibility and ethics in journalism
Methodology and research design
Findings
Discussion
Conclusions

Basic literature list (at least 5 most important works related to the topic and the method(s) of analysis; all works should be briefly characterized on 2-5 lines):

- Atkin, D. Hunt. D. Lin. C. (2015) Diffusion Theory in the New Media Environment: Toward an Integrated Technology Adoption Model, Mass Communication and Society

  o This article explores innovation models and how technologies impact the generalization of information.

- Flores Vivar, J. M. (2019). Artificial intelligence and journalism: diluting the impact of disinformation and fake news through bots. Doxa Comunicación, 29, pp. 197-212.

  o The article focuses on defending disinformation and analyses the main developments of artificial intelligence in journalism and how it minimises or increases fake news.

- Vivona, V. Caranti, N. (2020). The Impact of Digitalisation on Media and Journalism

  o This article looks at the technology and the nature of economic, social and cultural activities of digitalization and how it impacts society. It gives an overview of the informative and communicative impact it has on the work field of Journalism.

- Marconi, F. (2020). Newsmakers: Artificial Intelligence and the Future of Journalism. New York, NY: Columbia University Press

  o The article exposes the potential of these new digital tools and how it can develop new ways of telling stories and connecting with readers

- Papadimitriou, A. (2016). The Future of Communication: Artificial Intelligence and Social Networks. Mälmo: Mälmo University.

o The articles analyses the changes in human communication and their influence on social interaction and societies.

Related theses and dissertations (list of B.A., M.A. and Ph.D. theses defended at Charles University or other academic institutions in the last five years):

- Noain-Sánchez, A. (2022). Addressing the Impact of Artificial Intelligence on Journalism: the perception of Experts, journalists and academics. Communication & Society, 35(3), 105-121.
- Wladdimiro Quevedo, Claudia . (2022). Artificial Intelligence in National Media: How the North-South Divide Matters?

Date / Signature of the student: 29/06/2023

…………CAMILLE GASNIER……………

THIS PART TO BE FILLED BY THE ACADEMIC SUPERVISOR:
I confirm that I have consulted this research proposal with the author and that the proposal is related to my field of expertise at the Faculty of Social Sciences.

I agree to be the Thesis supervisor.

Mgr. Santa Lábová

……………………………………………………

| Surname and name of the supervisor | Date / Signature of the supervisor |

Further recommendations related to the topic, structure and methods for analysis:

Further recommendations of literature related to the topic:

The research proposal has to be printed, signed and submitted to the FSV UK registry (podatelna) in two copies, before the deadline. This deadline is published in the current academic year schedule.
Accepted research proposals have to be picked up at the Department of Media Studies secretariat. The accepted research proposal needs to be included in the hard copy version of the submitted thesis.

RESEARCH PROPOSALS NEED TO BE APPROVED BY THE HEAD OF THE MARS STUDY PROGRAM.

Contents

Table of Figures

Introduction

The rise of digital technologies has engaged post-industrial journalism to be in constant adaptation of work habits (Pavlik, 2000; Wilding et al., 2018). Since the digitization of newspapers on the Internet, journalism has had to adapt the types of articles and format produced, including multimedia content and images (Maenpaa, 2014; Suijkerbuijk, 2014). While images convey messages to connect the events and the readers for journalistic purposes, digital media has increased the role of images in news information (Ilan, 2018; Mitchell, 1994). To support journalistic work habits, structural strategies are considering new tools. In recent years, ongoing debates in journalism have been raised on Artificial Intelligence at work (Beckett, 2019; Braly & Ganascia, 2017; St-Germain & White, 2021).

Perceived as machine-based learning platforms, generative systems can perform specific tasks (Jordan & Mitchell, 2015; Mattei & Villata, 2022). For instance, it can automotized and ameliorate content, and texts along with multimedia images known as generative images. Since the year 2022, AI-generated images have impressed the international audience with their capacity to create various visual, collage, hyper-realistic images and support artistic representations based on a dataset and can develop particular forms of images within social media networks (Maudet et al., 2021; Wells, 2022; Wilde, 2023). Thus, due to the recent growth of generative imagery and the role of images in media, it questions the impact of work habits in journalism (Lippolis & Parusinski, 2022). Indeed, it refers to a potential transfer from traditional photojournalism, which initially captures events, to fabricated images that depict events for journalistic narratives (Verosky, 2023). Thus, it questions the opportunities or threats given by generative tools in digital media.

To delve into the impact of AI-generated images in the work field of journalism, this thesis is designed to pursue research on Journalism and Generative Imagery. It will lead to an analysis of potential shifts in work practice since the digitalization of news to perceive a connection between Artificial Intelligence and media. It requires extending beyond the function of technological innovation to understand the ideological effect of generative images. To elaborate further, the thesis will be conducted initially through research sections to expose the perspectives surrounding generative imagery in journalism. It will cover

structural strategies in digital media, generative imagery tools, and the role of information including ethical concerns in journalism. As explained in the following sections, theories will be connected with experts' opinions to analyze dynamics and challenges in the work field of journalism. Indeed, this thesis research will entail conducting semi-structured interviews with experts in journalism and photojournalism. Results found along with deeper discussions will expose how generative tools impact journalistic activity.

1. Literature Review

1.1 Digitization of newspaper

In today's world, the concept of media is to propose a large diffusion of information, a process known as mass communication (Bull, 2009). Mass communication is a form of message based on disseminating a collection of values, beliefs, practices, and behaviors toward particular institutions, societies, communities, and cultures.

Media plays an important role in democratic institutions by driving news topics and engaging interest, participation including opinion from the audience (Wilding et al., 2018). Hence giving access to information has become crucial for the healthy functioning of groups, communities, and nation-states (Knight Commission, 2009). Through the prism of the Internet's development in, traditional media gained new rooms to offer news content. Over the years due to structural and economic interest, its integration has influenced the business systems of newspaper sectors (Bauer et al., 2009). For instance, as described by Vivona and Caranti (2020), the Internet has created new dynamics in information, production, and distribution, leading to a digitization of news. Indeed, the first stage of digitalization of news was made in the 1990s followed by the launch of Google News in 2002. Digitalization, or digital transformation, involves social, cultural, and economic processes that present both challenges and opportunities (Vivona & Caranti, 2020).

With the Internet, newspapers have drift-way methods of distribution from print to digital, and elaborate news format of information as reliable as non-digital sources, with an emphasis on the speed of transmission and production (Deacon, 2007). Since the early 2000s, the media industry has been expanding its production capacity and volume by integrating websites into its internal development as well as reducing external expenses on print methods (Bull, 2009). The accessibility of online newspapers is closely related to the portable devices revolution with the growth of mobile platforms (Suijkerbuijk, 2014). Indeed, it allows readers to have access from any location or entirely ceased print papers to the online version (Newman, 2012). In the context of the digital revolution, traditional newspapers persist in print form however in practice dissemination of news information relies on online networks which facilitate widespread content distribution. This shift includes competition from

5

independent websites labeling themselves as part of the news media spectrum, thus enhancing pluralism on the Internet (Bull, 2009). Another factor of the digital revolution of media is the implementation of multimedia images which lead to new dynamics in journalism.

1.1.1 The importance of images in digital media

With the revolution of online sources and the speed of mobile platform access, digital media have implemented new types of content in news production. With the expansion of digital platforms in post-industrial journalism, multimedia content has become an integral part of information and news distribution (Campbell, 2013; Singer, 2010).

According to Campbell (2013), multimedia content refers to the integration of visual production, sound, design, and text to construct narratives. This approach has evolved significantly within digital media by including photo galleries along with text captions (p 10). Both moving or still images by transmitting visual details and meaning, compels viewers to initially believe what they see (Bartholeyns et al., 2010). Images support the storytelling and connect the readers with the event but do not guarantee its authenticity (Cudlipp, 1992; Mortensen & Gade, 2018), especially in digital media where it is possible to transform, modify, and adjust the visual of an image (Taylor, 2000). According to Newton (2020), the practice of images in news refers to photojournalism activity and is more than a process of depicting events but is considered as a process of thinking humain perspective. In contemporary photojournalistic practice, broadsheet content has been replaced with sensational news including additional multimedia images to maintain the reader's interest (Taylor, 2000). Thus, the diversity of visual format represents the progression of photography while digital media has significantly shifted newsworthiness to emphasizing narrative techniques (Bakir & McStay, 2018).

Furthermore, what conducts the importance of image is the concept of stream in digital media as involved in an "ecosystem of networking" (Ritchin, 1991, as cited in Campbell, 2013, p.29). This concept mentions how image can be shared as a product of information through network platforms which participated in the hyperphotography and is

6

defined as the transfer from a typical photo into multimedia networks. Thus images in digital media convey various purposes not only through conventional media but also into social networks. Social networks represent interactive environments on the web that promote opportunities for users to meet and exchange material and creative content (Burger et al., 2017). According to Campbell (2013), images are central in social media networks as they are based on a shared reaction to digital content. This activity helps users to publish online facts which has become a space to access news from non-conventional media. Furthermore, as anyone can share data on the web, these details can have an influence on the audience including broadcast news (Bruns, 2018; Malik & Pfeffer, 2016). Movements can emerge as a result of media coverage and subsequently trigger numerous reactions (Wilding et al., 2018). Hence why social media networks are changing practices in traditional media regarding the production of formats and consumption of information habits (Burger et al., 2017). Thus, as images convey messages and meaning which can lead to reactions from readers, they serve a crucial function in communication. Even though images have been integrated into newspapers for decades, new technologies in digital media influence the way news is produced and consumed (Hadland et al., 2016). However, not only photojournalism activity is influenced by technology, but journalism itself has perceived concrete innovation in work habits.

1.2 Technological innovation in journalism

As exposed, with the growth of the Internet, digital innovations are correlated to the transformation of post-industrial journalism (Delporte, 2005; Pavlik, 2000; Túñez-López et al., 2021). Over the years, journalism and photojournalism have changed, modified by new innovations (Mitchell, 1994). Recently, with the growth of digitalization in the journalistic sector, technologies have implemented tools known as softbots which result in the standardization of work tasks by implementing coding systems (Bostrom, 2014; Broussard, 2018). Ongoing debates in journalism work production mention the use of Artificial Intelligence softbots (Braly & Ganascia, 2017; Dhiman, 2023; Gremaud, 2022).

Artificial Intelligence or AI is a machine-based learning platform and involves in an ecosystem of data (Russell & Norvig, 2003), It has been developed as an auto-learning

7

mechanism and is driven by algorithms to solve specific problems or achieve defined outcomes (Beckett, 2019). For journalism purposes, the most notable developments occurred since 2010, when these machines learning were capable of programming generative content using massive data sets, leading to perform on learning techniques such as language mimicry or visual recognition of public images (Martinez, 2018; Ufarte Ruiz & Manfredi Sánchez, 2019). To delve into their significant advance for journalistic purposes, two techniques are currently used: Machine Learning (ML) and Deep Learning (DL) (Jordan & Mitchell, 2015, pp. 255-56; Wilding et al., 2018). ML has the capacity to develop autonomously and enhance capabilities through experiential learning without specific programming directives while DL, inspired by brain function, processes massive data sets to recreate approximate representations.

Thus, machines can analyze and interpret content to produce new formats for journalistic content (Wilding et al., 2018). More precisely, since 2014 most automatic programs function as generative adversarial networks, also known as GANs (Maffei, 2021). The concept involves training two neural networks (a generator that designs the most accurate result and a discriminator to analyze mistakes), and strive improvement to generate new data samples through a training dataset. These machines can be adapted for various purposes in terms of information gathering, and processing in journalism (Gremaud, 2022). In this perspective, AI can ensure access to high productivity of generative content by adapting the work habits of journalists to drift away from particular tasks (Dhiman, 2023; Fernández-Barrero, 2018). Thus, AI has the potential to transform newsrooms into a networked information hub, giving journalists new structures and editorial policies in the industry (Beckett, 2019). The question is no longer about whether technological innovations are changing practices in the journalistic sector (Mercier & Pignard-Cheynel, 2014), but rather the emergence of trends resulting from the integration of technology.

1.2.1 Generative Imagery

As discussed in the previous section, generative content from Artificial Intelligence tools has seen significant growth in recent years. With advancements in technology, numerous AI-backed companies and software are exploring the interaction between humans

and machines, producing original content for journalism and photojournalism perspectives (Dörr & Hollnbuchner, 2017; Lippolis & Parusinski, 2022; Noain-Sánchez, 2022).

The year 2022 was marked by the accessibility of generative models like Open AI's language model, Bing, or as well Google (Offert & Phan, 2022). Open AI specializes in artificial reasoning models, and along with other platforms such as AI Builder and Google Cloud AutoML, has contributed to democratizing AI accessibility since 2020 (Cetinic & She, 2022). Two models are emerging: text-to-prompt applications such as ChatGPT, Bard, or Bing, and text to image functions like Stable Diffusion, Midjourney including DALL.E and more have emerged since 2023 to create collages, graphic visuals, etc (Bajohr, 2023; Offert & Phan, 2022). Interest for these tools has been increased since their capacity to generate hyper-realistic representations along with the simplicity of creation through prompts (Wilde, 2023).

Originally, AI-generated images were developed for various purposes. According to Kundu (2022), basic computer-generated images date back to the late 1960s, around the same time as AI. However, the contemporary concept of Art through AI was accelerated in the 1970s, with notable examples like the AARON project initially focused on drawing black-and-white images (Cohen, 2016). With the integration of technologies, the creation of GANs for machine learning accelerated the use of AI in generating digital art. These tools analyze patterns in extensive data collections to produce their own works of art such as Neural Style Transfer NST, a deep learning program, that allows the combination of images using content and style from different sources (Mattei & Villata, 2022). These technologies demonstrate an advanced understanding of natural language to associate words with images or representations of images. Therefore, it is now feasible to use generative models daily to create images and add modifications layer by layer (Meyer, 2023). However, the possibilities of creation from generative tools are confined by their capacity to recognize and analyze their data collections. Models are based on language systems containing correlations between text elements and collected data, which can result in erroneous, random, and unrealistic outputs in representation (Croizer, 2023). According to Michos (2023), its training database works in a way to reduce errors by creating more realistic illustrations but still faces a few challenges such as the potential for a "black box," meaning recognizable markers and mistakes in generative images. As a part of their mediality, some images may contain incorrect hand positions and dysfunctional layers, reducing the realism of generative imagery. Besides a few

9

limitations in prompt interpretation and data training, this technology can help the creation of illustrations. It can further be seen as a flexible alternative to traditional stock photos in photojournalism, as AI can analyze keywords in articles and pair them with graphical illustrations to generate tailored images (Lippolis & Parusinski, 2022; Meyer, 2023). As of December 2023, the challenge is mainly to understand its evolution as well as to evaluate potential transformations in media.

1.3 Artificial Intelligence in the newsroom

In order to understand the potential integration of generative imagery in media, we must recontextualize critical theories on cultural adaptation of conventionalized practices (Bajohr, 2023; Roberge & Castelle, 2021).

Reports have identified a change in journalistic newsrooms, from the advent of television, followed by the digital revolution, to the expansion of media on digital platforms, new digital tools have had a direct consequence on photojournalism and media practices (Gramaccia & Watine, 2020). Recently Artificial intelligence is presented as a new possible tool to support journalistic tasks (Diakopoulos, 2019). For instance, within media networks, multimedia image interest has increased and AI can develop targeted image content based on the user's consumption which can increase the concept of the "atomization of news" (Broussard et al., 2019). This concept underscores the need to find tools to improve efficiency and competitive (Gramaccia & Watine, 2020). Indeed, based on business logic, journalistic work conditions are predisposed to evolve towards achieving higher margins profit with lower production costs (Dhiman, 2023; Fernández-Barrero, 2018). Furthermore, according to Noain-Sánchez (2022), Artificial Intelligence in journalism can overcome the global crisis. Indeed, the profession was compelled to profoundly adapt its business model following a severe economic downturn, primarily due to the shift of advertisers and readers from print to digital media, as well as an employment crisis. (Noain-Sánchez, 2022).

To delve into Artificial Intelligence in the newsrooms, Beckett (2019) develops approaches regarding AI's integration as a survey for media: The first approach is about the current journalistic news activities, which require an adaptation in news gathering,

production, and distribution. First of all, news gathering helps journalists and photojournalists to source their information, identify trends, or collect content (Beckett, 2019). Generative images, by analyzing text-to-image, collect various data from online databases and can adapt the result to the required demand (Brockman et al., 2023). Secondly, news production is the way to edit and create content for formats and platforms. For instance last year, Stable Diffusion was integrated into Adobe Photoshop and other graphics programs and led standard creative platforms to incorporate generative tools to remain dynamic (Alfaraj, 2023). Then, news distribution is the capacity of AI to understand user behaviors by creating personalized communication content (Beckett, 2019). Recently, digital images of Emmanuel Macron, the French president, were released on social media platforms. The realism of these pictures portrayed the president involved during demonstrations in Paris while social tensions were emerging due to France's retirement age reform (Mouriquand, 2023). Widely circulated on social media networks and in national newspapers, these false images contributed to questioning opportunities and risks surrounding the use of AI in media (Gayte, 2023; Mouriquand, 2023).

Figure 1

AI Image of French Demonstration;

Credit: (Reddit, 2023, March 23): "Macron taking the streets to protest against the retirement age reform in France".

Moving on to the second approach, Beckett (2019) discusses editorial strategy for the next two to five years, leading to an evolution toward the integration of AI into the media's structure. This evolution demands experimentation from media organizations to develop a comprehensive strategy. The main challenges to adopting AI are financial resources and structural effects. Indeed, experimentation requires infrastructure, which can be expensive for small media structures. Despite these challenges, the fabrication of the media's reality within artificial intelligence is a subject of ongoing debates. Nevertheless, generative tools in the newsroom already offer efficient capabilities to support business activities however engage economic concerns.

In the perspective of creating multimedia content, generative image tools can produce fast and efficient images to illustrate information. The traditional press is currently navigating a hyper-competitive economic climate (Gramaccia & Watine, 2020). Photojournalism finds itself at a crossroads of declining general income with the necessity to increase productivity (St-Germain & White, 2021). Main debates are proceeding on the adoption of the digital era reflective of the precarity of income and work production from photographs and photojournalist workers (Estrin, 2017; Hadland et al., 2016). Nowadays, photographers and image banks are commonly used to illustrate articles, however, noticeable implementations of generative images are designed in media outlets as AI's contributing to cost reduction through their accessibility and low-cost pricing (Dutta, 2023).

1.3.1 Current status in the European Francophone Market

Discussions have arisen forming concerns about threats and opportunities due to its potential impact on journalistic activities. Indeed, AI can assume tasks traditionally performed by journalists, photographers, and others. This shift in skills underscores the ongoing digitization of the journalism profession (Brantner & Saurwein, 2021; Maenpaa, 2014; Mercier & Pignard-Cheynel, 2014).

Challenges have emerged concerning the current status of AI-generative images in journalism in opposition to banks of images used by printed press outlets (Verosky, 2023). The accessibility, swiftness, and customization abilities of generative visuals raise concerns among professionals and photojournalists (Verosky, 2023). However, some perspectives look

into generative AI as a beneficial tool for the media sector (White, 2022). For instance, within Agence France-Presse (AFP), an AI photo service named "Camino" aids in object and face recognition, enhancing the agency's photograph indexing during well-known events. AI services demonstrate to be a time-saving asset for publishers (White, 2022). Within work conditions perspectives, it must be valuable to expose the context of current practices in media. This research delves into the impact of AI-generated images in the journalistic sector in Europe, with a particular emphasis on French-speaking media, which includes: France, Belgium, Luxembourg, and Switzerland.

Traditional print media in these countries have demonstrated a growing interest in AI and generative tools (CCFI, 2023; Pargamin & Hanssen, 2023). Articles dedicated to artificial intelligence and technologies have been incorporated into editions (Dhiman, 2023). With the expansion of generative images, the press is exploring new methods of operation. Notably, national newspapers in France, such as Le Monde, l'Équipe, and Le Parisien, which have incorporated generative images to illustrate some articles since March 2023 (Pargamin & Hanssen, 2023). Similar cases of generative illustration have been seen in Belgium and the Luxembourg press. Midjourney's generative images have been the most used tool to illustrate articles on AI-related topics (Eutrope, 2023). However, the Figaro, in March 2023, faced controversy regarding its use in coverage of a writing-related matter, raising questions about editorial direction and illustration work (Pargamin & Hanssen, 2023). In Switzerland, newspapers including Le Temps, Challenges, and Blick have confirmed the use of generative images for specific editions (Jelassi & Wassmer, 2023; Pargamin & Hanssen, 2023). Blick newspaper, for example, describes the use of generative images as both "provocative, arousing debate, and something that should remain a framed practice" (Jelassi & Wassmer, 2023). Additionally, Le Temps, Challenges, and JPP Magazine (a French media) have developed front covers and special editions exclusively featuring visuals created by algorithms (Eutrope, 2023; Gremaud, 2022; Jelassi & Wassmer, 2023; Pargamin & Hanssen, 2023). This editorial choice involves collaboration with photographers and editors, as illustrated by the newspaper Challenges. While human control is still required, the newspaper suggests the possibility of prominent iconographers emerging, capable of guiding AI as it offers a diversity of illustrations that align the graphic chart of the newspaper compared to image banks (Pargamin & Hanssen, 2023). Despite these developments, initiatives related to generative content in media seem to be a critical topic (Roberge & Castelle, 2021). Indeed,

the implementation of generative images remains complex, primarily due to ambiguities in traditional journalism and photojournalism practices.

2. Theoritical Framework

2.1 Ethical concerns in photojournalism

As exposed in previous sections, Artificial intelligence can improve both the quality and quantity of production, allowing it to supplant journalistic tasks. Generative image platforms have the ability to design unique and original illustrations, acting as tools to facilitate artistic creation and the development of creative strategies (Verosky, 2023). This tool, by helping the creation, can fabricate an interpretation of events that opposes real photos and their transcription of reality. This distinction between imagery types may be identified as photofiction and phototruth in the digital era, each possessing the capacity to distort viewers' perceptions of reality through a constructed lens (Newton, 2020). It led to question how fabricated images may affect ethical concerns of visual media in photojournalism by depicting a modelized world.

First of all, discussions between ethical practices and photojournalism are beyond its use as any photo results in the representation of artifacts (Hadland et al., 2016) Media ethics represent a process grounded in forms of communication that are designed to guide interactions with others, where all aspects of journalistic behaviors are constructed and mediated (Gazzaniga, 2005). According to Christians (2019), photojournalism ethics remain in the value of facts, respect in the human condition, and non participation of outrageous illustrations. Indeed, photojournalists develop a core of professional attributes which require resources and documentation to observe and record events for the benefit of the media industry (Mortensen & Gade, 2018). Visual media is complex and shapes collective memory by depicting the way how the world is experienced. Indeed, photojournalism continues to carry a deliberated weight aiming to reveal the truth of events that we attempt to believe instead of using images to startle (Cudlipp, 1992). Thus, visual media as a form of communication fabricated invokes a responsibility associated with visual stimuli deemed socially acceptable in which newspapers may either recognize or overlook in news photographs to capture the reader's interest (Taylor, 2000). As images in media represent an idealized portrayal of events, it embodies a core of ethical attributes. However, regarding

15

generative imagery, it can also help embody reality as an authentic image could and be viewed as digital manipulation since it modifies the content of the image itself (Ilan, 2018). The ethical concern behind fabricated realistic images in journalism is to depict authentic situations that can mislead information.

Secondly, besides realistic design connotations, data employed (origins of the sources, image rights, and copyright issues) in generative imagery also raises ethical dilemmas (Brantner & Saurwein, 2021). For instance, the data collection used to produce generative images can misappropriate a person's identity without the right of image (Bolter, 2023). Artificial Intelligence Imagery platforms like Stable Diffusion, DALL.E, etc., have standardized their open access without yet proper standardization on intellectual property rights to use real images to create generated content (Bajohr, 2023). Photojournalism has to adapt its methods to the digital environment but the challenge of identifying original sources or to attribute copyright can compromise the ethical standards of work practice (Ervik, 2023; Wilding et al., 2018). In the realm of photography, AI can modify and transform images or parts of images available on the Internet (Croizer, 2023). However, the extension of its use may be subject to plagiarism or intellectual ownership concerns, and under the current state of law, the author of the generative image cannot be an AI system software as AI does not benefit from a legal person (CNPEN, 2023). It wonders whether AI complies with journalistic codes such as responsibility, objectivity, and truthfulness in information (Beckett, 2019). Thus, in journalism, the ethical use of AI-generated images is a subject of debate, primarily regarding the subjectivity and responsibility inherent in this tool (Wilde, 2023). The aspect of responsibility might be perceived as diminished when derived from technology, given that its primary function is to execute specific tasks. Consequently, the ethical concerns in photojournalism are less about the tool itself and more about its exploitation to incessantly generate sensationalism within news reporting (Taylor, 2000).

2.1.1 Information Bias through Generated Images

Beyond the integration of Generated Images in the newsrooms and its ethical concerns, visual content carries information in news. Perhaps generative illustration may bias

the information itself as it does not depict real affairs but remains a construction of artifacts from particular prompt demands.

The concept of stream and multimedia images in digital newspapers has engaged a shift in photojournalism practices (Campbell, 2013). As demonstrated in the previous section, visual caption has a meaning in news and participates in the interaction between readers and newspapers, however images cannot be defined as proof of an event and can be fabricated (Taylor, 2000). We have exposed the importance of images in media and their impact on the interpretation of events, thus it will be interesting to delve into the connection between generative illustration and its function of message. As this tool has the capacity to portray a hyper-realistic content, it can participate in disseminating information (Dhiman, 2023).

In journalism, using generated images to illustrate articles is politically engaging for newspapers as it serves informative purposes, supporting textual narratives, and contributes to the depiction of past or future events as real photography (Schröter, 2023). For Meyer (2023), this tool refers to the digital transformation of photography and can serve for the same purpose as banks of images in newspapers. Generative imagery forms reflect on social depiction from prompts which can mislead plurality of representation in photography (Maudet et al., 2021). Image forms in media (print, digital, or generated) seem to announce an evolution of practice. Endless illustration choices according to the prompt can indeed help and support photojournalism by portraying specific artifacts for the purpose of articles. For instance, during the 2020 US elections, The Washington Post illustrated an article based on realistic generative images of political candidates. These images, based on an extensive dataset, depicted public personalities that blurred the lines between reality and fiction (Dutta, 2023). The realism of these creations wouldn't be as concerning if it wasn't correlating with the virality of distribution in media platforms.

With the shift to online news with high interest in multimedia content, the spread of information can fabricate constant reactions, in which AI can participate by distributing new storytelling. As generated imagery is based on the fabrication of elements, using this tool in newspapers can lead to transforming messages. Indeed, it became harder to depict real events from the mass information on digital platforms (Bruns, 2018). Furthermore, generative realistic images have the capacity to disseminate false information through disinformation (false contextual information, manipulation of content, or generative imagery) and misinformation (false communication, such as visual or misleading content) (Vivona &

Caranti, 2020). Additionally, disinformation can pollute the media ecosystem, develop contestation on public news, or foster negativity and trust issues with media institutions (Brennen et al., 2020). For instance, last November 2023, fictional generative images depicting a conflict between the Gaza Strip and Hamas were posted on social networks and official news sites, which participated in the spread of false information and became problematic as it communicates official political news (Quach, 2023). So-called "deep fake", the photorealism of generative visuals suggests that this artificial intelligence can interfere with media credibility as a false representation of events that deceive journalistic purposes (Bakir & McStay, 2018; Hill & White, 2020; Maenpaa, 2014). However, the balance between veracity of fact and information is a matter of credibility from established newspapers (Taylor, 2000). Hence an understanding of its limits to anticipate the spread of fake news and not to participate in information dissemination in digital media.

2.1.2 Controvercy

The debate on generative images extends beyond technological innovation and integration; it serve as information tools, unveiling representations of events and conveying messages (Croizer, 2023).

Words defined in prompts are conditioned on visual representations which can potentially reflect bias or dysfunctional societies' perception (Ervik, 2023). Despite precautions taken by broadcasting sites, such as limiting violent or pornographic terms, it can tend to exacerbate stigmatization based on gender, profession, ethnicity, and other factors. Filters and word regulation aren't yet sufficient to contain uncontroversial content (Perrigo, 2023). According to Truk (2023), many generative platforms, primarily Western creations, exhibit stereotypical content. For instance, when prompts include a "portrait of an Indian person," the choices predominantly interpret a Hindu religious man from New Delhi (Truk, 2023). The underlying issue with these tools is the accentuation of social stereotypes and the proliferation of inappropriate content, including misogyny, pornography, and distortion of historical facts (Truk, 2023). Its use in photojournalism can be controversial as it can engage the sygmatisation of groups in news for the purpose of storytelling. Generative content by its capability of creating target content can boost the current trivial news in newspapers to catch

18

readers' attention and engage more reactions (Bajohr, 2023). Indeed, the fictional narratives presented by generative photography expose challenges not only for technological innovation but also for inventive ways to confront individuals with their own image (Breton, 1995). This question is both an issue for information endeavors and a broader social challenge.

However, can these visuals be considered as a form of journalistic photography? Photography aims to portray a representation through the prism of captured light. Photography, etymologically, means "light and writing" that captures and reveals a reality (Newton, 2020). On the other hand, image-generating AI reproduces images based on a model trained to create fictional representations. The generated images result from a probability of infinite visual representations defined by the data collection and analysis algorithms of generative programs (Donnelly, 2023). As Croizer explains in his article "Comment le remplissage génératif redéfinit l'art de la photographie" (2023) that the 'graphic' writing generated by an algorithm no longer requires light and therefore no longer corresponds to the definition of photography but rather of algography, although it allows to quickly create realistic visual it does not legitimize its field of photography but can serve as a support for the illustration of information. Yet, generative image can't be defined as photography but can drive creativity into higher perspectives in journalism and has become a form of information. Since generative images represent a new model of innovation for illustration, it can play a major role in media (Donnelly, 2023). This tool can have an impact on journalistic work habits and photojournalism code values. As such, potential structural changes which channel opportunities but remain unclear within media platforms. Thus, we have raised concerns about the importance of image as a message in digital media, technological innovation of AI-generative imagery, its evolution in practice, ethics in photojournalism, and information bias in theory, however, what is it in current journalistic practices? This research focuses on the potential shift in photojournalism activities through the impact AI generated-images in the media industry.

3. Methodology

The objective of this study is to investigate whether images created by artificial intelligence have tangible effects on journalistic practices. However, the aim is not to define the impact of generative images on society. In this context, it is a matter of understanding the potential repercussions of AI's integration in the information and media sector.

3.1 Data Collection Methods

To conduct this analysis, this master's thesis employs a qualitative research methodology, featuring semi-structured interviews. This methodology enables interviewees to respond to open-ended questions with flexibility and to delve deeper into subjects of personal interest (Bryman, 2008). The aim is to collect journalist and photojournalist's opinions, to understand the impact of generated images in the global journalism landscape. In order to complete the data collection of semi-structured interviews, each professional candidate will define images created by artificial intelligence that they believe have been decisive for AI's democratization in the media. Thus, to complete the method of research, visual information will be incorporated into the qualitative analysis (Cole, 1988). Opening the interviews with respondents' first personal connection with generative images allows them to reflect on the expansion and perspective of AI in media. Employing images, known as photoelicitation aims to prompt comments and to stimulate discussion (Lapenta, 2011, p.5).

3.2 Data Analysis Strategy

Beyond photo-elicitation, initial method includes semi-structured interviews with open-ended questions The aim is to gain personal insight into the evolution of generative AI within the media they work for. Their professional experiences and perspectives will then be compared, analyzed, to identify recurring themes. The choice of the qualitative discussion group method is a way to analyze accurate and personal data. This method allows the

exploitation and aggregation of diverse and varied opinions. The objective of qualitative semi-structured analysis is to discern interconnections within the dataset. Themes emerge organically through data examination, without the aim of validating existing theoretical frameworks (Vaismoradi et al., 2013). The method of data analysis used is indeed a thematic analysis in order to build groups of opinion and compare answers given.

This research thesis was directed at addressing the primary research question along with its subsidiary questions (Fylan, 2005).

Upon observing the digital transformation within the media sector and the incorporation of technological advancements to facilitate journalistic endeavors, this research study seeks to understand the impact of AI-generated images in journalistic practices. The previous section extends to the influence of photojournalism and visual interpretation on the sector, interrogating the implications of viral and hyper-realistic digital creations to the information, distribution, and reception of news. Consequently, this study will rigorously examine three critical dimensions. Initially, it aims to determine the extent of AI's integration into the working methods and practices of the interviewees. Subsequently, an examination of the socio-economic status of Artificial Intelligence in the media landscape will proceed. This analysis will be contextualized against the backdrop of the flow of information accessible online, aiming to highlight the consequential effects on media consumption patterns. Last but not least, the analysis will explore the prospective shifts in journalistic ethics and the potential reconfiguration of professional roles within the industry due to the advent of AI generative technology (Ouchchy et al., 2020).

Each sub-question is progressive and is taken into account from a global analysis perspective. Its reflection starts from a simple observation: The advent of artificial intelligence has ignited considerable discussion and is progressively being incorporated into various digital sectors. Thus, it raises the question if images created by intelligence are already used in media services and what that implies. Moreover, what are the current discussions about its potential integration, and what does it entail for journalists to use AI in the news sector? Initially, the questions adopt the professional perspective of the journalist on their activity. Secondly, broader questions enrich the research, focusing primarily on the advantages of this tool, the relationship between image and information, and the ethical issues behind its use including a potential transformation of photojournalism. These topics

have been discussed in previous sections, therefore, it will be essential to validate the proposed theories through the analysis of the research:

1: Current use of AI generated images in media

- Does generative imagery illustrate articles in your media's photo departement,?
- Have you noticed changes in your professional activity?
- Does your editorial department implement structural strategies to guide the advancement of this technology?

2: Challenge of generative imagery in journalism

- In your opinion, do you perceive potential threats in copyright regulation ?
- How AI generative images tools can support creativity in photojournalism?
- What concerns do you have regarding generative images and the veracity of information?

3: Journalistic work value through generative imagery

- Do you anticipate a shift of photojournalism practices?
- What concerns do you harbor regarding the ethics of generative imagery in photojournalism?

To the accuracy of this research, modification has been made regarding the main research question. Below are the changes made compared to the submit research proposal:

Research Questions:

Initial Research Questions, defined in the Reseach Proposal	Improved Research Questions, for the accuracy of this thesis
● RQ1: Do AI-generated images used in news coverage support, change or deviate from the aim of information in a democratic society?	● RQ1: Do AI-generated images used in news coverage support or change the work structure of media's information?
● RQ2: What are the main challenges and opportunities brought by AI-generated images in photojournalism?	● RQ2: What are the main challenges brought by AI-generated images in photojournalism?
● RQ3: How do the AI-generated images question the veracity and ethics of visual new coverage? ethics and AI-generated images	● RQ3: How does AI-generated image question the ethics and work value in journalism?

3.3 Procedure

Interviewees were identified via online investigation, focusing on the significance of the media organizations they represent, their current professional roles, and their expertise relevant to this study. The goal was to choose Francophone journalists within Europe, specifically from France, Belgium, Luxembourg, and Switzerland. After research, 54 media were identified as more likely to use Artificial Intelligence, based on monthly audience and on influence factor. The first selection was based on the subjective number of monthly

readers (minimum 10,000) and the second selection was defined based on national media rankings (ACPM, 2023; CQM, 2022; Guide Presse, 2022; Statista, 2023). Although highlighted in the research proposal, the choice of regional and local media appeared to be less relevant in view of the data provided in the section 1.3.1.

After an extensive research of professionals and experts for each selected media, emails were simultaneously sent to publishers, photographers, and web editor-in-chief to request interviews. The use of Twitter, Linkedln, Instagram but also the website The Experts, allowed me to have direct contacts with journalists. In total, seven interviews were conducted, involving six journalists and one photojournalist, all of whom are employed by international or national media outlets. The interviews were carried out using the Google Meet platform and participants have approved the recording aspect of interviews including the use of their names and responses for this master's thesis. Initially, the recorded audio was replayed several times before being transcribed in French. Subsequently, the transcriptions were translated from French into English to facilitate the composition of this thesis. The interviews varied in length, ranging from 21 to 45 minutes of dialogue, and took place between October and December 2023.

Figure 3

Interview Subjects:

Date	Name	Expertise	Media of contributions	Time
16/10/2023	Chloe Subileau	Web journalist	La Croix	27:32
30/10/2023	Lucille Souron	Journalist in culture	L'Obs	21:41
08/11/2023	Mathilde Saliou	Tech and web journalist	Next 20 minutes	29:27
14/11/2023	Chiara de Martino	Journalist expert protection of data and AI	Société Générale de Press Libération	20:38
20/11/2023	Gerald Holubowicz	Photo-journalist, media consultant IA and journalist tech	Synth Media Les Echos	45:10
28/11/2023	Louis Valleau	Web journalist	Le Parisien Le Figaro	24:45
02/12/2023	Vincent Manilève	Tech and web journalist	France Info Libération Arrêt sur Image	22:50

Below is a description of the themes perceived during each interview of their personal point of view on the impact of generative images in Journalism.

Figure 4

Themes Engaged:

Strategy employed	Potiential Impacts Perceived
Language	None
- Positive	Potential
- Negative	
- Uncertitude	Active changes
- Motivated	
- Direct	
- Engaging speech	Connected topic
Experiences	- Bais society representation
	- Quantity of content
- Personal use	- Quality of content
- Past observation	- Culture of digitalisation
- Work habits	- Ethical concerns in work value
	- Capitalisation of work labor
Authenticity	
- Emotion and feelings	
- Professional thought	
- Bais perceptive	
- Openness and accessibility	
- Critical reflexion	
Medium	
- Social Media	
- AI platforms	
- Newspaper	
- Imagery and photography	
- Media spectrum	
Immediacy	
- Current news	
- Controvercy	
- Virality	

3.4 Limitations

Due to the methods used for this research (semistructured interviews and online interviews), some limitations might be anticipated. At first, we can mention the recent growth of Artificial Intelligence (Wilde, 2023). The results achieved are likely to evolve over the coming months. The subject of generative images has not yet known an important exposure since the middle of the year 2022, so the subject is considered as a technology "niche" market (Wells, 2022). Many emails were not concluding due to lack of expertise or non-use of artificial intelligence in their journalistic work. The second limit to the analysis of respondents' responses is subjectivity. Indeed, the data gathered and compared will depend on three major factors: the first will be the field of expertise of the candidates, the second is the relationship of use with the images created by artificial intelligences hence why seven candidates had been selected. In the near future, it will be interesting to get a broad perspective outside from journalist tech but from AI experts in media. Additionally, all positive and selected respondents work for media based in France. Thus, for the accuracy of the results, the analysis strategy is conducted on the media market in France. Finally, the third factor will be dependent on the translation from French to English. As stated, the interview was pronounced in French and then translated into English, which may bias the veracity of the perceived opinion.

4. Findings - Analysis

To delve into the topic's research, each interview began with a request to describe one of the first impactful generated images in media. Respondents exposed the date of release, the description of the visual elements as well as the themes addressed.

Concerning the date of publication, images selected by respondents revealed a two-stage action. First of all, three professionals discussed the period of October-November 2022, coinciding with the launch of ChatGPT by OpenAI on November 30th, 2022. Two of these three journalists's main attention was the development of generative platforms such as Open AI with DALL.E, Stable Diffusion, or even Midjourney rather than specific images: "As soon as the Midjourney models were released, all those who were interested in the technology described the effectiveness of this tool and its availability on the market in fall 2022." (M. Saliou, personal communication, 2023) but also, "I noticed two dates: the first one in November 2022, we started to hear a lot more about the terms Artificial Intelligence and Generative Image. It's been almost a year since we've been discussing it, especially in the media sectors." (C. De Martino, personal communication, 2023). However, Gerald Holubowicz mentions an earliest period: "The first exhibition was at the end of 2017" (G. Holubowicz, personal communication, 2023). Then, the second stage-action began at the first quarter of 2023:

"Since March 2023, there have been flourishing articles on AI and generative images. What comes to my mind is the false representation of President Macron in magnifications." (L. Souron, personal communication, 2023)

"The photo by Midjourney of the Pope wearing a white coat was one of the first generative images spread massively in March 2023." (C. Subileau, personal communication, 2023).

Figure 5

Generated Image of the Pope;

Credit: (Reddit, 2023, March 24) created from Midjourney, "The Pope Drip"

"The second date would be in January 2023, with the use of this tool in artistic agencies. The first reception tests on social media were seen in mid-March-April with realistic representations of political figures on the international stage (C. De Martino, personal communication, 2023).

These two stage-action of AI expose the evolution of uses from the development of these applications to test practices in society. Since the accessibility of Open AI in November 2022, the number of users has drastically increased: "It has been a great technical and scientific success to give open accessibility of these tools. Previously, there was no application that was so easy to handle. The results given by these applications have stunned everybody except scientists who used to work on its development" (M. Saliou, personal communication, 2023). Furthermore, since then, new sites of generative creations have been established, leading to competitiveness in the tech market, promoting research and improvement on data collection and results: "With Midjourney making its appearance, we have since seen a take on the use of generative platforms" (G. Holubowicz, personal communication, 2023).

Secondly, concerning the visual of images chosen by journalists, all of them correlate on political and/or social current debate. So-called "realistic photo" images can depict representations of people's faces with efficiency and accuracy. Thus, these images appear to be so-called "journalistic" photos as they convey information on societies, and as mentioned in the previous part, image is a spectrum of information (Newton, 2020): "In this dimension, the creation of content for informational purposes was still in development in 2022, but it has evolved since then (G. Holubowicz, personal communication, 2023). Thus, the respondent's answers expose the two stages of viral distribution along with the hyper-realistic images which conduct further interrogations on their perceived reception in the media sector.

The topic of AI-generative images is recent and influences the media sector. Indeed, it raises questions about the information's process of use. From now on, it would be interesting to analyze how these images impact the field of journalism and whether these generative images change journalistic work methods.

Analysis

The purpose of the interviews is to acquire a deeper comprehension on how generative images can have impacts in Journalism and might modify work habits. In addressing this question, the analysis was guide by the following sub-questions:

- Q1: Does AI-generated image used in news coverage support, change the work structure of media's information?

- Q2: What are the main challenges brought by AI-generated images in photojournalism?

- Q3: How does AI-generated image question the ethics and work value in journalism?

4.1 Current use of generated images in media

- **Illustration by generative imagery**

To understand the impact of generative images, it is crucial to evoke the context. In the previous section, we have exposed how the media are currently looking for new technologies to improve work productivity. Digital newspapers are indeed implementing artificial intelligence in the newsroom. Also, it refers to a potential transfer from traditional photojournalism, which initially captures events, to fabricated images that depict events for journalistic narratives (Verosky, 2023). Thus, the aim of the interview is to define if these tools are already replacing current methods of news illustration. Each respondent answered the following questions: Does generative imagery illustrate articles in the newspapers? Initial responses were focused on the media and editorial departments they work.

First of all, concerning illustrations of articles, most editions use banks and stock photos. Most interviewees mention that at the media OBS, " AFP image and SIPA " are used as stock of photos since these photos are sourced, quoted, and copied. Thus, these sourced images are more likely to illustrate articles: " The research on origins and sources has already been done, with no need for the journalist to re-verify credits " (L. Souron, personal communication, 2023). Banks of images are central in the process of production as a source of information. These images can be substituted according to the theme and subject of the journalistic articles.

In addition to sourced images from banks of images, editorial departments employ on-demand photographic and graphic work. It requires an established budget along with a structure and connects the journalist's research with the angle of work production. However, journalists emphasize a distinction of photo's intentions between 'hot' and 'cold' articles, where AI may play a significant role. 'Hot' articles involve immediate news coverage, aiming to swiftly disseminate and present information. Therefore, generative images may serve to illustrate articles since " photo banks may lack images related to breaking news topics " (C. Subileau, personal communication, 2023). The objective is to respond promptly due to strong reader's interest, which is expected to diminish rapidly over time: "At Figaro, they've implemented an audience monitoring system to generate articles based on keywords and images circulating to produce a high volume of news articles to enhance visibility in GAFAM platforms like Google, Safari, and others " (L. Valleau, personal communication, 2023). On

the other hand, 'cold' articles are research-focused articles with a longer-term perspective and are not centered around breaking news. The initial aim of these articles is to educate readers and provide information on a specific subject. In this context, the selection of photos can be more deliberate, with thorough illustration searches conducted on available stock images. However, AI also finds its place in these 'cold' articles, as highlighted by Louis Valleau: "For information categorized as cold, such as documentaries and research, generative illustrations can present constructed visuals through neutral perspectives (personal communication, 2023). Indeed, as explained by journalists Mathilde Saliou and Gérald Holubowicz, generative intelligence platforms facilitate customiaation of the creation of unique visuals that enhance both 'hot' and 'cold' articles:

"Some articles feature illustrations generated by platforms like Midjourney, DALL.E, and others, but the accompanying texts are often designed to be educative and explanatory, making generative imagery an integral part of the overall article" (M. Saliou, personal communication, 2023).

Overall, distinctive observations have been made regarding the potential of generative images within the media landscape and the reality of its application. Thus while generative images face limitations in media, there is a recognition of their capacity to illustrate press articles.

- **Journalistic work methods**

Since November 2022, the adoption of generative images has gone through changes, becoming an integral part of the digital landscape. To analyze their incorporation into media, it's essential to perceive a change in their professional activity. Based on the insights gathered from the seven respondents, three distinct approaches emerged: none, limited, and proactive.

Two respondents expressed that their methods remained unchanged: "I have not altered my work methods" (C. Subileau, personal communication, 2023), and "it does not directly impact the form and use of my work" (C. De Martino, personal communication, 2023). They contend that there's no imperative need for AI integration in their articles due to the current supply of image banks. Furthermore, their journalistic efforts primarily revolve around research and subject analysis. While they acknowledge the value of images in

enhancing article quality, visuals aren't central to their journalistic practice. As of the year 2023, editorial teams have not yet initiated the widespread requests to integrate AI tools into image banks, indicating a unoticeable shifts in their working attitudes.

Despite variations in responses, recurring terms such as "potential tool," "speed," and "economy" emerged. Some respondents described it as "a work aid tool" (L. Souron, personal communication, 2023). There's a consensus among respondents regarding the potential support that AI can offer in journalistic activities, leading its role to "advocate," "complete," and "compose" new illustrations however subject to human verification.

While direct use of AI may not be prevalent for some journalists, the topic of generative AI has become an integral aspect of editorial content, featuring specialized sections on artificial intelligence. Both Chiara and Vincent highlight the increasing volume of press articles addressing AI-generated images. This growing journalistic interest introduces nuanced perspectives, indicating a form of change in your professional activity however limited. Additionally, Louis Valleau notes that his use of AI has been specific to certain topics, allowing him to save time in article creation and illustration: "It saved me an incredible amount of time" (personal communication, 2023). This pursuit of automated workflows facilitated by AI, positioning it as a valuable tool in journalistic work and actively contributes to article's production.

Likewise, some respondents noticed a change in their professional activity. Gérald Holubowicz, who works with image creation sites, sees it as an opportunity to expand the scope of photography within journalistic dynamics:

"I try to envision, through testimonies, a potential reality that will illustrate my journalistic work" (personal communication, 2023).

Additionally, Mathilde incorporates generative images in her articles to illustrate research, as seen in her recent contribution to the magazine "La Déferlante," which features content generated by Midjourney. It is conducted by explanations of the results and applications of generative imaging (personal communication, 2023).

Thus, the work conditions are defined according to their interest and professional use (research purposes, production, or illustrations). However, from a broad perspective, the editorial department might implement changes and policies to understand the opportunities and threats of AI-generative images.

- **Structural strategies in media**

As highlighted in the previous sections, the motivation behind incorporating generative images in the media varied among respondents. To examine the impact of AI in journalism, participants were asked to demonstrate the structural strategies to facilitate AI's integration employed by their editorial departments.

All journalists affirmed a hesitant adoption of AI-generated images. Its utilization in imagery is not yet recognized into an established framework within media organizations journalists are associated with: "In our editorial structures, AI is currently only a subject to study" (C. De Martino, personal communication, 2023). Nevertheless, ongoing deliberations are in progress, journalists express an "interest" in generative images, with G. Holubowicz stating, "All titles more or less reflect on the use of this tool; there is potential interest regarding an illustration plan" (personal communication, 2023). Some media outlets recognize the potential of generative images and have already featured articles illustrated by generative images: "The Monde and the Figaro were the first media outlets that introduced AI tools for image creation" (C. De Martino, personal communication, 2023). Louis, a web journalist at Le Parisien who previously worked for Le Figaro, elaborates on the indefinite nature of AI-based illustration: "The image is as crucial as the title because it captures the reader's attention. In late March, Le Figaro experimented with articles illustrated by generative images, but the outcome was inconclusive. This sparked negative comments on social networks from photojournalists and journalists, leading to the switching of the image during the day" (personal communication, 2023).

Furthermore, there is a development of guidelines within local editorial teams. For instance, in Le Monde magazine, existing structures involve " the entitlements and restrictions on generative images " (M. Saliou, personal communication, 2023). Additionally, tools of control are emerging: "Some French editorial offices employ fact-checking on photos before their publication" (C. De Martino, personal communication, 2023). On a broader scale, charters are currently being formulated and will be extended to all journalists, editions, and associations:

"For example, since August 2023, Reporters Without Borders (RSF) and others have started introducing charters on AI to regulate its use" (C. De Martino, personal communication, 2023).

On the European Union scale, laws on artificial integrity (AI act) are emerging, without targeting the journalism sector (CNPEN, 2023): "There is no general charter on the management and understanding of generative content" (M. Saliou, personal communication, 2023). Gérald Holubowicz highlights incomplete charters, attributing this to the inadequate control over AI: "Charters are in progress, but the problem is the lack of knowledge" (personal communication, 2023).

Thus, illustrating journalistic articles with generative images enhances challenges for editorial structures due to the associated opportunities and risks of its use.

4.2 Challenges of generative imagery in journalism

● **Risk of copyright with generated tools**

The implementation of Generative Illustration in the newsroom is defined through opportunities and threats of its use. We have mentioned how in photojournalism one of the main challenges in AI-generated platforms is copyright issues regarding these images. The right of images, along with intellectual ownership in artificial intelligence is a subject of debate in academic research (Matulionyte & Lee, 2022). However, the question was asked to journalists if they perceive these tools as a potential threat in intellectual property for journalistic purposes. Hence why, to delve into the impact of generative imaging on journalism in Europe, it is necessary to examine its current challenges. To address this, respondents were questioned about copyright regulation in newsrooms.

First of all, the amplification of diligence regarding sourced images and credits, driven by the accessibility of generative imaging platforms is a current concern. It led to the emphasis on content verification, as expressed by Chiara De Martino: "We are dealing with a question of verification" (personal communication, 2023). The user-friendly orientation of these tools has urged press editions to seek more control over content. Another challenge identified is the traceability of generative images. Often, copyright references are overlooked which presents both legal and moral dilemmas. Mathilde Saliou pointed out the complexity of copyright issues, especially when Artificial Intelligence models use "free" datasets to produce and sell images for their own benefit (personal communication, 2023). Given the viral nature of content on social networks, the use of image-generating AI is perceived to amplify challenges in regulating copyright and legal framework. Journalists express concerns about the "lack of sources and funds." The aspect of viral content adding with the difficulty of tracing the origin of sources have increased vigilance in source verification from media. It's crucial indeed to declare the origin of published photos in image credits, whether they involve artificial intelligence content or not.

However, ongoing discussions further attempt to establish copyright protection of work within generative plateformes. Thus, journalists notice various ongoing discussions during meetings, primarily revolving around problematic sources and credits in articles. Vincent exposes that since the end of March 2023, technology needs legal direction.

Journalists express concerns about the risks associated with the data used and uncontrol of sources:

"Most of the generated images were discovered, used, and retrieved from the internet without requests of use and claims of rights. Exploitation of data image is closely disloyal or at least unfair" (G. Holubowicz, personal communication, 2023).

Solutions can be considered through compelling generative models to provide labels, like "watermarks," to contain disinformation and identify image creators (M. Saliou, personal communication, 2023). Additionally, discussions are advancing on the implementation of cybersecurity systems to interfere with generative content. While legal protection of the right to image is being discussed at the European level (CNPEN, 2023), stock companies such as Getty Image are implementing systems to control the use of generative images to credit mentions of authorship (Marchand, 2023). Indeed, new technological tools are developed to counter misinformation and support journalism's activity. Thus, the intersection of information and evolving technologies presents legal, structural, political, and social challenges that necessitate ongoing consideration and adaptation.

- **Creativity and AI**

To analyze the impact of AI-generated images in journalism, we must evoke its capacity in newsrooms and how it can improve work production. Previous section we have demonstrated the capabilities these tools can offer in terms of execution from text to illustration and it is defined as a creative tool (Croizer, 2023). These tools can adapt successfully to user's demands which can question how AI can be used daily in work production, especially in photography without reducing the quality of production (Verosky, 2023). The question asked was "how AI generative images tools can support the creativity in photojournalism according to you?".

Beyond journalistic support, these generative platforms are recognized as "tools for artistic creation" especially in collages and visuals, extending beyond realistic photographic representations (V. Manilève, personal communication, 2023). Mathilde Saliou exposes, "It is not unlikely that illustrators will use these tools, not to replace but to support the creative work" (personal communication, 2023). Thus, AI is presenting itself as a new digital

technology contributing to the ongoing process of digitization and article production (Beckett, 2019).

Generative platforms are also used by graphic designers and publishers (C. De Martino, personal communication, 2023). According to Gérald, generative AI serves as a creative and innovative tool for customized needs: "In everyday use, it is quite interesting; it helps me generate ideas and options according to cases." Gérald collaborates image creation with Midjourney, aiming to replicate textured photos and evoke emotions. Gérald's focus is to create a lighter and more authentic vision, thereby introducing a new dimension to the production's process of journalistic research (G. Holubowicz, personal communication, 2023).

Additionally, Gérald Holubowicz explains a conceptual approach to photojournalism through the application of AI. His remarks revolve around the relationship on photos and information:

"There is a new conception of information that opens up, the representation of past events can be retransmitted to the digital realm with AI which was previously seen in media. For instance, in the traditional written press, the drawing was replaced by photography, but more or less realistic staging was already drafted. Readers were aware that these representations were just an illustration of reality." (personal communication, 2023).

However, within the framework of AI, the authenticity of the image is questioned since the transcribed reality was not captured by a corroborator of events. In fact, a photo does not guarantee the authenticity of past events despite the subjectivity, shot, and style used (Croizer, 2023). According to Gérald, AI can also create a journalistic image using the same principle, not by capturing the real, but by fabricating the real through research work: "With the collection of testimonies, the research work is just as important since the information used has helped the fabrication of generative images that reflects a representation of what probably has happened" (G. Holubowicz, personal communication, 2023). Thus, AI enables us to consider a different approach to the work of photojournalism.

- **Disinformation through generative content**

In previous theories, we have exposed how AI-generated images are perceived as a tool for opportunities but remain concerns as raised regarding its full capacity. For instance, it is possible to create images, increasing options for visual storytelling and styles (Lippolis & Parusinski, 2022), However, illustrating events through prompts can alter reality, raising questions about the authenticity and manipulative bias of generative imagery tools (Dutta, 2023)**.** These connections between photo and information rely on the authenticity perceived in the media spectrum, as an element of truth. Photography in journalistic articles claims an intention of veracity in reporting (Ritchin, 1991, as cited in Campbell, 2013). However, these generative images can project a false reality that can lead to misinformation (Dutta, 2023). Hence why it was asked to participants what concerns they have regarding generative images and the veracity of information. After gathering information from respondents, two main impacts (potential and current) have been exposed: the problem of truthfulness and the intentionality of information.

As a source of information, images can participate in disinformation by exposing a distorted reality, and disclosing a false message. Most respondents acknowledge these phenomena. Due to its hyper-realism effect, these generated images can easily be confused with real photos taken by photographers: "Sometimes there are details that demonstrate errors such as additional fingers, but in general it is quite difficult to discern a generative image because of the realism of representations" (V. Manilève journalist freelance, personal communication, 2023). Mathilde Saliou explains how Generated imagery is contributing to the phenomenon of deep fake: "various disinformation techniques exist, and the use of generative imagery is adding into existing challenges but haven't yet caused deep collapes" (personal communication, 2023). Furthermore, the ability to create photo-realistic generative images raises concerns regarding the spread of deep fakes on the internet, particularly through social networks. Chiara De Martino exposes:

 "Image is a source of information and the role of a journalist is to define the origin of content, especially on social networks where content can quickly go viral, making it challenging to refute false information" (personal communication, 2023).

Indeed, respondents expose a connection between media. For Lucille, disinformation primarily occurs through social networks, nevertheless, the proliferation of deep fakes by the

traditional media can be attributed to a lack of diligence: "In the realm of information, we are engaged in investigative work. Thus, participating in disinformation through image manipulation by a media outlet is a problem" (M. Saliou, personal communication, 2023). However, errors from sources in journalistic articles have already been found, contributing to the propagation of deep fakes "for example during the conflict in Ukraine last year, false images of war have been circulating in official newspapers which lead to political concerns" (G. Holubowicz, personal communication, 2023).

In addition to concerns about the truthfulness of information, journalists raise negative opinions on the intentionality of information by AI-generated images. Indeed, most of the respondents question manipulative bias on generative content, especially through representations of public personalities which indirectly contaminate the media's institution (Brennen et al., 2020).

"The overrepresentation of people is a problem. Data collection sites often provide representations of our societies that demonstrate a Western, capitalist, and stereotyped perception. This problem can result in an overrepresentation of biased clichés related to gender, identity, profession, or ethnicity. In the context of AI's use, concerns about pornography and child pornography are also significant and require guidance." (G. Holubowics, personal communication, 2023).

Efforts have been made to decrease risks of misinformation, such as Adobe's system, which obtained photographers' permission for generative creations. Therefore, all of the journalists interviewed mention the importance of "regulation against disinformation" as an ongoing consideration for the ethics of journalism practices.

4.3 Journalistic work value through generative imagery

- **Shift of photojournalism practices**

The analysis of generative AI's challenges has exposed both risks and opportunities for journalistic activities, increasing questions about potential shifts of work practice in photojournalism.

In the previous section, journalists mentioned some noticeable changes in their journalistic work according to the editorial department they are working for. According to Louis, there haven't been significant changes in France yet, although there are ongoing "advancements in the integration of generative images in the media sectors" (personal communication, 2023). However, most concerns are regarding the photojournalism sector itself which seems more impacted by the expansion of this digital technology. Some professions are already witnessing changes due to the impact of generative AI on production: "Marketing and communications agencies are being affected. It is now part of training sessions on these tools" (C. De Martino, personal communication, 2023). Indeed, for small businesses, its use can add positive value for production and limit expense: "Artificial intelligence can offer significant advantages, particularly for small publishers who may face financial constraints and thus lack the resources to hire photographers or graphic artists." (C. De Martino, personal communication, 2023). However, despite its powerful possibilities for imagery production, it involves potential risks for working conditions. Indeed, the use of generative images might reduce fieldwork in favor of digitizing journalistic tasks, it can diminish the quality of journalism through the automatization of work without the requirement of human vision. Indeed, the outcomes yielded by generative image creation could potentially replace the work of an illustrator and photographs, prompting consideration for the integration of AI into editorial structures. Journalist Mathilde Saliou offers another critical perspective on generative AI in photojournalism activities. The accessibility and sustainability of these creations could lead to disloyal competition in press image (photographers and illustrators) resulting in a potential decrease in demand and ressource:

"The existence of an inexpensive tool will undoubtedly lower the price of services. Testimonials indicate a decrease in demands and, consequently, salaries. This raises concerns about the future remuneration of artists" (personal communication, 2023).

Secondly, the shift of photojournalism practices can also emerge from a new way of operating information. Journalist Holubowicz exposes a new vision not only on the work condition but mainly on photojournalism activity itself: "It is very likely that we find ourselves in a position where the publishing sector will change its way of operating. This will compel information actors to return to the reporting instead of the current sedentarization in the newsroom" (personal communication, 2023). Regarding the ability to instantly create images as a source of information, there is a divergence of opinion among respondents. Gérald mentions that generative images don't necessarily require a snapshot of an event but serve as a testimony of reality to build visual representations. This echoes with the work production of Taylor (2000), that digital media requires images to represent a particular form of information, whatever the form is given as long as the intention sensation helps in the commercialization of news. Consequently, journalistic activities appear to stand at a professional crossroads, with potential shifts towards digital evolution or a continuation of current journalistic work habits.

- **Ethical dilemma in journalism**

After developing an analysis on how AI can impact the work practice, we must evoke the ethical concerns raised in photojournalism. The CNPEN (2023) has developed a draft of regulation to expose issues behind its use in journalism. However, it is essential to adopt the point of view of journalists regarding potential evolutions in the codes of ethics in journalism. The main impact journalists seem to agree on is the ethical concerns behind these generative images in the media.

Currently, news platforms face challenges in distinguishing their bais differences due to the overwhelming flow of information on the Internet. Mathilde Saliou addresses the need for media to get an education in order to understand artificial intelligence systems: allowing professionals to contain and detect fake content, thereby reducing the impact of deep fakes on societies. According to the photojournalist Holubowicz, it is less the production of images by generative tools the current problem rather than its utilization and lack of ethics in its distribution: "The real issue is its ethical use that has been included in the media landscape" (personal communication, 2023). Indeed, generative imagery does not yet have filters or limitations in its prompt text (Michos, 2023) and can participate in the proliferation of

content that may be inappropriate, violent, or dangerous for some categories of people.

Secondly, ethical concerns seem to appear on journalistic independence, as the use of generative illustrations creates a relationship between the media and AI platforms. As of December 2023, private generative platforms are being used as external sites for their own purposes of economic gain, structural improvement, and data training. Indeed, respondents agree on the creative and financial interest which could explain the utilization of generative images. However, its closure with media can bias journalistic perspectives and lead to sensational news along with a mass production of information (Taylor, 2000).

Finally, subsequent questions address the ethical use of data. According to most journalists, it is essential to protect the data used, such as the rights of images. Mathilde Saliou further exposes the importance of generative platforms taking responsibility for the content they produce: "Claim responsibility by digital companies" (personal communication, 2023). Thus, the future of image-generating AI is unsure, especially regarding ethical use in the journalistic sector, to ensure the codes and values of journalistic work. Furthermore, the ethics of generative image is complex, enfolding respect of copyright, the right to images, and the rights of the data used:

"The major criticism I have on these models is that they are trained on massive amounts of data that are not yet controlled, but it is very difficult to regulate information because one can quickly fall into issues of censorship and freedom of expression. It seems to me that we should not attack the machine that generates content but rather focus on who constructs the content" (M. Saliou, personal communication, 2023).

5. Discussion

This master's thesis delved into how journalists define the impact of AI-generated images in the work field of journalism. Interviews revealed how this technology leads to both opportunities and threats in the media landscape. While being presented as a powerful tool to reinforce journalistic activities, yet has the potential to compromise media's credibility through the spread of misinformation from generative content (Brantner & Saurwein, 2021; White, 2022). Another aspect explored in the interviews was the hesitant approach to integrating generative imagery into editorial structures, mainly due to ethical and legal concerns.

The semi-structured interviews initially highlighted diverse perceptions. Despite its recent growth, journalists and experts in photojournalism expressed insights into current professional activity as exposed by Noain-Sánchez (2022). Within the media organizations they represent, various approaches to AI's integration were observed: focusing on the strategies employed by publishers and their work necessity in journalistic production (Túñez-López et al., 2021). The interviews underscored controversy surrounding its use by revealing differences of expertise between respondents, mainly due to their work specialization. While some respondents downplayed the impact of AI, others exposed a critical direction within photojournalism. Nevertheless, there were unanimous agreements among journalists that image-generating AI can serve as a creative tool as confirmed in section 1.3.1. It offers methods to edit and correct images that can evolve to new dynamics of production in media (Pargamin & Hanssen, 2023). However, two significant issues were identified: first of all, the creation of so-called realistic photos (Maudet et al., 2021; Michos, 2023). These images portray events that could facilitate the spread of misinformation. Additionally, the second issue highlighted is the lack of legal framework and structure (Dörr & Hollnbuchner, 2017). The initial descriptions of impactful generative photos for the media sector shared at the beginning of each interview highlighted several phenomena: the recent exposure of generative imaging platforms from November 2022, the predominant distribution of images through social networks, the realism of images contributing to the proliferation of deep fakes, and the questions on ethics of code value which can change work profession (Lippolis & Parusinski, 2022; Newton, 2020).

First of all, to the research question, "Do AI-generated images used in news coverage support or change the work structure of media's information?" results showed that editorial strategies are hesitant to implement AI-generated images. While there is potential in illustration news, most media outlets have not altered their work policies. Despite this, respondents agreed on the efficiency and technological progress of generative illustration, leading to a rise in journalistic articles on AI topics. As well, some media incorporated generative illustrations via Midjourney as a symbol of modernity and innovation. Furthermore, images as a form of information were highlighted in both "hot" and "cold" articles, in which AI-generated images can have a function in editions. Most journalists indicated unchanged working methods since the rise of AI. Yet, other journalists mentioned specialization of Artificial Intelligence's topic for their current research work, while others viewed generative platforms as new technological tools in their daily routines. Furthermore, ongoing debates about the need to regulate generative platforms from the editorial department. Efforts are being made to innovate charters within media outlets. The major challenge of AI-generated images lies in the rapid and constant evolution of these sites.

Then, to the question "What are the main challenges brought by AI-generated images in photojournalism?" answers given by journalists showed the democratization of this tool has consequences in journalism. The main consequences of integrating generative content in media activities can be both internal and external. These images, working through training, produce an increasing quantity of images that question the quality in itself and a lack of diversity of content (Broussard et al., 2019; Dutta, 2023). First of all, as mentioned above, miscreditation in generative content and the lack of sources in generative illustration for journalistic purposes have heightened vigilance and verification of sources within news organizations. Journalists' work codes must address proof of origin in information shared, but legal structures related to the mention of copyright and images in generative platforms are not yet established. Another consequence is the lack of transparency in information, mainly due to the viral aspect of generative images on social networks. For instance, some newspapers have published generative illustrations depicting inaccurate events, which resulted in the propagation of misinformation from traditional media. Respondents declare that generative imagery may not cause deep fakes but contributes to the proliferation of disinformation which pollutes the media ecosystem (Maudet et al., 2021). Another significant consequence involves the credibility of the information. Some journalists confirm possible manipulation bias from these images to discredit information. The data collected from these tools can

46

contribute to biased representations of society. However, the term "tool" is generally viewed positively by most journalists, especially when it supports creative work. It can also join the work production to create accurate content for specific articles along with journalists. Consequently, journalistic activities appear to stand at a professional crossroads, with potential shifts towards digital evolution or a continuation of journalism activity. This could potentially result in increased research, testimony-building, and a resurgence of ground photo-journalism practices.

Finally, to the research question "How does an AI-generated image question the ethics and work value in journalism?" results showed that generative imagery has an impact in journalistic work value. First of all, concerns are based on the shift of photojournalism practices. Generative AI is already integrated which potentially reshapes its profession. While some respondents do not express fear of job loss or job redistribution, others highlight experience effects in particular. All respondents mentioned the current tendency of automating journalistic tasks through AI, raising interrogation on the roles of photographers, photojournalists, and graphic artists. The accessibility of image-generating platforms may lead to unfair competitiveness, especially for low-skilled workers, resulting in further decreased work demand and financial resources. Secondly, concerns on ethical considerations arised regarding image-generating AI in journalism. One significant impact could be the evolution of ethical codes. It involves concerns on the economical integration of private generative groups and platforms (GAFAM). These tech giants have emerged as key players, advertising investors, and shareholders in media information services. The function of its technology as an external tool, can enhance the competitiveness of developers and intensify media dependency on these GAFAMs. Since AI operates repetitive data analysis improvement on a similar matrix, it may lead to diminishing diversity and plurality of digitized content (Beckett, 2019). In response to this concern, platforms have implemented data protection systems against legal conflict as they can participate in the proliferation of content that may be inappropriate, violent, or dangerous for some category of people which require measures on restricting inappropriate terms and labeling images. Therefore, respondents demand accountability from actors and users. Educative guidelines from traditional media seem necessary to perceive the limitations and capabilities of these tools. To conclude, while the impact of image-generating AI may not bring structural changes to the media sector, it has provoked ongoing discussions about the legal and ethicall framework.

However, the research has its own limitations, for instance on the rapid and diverse evolution of AI. Ongoing charters might change this master's thesis analysis. Additionally, all respondents come from French media, hence the need to expand the research geographically. This expansion would provide insights into how image-generating AI impacts European and global journalistic activity. Furthermore, the research relies on the viewpoints of journalists and photojournalists, potentially introducing bias based on their own experiences and work habits.

Conclusion

With the advancement of technological innovations in journalism, this research study aims to understand the potential shift of work due to the integration of new technologies known as Artificial Intelligence. Recently, the growth of Artificial Intelligence softbots is profiled as tools for journalistic practices (St-Germain & White, 2021). As the economy has shifted to a capitalist information market system, it has led the media to adopt innovation to increase news atomization to reach audiences (Broussard et al., 2019). With the digital revolution of newspapers, multimedia content has been central to news production. Modern journalism is included in an ecosystem of social networks where images, as a media spectrum, convey messages for readers and became crucial for public information as a fact of events (Newton, 2020). Indeed, images in newspapers give an additional context to the storytelling process. Since November 2022, a change in Artificial Intelligence has occurred across generative platforms, creating images and visual illustrations for multimedia online production. As we have defined how photos are interconnected with journalistic practices, this thesis aimed to analyze how the growth of Artificial Intelligence tools could impact the imagery sector in journalism with softbots known as generative imagery.

The integration of generative images in media exposes a breach in practice, as the utilization of generative imagery differs from its formal goals, instead involving tangible practices and work industries, potentially threatening their economy and activities (Amodei et al., 2016). Thus, to understand the opportunities and threats of AI-generated images, this master research objectives was to analyze the impact of its integration in the world field of journalism by conducting semi-structured interviews of journalists and photojournalists. Results confirm the integration of new AI digital technologies into traditional media has led to changes perceived to be both supportive and harmful for journalism activities. Two impacts have been identified: ideological and structural. This tool is perceived as a support for the creative from journalists which can ensure a quality of content from text to image by extending beyond the resources in banks of images. Thus, AI-generative images may participate in photojournalism practices as an evolution of innovation in work methods. The first impact developed from the analysis is based on the ethics of generative images for journalistic purposes. Due to hyper-realitic generative content on digital platforms is required

49

from journalists to ensure the veracity of the source to not expose copyright and image rights issues. Indeed, these images have the capacity to create wilful misconduct of reality's representation, contributing to deep fakes. While respondents agree that Artificial Intelligence does not create disinformation but could contribute to it, hence its impacts on the credibility of media institutions if media news is based on generative images. Additionally, results showed that AI has the capabilities to generate illustrations that initially required human expertise, perhaps the impact on the artistic work profession will have further importance such as digital work replacement and low pricing demands.

On a structural level, the results showed that Generative Imagery in journalism isn't yet integrated as explicit technical support. Although generative imagery is currently adapting, work practices are already impacted. The majority of the editorial department now develops articles and news editions dedicated to AI, and incorporates generative illustrations from private platforms such as Open-AI, MidJourney, etc. Therefore a widespread use of generative images in the journalistic sector. However, as discussed in the research analysis, internal integration within publishing is yet sensitive due to a blurred legal framework of its usage. Upcoming charters and laws should address the responsibility of platforms and the protection of the work conditions of photographers, publishers, journalists, etc. In the coming months, traditional press outlets should clearly position themselves on the use of AI in their services to communicate potential risks. Overall, the research thesis demonstrates that AI-generated images is a powerful tool that facilitates artistic creation and can add value to journalistic activity. However, its usage in the field is heavily dependent on editorial decisions, hence a proper set of regulations needed. Additionally, Artificial Intelligence could transform existing journalistic techniques to guide ground reporting, as generative images create fictional scenes from searches of testimonies.

Additional research is required to evaluate the profound impact of generative content on the European media market. While this research thesis focuses on the perspectives and experiences of French journalists and photojournalists, generative content is constantly evolving, making the data analysis conducted potentially obsolete in the near future. Furthermore, society is not fully aware of the potential impacts of generative content, so additional researches on the topic will be necessary.

References

ACPM. (2023). Classement diffusion presse quotidienne nationale 2022-2023. Retrieved from le tiers de confiance la valeur des médias website: https://www.acpm.fr/Les-chiffres/Diffusion-Presse/Presse-Payante/Presse-Quotidienne-Nationale

Alfaraj, A. (2023). Auto-Photoshop-StableDiffusion-Plugin. GitHub. From https://github.com/AbdullahAlfaraj/Auto-Photoshop-StableDiffusion-Plugin

Amodei, D., Olah, C., Steinhardt, J., Christiano, P. F., Schulman, J., & Mané, D. (2016). Concrete Problems in AI Safety. *ArXiv, abs/*1606.06565

Bajohr, H. (2023). Dumb Meaning: Machine Learning and Artificial Semantics. In: Generative Imagery: Towards a 'New Paradigm' of Machine Learning-Based Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences, 37*(1), pp. 58-70

Bakir, V., & McStay, A. (2018). Fake News and The Economy of Emotions: Problems, causes, solutions. *Digital Journalism, 6*(2), 154-175. https://doi.org/10.1080/21670811.2017.1345645

Bartholeyns, G., Dierkens, A., & Golsenne, T. (2010). La performance des images. Bruxelles: *Éditions de l'Université de Bruxelles,* p. 15-25, ISBN 978-2-8004-1474-4

Bauer, S., Clark, D., & Lehr, W. (2009). The Evolution of Internet Congestion. *Massachusetts Institute of technology,* p.1-34

Beckett, C. (2019). New powers, new responsibilities. A global survey of journalism and artificial intelligence. Polis, *journalism and society*, LSE

Bolter, J. D. (2023). AI Generative Art as Algorithmic Remediation. In: Generative Imagery: Towards a 'New Paradigm' of Machine Learning-Based Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences, 37(*1), pp. 195-207

Bostrom, N. (2014). SuperIntelligence: Paths, Dangers, Strategies. Oxford University Press

Braly, J.-P., & Ganascia, J.-G. (2017). Le temps des robots est-il venu ? Découvrez comment ils transforment déjà notre quotidien. *Editions Quae*, 978-2-7592-2723-5

Brantner, C., & Saurwein, F. (2021). Covering Technology Risks and Responsibility: Automation, Artificial Intelligence, Robotics, and Algorithms in the Media. *International Journal of Communication, 15,* 5074-5098

Brennen, J. S., Simon, F. M., Howard, P. N., & Nielsen, R. K. (2020). Types, Sources, and Claims of COVID-19 Misinformation. *The Reuters Institute,* the Oxford Internet Institute

Breton, P. (1995). À l'image de l'Homme: Du Golem aux créatures virtuelles. *Paris Seuil,* 2-02-013416-0. https://doi.org/10.4000/communication.6368

Brockman, G., Eleti, A., Georges, G., Jang, J., Kilpatrick, L., Lim, R., Miller, L., & Pokrass, M. (2023). Introducing ChatGPT and Whisper APIs. In: *OpenAI Blog,* https://openai.com/blog/introducing-chatgpt-and-whisper-apis

Broussard, M. (2018). Artificial Unintelligence. How computers misunderstand the world. https://doi.org/10.7551/mitpress/11022.001.0001

Broussard, M., Diakopoulos, N., Guzman, A. L., Abebe, R., Dupagne, M., & Chuan, C.-H. (2019). Artificial Intelligence and Journalism. *Journalism & Mass Communication Quarterly, 96(*3), 673-695. https://doi.org/10.1177/1077699019859901

Bruns, A. (2018). Gatewatching and news curation: Journalism, social media, and the public sphere (*Digital Formations, Volume 113*). Digital Formations. Peter Lang Publishing, United States of America. Gatewatching and News Curation. https://doi.org/10.3726/b13293

Bryman, A. (2008). Of methods and methodology. *Qualitative Research in Organizations and Management: An International Journal*, *3*(2), 159–168. https://doi.org/10.1108/17465640810900568

Bull, S. (2009). Photography. Routledge Introductions to Media and Communications. Routledge 1, 978041542894

Burger, M., Thornborrow, J., & Fitzgerald, R. (2017). Discours des réseaux sociaux : enjeux publics, politiques et médiatiques.Culture et Communication. In *De Boeck Supérieur eBooks*. De Boeck Supérieur. https://doi.org/10.3917/dbu.thorn.2017.01

Campbell, D. (2013). Visual Storytelling in the Age of Post-Industrial Journalism. *Www.academia.edu*. https://www.academia.edu/9476753/Visual_Storytelling_in_the_Age_of_Post_Industrial_Journalism

CCFI. (2023). IA: les médias français explorent toutes les pistes. Retrieved from Compagnie des Chefs de fabrication des industries graphiques et de la communication website: https://www.ccfi.asso.fr/ia-les-medias-francais-explorent-toutes-les-pistes/

Cetinic, E., & She, J. (2022). Understanding and Creating Art with AI: Review and Outlook. *ACM Transactions on Multimedia Computing, Communications, and Applications, 18*(2), 1-22. https://doi.org/10.1145/3475799

Christians, C. G. (2019). Media Ethics and Global Justice in the Digital Age. *Cambridge University Press*. https://doi.org/10.1017/9781316585382

CNPEN. (2023). Assemblée plénière du CNPEN : *Systèmes d'intelligence artificielle générative : enjeux d'éthique*. Avis 7. Comité consultatif d'éthique pour les sciences de la vie et de la santé. From: https://www.ccne-ethique.fr/sites/default/files/2023-07/CNPEN-Avis7.pdf

Cohen, P. (2016). Harold Cohen and AARON. *AI Magazine, 37*(4), 63-66. https://doi.org/10.1609/aimag.v37i4.2695

Cole, F. L. (1988). Content Analysis: Process and Application. *Clinical Nurse Specialist, 2*(1), 53-57. https://doi.org/10.1097/00002800-198800210-00025

CQM. (2022). Classement de la qualité des médias 2022. Qualité des médias en Suisse. From: https://www.mqr-schweiz.ch/files/mqr/pdf/CQM-22_Sommaire_Web.pdf

Croizer, J. (2023). *Comment le remplissage génératif redéfinit l'art de la photographie*. Nikon Passion. Retrived from: https://www.nikonpassion.com/comment-le-remplissage-generatif-redefinit-la-photographie/

Cudlipp, H. (1992). The Camera Cannot Lie, *British Journalism-Review 3(3),* 30–35. https://doi.org/10.1177/095647489200300306

Deacon, D. (2007). Yesterday's Papers and Today's Technology: Digital Newspaper Archives and 'Push Button' Content Analysis. *European Journal of Communication, 22*(1), 5-25. https://doi.org/10.1177/0267323107073743

Delporte, C. (2005). Jules Verne et le journaliste. Imaginer l'information du xxe siècle. *Le Temps des Médias, 4*(1), 201–213. https://doi.org/10.3917/tdm.004.0201

Dhiman, D. B. (2023). Does Artificial Intelligence Help Journalists: A Boon or Bane? *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.4401194

Diakopoulos, N. (2019). Automating the news: how algorithms are rewriting the media. Harvard University Press.

Donnelly, M. (2023). WME Signs AI Artist Claire Silver. Retrieved April 22, 2024. *Variety.* https://variety.com/2023/digital/news/wme-signs-AI-artist-claire-silverlouvre-123554502/

Dörr, K. N., & Hollnbuchner, K. (2017). Ethical Challenges of Algorithmic Journalism. *Digital Journalism, 5*(4), 404-419. https://doi.org/10.1080/21670811.2016.1167612

Dutta, A. (2023). The power of AI-generated images in journalism: A game-changer! *Medium.* https://medium.com/@AmitDutta09/the-power-of-ai-generated-images-in-journalism-a-game-changer-d6c752e0c6b2

Ervik, A. (2023). Generative ai and the Collective Imaginary: The TechnologyGuided Social Imagination in AI-Imagenesis. In: Generative Imagery: Towards a 'New Paradigm' of Machine Learning-Based Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences, 37*(1), pp. 42-57

Estrin, J. (2017). The Uncertain Future of Photojournalism. Retrieved from Lens Blog
   website:
   https://archive.nytimes.com/lens.blogs.nytimes.com/2017/02/15/the-uncertain-future-
   of-photojournalism/

Eutrope, X. (2023). Intelligence artificielle et médias : cinq utilisations, au-delà de ChatGPT.

   Retrieved from La Revue des Médias, INA website:

   https://larevuedesmedias.ina.fr/chatgpt-intelligence-artificielle-medias-utilisations

Fernández-Barrero, M. A. (2018). Journalism and drones. Challenges and opportunities of
   the use of drones for informative narration in Spain. *Doxa Comunicación, 26,*
   35-58

Fylan, F. (2005). Semi-structured interviewing. A handbook of research methods for
   clinical and health psychology, *Oxford University Press, 5*(2), 65-78.

Gayte, A. (2023). Méfiez-vous de ces photos de Macron en manifestation, elles sont fausses.
   Retrieved from Numerama website:
   https://www.numerama.com/politique/1313304-mefiez-vous-de-ces-photos-de-macro
   n-en-manifestation-elles-sont-fausses.html

Gazzaniga, M. (2005). The Ethical Brain. New York: The Dana Foundation. *Journal of the
   Royal Society of Medicine, 98(*9), 10.1258/jrsm.98.9.433

Gramaccia, J., & Watine, T. (2020). Les entreprises de presse et les journalistes face aux défis
   de l'intelligence artificielle: les premiers résultats du projet med-IA. Journalismes
   spécialisés à l'ère numérique, 89-108. https://doi.org/10.2307/j.ctv1h0p159.8

Gremaud, R. (2022). Révolution: l'intelligence artificielle au service du magazine T. *Le
   Temps*. Retrieved from
   https://www.letemps.ch/opinions/editoriaux/revolution-lintelligence-artificielle-servic
   e-magazine-t?utm_medium=partage-social&utm_source=copylink

Guide Presse. (2022). Presse Francophone Luxembourgeoise; Annuaire Francophone de la
   presse en ligne. *Guide Presse.* Retrieved from
   https://www.press-directory.com/presse-francophone/presse-luxembourg.html

Hadland, A., Lambert, P., & Campbell, D. (2016). The Future of Professional Photojournalism: Perceptions of risk. *Journalism Practice, 10*(7), 820-832. https://doi.org/10.1080/17512786.2016.1163236

Hill, K., & White, J. (2020). Designed to Deceive: Do these People Look Real to You? *The New York Times.* November 21, 2020. Retrieved from https://www.nytimes.com/interactive/2020/11/21/science/artificialintelligence-fake-people-faces.html

Ilan, J. (2018). The International Photojournalism Industry. https://doi.org/10.4324/9781315178783

Jelassi, S., & Wassmer, P. (2023). Ethique, outils de détection, les défis que posent les images générées par l'intelligence artificielle. *RTS.* Sciences-Tech. Retrieved from https://www.rts.ch/info/sciences-tech/13909152-ethique-outils-de-detection-les-defis-que-posent-les-images-generees-par-lintelligence-artificielle.html

Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. *Science, 349*(6245), 255-260. https://doi.org/10.1126/science.aaa8415

Knight Commission. (2009). Informing Communities: Sustaining Democracy in the Digital Age. *The Aspen Institute.* 0-89843-511-0. Retrieved from https://knightfoundation.org/reports/informing-communities-sustaining-democracy-digital/

Kundu, R. (2022). AI-Generated Art: From Text to Images & Beyond [Examples]. *V7Labs.* https://www.v7labs.com/blog/ai-generated-art

Lapenta, F. (2011). Some Theoretical and Methodological Views on Photo-Elicitation. *The SAGE Handbook of Visual Research Methods*, 201-213. https://doi.org/10.4135/9781446268278.n11

Lippolis, A. S., & Parusinski, J. (2022). What AI image generators can do for newsrooms. *The Fix Media.* Retrieved from https://thefix.media/2022/10/20/what-ai-image-generators-can-do-for-newsrooms/

Maenpaa, J. (2014). Rethinking photojournalim, the changing work practices and professionalism of photojournalists in the digital age. Nordicom Review 35 (2014) 2. 10.2478/nor-2014-0017

Maffei, M. (2021). L'intelligence artificielle ou le bouleversement de la représentation. *Écosystème, 3*(1), 69-80. https://doi.org/10.7202/1075896ar

Malik, M., & Pfeffer, J. (2016). Identifying Platform Effects in Social Media Data. *Proceedings of the International AAAI Conference on Web and Social Media, 10*(1), 241-249. https://doi.org/10.1609/icwsm.v10i1.14756

Marchand, L. (2023). Getty lance son propre générateur d'images par intelligence artificielle. *Les Echos.* Retrived from https://www.lesechos.fr/tech-medias/intelligence-artificielle/getty-lance-son-propre-ge nerateur-dimages-par-intelligence-artificielle-1981318

Martinez, C. (2018). L'Homme et le robot : une collaboration est-elle possible ? *Haute École de Gestion de Genève.* p.1-67

Mattei, P. A., & Villata, V. (2022). Introduction à l'intelligence artificielle et aux modèles génératifs. Bruno Martin; Sara Riva. Informatique Mathématique: Une photographie en 2022, *CNRS Editions 2022.* ffhal-03849387. https://hal.science/hal-03849387

Matulionyte, R., & Lee, J.-A. (2022). Copyright in AI-generated works: Lessons from recent developments in patent law. *SCRIPT-ed, 19*(1), 5-35. https://doi.org/10.2966/scrip.190122.5

Maudet, N., Philizot, V., & Zara, S. (2021). Que font les images de l'IA ? Imaginaires, fictions et représentations. *Maison Interuniversitaire des Sciences de l'Homme-Alsace (MISHA).* Université de Strasbourg. p.1-6. hal-03763890

Mercier, A., & Pignard-Cheynel, N. (2014). Mutations du journalisme à l'ère du numérique : un état des travaux. *Revue française des sciences de l'information et de la communication(5).* https://doi.org/10.4000/rfsic.1097

Meyer, R. (2023). The New Value of the Archive: ai Image Generation and the Visual Economy of "Style'" In: Generative Imagery: Towards a 'New Paradigm' of Machine Learning-Based Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences, 37*(1), pp. 100-111

Michos, K. (2023). AI in Scientific Imaging: Drawing on Astronomy and Nanotechnology to

Illustrate Emerging Concerns About Generative Knowledge. In: Generative Imagery: Towards a 'New Paradigm' of Machine LearningBased Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences 37*(1), pp. 165-178

Mitchell, W. J. (1994). The Reconfigured Eye: Visual Truth in the Post-Photographic Era. *Technology and Culture, 35*(3), 640. https://doi.org/10.2307/3106290

Mortensen, T. M., & Gade, P. J. (2018). Does Photojournalism Matter? News Image Content and Presentation in the Middletown (NY)Times Herald-RecordBefore and After Layoffs of the Photojournalism Staff. *Journalism & Mass Communication Quarterly, 95*(4), 990-1010. https://doi.org/10.1177/1077699018760771

Mouriquand, D. (2023). Comment l'IA met le président Macron au milieu des manifestations contre la réforme des retraites. *Euronews.* Retrived from https://fr.euronews.com/culture/2023/03/24/comment-lia-met-le-president-macron-au-milieu-des-manifestations-contre-la-reforme-des-ret

Newman, N. (2012). Reuters Institute Digital News Report. Tracking the Future of News. Reuters Institute for the Study of Journalism, *Oxford, Reuters Institute.* p. 7-64 Retrieved from https://www.digitalnewsreport.org/wp-content/uploads/2012/05/Reuters-Institute-Digital-News-Report-2012.pdf

Newton, J. H. (2020). Photojournalism Ethics. *Routledge EBooks, 2*(9781315545929), 115–132. https://doi.org/10.4324/9781315545929-9

Noain-Sánchez, A. (2022). Addressing the Impact of Artificial Intelligence on Journalism: the perception of experts, journalists and academics. *Communication & Society, 35*(3), 105-121. https://doi.org/10.15581/003.35.3.105-121

Offert, F., & Phan, T. (2022). A Sign That Spells: DALL-E 2, Invisual Images and The Racial Politics of Feature Space. *Cornell University.* Retrieved from https://doi.org/10.48550/arXiv.2211.06323

Ouchchy, L., Coin, A., & Dubljević, V. (2020). AI in the headlines: the portrayal of the ethical issues of artificial intelligence in the media. *AI & SOCIETY, 35*(4), 927-936. https://doi.org/10.1007/s00146-020-00965-5

Pargamin, D., & Hanssen, M. (2023). IA : Comment Challenges a testé Midjourney et ce qu'on en retient. *Challenges.* Retrieved from https://www.challenges.fr/media/ia-comment-challenges-a-teste-midjourney-et-ce-quon-en-retient_852831

Pavlik, J. (2000). The Impact of Technology on Journalism. *Journalism Studies, 1*(2), 229-237. https://doi.org/10.1080/14616700050028226

Perrigo, B. (2023). OpenAI Used Kenyan Workers on Less Than $2 Per Hour to Make ChatGPT Less Toxic. In: Time. January 18, 2023. Retrived from Time websiste: https://time.com/6247678/openai-chatgpt-kenya-workers/

Quach, K. (2023). Adobe sells fake AI-generated Israel-Hamas war images – then the news ran them as real. The world needs a timeout moment. Retrieved from The register website: https://www.theregister.com/2023/11/08/adobe_ai_israel_hamas_war_pics/

Reddit. (2023, March 23). Macron taking the streets to protest against the retirement age reform in France. 23rd of March 2023. Retrieved from Reddit website: https://www.reddit.com/r/midjourney/comments/11xfsqm/macron_taking_the_streets_to_protest_against_the/?rdt=36200

Reddit. (2023, March 24). The Pope Drip. Retrieved from Reddit website: https://www.reddit.com/r/midjourney/comments/120vhdc/the_pope_drip/

Roberge, J., & Castelle, M. (2021). The Cultural Life of Machine Learning: An Incursion into Critical AI Studies. Cham, Switzerland: *Palgrave Macmillan.* 9783030562861

Russell, S. J., & Norvig, P. (2003). Artificial Intelligence, A Modern Approach. Second Edition. University of Michigan Press, Pearson Education International. *Upper Saddle*

Schröter, J. (2023). The AI Image, the Dream, and the Statistical Unconscious. In: Generative Imagery: Towards a 'New Paradigm' of Machine Learning-Based Image Production, special-themed issue of IMAGE: *The Interdisciplinary Journal of Image Sciences, 37*(1), pp. 112-120

Singer, J. B. (2010). Journalism ethics amid structural change. *Daedalus, 139*(2), 89-99. https://doi.org/10.1162/daed.2010.139.2.89

Statista. (2023). Classement des journaux de presse quotidienne nationale en diffusion payée en France en 2022, par volume de diffusion quotidienne. Statista Research Departement. Retrived from Statistica website: https://fr.statista.com/statistiques/527259/journaux-presse-quotidienne-nationale-diffusion-payee-france/

St-Germain, N., & White, P. (2021). The impact of artificial intelligence on journalistic practices in Canada. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3861842

Suijkerbuijk, M. (2014). Digitalization in the newspaper industry: a business model for the e-newspaper from a customer perspective. University of twente student theses. Retrieved from https://purl.utwente.nl/essays/64542

Taylor, J. (2000). . Problems in Photojournalism: realism, the nature of news and the humanitarian narrative. *Journalism Studies, 1*(1), 129-143. https://doi.org/10.1080/146167000361212

Truk, V. (2023). The rise of AI. How AI reduces the world to stereotypes. Rest of World. Retrieved from: https://restofworld.org/2023/ai-image-stereotypes/

Túñez-López, J.-M., Fieiras Ceide, C., & Vaz-Álvarez, M. (2021). Impact of Artificial Intelligence on Journalism: transformations in thecompany, products, contents and professional profile. *Communication& Society, 34*(1), 177-193

Ufarte Ruiz, M. J., & Manfredi Sánchez, J. L. (2019). Algorithms and bots applied to journalism. The case of Narrativa Inteligencia Artificial: structure, production and informative quality. *Doxa Comunicación, 29*, pp. 213-233

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & health sciences, 15*(3), 398-405. https://doi.org/10.1111/nhs.12048

Verosky, E. (2023). The Impact of Generative AI on Photographers. Toolify.ai. Retrieved from https://www.toolify.ai/ai-news/the-impact-of-generative-ai-on-photographers-50223

Vivona, V., & Caranti, N. (2020). *The Impact of Digitalisation on Media and Journalism Digital Transformation in Learning for Active Citizenship.* Retrieved from https://dttools.eu/pdf/digit-al-io1-media-and-journalism.pdf

Wells, N. M. (2022). Impact of AI Imaging Technology on the Present and Future of Art. College of Computing, Georgia Institute of Technology. CS 3001: Computing and Society

White, P. (2022). Les défis des agences de presse internationales AFP, Reuters, AP et Bloomberg à l'ère des GAFA et de l'Intelligence artificielle (The challenges of international news agencies in 2022). SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4219940

Wilde, L. R. A. (2023). Generative Imagery as Media Form and Research Field: Introduction to a New Paradigm. *The Interdisciplinary Journal of Image Sciences 37*(1), 2023, S. 6-33 ISSN 1614-0885 doi: 10.1453/1614-0885-1-2023-15446

Wilding, D., Fray, P., Molitorisz, S., & McKewon, E. (2018). The Impact of Digital Platforms on News and Journalistic Content, University of Technology Sydney, NSW. Centre for Media Transition. http://hdl.handle.net/10453/159124