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**The Future of Investigative Journalism in the Age of Automation,
Open-Source intelligence (OSINT) and Artificial Intelligence (AI)
Ganguly, M.**

A PhD thesis awarded by the University of Westminster.

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**THE FUTURE OF INVESTIGATIVE JOURNALISM
IN
THE AGE OF AUTOMATION, OPEN-SOURCE INTELLIGENCE (OSINT)
AND ARTIFICIAL INTELLIGENCE (AI)**

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A thesis submitted in partial fulfilment of the requirements of the University of
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ABSTRACT

This study uses a political economy lens to understand the impact of automation on investigative journalism and journalists, through qualitative methods of inquiry.

*Through semi-structured interviews with 30 investigators and investigative journalists who are experts in or pioneering Open-Source Intelligence (OSINT) investigations (mainly from the BBC and Bellingcat), it seeks to address the main research question: **What are the consequences of automation on investigative journalism?***

This is interrogated through three sub-questions:

SQ1: *How are automated tools changing the work of investigative journalists?*

SQ2: *What are the risks and advantages of conducting investigations using automated tools?*

SQ3: *What are the risks for the mental health of investigative journalists in the context of digital work?*

The study is grounded in theoretical debates related to the political economy of journalism and knowledge work, such as the understanding of labour in Marxism and connected traditions. It engages with topics such as the substitution of humans in the economic process through automation under capitalism, automation's impact on humans and society such as alienation, the exploitation of labour; as well as the power structures within the newsroom and its consequential impact on storytelling, trauma/mental health of journalists' work with graphic violence seen in conditions of war and conflict, diversity (gender and race). It contextualises the relationship between the crisis in journalism, and the fourth estate's ability to hold power to account, caused by capitalist modes of production. It studies the impact of Artificial Intelligence-powered automation, and augmentation using Open-Source Intelligence tools (OSINT tools), on investigative journalism units by depicting the technological disruption within workflows and affected journalists within the industry.

The research presented in this dissertation is the first of its kind, looking at the impact of OSINT on investigative work, methodologies and practices, and the mental health of journalists, and developing a typology of OSINT tools in practice. The study found that the adoption of OSINT tools in investigative units have enabled investigations of a range of human rights abuses from locations previously inaccessible or difficult to access due to conflict. The use of non-traditional investigative sources have created a knowledge controversy and upended the flow of power in journalism. However, it is human expertise, creativity and methodology in implementation of tools that are critical to such investigations, instead of the tools themselves, which are often flawed and require human intervention when augmenting workflows. Most journalists working in OSINT are young digital natives who have found the adoption of OSINT easy in their working day. However, issues of overwork, stress, and the pressure to be constantly online have blurred boundaries of work and home. In addition, structural imbalances of race, class and gender appear to be replicated in the OSINT space which is a majority white middle-class male-dominated profession from the Global North, often investigating the Global South, replicating colonial power dynamics. Finally, the risk of vicarious trauma from OSINT was a major cause of concern in mental health, but poor mental health was concurrent with bad, OSINT-illiterate management that didn't understand the impact of graphic imagery, alienation, and microaggressions. The study ends with recommendations that are based on the findings and are directed at existing investigative units, institutions looking to build OSINT units, and executives seeking to create a functional newsroom with a healthy balance of power that has the potential to produce impactful investigative journalism that holds power to account.

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AUTHOR'S DECLARATION

I declare that all the material contained in this thesis is my own work.

CHAPTER 1: INTRODUCTION

1.1 Introduction to the Study

This study was conducted to determine the consequences of automation on investigative journalism in current English-speaking digital newsrooms using the lens of political economy, focussing specifically on two outlets: the British Broadcasting Corporation (BBC) and BellingCat, both based in the U.K.. The research has attempted to determine how automation has affected investigative journalism in terms of change in work, investigative projects, and the available scope for 'augmenting' investigative reporting with automated tools to tell more impactful stories, with a special focus on Open-Source Intelligence (OSINT)-led investigations. It has also delved into key debates in the media economy to highlight how a profit-driven capitalist economy has slowly eroded high-quality investigative journalism, and through it, the fourth estate's ability to hold power to account.

The key research questions map the consequences of automation on investigative journalism, more specifically: how automated tools have changed the work of investigative journalists, the risks and advantages of conducting investigations using automated tools, and the risks for the mental health of investigative journalists in the context of digital work. This is so that media reforms necessary to sustain investigative journalists in the age of automation can be made based on this study's findings.

The research looks at the impact of the adoption of automated and open-source tools within investigative workflows by highlighting how these tools are being used and their consequent impact on the industry as well as individual journalists. Through semi-structured interviews with Open-Source Intelligence (OSINT) investigative journalists and investigators, it explores the change in work as a result of these tools,

whether this automation and augmentation are helping the investigative process, the resultant impact on the industry through job gains or losses, impact on mental health due to OSINT styles of investigation which require long hours online with exposure to the extremely graphic content of human rights abuses in some cases, so that critical changes can be made to sustain investigative journalism in the age of late-stage capitalism and automation.

The history of journalistic production of news is intertwined with the evolution of technology (Pavlik 2000), and automation. Throughout this history, the definition of automation has changed with time. A rudimentary explanation of automation is a mechanical process/or a series of processes that replace manual labour. Marx, writing in 1867, described the process of automation as: “The machine, which is the starting point of the industrial revolution, replaces the worker, who handles a single tool, by a mechanism operating with a number of similar tools and set in motion by a single motive power, whatever the form of that power” (Marx 1992, 497).

The earliest record of institutionalised news in the Western world traces back to AD 59, with Julius Caesar ordering the *Acta Diurna*, created to distribute information about the important events of the day (Pavlik 2000). To provide a brief history of automation in news is to draw a not-very linear line from the birth of the Gutenberg printing press in the fifteenth century, all the way to robot-written articles in the twenty-first, from advances in electronic communication such as cable TV in the twentieth century, to live streams of press conferences on social media in this current age. News has always adapted to technology, and automation has progressively made mass communication possible at a scale never seen before.

This chapter will provide a basic overview of the historical context of automation in news, the importance of investigative journalism, as well as an understanding of how investigative journalism has incorporated various automated tools and open-source intelligence and its importance.

1.2 A Brief History of Automation Technology in News

In this section, an overview of the implementation and evolution of automation in news is presented – all these moments relate to groundbreaking technological inventions that brought about seismic shifts in how news is gathered, produced, and broadcasted, starting from the birth of news itself.

The Gutenberg printing press is a historic landmark. Functional by 1450, it automated the very manual, labour and time-intensive process of duplication of text, leading to a sudden increase in accessibility of information, and a subsequent increase in literacy among the masses as a result of it (Abel 2011). The Gutenberg Revolution (Davies 1996) was followed by successive periods of automation in mass communication, culminating in the digital age, the most explosive of all, characterised by the inclusion of computers, intelligent processing systems, and masses of data. It was not a single event, but a successive domino effect beginning with the design of the first computer by Charles Babbage in the mid-1830s, the Analytical Engine (Menabrea 1843). This paved the way for the work of Ada Lovelace, aka Ada Gordon, the “first computer programmer”, who developed the ideas of Charles Babbage (“father of modern computing”) in “Sketch of the Analytical Engine, with Notes from the Translator”, which included the earliest versions of what is now known as a computer program (Lovelace 2009 [1843]).

It would be remiss to not mark the year 1989 in this stage: the year Tim Berners-Lee, a British scientist working at CERN, invented the world wide web to create a platform for automated information-sharing between scientists across the world. This is now known as the internet (CERN n.d.). While the internet and its microcosms, through social media, have upended the news economy, on a technological level, it automated both the input, processing, and output of news; in short, the entire assembly line of news.

Alongside the dawn of the first computer age was the birth of Artificial Intelligence (AI), which in the post-2020 era, is pervasive in most aspects of journalism. Alan Turing, the father of AI, in the 1950s, created the first test of an intelligent machine – what he named the imitation game (later popularised as the Turing Test), posing a simple question– “can machines think?” (Turing 1950, 433). Intelligent systems have existed since the late 20th century, but it wasn’t until the 2000s that the technology for processing or aiding these systems became commercially viable, leading to a whole host of automated tools for news.

The implementation of automation in journalism has been rapid in the last few years: In 2015, the New York Times unveiled ‘Editor’, an AI-powered research tool that identified semantic tags while writing a report to gather supporting data in real-time (Underwood 2019); similarly, BBC have been using their AI-powered Juicer since 2012 to extract data from their base of 850 global news outlets’ RSS feeds (BBC News Labs 2012). The Guardian unveiled its chatbot for Facebook in 2016, allowing readers to select a timezone and get digested customised headlines in their chatbox (Good and Wilk 2016). Following this, in 2016, Quartz’s Bot Studio was awarded a £193,000 grant from the Knight Foundation to develop automated tools (Underwood 2019). In 2017, the Washington Post’s ‘robot journalist’ published 850 reports on sports matches (Moses 2017), while Who Targets Me, a browser extension that monitors targeted advertising by political parties on Facebook, was used during the UK Snap Election to investigate ‘dark ads’ used by political parties (Ganguly 2017a, n.p.).

The New York Times has been using machine learning, a form of AI, for election campaign finance coverage, and Associated Press partnered with Graphiq, a company using AI to create data graphics, to create interactive visualisations to data stories (Rodriguez 2016). Softwares like Agolo and Auto-Edit are being used in investigations to make real-time summaries of documents and auto speech-to-text video transcription, respectively (Marconi, Siegman and Machine Journalist 2017). Both BBC and the Guardian use interactive templates through Shorthand for investigative storytelling, which automate coding (Shorthand n.d.). BuzzFeed

monitors real-time traffic breakdowns to optimise headlines for the web (Wang 2017) and launched the Buzzbot to gather (instead of push or break) real-time updates from 22 reporters at the Republican National Convention (Hennigh-Palermo and Hickman 2016).

1.3 Importance of Investigative Journalism and the Current Crisis

Hannah Arendt, writing about the human condition, argued that “truth was no longer supposed to appear”; therefore there arose “a veritable necessity to hunt for truth behind deceptive appearances” (Arendt 2018, 290). The mere function of investigative journalism is to get at this truth and underpins its importance.

It is impossible to discuss the importance of investigative journalism without referring to two striking scenes that defined the field, immortalised by cinema: The first is, of course, the car-park meetings in *All the President's Men* (1976), between Bob Woodward of the Washington Post and FBI whistleblower Mark Felt (nicknamed Deep Throat), which led to the unearthing of the Watergate scandal, taking down US President Richard Nixon (YouTube 2017). The second is the screens of encrypted communications between investigative journalist Glenn Greenwald and NSA-whistleblower Edward Snowden in *Citizen Four* (2014), before and following the leaks, which exposed the largest breach in the history of civilian privacy through illegal government surveillance.

The then-and-now images help us assess the impact technology has had on investigative journalism in relation to two distinctive factors: first, the ease of acquiring and processing large amounts of data. It is helpful to refer back to the scene from the first film, where we find Woodward and Bernstein manually trawling through catalogues in the Library of Congress (YouTube 2019), and compare with the relative ease with which Snowden leaked 1.7 million documents. The second, the public service ideals of investigative journalism in both cases: in the case of

Woodward and Bernstein, it was the exposure of a corrupt President. In the case of Greenwald, it was the exposure of state-sanctioned mass violations of privacy.

Investigative journalists, unlike news reporters, are a special breed.

“The watchdog is unlike any other role. It is similar to other journalism, but requires special skills, a special temperament, a special hunger. It requires a serious commitment of resources and a desire to cover serious concerns. And it requires a press independent of any interest except that of the ultimate consumer of the news. For all the lip service paid to it, the watchdog principle faces more challenges today than ever” (Kovach and Rosenstiel 2001, 53).

One of the fears of the digital age was the death of the presses, and through it, investigative journalism. The Guardian, commenting on the Afghan and Iraq cables received from Wikileaks, refutes this anxiety by reflecting on how their reporting had involved both “traditional journalistic skills and the power of the technology, harnessed to tell an amazing story” (Rogers 2011). Data journalism, another outcome of the digital age for investigative journalism, allowed for both quick processing of data, and the creation of representation systems to explain the findings.

And yet, investigative journalism is in crisis. Journalism, in its function of maintaining democratic social order (Deuze 2017 [2008]), consists of two chief acts: bearing witness (Cohen 2009) and holding power to account (Alexander, Butler Breese and Luengo 2016). The first act is commonly associated with news reporting, while the second, holding power to account through muckraking (Schiffrin 2019), is cited as the key function of investigative journalism. If one cannot have journalism without democracy (Carey 1996), then a crisis in journalism is reflective of a crisis in democracy.

In “Media Manifesto”, John Lloyd states that two acts – witnessing, and holding power to account – is “more widespread in this century than it was at any time in the past one.” (Lloyd 2002). The changing role of investigative journalists and

technological advancement has ensured that we act this role out in new ways. Investigations have moved from exposing wrongdoings into active participation – journalism with an agenda to change the course of history through documentation and intervention.

The investigative journalist has emerged in three roles: as a *witness* – to find and legitimise what might be censored/denied; as an *activist*, advocating for change explicitly based upon facts uncovered; as an *upholder of democratic values and human rights*; and often all three. This metamorphosis is prompted by technology and the internet in three ways: through *data investigations*; *social media and open-source intelligence investigations*; and the third, *an amalgamation of old school source-based reporting with information available through platforms for leaks and large-scale financial whistleblowing*.

1.4 Open-source Intelligence, and Applications in Investigative Journalism

The new tools of the internet and digital technology brought about a key cultural shift: what activist Vandana Shiva calls an “insurrection of subjugated knowledge” against “dominant knowledge of power” (Pilger 2011, xvi) through the advent of open-source investigations in journalism.

The term “open-source intelligence”, or OSINT as it is commonly known as, is a fairly new advent in journalism. The term is borrowed from the intelligence community where ‘open’ refers to all sources that are publicly available and can be acquired legally and ethically from public sources, in opposition to covert or clandestine information gathering often obtained illegally or with the use of deception. However, open-source as a concept has existed for much longer, with the recent advent of digital communications making the gathering of information from unclassified public sources easier.

One of the earliest definitions of OSINT, or “OSCINT” as it was initially called, can be found in a document authored by a former CIA officer, Robert D. Steele. It states: “By Open Source we refer to publicly available information appearing in print or electronic form...It may be disseminated to a broad public, as are the mass media, or to a more select audience... Whatever form it takes, Open Source involves no information that is: classified at its origin; is subject to proprietary constraints (other than copyright); is the product of sensitive contacts with the U.S.” (Steele 1995, 457).

In Steele’s document, which argues for greater funding for OSINT teams within the US military, he says that the “official approach to OSCINT” is limited as “the existing information handling architectures for intelligence processing, including dissemination to the commander, are all classified, and there is a very limited capability for routing unclassified information efficiently, even assuming it can be obtained” (Steele 1995, 458). This has quite interesting applications for journalism. While investigative journalism on national security and military issues like war or conflict is notoriously difficult due to the lack of transparency from governments of “classified information” as well as the protection of state secrets through the Official Secrets Act in the UK and the Patriot Act in the US, the emergence of platforms like Wikileaks which have made this classified intel accessible has had a direct bearing on the success of OSINT investigations.

The sheer volume of information leaked by Snowden, however, presents a great case study. In 1995, when Steele was writing this memo to the US intelligence agencies, the internet, which incidentally evolved out of the military project ARPANET, had not fully taken off yet. The thousands of blogs, user-generated content (UGC) and data leaks have since created an information explosion (Fuller 2010). The challenge with OSINT in Steele’s time was to find the right data from a public source. Steele identifies nine sources of information brokers: private investigators, schools, libraries, government intelligence, universities, businesses, media and defense.

The challenge in our current age is to sift through the millions of sources publicly available and find the right piece of evidence. Within the military context, Open-Source Intelligence (OSINT) exists alongside Human Intelligence (HUMINT), Geospatial Intelligence (GEOINT), and Signals Intelligence (SIGINT) (Richelson 2015). This has translated into the current version of OSINT practised in journalism. Loosely, the current OSINT can be divided into SOCMINT (Social media intelligence), GEOINT (Geospatial intelligence), and SIGINT (Signals intelligence), explained in the table below.

TYPE OF OSINT	SHORT FOR	INCLUDES
SOCMINT	Social media intelligence	Information mined from social media profiles on Facebook, Instagram, Tumblr, Twitter, LinkedIn, SoundCloud etc. such as personal information, activity data, social network mapping of bots and such, location information, personal connections, and more.
GEOINT	Geospatial intelligence	The rise of commercial satellites and the availability of satellite data from companies like Maxar and Planet Labs has made this easily accessible to journalists and the civil community. This provides unimaginable scope for visual investigations, from location tracking and geolocation, to remote surveillance of conflict zones.
SIGINT	Signals intelligence	This exists primarily within the domain of state security as it refers to what is commonly known as 'wire-tapping' or the interception of signals, mostly illegally. The state agencies commonly associated with this activity are the NSA in the US and GCHQ in the UK-- both of whom were exposed for mass surveillance by Snowden. However, there is a secondary type of signals interception that journalists and civil society can/do engage in-- the monitoring of signals off transportation networks. This information exists within the public domain, and includes flight data, data of tankers and marine vessels, as well as network traffic data which can be manually found by forensically analysing a particular website.

FIG 1.4.1 BREAKDOWN OF TYPES OF OSINT USED IN JOURNALISM

Data sources for open-source intelligence in Steele's manuscript were divided into six categories of information flow by the intelligence communities. This classification is still used for open-source investigations. The six categories are presented in the table below.

SOURCE	INCLUDES
Media	All forms of content, such as newspapers, radio, TV, digital.
Internet	Online publications like blogs, discussion forums like Reddit, social media websites.
Public government data	Budgets, hearings, press conferences, public government reports, speeches.
Academic publications	Journals, dissertations, academic papers, theses, symposia.
Commercial data	Databases, financial and industrial information, commercial imagery.
Grey literature	Working papers, patents, preprints, business documents, newsletters.

FIG 1.4.2 BREAKDOWN OF SOURCES OF OSINT AVAILABLE

Most open-source investigations are now conducted exclusively online, with additional sources of data, such as information from National Archives, past Freedom of Information requests, company records and tax filings, electoral roll data, information uploaded online from briefings and conferences, electronic press releases, as well as whistleblowing platforms like Wikileaks who have access to the Global Intelligence Files, the Hacking Team leaks, and so on.

Early incarnations of OSINT in journalism appeared in 2009 with the news agency Storyful, which developed new methods of mining and monitoring social media to report on conflicts (Dubberley, Koenig and Murray 2020). This was followed by the Arab Spring, which showed how social media could be a legitimate platform for newsgathering due to censorship by authoritarian regimes in the Middle East.

In the case of Bellingcat, the pioneering open-source investigative unit, it was the efforts of former blogger Eliot Higgins in 2014 to use publicly available data and citizen journalist analysis for “advancing narratives of conflict, crime, and human rights abuses” (Bellingcat n.d.). They have used this data to probe various subjects - “from Mexican drug lords and crimes against humanity, to tracking the use of

chemical weapons and conflicts worldwide”. The definition of OSINT used by Bellingcat is perhaps the most accurate description of the practice as it stands now: “a unique field where advanced technology, forensic research, journalism, investigations, transparency and accountability come together” (Bellingcat n.d.).

Using OSINT, Bellingcat has managed to pull off investigations at a scale and reach that has rarely been seen so consistently in investigative journalism. In the introduction to his book on Bellingcat, Higgins writes: “We proved that the Syrian dictator Bashar al-Assad fired chemical weapons at his own people. We showed who was behind the downing of Flight MH17. We located ISIS supporters in Europe. We identified neo-Nazis rampaging through Charlottesville, Virginia. We helped quash the floods of disinformation spreading alongside Covid-19. And we exposed a Kremlin ‘kill team’” (Higgins 2021, 6–7).

The importance of these investigations can be understood through the impact they had. Take the example of the Malaysian Airlines Flight 17 or MH17, which crashed in July 2014 over eastern Ukraine. It was initially reported as an accident. But using publicly uploaded videos, satellite data, and citizen journalists, Bellingcat was able to discover that MH17 was shot down using a BUK missile launched from a Russian base into Ukraine. In fact, they were able to locate the exact field from where the missile was launched, proving the involvement of the Russian military. Russia maintains that they were not responsible for the deaths of 283 passengers and 15 crew on MH17.

The conflict in Syria, which initially inspired the creation of Bellingcat by Higgins, is known as the most documented war in human history (Dubberley, Koenig and Murray 2020). This provides unimaginable scope for open-source investigations. Open-source work done by Bellingcat and BBC’s Arabic investigations team to document war crimes in Syria has received the attention of the International Independent and Impartial Mechanism (IIIM) on Syria, created by the UN General Assembly to gather evidence of potential war crimes and other violations (International Independent and Impartial Mechanism, n.d.). The importance of this

work, for accountability through perhaps a new Nuremberg to prosecute ISIS and foreign parties like Russia, for a historical record that so often in situations of war gets written by the powerful, and to bear witness to unimaginable human suffering, cannot be overstated.

One of the critical aspects of OSINT, due to the public nature of information, is transparency. An OSINT investigation shows step by step how each piece of the puzzle fits into the narrative. Therefore, unlike traditional investigative journalism led by closed sources, it is hard to refute. This explains its popularity and power in holding to account super-states like Russia.

Since 2016, there has been a striking increase in open-source evidence being used to prosecute war crimes and other atrocities at the International Criminal Court (ICC). At the ICC, internet-sourced satellite imagery, videos and geolocation data led to the conviction of Ahmad Al-Faqi Al-Mahdi for the war crime of destroying cultural property in Mali (Dubberley, Koenig and Murray 2020). The following year, the ICC issued an arrest warrant for Libyan National Army's special forces commander Mahmoud Al-Werfalli for thirty-three counts of the war crimes of murder based on open-source evidence in the form of execution videos uploaded to social media, which were investigated by both Bellingcat and the BBC World Service's Arabic investigations team (BBC Arabic 2019, Bellingcat Investigation Team 2017).

1.5 Conclusion

In conclusion, to understand how automation interacts with journalism, it is necessary to acknowledge that the history of journalism is preceded by rapid technological innovation (Pavlik 2000).

The age of computers, leading to the birth of computer-assisted reporting, had direct applications to news in the 1950s. Alongside the dawn of the first computer age was

the birth of artificial intelligence, which in 2020, is pervasive in most aspects of journalism, such as the New York Times' 'Editor' and the Washington Post's 'robot journalist', which writes reports on sports matches (Moses 2017).

One of the fears of the digital age was the death of the presses, and through it, investigative journalism. But even without the threat of digital, investigative journalism is in crisis, failing to hold power to account through muckraking and thereby maintaining democratic social order. This is largely due to rapid digitisation upending revenue streams for investigative journalism.

However, the adaptability of investigative journalists with technological advancement has ensured that it survives in new ways. One of these new avatars of investigative journalism in the age of the internet is "open-source intelligence" journalism or OSINT, with the term borrowed from the intelligence community.

OSINT lies at the intersection of technology, human rights, journalism, forensic research and accountability. One of the key signifiers of an OSINT investigation is transparency: an OSINT investigation shows the working of the investigation, making it easier to fact-check and harder to refute. As a result, since 2016, there has been a striking increase in the use of open-source evidence for legal accountability, including at the International Criminal Court (ICC). The importance of these investigations thus cannot be overstated.

This research looks at the increasing adoption of automated tools in investigative journalism and the subsequent impact of that on the industry, investigators, as well as on the kind of stories that get told using it.

The next chapter provides an overview of the existing empirical research and literature in this area study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The purpose of the literature review is to provide an overview of existing empirical research in the area of my study: that being, the political economy of journalism and knowledge work through the crisis of media/journalism, through studies reflecting the change of working conditions of knowledge labour, change of working conditions of journalists and its impact, and more specifically, the change of working conditions for the investigative journalist. Following this is a discussion of automation, and studies on the automation of knowledge labour, in particular automation of journalism and automation of investigative journalists.

This enables us to crystallise the relevance of my research/study within the field of social sciences, more specifically, to outline the existing knowledge and identify the gap in knowledge this study fits into. In addition, this chapter contains an overview of the various methodologies used in previous studies and enables us to assess the pros and cons of different research methods, concurrently producing a stronger argument for the methodology chosen for this research, expounded upon in Chapter 4.

This chapter is divided broadly into two sections: the first section briefly reviews the existing research on the political economy of knowledge labour and journalism, leading into the second, which provides a more focussed approach to automation of knowledge labour, in particular, investigative journalism. It concludes by noting the implications these empirical studies have on this research. The next chapter then picks up on the theoretical foundations of the research for this study, as well as the theories touched upon briefly in this chapter.

In our understanding of automation, we refer to two processes: the first is full automation, or the substitution of humans in the economic process through automation under capitalism, with the machine as a means for producing surplus-value (Marx 1992); the second is the augmentation of the workflow in line with the singularity principle (Vinge 1993), of the introduction of tools to replace the human process and achieve “enhanced problem solving” (Warwick 2014, 4).

For selecting the empirical studies, keywords were identified for search queries through Google Scholar, and the Thomson Reuters Web of Knowledge which stores academic publications between 1970 and the present. The key search terms to identify papers included, but were not limited to, “political economy”, “knowledge labour”, “knowledge workers”, “crisis”, “automation”, “automated tools”, in conjunction with “investigative journalism” and “journalism”, “robot journalism” (Montal and Reich 2017, 829), “automated journalism” (Carlson 2015, 423; Graefe 2016; T. Lindén 2017b, 125), “algorithmic journalism” (Dörr and Hollnbuchner 2017, 404–419), “augmented journalism” (Marconi, Siegman and Machine Journalist 2017, 1–23), and “computer-assisted reporting” (Houston 2015; Meyer 1991, 79). Lists of references from selected papers and other relevant pieces of literature such as on the mental health impact of automation of knowledge labour were also reviewed, and experts were consulted for further additions. Most of the papers were in English, while some were in Spanish. The selected studies were reviewed to gain an understanding of the findings, their strengths and deficiencies, and map the methodologies used.

The following section delves into the political economy of journalism and knowledge work.

2.2 The Political Economy of Journalism and Knowledge Work

For the purposes of this study, we will be using the critical framework of political economy, recognising that power dynamics is the defining structure of social relations, perhaps especially/significantly within the newsroom and the media industry. Vincent Mosco defines political economy as “the study of the social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources” (Mosco 2009, 2)

While political economy is often regarded as a form of theoretical social science, its focus lies squarely within the realm of praxis, or the synergy of research and action leading to media activism (Mosco 2017). Wasko aptly summarised this when he wrote that “political economists attempt to transcend the distinction between research and policy, orienting their work towards actual social change and practice, or, as Marx pointed out: ‘Philosophers have sought to understand the system, the point, however, is to change it’” (Wasko 2012, 27).

Therefore, no other framework within the social sciences is better suited to studying the power relations within journalism and knowledge work than political economy. The following section delves into the change of knowledge labour’s working conditions.

2.2.1 The Change of Knowledge Labour’s Working Conditions

In order to study the political economy of journalism and knowledge work, it is perhaps necessary to define what a knowledge worker is – a worker who “thinks for a living”: “Knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge. In the current economy, they are the horses that pull the plow of economic progress” (Davenport 2005, 10).

For the knowledge worker, the chief capital is knowledge, and the process involves non-routine problem-solving using a combination of convergent and divergent

thinking (Reinhardt et al. 2011). Knowledge workers have represented almost half of the workforce in the early 21st century and are seen to have the most impact on the economy.



FIG 2.2.1.1 CLASSIFICATION OF KNOWLEDGE WORKERS (Davenport, 2005)

Peter Drucker, in his seminal essay “The Future That Has Already Happened”, aptly wrote: “The productivity of knowledge and knowledge workers... is likely to become the decisive factor, at least for most industries in the developed countries” (Drucker 1998, ix).

Despite the undisputed global dependency on knowledge workers, the rise of the internet and the digital age have brought about changes in working conditions that aggressively threaten their livelihoods. In a multi-year study of digital knowledge workers in south-east Asia and sub-Saharan Africa, using transaction log data from the most comprehensive digital labour platform and face to face semi-structured interviews with 125 digital workers and 27 digital work stakeholders, between 2014-2015, the authors found “a global, but uneven, market for digital labour exists with a significant imbalance between the supply and demand of work” where the “frictions of distance have not been eliminated” but have instead been warped with

spatial fixes for digital work: “There is tedium, loneliness, alienation. There are new jobs for many who crave and need them, but inherent precariousness and nothing at all resembling job security” (Graham, Hjorth and Lehdonvirta 2017, 153).

In addition, there is little to no understanding of what affects knowledge worker performance. While the performance of knowledge workers depends on management and organisation, information technology and workplace design, there was no integration of the three, and organisations tend to resist the idea of segmentation of knowledge workers, applying the same standards to all. A study interviewed over 100 academics, managers and professionals across 41 companies, and found managers incapable of taking responsibility for knowledge-worker performance, while focussing only on optimising workplace design and technology. Companies experimenting with workplace design aren’t learning much: “fad, fashion and faith drive most decisions about new work environments for knowledge workers” (Davenport, Thomas and Cantrall 2002, 25).

As knowledge workers, journalists face these obstacles within the organisation and, broadly, within the media industry itself, which in turn is plagued by its own set of crises. The following section delves into the crisis of media and journalism.

2.2.2 The Crisis of Media and Journalism

In order to discuss the crisis in journalism, it is necessary to unpack the notion of “crisis” itself. Within Mosco’s definition of political economy, we find a framework of critique of the crisis of journalism: i.e. we recognise the crisis as a crisis of power relations “that mutually constitute the production, distribution, and consumption of resources” (Mosco 2009, 2).

The crisis stems from the erosion of the business models of traditional forms of media (Nichols and McChesney 2010; Macnamara 2010). While economically, the traditional business models of the media are in freefall (Grueskin, Seave and Graves

2011), the new alternatives have not developed enough to provide stable sustenance.

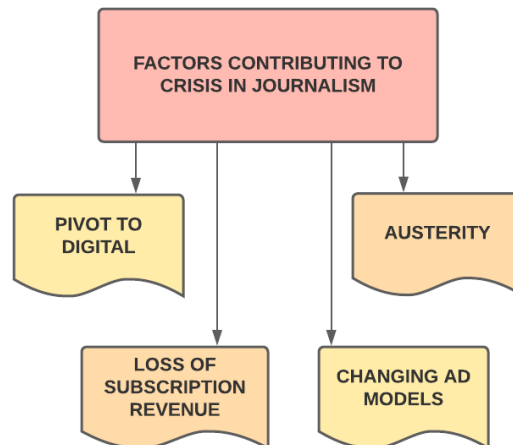


FIG 2.2.2.1 FACTORS CONTRIBUTING TO CRISIS IN JOURNALISM
(Beckett and Livingstone 2018; Chyi, Lewis and Zheng 2012; Siles and Boczkowski 2012; USC Annenberg School Center for the Digital Future 2012)

Technologically, the rise of digital or new media upended the old rules of engagement and required new models of monetization to subsist within the existing capitalist framework. This led to widespread layoffs, newsroom restructurings (Fenton 2011) and a greater reliance on freelancers and other “contingently employed newswriters” to provide content for their products (Deuze 2017 [2008], 11).

In addition to the revenue scarcity in meaningful investigative journalism, there is also a coincidental lack of willingness to pay for information (Gluck and Roca-Sales 2008). This heavily impacts the advertising-based business model used by newspapers and broadcast TV, leading to loss of audiences and revenue at an alarming rate (Arsenault and Castells 2008). Therefore, the crisis is something engulfing the media industry as a whole and not just investigative journalism. Within the journalism framework, though, there is an overwhelming feeling among reporters of constant crisis. The following section delves into the change in working conditions of journalists.

2.2.3 Change in Working Conditions of Journalists

In this section, we take a critical look at the changes that have affected the working conditions of journalists: what the areas of changes are, how journalists have adapted, and how the changes have affected journalists.

With the rise of the internet, the knowledge monopoly of journalists has eroded, while the pressures of multi-skilling have increased exponentially. An early study investigated the impact empirically by analysing the results of two studies in England and Sweden, which involved close observation of news production between 2006-2009, through a survey of 175 journalists and secondary data from national surveys of journalists (between 1989-2005) and identified ten areas of change in journalistic work, which involve the routines or norms, as well as the mundane daily work (Witschge and Nygren 2009) – these are presented in the table below.

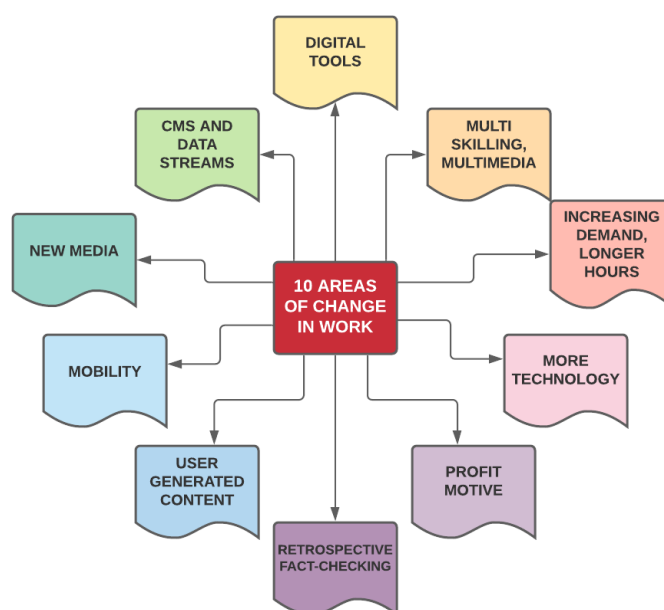


FIG 2.2.3.1 AREAS OF CHANGE IN JOURNALISTIC WORK
(Witschge and Nygren 2009)

About five years later, another paper used a series of case studies to set out the transformation in journalism through technology-driven change in and around 2015, and the resultant crisis. While it acknowledges the difficulty in empirically studying the crisis in media and journalism, they attempt to create a partial overview of new practices through case studies. These include networked journalism; crowdsourcing and user-generated content; visual journalism; and automated journalism (Van Der Haak, Parks and Castells 2012).

All of these, while painting a brighter picture for the development of journalism, fail to address the underlying issue of existence within a capitalistic framework, where the “public good” approach is encouraged so long as healthy profits are promised. None of these advancements exist outside the constant struggle of funding and under-funding, and most risk being prematurely aborted if they fail to hit the revenue targets at mainstream newsrooms.

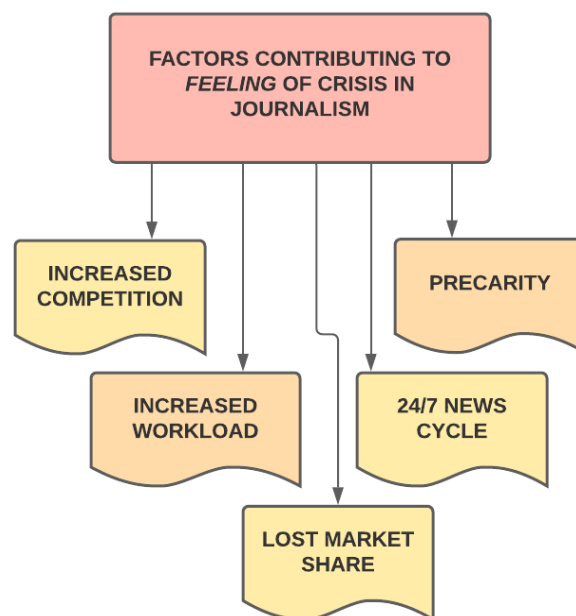


FIG 2.2.3.2 WHY JOURNALISTS ARE “FEELING” CONSTANT CRISIS
(Van Der Haak, Parks and Castells 2012)

As the financial motives strengthen in media companies, companies, including public service broadcasters like the BBC, have adapted. Research using surveys of BBC

industry professionals of an unspecified number found a fundamental dichotomy between the content provider and the broadcaster at the BBC. Technological acceleration threatened the largest round of job losses, as polarisation was observed between the ‘new’ or the technologists – branded the Future Media and Technology (FMT); and the journalists who actually make the programme, who had significantly diminished power and belonged to the ‘old’. With the greater part of the budget spent on creation, the concerns with shrinking audience meant then-director Ashley Highfield was forced to shift focus to delivery of the FMT team. While there is scant evidence to suggest that deregulated markets or free-market economics support or encourage political engagement and hard news, the danger with the BBC becoming subservient to populist perspectives is greater (Lee-Wright 2008).

In addition, there is the impact these changes have on the worker, who, as we have established, is forced to work more for less compensation and is pushed into financial precarity. A study conducted on 47 journalists in between periods of layoffs at an independent US media company with print, digital and broadcast outlets between 2012 and 2013 through batches of in-depth interviews found that the culture of job insecurity had an adverse effect on newsroom change as the anxiety of losing jobs prevented the initiation of change at the very outset, similar to the general “tedium” among digital workers noted. One participant, a veteran journalist, said: “Digital and social media have added hours to the day that we’re expected to fit in. This isn’t easy, especially when the current salary structure was built for a newspaper reporter” (Ekdale et al. 2015, 391). Another noted that the constant layoffs created a weaker news product and made it difficult to hold fast to the public service ideals of journalism.

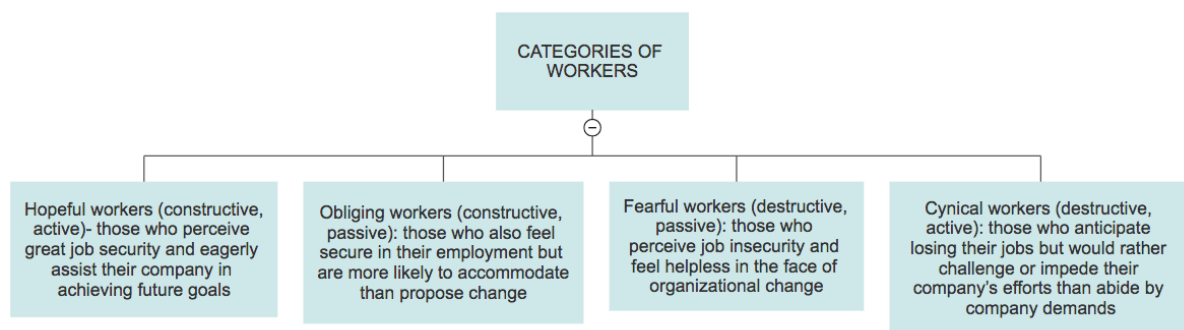


FIG 2.2.3.3 CATEGORIES OF WORKERS
(Ekdale et al. 2015)

2.2.4 The Change of Investigative Journalists' Working Conditions

It is this erosion of the public service ideals of journalism that ultimately creates a lasting adverse impact on democracy. The Federal Communications Commission in the USA, at the conclusion of a landmark study in 2011, wrote that journalists had: “less time to investigate, to question, to take a story to the next level. Fewer newsrooms... deploy reporters to work on labor-intensive stories. That means... fewer investigative stories...that impact the future, their safety, their livelihood, and their everyday life... The dramatic news-industry cutbacks appear to have caused genuine harm to ...citizens and local communities” (Waldman 2011, 57).

Investigative journalists appear to be disillusioned about their own ability to conduct investigations due to a lack of newsroom support. A 2016 survey of 861 primarily US-based investigative journalists found that almost half the journalists felt that journalism was headed in the wrong direction as there was less time and resources to do meaningful investigative work, with most feeling that “the news media’s commitment to investigative reporting is not as strong today as it was a year or two ago”. A third said that staff doing investigations had been in steady decline over the past few years, with one newspaper reporter adding: “Investigative reporting is in

great shape, but the business model is broken and can't robustly support it". However, more than two-thirds of the interviewees showed optimism about the future prospects of investigative reporting, stemming from developments in their own newsrooms (Lanosga and Houston 2017, 1116).

The advent of databases and algorithms within investigations pose a challenge to cutbacks impacting investigative reporting, as well as the opportunity for new types of revelations through the processing of massive datasets. In an ideal scenario, the disruption in investigative journalism, with the right monetary and time investment, yields a kind of augmented approach to investigations, where the traditional and new models of approach coalesce into more efficient investigative techniques.

A 2015 paper used a combination of quantitative and qualitative research methods to study a 19-month long investigation launched in 2011 by the Center for Investigative Reporting (CIR), based in the USA, which used two complementary investigative methods. Five interviews from the team of investigative reporters, data journalists and programmers found two clear epistemological paths of investigating:

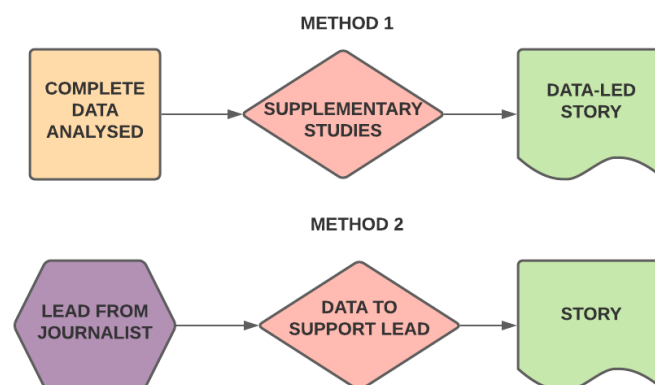


FIG 2.2.4.1 TWO METHODS OF INVESTIGATING WITH DATA

One “news applications developer” involved in the “data science community,” said of this coexistence: “It’s funny sometimes because reporters or editors, when we tell them about a project, one of the first things they’ll say is, ‘Okay, well, what’s the lead?’ It’s like, ‘No, we want to use the data as a vehicle to tell a story’” (Parasie

2015, 377). It is perhaps worth noting in this regard that with the current state of cutbacks and lack of funding highlighted in the previous section, to conduct a 19-month investigation of this stature is a rarity, if not an anomaly itself.

The networked media environment also places new stresses upon investigative journalists, such as constant online vigilance and foresight, but can also be exploited to investigate crucial events as they unfold. A study into the use of social media in reporting violent extremism interviewed 26 Norwegian investigative journalists (9 editors, 17 reporters) who used the internet and social media sites to report on violent extremism. It found that journalists used social media to map the network of jihadists by exploiting the privacy settings on Facebook (Larsen 2017). The study crucially failed to ask interviewees if hours of mapping jihadist networks through their social media footprints meant they had had any prolonged exposure to graphic material and any resultant additional stresses this might have placed upon the journalist in terms of mental health impact.

Research conducted in the aftermath of the assassination of investigative journalist Ján Kuciak and his fiancée, to study its impact on Slovak journalists through semi-structured interviews with 12 top investigative journalists found that aside from the usual coping mechanisms of trauma (such as emotional purging; sharing and support seeking; avoidance and displacement; defiance and defence; and spreading the legacy of Kuciak to give meaning to the tragedy), the ones specific to journalism were: spreading the ethics and morality Kuciak stood for and working on his legacy, e.g., “by finishing his last article and publishing it simultaneously in various domestic and international media outlets, by describing his life and values in a book, by cooperating with other media in the spirit that he would have appreciated, by holding the powerful to account, by covering the investigation and the trial of the suspects” and through the reassessment of personal values and priorities (Urbániková and Haniková 2021). However, it failed to delve deeper into long-term trauma and resilience.

But a more extensive online study involving 115 journalists into the roles of world views, institutional betrayal, and work-related trauma exposure on symptoms of Post-traumatic Stress Disorder (PTSD), alcohol use, and depression found that journalists who reported greater institutional betrayal had higher incidences of PTSD and alcoholism, showing the role of organisational factors in exacerbating symptoms of mental distress (Dadouch and Lilly 2020).

Another large-scale study of 70 TV reporters found a link between personal trauma, lack of perceived peer support, and exacerbation of compassion fatigue, secondary or vicarious traumatic stress and burnout (Dworznik 2018). A similar qualitative study of 20 news camera operators who work as first responders to crises and human suffering found them experiencing primary and vicarious traumatisation simultaneously and recommended mental health support and training at the undergraduate and/or organisational levels (Ikizer, Karanci, and Kocaoglan 2019).

And yet, despite this prevalence of trauma, there is a lack of education in journalism schools about it. A 2018 study of journalism schools in the US found that only 1 in 41 journalism programmes offered a course specifically aimed at teaching journalists how to protect themselves from psychological trauma and how best to interact with victims of trauma (Dworznik and Garvey 2019).

There is also a similar lack of awareness of vicarious trauma and how it is caused, even though greater vicarious trauma is directly related to higher severity of PTSD (Joscelyne et al. 2015). A recent study of activists (who like journalists are frontline defenders) in Colombia, Mexico, Egypt, Kenya, and Indonesia, found that they “tend to prioritize the necessity and importance of their work before thinking about their personal well being”, and considered concern for their own wellbeing as “self-indulgent” (Nah 2017, 2).

In addition, there are a host of known factors that make individuals more susceptible to developing PTSD, which include: a prior history of trauma or mental illness; significant non-trauma stress or prolonged stress; coming from a marginalised

background; poor working conditions; inadequate trauma training; lack of workplace trauma sensitivity that minimises harm or engages in gaslighting; perfectionism (defined as “the process in which a person consistently strives towards high personal standards and when those, often unrealistic, personal standards are not achieved, the individual then engages in persistent self-criticism” (Dubberley, Koenig and Murray 2020, 277)); while factors that mitigate risk include having a higher education level and a good social support network (Dubberley, Koenig and Murray 2020).

It must be noted that while open-source investigative work, the subject of this study, does include a lot of graphic imagery, Dubberley and his colleagues state that the content itself does not mean the investigator will develop PTSD; in fact, investigators who engage in this kind of work are generally more resilient (Bonanno 2004) and have strong capacity to recover (Bisson et al. 2015). However, it is the response to that exposure that determines the chances to be traumatised, and this study will interrogate the symptoms of PTSD experienced by journalists and attempt to understand the causes behind it specific to OSINT investigative journalism.

2.2.5 Conclusion

For a knowledge worker, the rise of the internet has been disruptive, leading to unemployment, precarity and alienation. Companies had increased focus on restructuring without understanding the new class of knowledge workers emerging with the advent of digital labour, and had no understanding of what affected worker performance.

The crisis in journalism is multi-faceted but caused mainly by the profit-making incentives divergent from the public service goals of journalism. Journalists faced new pressures of the digital economy, constant redefining of necessary skills, longer work hours with less pay, while investigative journalists were the most adversely affected, failing to commit to their duty of holding power to account as a result of these pressures.

In addition, institutional apathy and lack of trauma awareness were placing journalists at risk. These added stresses upon journalists, especially investigative journalists struggling to survive within a dying industry, could lead to an adverse mental health impact, such as depression, PTSD, and alienation (Graham, Hjorth, and Lehdonvirta 2017). The following section delves into a literature review of automation studies.

2.3. Automation

The early 20th-century economist Joseph Schumpeter described the so-called “advances in economies” as being accompanied by “a process of “creative destruction,” which dramatically changes profit pools, reorganises industry structures, and “replaces incumbent businesses”. Automation is one of these advances, described by Marx as, “The machine, which is the starting-point of the industrial revolution, replaces the worker, who handles a single tool, by a mechanism operating with a number of similar tools and set in motion by a single motive power, whatever the form of that power” (Marx 1992, 497). Thus, on the one hand, the introduction of machinery (‘constant capital’ in Marx’s term) is used to control and exploit the workforce. Yet, it can also have a liberating potential in many regards: first, it frees human labour from the most tedious and repetitive tasks that turn labourers into unskilled labourers; second, because it frees up, at least in theory, time for people to dedicate themselves to more creative tasks, as is the case with investigative journalism.

McKinsey Global Institute, in 2013, identified automation of knowledge work, or “intelligent software systems that can perform knowledge work tasks involving unstructured commands and subtle judgments” as a key disruptive technology with serious potential to impact the way people live and work, as well as on industries and economies (Manyika et al. 2013, 4).

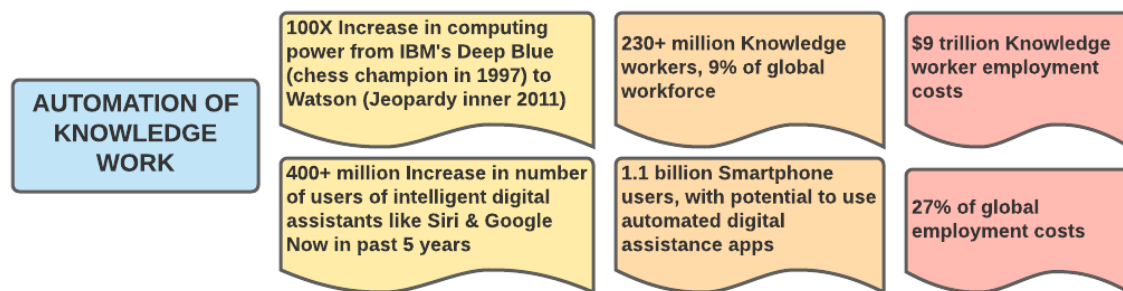


FIG 2.3.1 EXCERPT FROM “DISRUPTIVE TECHNOLOGIES: ADVANCES THAT WILL TRANSFORM LIFE, BUSINESS, AND THE GLOBAL ECONOMY” (Manyika et al. 2013, 5)

Recent advances in artificial intelligence (AI), machine learning with neural nets, and natural user interfaces like voice recognition have already allowed for the automation of knowledge worker tasks previously thought to be only possible using human faculties. Computers can now answer “unstructured questions” written in ordinary languages as opposed to code, allowing for greater accessibility of software to non-computer literate employees. This upends the way knowledge work is performed and organised, with analytics tools of greater sophistication now augmenting the mundane tasks of knowledge workers. The following section delves into automation in knowledge labour.

2.3.1 The Automation of Knowledge Labour

Automation of knowledge work in the areas of finance, computer programming, creative industries, and education has been slowly expanding over the past decade. Two common examples are automated marking software, now a standard in university marking in the US, and automated transcription, which has dramatically improved cross-linguistic communication.

As early as 2004, Burstein, Chodorow, and Leacock analysed how Criterion Online Essay Evaluation Service, an automated web-based educational technology software, had been bought by 445 academic institutions, with around 500,000 active

users from a variety of backgrounds: schools, colleges, universities, military institutions, and national job training programs. The tool provided a combination of “automated essay scoring” and “diagnostic feedback”, with feedback customised to each essay submitted. The software, using machine learning techniques and natural language processing, was designed to be an aid, i.e., it was expected to augment the teacher’s workflow by helping her mark essays with greater efficiency but not replace the teacher altogether. However, there were still barriers to the frictionless usage, such as “detection of grammatical errors that are important to specific native language groups,” and judgement of quality (Burstein, Chodorow and Leacock 2004, 35).

Automated accurate transcription with a reasonable level of delay can also significantly improve non-native speakers’ comprehension. A 2011 experiment to simulate a “one-way computer-mediated communication scenario” to map “comprehension performance and user experiences” confirmed this (Yao, Pan, and Jiang 2011).

Within the creative industries, automation has seen wide implementation in journalism, with comparatively limited implementation in the investigative sphere. The following section delves into automation in journalism.

2.3.2 Automation in Journalism

Automation in journalism is not a new occurrence and can be traced back to before the advent of computers or computational journalism, to the birth of the printing press, which allowed for the mass scale dissemination of information. Algorithms are regarded to be the future of journalism (Lindén 2017a), automating different production stages (Napoli 2014) and performing traditional journalistic functions (Dörr 2016). Computational aid has long existed for journalists in various phases of news production, but journalists have remained the authority in actually deciding the news agenda, or “news creation” (Graefe 2016, 17).

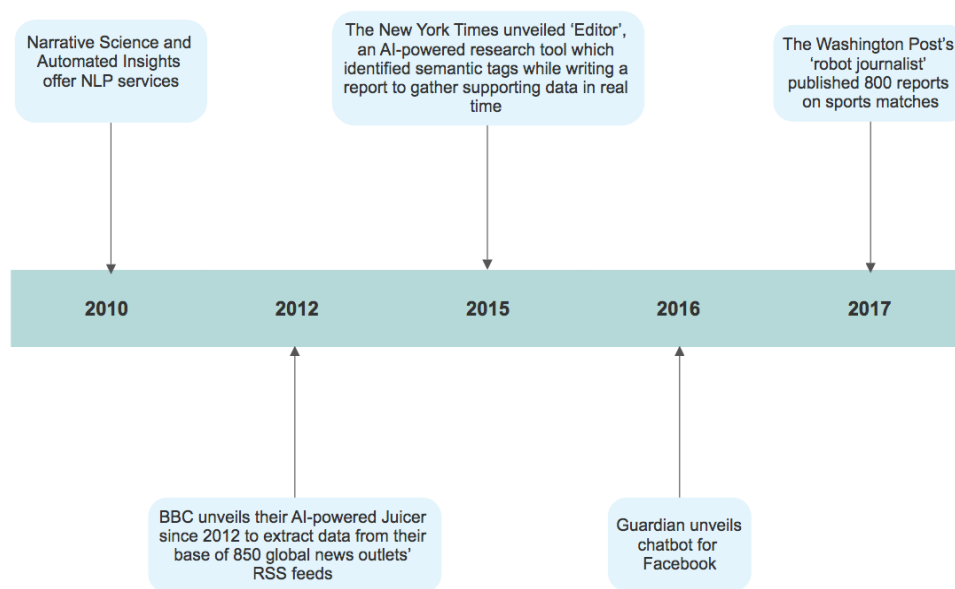


FIG 2.3.2.1 SOME KEY MOMENTS IN AUTOMATION IMPLEMENTATION IN UK/US NEWSROOMS

The chief result of automation should not be to throttle or even replace journalism but to automate everything that can be automated according to Zuboff's first law, using the surplus time to invest into complex journalism such as augmented investigations. In 2014, Associated Press (AP) began using the Wordsmith natural language generation platform by Automated Insights, which freed resources. AP reinvested these resources into investigative and explanatory journalism (Graefe 2016), and also hired an automation editor, whose job it was to identify internal processes that could be automated. A similar implementation by Forbes has led to increased site traffic and growth in audience, as readers are receptive to both the increased automated content and the high quality in-depth human content.

The studies in this section have been divided into categories based on the logics of production (Jensen, Mortensen, and Ørmen 2016): automation in news production; automation in news distribution; and automation in news consumption as well as attitudes of journalists and the general public towards automated tools and automated news, respectively.

It is essential to highlight that while “robot journalism” is gaining popularity as coinage, the semantics fail to capture the possibility of “augmentation”, or the creation of a unicorn reporter who straddles technological and editorial expertise, using tools to hone the workflow. A 2017 study from interviews with 17 Canadian data and computational journalists, across six of the country’s largest news organisations, found ‘encounters’ between older and newer ‘logics’ which indicated “a hierarchy of hybrid cultures... showing signs of growing power and the ability to mobilize technological adaptation, journalism and audience imperatives in generative ways” (Hermida and Young 2017, 160).

In an earlier paper by the same authors, they noted that the chief benefits of using automation, such as bots, were speed and cost benefits, after conducting long-form interviews with seven journalists from the LA Times and textually analysing seven articles from the investigative project to map the organic adoption of automation tools into existing workflows (Young and Hermida 2015).

A significant gap was found in empirical studies that examined the usage of open-source automated technology and tools within the investigative workflow, and the research in this thesis seeks to fill this gap. The following section delves into automation in news production and distribution

2.3.2.1 Automation in News Production and Distribution

While automation in news publication has made great strides since the birth of the printing press, the production of news stories poses the greatest challenge due to the various processes and judgements involved in it.

Employment of automation in production currently demarcates two major levels of algorithmic involvement in journalistic content creation: in algorithmic content generation, in which content is produced without the involvement of a human

journalist/editor; and in integrative content generation, in which “content is produced through collaboration between one or more human journalists and a generative algorithm” (Montal and Reich 2017, 843), as demonstrated through interviews with journalists from 7 news organisations where quantitative content analysis was used to find these two types through the prevailing byline and disclosure policies of automated content.

Loosely, automated tools in news production have been developed in three areas: one, *to simulate the “nose for news”* or the instinctual understanding based on experiential knowledge that a journalist uses to decide what is or isn’t a ‘story’, also known as algorithmic curation (Diakopoulos and Koliska 2017); two, *the act of telling the story itself*, where recent developments in natural language processing have led to simulation, prediction, and modelling in storytelling; as well as three, *‘bots’ or applications for automated news processes*, which include automated news writing and publication.

A reporter’s “nose for news” is part of the ‘discovery’ phase of production and takes into account factors such as news trends, personal judgement and an acute understanding of the editorial policy and audience for the publication. The knowledge graph of investigative journalism is slightly more complex than that; it attempts to find a story where there is a lack of one. Investigative journalism lies in chasing the “known unknowns” or accidentally finding the “unknown unknowns” (Defense.gov 2002) and being able to identify it as a story with a “nose for news”. In addition, the cognitive process involves creativity (Broussard 2015), which is difficult to automate.

More importantly, perhaps, the chief distinction between investigative journalism and other forms is the act of truth-telling, verification, grounding public conversation in fact (Rosen 2018). In the 2019 predictions for journalism by Harvard’s Nieman Lab, Cory Bergman suggested that journalism might be able to tackle the world’s most vexing problems — the erosion of facts and the accelerating effects of climate change — not just through stories, but increasingly through technology services; through the use of automated tools or software as service (SaaS) tools that enable

journalists “to do things that would be too difficult, costly, or time-consuming to do yourself” (Bergman 2019, n.p.).

It is therefore not surprising, when a group of ten journalists at different levels of seniority from BBC, CNN, and Thomson Reuters, given an automated tool to test in observed workshops and subsequently interviewed about their experience of using it, said it had no “nose for news” (Thurman, Dörr and Kunert 2017) but predicted rising popularity in its use, which raises ethical issues. For the study, the authors invited 641 journalists to participate in testing a writing software. Journalists found the tool to be limited by the data feeds it relied on, unable to interrogate anomalies, and unable to spot “the human angle” behind the story (“journalism is about telling stories that involve human beings whose lives are not easily quantifiable into programmable data”) and irritating to use (“What gives me pleasure as a journalist is the use of language and creativity and [this software] is the complete opposite”). On the other hand, two senior sports journalists at Thomson Reuters did express a scope for complementarity in “the first stage of the news cycle, [where] the straightforward facts could be automated”, with the human journalist coming in “further up the value chain” to focus on what “warrants further exploration”.

When algorithms do find credible stories, they aren’t always newsworthy. A 2016 study examined the automation of “nose for news”/judgement through the SocialSensor application by studying 5,000 accounts collated by it of “newshounds”. Both the studies reflect that news judgement cannot be automated (Thurman et al. 2016, 20).

What automated tools crucially lack is the ability to judge sources, stories, data. Another study analysed the use of social media platforms among 81 trainee journalists, found that although these apps infused news work through location-based tracking of social media and ‘trends’, they failed to detect sentiments such as sarcasm when analysing content and, most crucially, could not determine credibility (Thurman 2018).

The opaqueness of bots in production is also addressed by a study interrogating “the role of code as intermediary” in news apps, which classified algorithms of this discovery nature into two categories: classification and regression. While classification followed a clustering model, regression looked at relevance and had a curatorial angle. The critical finding was the large communication gap between news app developers and journalists, impacting usability (Weber and Kosterich 2018).

In fact, this communication gap or lack of input between developers of tools and journalists is so severe that one developer described the editorial process as, “..so there is some editor there and some journalists and they write what they feel like writing and get very little feedback about what people are interested in, what people actually read,” in a study conducted through 5 qualitative interviews and document analysis to study a knowledge aggregation tool developed by JSI (a Slovenian public research institution) (Brllek, Smrke, and Vobic 2017).

Social media tools present challenges with filtering and verification, too; another study conducted through semi-structured interviews with 22 news journalists from Austria, Finland and Norway found that the final decision-making for verification of content remained a task that cannot possibly be automated due to the trust factor in journalistic newsgathering (Backholm et al. 2017).

It is interesting to note that the accepted definition of ‘algorithmic journalism’ as “the (semi)-automated process of natural language generation by the selection of electronic data from private or public databases (input), the assignment of relevance of pre-selected or non-selected data characteristics, the processing and structuring of the relevant data sets to a semantic structure (throughput), and the publishing of the final text on an online or offline platform with a certain reach (output)” (Dörr 2016, 702), is currently in practice in finance and sports journalism (Fanta 2017).

While a 2018 paper looking at the response of science journalists to AI writing bots found that using such bots for the presentation of data-led stories was time-saving and effective; it also noted that wholly, most science journalists were unaware of

such tools' existence, highlighting the communication gap. The paper provided a useful example of SciNote's AI manuscript writer, that has composed more than 100 research papers already, creating the first draft from the researcher's data and previous literature. One user at the University of Michigan said, "The feature allows me to assemble and present data in a way that can lead to a publication with only minor modifications from me" (Tatalovic 2018).

A survey of 15 news agencies in Europe, and AP in the US, found that automated text creation was in use at nine, with tools in development at two. Still, most of the implementation was rudimentary, and one of the main barriers to robots replacing journalists was not just the algorithm but lack of expansion and development in the area due to costs involved (Fanta 2017). The study, using semi-structured opinion to determine if automation tools were in development or in use and how, was comprehensive but failed to define automated journalism beyond "robot-written", failing to look at augmentation within the workflow with free tools. It also focused on statements from the news agencies without independently assessing the automated output itself from the news agency and the subsequent audience reception of it.

Studies focusing on the impact of automation/algorithms using Natural Language Generation (NLG) – how software structured news stories from data and how that was changing news production – found a gap between investment in such applications (high) and actual use of applications (low), but with signs of greater integration into newsrooms in the form of market insights (Dörr 2016). The 2016 paper only looked at the impact of automation/algorithms in text creation without including functions like graphics and other media, so the focus was not on algorithmic journalism itself but algorithmic news writing. Thirteen semi-structured interviews were conducted with "NLG providers", out of which ten had applications related to journalism.

Dörr, the author, explains: "As the costs of NLG systems are low compared to human journalists, algorithmic journalism can be profitable for special-interest domains in the long tail, and also due to the possibility of generating news in multiple languages

to reach a broader audience and new markets” (Dörr 2016, 716). But the focus – text creation – without including embedded graphics and other media, failed to acknowledge the value judgments and storytelling techniques that actually transformed writing into journalism and argued that digital journalism was primarily text-based, which is currently not valid due to the rise of multimedia and digital content and documentaries.

In addition, the structured data needed for the application of automation to complex journalistic storytelling does not exist. A 2018 study aimed to identify the “kind” of data required for the application of automation to complex journalistic storytelling and Structured Stories, an event-based experimental platform, was studied to provide “a text-assembly procedure for all eventualities that may occur in any dataset formatted according to the designated data model”. But such ‘formulaic characteristic’ is absent from investigations when conducting them, although the presentation may follow the linear narrative, as described by NBC’s SoCal pursuit stories in the study (Caswell and Dörr 2018).

While theorists suggest that there is a reasonable expectation of finding new investigative ideas through data analysis (Appelgren and Nygren 2014; Pavlik 2013; Flaounas et al. 2013) and that the watchdog function of journalism could be automated due to the precise problem-solving process behind it (Hamilton and Turner 2009), algorithms can only go so far as to mine the data. It would be up to investigative journalists to track down the story that explained the data pattern. A 2017 paper interviewed 31 data journalists, news managers, computer scientists, academics and industry experts in the US, UK, Sweden, Denmark and France to assess automation and augmentation potential. It forecasted that “the development of learning algorithms will lead to more advanced forms of automated news; however, journalists have shown a strong capacity for adaptation and mitigation of new technology” (Lindén 2017b).

Discussions on automated journalism tend to focus on “algorithms”— the step-by-step or statistical procedures by which information is translated from data

into natural language text. Although the work flowchart for investigative journalism might be algorithmic in the sense that it is rooted in the if-then-else paradigm, it also factors in the '*what else*' paradigm, which uses experiential knowledge and is based on literal as well as lateral thinking, or the ability to move from a known paradigm via a tangential route onto new ideas for problem-solving (de Bono 2010).

The following section delves into automation in news consumption.

2.3.2.2 Automation in News Consumption

Vincent Mosco warns that with “the vast volume of information available, the possibility of becoming a content producer and the speed of the exchange process, almost instantaneous, allows the establishment of new logics of production and consumption of journalism, highlighting issues from the survival of the traditional press to ethical issues related to the content published” (Dourado et al. 2017, 9). With automation branching out into news consumption, this section presents attitudes of the public and journalists towards it, as well as how it has been implemented and disrupted the workflow.

Despite the prevalence of automated content, readability and creativity are two key factors that machine-generated content seemed to lack. In a 2014 study, a “blind taste test” with 17 readers asked to assess the text based on 12 variables as descriptors of credibility and quality (identified through a literature review) found that readability scored the highest for humans, but no significant differences were discernible between the robot and human content. Interviews were conducted with web production students to gauge responses in three separate stages, but the study failed to analyse that writing in journalism, especially investigative journalism, is often the last step of the process, after newsgathering. Also, the sample size was very small and too homogenous to get a clear picture of audience reception. Clerwall also cautions: “An optimistic view would be that automated content will free resources that will allow reporters to focus on more qualified assignments, leaving the

descriptive ‘recaps’ to the software. However, making use of automated content may just as well be seen as a way for news corporations to save money on staff, as they do not need the reporters to produce the content” (Clerwall 2014, 527).

A second similar study conducted using a larger sample size of 986 participants tweaked this process slightly, varying the declaration of the source. Participants randomly assigned to four experimental groups were presented a mix of human and machine written articles, but neither was correctly declared to the reader. The articles related to sports and finance were mainly of the same length. While participants’ ratings were not affected by the declaration of whether it was written by a human or a computer, automated articles were seen to be more credible, while the human-written ones were seen to be more readable and thus achieved higher ratings (van der Kaa and Krahmer 2014). However, the researchers noted that subconscious bias by readers could have influenced the results in favour of automated news, i.e., “knowing the news is automated can prime readers to look for signs that a robot wrote it and therefore scrutinize it more carefully”, according to James Kotecki, head of communications at Automated Insights (Graefe 2016, 39).

The use of machine-generated content has now indeed become so pervasive that the New York Times ran a quiz in 2015 for readers to determine if a piece of text was written by a human or a computer (*The New York Times* 2015). The same year, NPR let one of their star reporters compete with Wordsmith, an Automated Insights tool, to write a news article, with the reader deciding which they prefer (Vanek Smith 2015). The result was a factually accurate machine-generated article, which can be easily distinguished from the human-written one, primarily due to a lack of language creativity, which as previously mentioned, is difficult to automate due to it being difficult to predict, and therefore difficult for the machine to be taught to do. Algorithms currently in use struggle to understand the linguistic nuances of humour, sarcasm and metaphors (Graefe 2016).

It would be unfair to say that the communication gap between developers and journalists is one-sided and wholly due to a lack of knowledge among automation

tool developers of journalistic processes. The knowledge of automation among journalists, as highlighted earlier, is also precariously low.

A 2018 study conducted interviews with 47 journalists from 17 South Korean newspapers and found three classes of opinion on automation: the first group believed journalism cannot be automated (fairly resistant), the second were concerned about augmentation destroying the quality of journalism (highly resistant), the third were open to augmentation for simple tasks like alerts (least resistant). The study proposed several practical critical implications of robot journalism: due to “the negative feeling that robots are likely to damage journalism’s value”, the authors suggested that robots’ capabilities be “tested from the perspective of journalism, regardless of fast and accurate data processing...To facilitate the smooth spread of robots in newsrooms, at this point the most essential step is for robot journalism to gain journalists’ trust. This is because, under the present circumstances... writer robots are neither greater nor lesser than human journalists”. The other issue concerned job stability, as journalists were worried about a decline in their ‘status in their organization and society’: “They presume that organizational restructuring will accompany the employment of robots. This being the case, substantial numbers of journalists would stand against adopting robot journalism” (Kim and Kim 2018, 354).

An earlier 2012 study performed an analysis of the opinions in 68 blog posts and newspaper articles during 2010 to define the attitudes of journalists towards automation. It found that journalists saw “robot journalism” as an opportunity to improve workflows by automating routine tasks, leaving more time for in-depth reporting (van Dalen 2012, 648). It would have been worth highlighting in the study if any of the journalists writing the opinion pieces had any hands-on experience with such tools.

A large-scale survey was conducted of 366 Spanish journalists to map the use of AI in journalism, collating 50 projects worldwide developing such technologies. A hybrid model of 10 open and closed questions used to assess the application, knowledge of tools, and perception of quality found that knowledge of automated content was low

among journalists. The study graded areas of journalism with the possibility of automation (fashion scored high). It found that surprisingly none of the 300+ journalists thought to rethink their newsmaking workflows (Tunez-Lopez, Toural-Bran and Cacheiro-Requeijo 2018). However, the study failed to ask journalists the issues they were facing that they wished a machine could solve instead of framing it directly in terms of workflow.

The following section delves into automation in investigative journalism.

2.3.3 Automation in Investigative Journalism

Computational journalism is generally defined as “finding, telling, and disseminating news stories with, by, or about algorithms... being adopted in a number of ways by the news media” (Diakopoulos and Koliska 2017, 810). The chief limitation of this is that it fails to recognise the workflow between finding and telling, i.e. beyond verification into the investigative process itself.

Within the knowledge graph, the detection of an investigative story is different from the investigative process itself, which deals with more complexity than a linear chain of command. In the case of the discovery tool “Stacked Up”, an Artificial Intelligence (AI) algorithm developed to identify “investigative topics”, the author’s note – “an investigation often arises when a reporter perceives a difference between what is (the observed reality) and what should be (as articulated in law or policy)” (Broussard 2015, 817) – is somewhat flawed. An investigation also arises when there simply is no knowledge of ‘what is’, i.e. the lack of data creates the need while exercising judgement on the importance of that hypothetical data. Therefore, the tool is not absolute nor complete, and being restricted to analysing education data in a very narrow paradigm, fails to sufficiently explain what the AI program is doing that a linear program cannot.

In the “Homicide Report”, another investigative project, the authors noted the chief benefits of using automation like bots were speed and cost benefits (Young and Hermida 2015) while mapping the organic adoption of automation tools into existing workflows. However, with the highlighted pressures on investigative journalism such as funding cuts, lack of time, and the anxiety of precarity, such long-form investigative reports are a rarity. One TV reporter said their newsroom had a “lack of resources to do meaningful impactful stories that prompt effective change for the betterment of society”. At the same time, another added: “I do not produce any [investigative stories] until such time as I see there is support for genuine investigative journalism. I find this organisation does not even understand what that implies. Our corporate attorney is never called” (Lanosga and Houston 2017, 1116).

The pressures of constant online vigilance and foresight within a networked media, where investigations have moved onto social media platforms, means only a few elite reporters at the biggest newsrooms can perform these resource-intensive and time-consuming tasks. One tech-savvy reporter at a large news outlet described an almost exhausting resource-intensive process: “The method is to be there at the beginning, before something has really happened, document as much as possible and save it... For instance, if I find a Facebook profile that is interesting, I start recording the screen and go through everything. I do not even read it, but scroll through everything, expand the posts so that I can see who has written what, and then I store it. Then, maybe in six months’ time something happens. Then I get the name of the people involved, I write it on my machine, and then it possibly pops up” (Larsen 2017, 1239).

Crucially, because of the precarity of the gig economy (Graham, Hjorth, and Lehdonvirta 2017), investigative journalists, who by definition need to be at the cutting edge of innovative news practices and hold power to account, are often afraid to experiment when they do have the time – because journalists who believed their jobs were at risk were less likely to take risks into innovation that might make them more valuable to their employers, primarily due to the stress and anxiety (Ekdale et al. 2015).

2.3.4 Conclusion

Thus, automation in journalism followed the logics of production, being implemented in news production; news distribution; and news consumption. In news production, automated tools have been developed to simulate judgement, create content, detect stories – but the editorial judgment of journalists has been difficult if not impossible to simulate.

With the existing tools, a communication gap exists between news app developers and journalists, impacting usability. With respect to audience responses, human writing was rated higher and showed a creativity the machine could not replicate.

Journalists were also not rethinking workflows to understand what tools could help amidst the chaos of failed ones. Investigative journalists, in particular, seemed vulnerable to this, exacerbated by job insecurity preventing any experimentation. In addition, a complete lack of resources needed for investigative journalism was noted by multiple journalists, which complicates the mere possibility of any automation and threatens the very existence of investigative journalism in news.

2.4 Conclusion

To summarise, the literature review provided an overview of existing empirical research in the field, using the framework of political economy of media and knowledge work by studying the production, distribution and consumption of news and the impact of automation on journalism and investigative journalism.

A knowledge worker “thinks for a living” (Davenport 2005) and uses non-routine problem-solving using a combination of convergent and divergent thinking (Reinhardt

et al. 2011), with the chief capital being knowledge. The rise of the internet has upended the relation between labour and the place of production, with digital labour lying at the confluence of two key trends (Graham, Hjorth, and Lehdonvirta 2017): a crisis of un- and under-employment, with fractures around neo-imperialist and class lines. What emerges is a global, uneven labour market with critical imbalances between supply and demand of work, leading to an inherent precarity that results in depression and alienation among workers (Graham, Hjorth, and Lehdonvirta 2017). Companies trying to combat it using workplace design and technology do not recognise the segmentation between knowledge workers: “fad, fashion and faith drive most decisions about new work environments for knowledge workers” (Davenport, Thomas and Cantrall 2002, 25).

Within this context, the crisis in the media industry or, more specifically, journalism does not have a single point of disaster. The current factors accelerating the crisis are rapid ‘pivots’ to digital mediums, loss of advertising revenue, the global economic downturn, causing cutbacks, layoffs in newsrooms and precarity among the rising ranks of freelancers (Nichols and McChesney 2010; Elefante and Deuze 2012).

Journalists now have less time to investigate, which harms local communities (Waldman 2011). Within the industry, journalists face cutthroat competition among increasing workload, deteriorating conditions and the relentless 24-hour news cycle (Van Der Haak, Parks and Castells 2012). The new pressures of digital news have increased “overtime hours” for journalists without compensation. In contrast, the anxiety of layoffs and layoffs themselves have led to a weaker press falling short of the public service ideals of journalism (Ekdale et al. 2015). With the focus on content, public service broadcasters are shifting focus away from the journalism quality and towards technological innovation in content delivery to combat a rapidly shrinking audience (Lee-Wright 2008).

In addition, journalism is a “profession under pressure” due to several key factors: the internet dismantling the knowledge monopoly of the fourth estate; a need to re-skill and multi-skill due to the constantly changing production process; the

strengthening of financial motives to target new audiences for advertising revenue leading to a consequential weakening of news value (Witschge and Nygren 2009).

Among investigative journalists in particular, while there is a general consensus for advocacy and activism, the crisis has adversely affected their ability to push for reforms based on the issues exposed via investigations (Lanosga and Houston 2017).

Within this already existing cesspool of crisis, automation emerges as a major disruptive technology, which within capitalism is accompanied by “a process of creative destruction”, dramatically changing profit pools, reorganising industry structures, and replacing “incumbent businesses” (Schumpeter 2010, 82–83). Of the 12 areas, the most relevant to this study is the automation of knowledge work.

Automation of knowledge work has been developing in the areas of management; finance; computer programming; creative industries; health; and education. Natural language processing has been widely implemented in the automation of knowledge work: In education, web-based educational technology softwares exist that provide a combination of “automated essay scoring” and “diagnostic feedback”, designed to augment the teacher’s workflow without replacing the teacher altogether (Burstein, Chodorow and Leacock 2004). Real-time automated speech recognition (ASR) and transcription tools facilitate non-native speakers’ comprehension within a conversation (Yao, Pan and Jiang 2011).

Automation in journalism is not a new occurrence, computational aid has long existed, but news judgement has always remained within the journalists’ domain (Graefe 2016). Encounters between older logics of journalism and newer ones like data and computation have given rise to “a hierarchy of hybrid cultures” which could potentially find cohesion between technology, journalism and audiences. The chief noted benefits of augmenting journalistic workflows with tools like bots are speed and cost (Young and Hermida 2015).

Automation in journalism followed the logics of production, being implemented in news production; news distribution; and news consumption. The algorithmic involvement in journalistic content occurs through automated content generation or integrative content generation through collaboration with automated tools (Montal and Reich 2017).

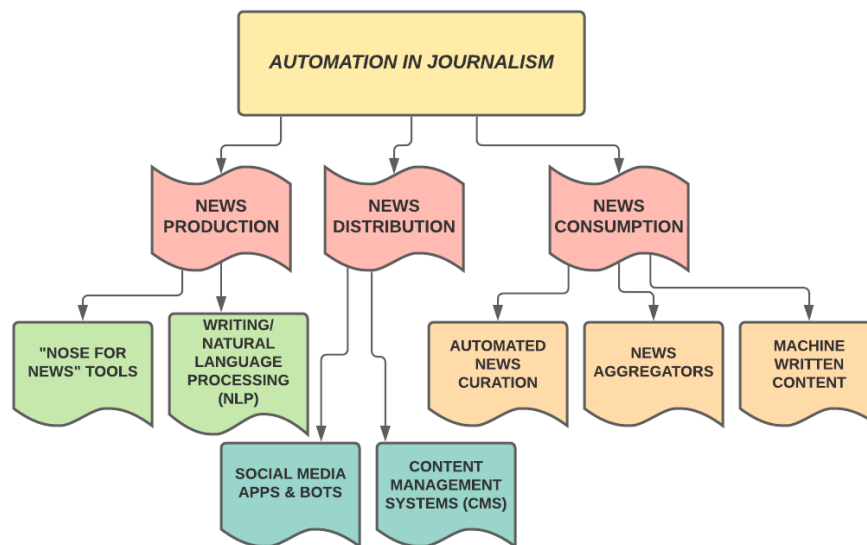


FIG 2.4.1 AUTOMATION IN JOURNALISM: AN OVERVIEW

In news production, automated tools have been developed to simulate the “nose for news” through algorithmic curation (Lokot and Diakopoulos 2016); and in the writing process through natural language processing – however, the former appeared to fail despite rising popularity as the stories weren’t always newsworthy (Thurman et al. 2016).

Regarding investigative journalism, while one AI tool, “Stacked Up”, was successful at augmenting the workflow through detection, curation and presentation (Broussard 2015), it was beat-specific and unlikely to scale into mainstream use. Apps used by journalists for social media surveillance were somewhat useful in augmenting the investigative process but could not ‘understand’ what it was detecting- failing to determine tone and credibility (Thurman 2018). Apps like bots used by journalists on social media to rebroadcast news, expand audiences, and curate content is seen as useful but create ethical issues around transparency and journalistic integrity (Lokot

and Diakopoulos 2016). Social media filtering tools repeatedly failed at verification, leaving the judgment of news in the hands of journalists (Backholm et al. 2017).

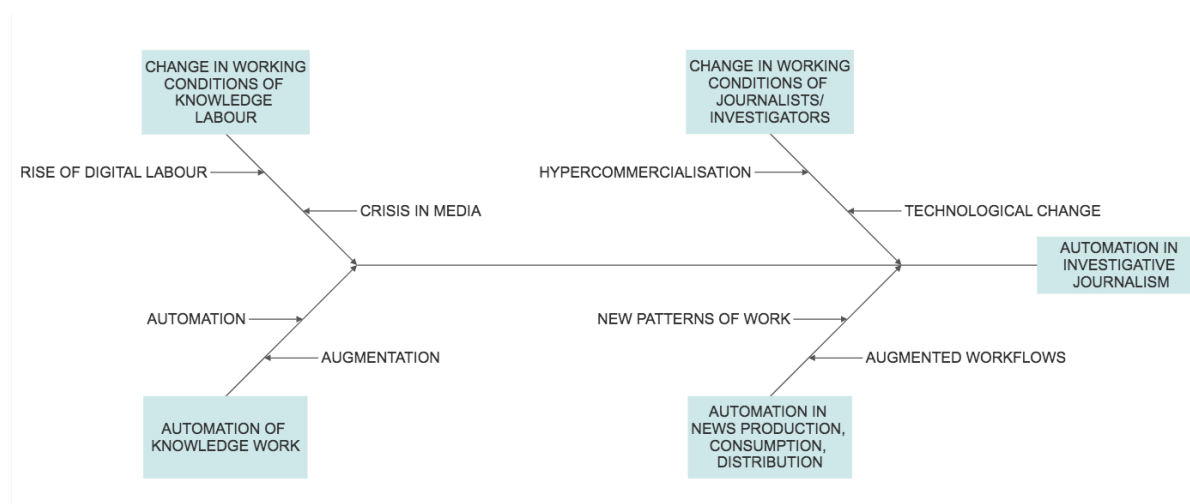


FIG 2.4.2 CAUSES OF AUTOMATION IN INVESTIGATIVE JOURNALISM

Several of the studies highlighted a critical communication gap between news app developers and journalists, impacting usability. Some tools, like data-focused ones, were found helpful by journalists in fields like science, but most were unaware of their existence (Tatalovic 2018b). While automated text creation tools were in use, they were rudimentary at best (Fanta 2017). There was also a disparity between the high financial investment in the development of natural language generation (NLG) software for news production and the low use of such tools (Dörr 2016). Moreover, the comprehensive data required for the application of automation to complex journalistic storytelling (Caswell and Dörr 2018) is absent. Even if the data pattern were identified by the algorithm with the right kind of data, it would be up to investigative journalists to track down the story that explained the pattern (Lindén 2017a).

Concerning audience responses to automated content, human ones are considered more readable, more creative, despite the machine written ones being of the same length and factually accurate (van der Kaa and Krahmer 2014).

Attitudes among journalists towards automated content were overwhelmingly negative, as reporters were concerned about an erosion of the value of the fourth estate and job stability (Kim and Kim 2018). But some journalists continued to see “robot journalism” as an opportunity to improve workflows by automating routine tasks leaving more time for in-depth reporting (van Dalen 2012); however, journalists weren’t rethinking their newsmaking workflows enough to accommodate that (Tunez-Lopez, Toural-Bran and Cacheiro-Requeijo 2018).

If the current overview of the journalism industry through the review of these papers seems overwhelmingly pessimistic, then it is because the suspension of the ideals of holding power to account is a real crisis of democracy. A press unable to hold power to account is a press suffering from an inability to function. And we recognise the crisis as a crisis of power relations “that mutually constitute the production, distribution, and consumption of resources” (Mosco 2009, 24).

However, there is scope, with the right financial and time investment in an investigative project, to find the right balance where designed data-processing complements traditional modes of journalistic enquiry (Parasie 2015). In addition, the rise of social media has added new avenues of investigative inquiry, such as open-source/social media investigations into extremists. But such processes were resource-intensive and required constant online vigilance, or the most valued currency in the digital age of journalism: time (Larsen 2017).

Which is perhaps why open-source investigations, which harnesses information already publicly available, such as open registries, social media profiles, satellite imagery, and digital analysis, with the power of specially designed freely available automated tools, have emerged as one solution to the crisis of investigative journalism; it costs very little money to acquire the automated tools, and it harnesses the powers of the hivemind, i.e. citizen journalists with time to chase digital breadcrumbs.

The erosion of the fourth estate's knowledge monopoly, which occurred with the rise of the internet and digital media, is perhaps not the worst blow to journalism if it results in the rise of open-source investigations for human rights through publications like BellingCat and BBC's Africa Eye. Multi-skilling is fundamentally about adapting – finding new ways to do investigations. It is only oppressive within the capitalistic framework, where the “public good” approach is encouraged so long as healthy profits are promised. Open-source investigations, due to their emergence in the human rights sector, are a little far removed from the for-profit ideals of a traditional capitalist publication.

One of the chief issues with traditional publications identified was the significantly diminished power of the journalists who make the programme (Lee-Wright 2008). Open-source investigations are labour-intensive, but they are also completely transparent, placing the automated tools and process along with all the evidence at the heart of the story – once again handing power back to journalists. While editors may still have little to no understanding of what affects knowledge worker performance, the open-source nature of the tools themselves removes the need for expenses that might otherwise need the editor's sign-off. One of the main barriers to robots replacing journalists was not just the algorithm but a lack of expansion and development in the area due to costs involved (Fanta 2017) – but due to the open-source nature of the tools, the key ones like Google Earth are freely available. There is an emerging market for proprietary OSINT tools, which this study also hopes to document, as well as any implications it holds.

The pressures of constant online vigilance and foresight within a networked media, where investigations have moved onto social media platforms, means only a few elite reporters at the biggest newsrooms can perform these resource-intensive and time-consuming tasks (Larsen 2017). Still, due to the collective nature of most open-source investigations, information from the very same networked social media has been weaponised to hunt for war criminals, paedophiles, and jihadists by open-source journalists. And while digital and social media have added hours to the day, most open-source investigators on Twitter or digital sherlocks as they prefer to

be called, boast of “living on the timeline” – to post reports which might collectively build an investigation; this study will interrogate if this has resulted in overwork and added stress, and how.

Thus the augmentation, or the emergence of the unicorn reporter previously described, is perhaps already here – through open-source investigations, which this study will present. A significant gap was found in empirical studies that examined the usage of open-source automated technology and tools within the investigative workflow outside of violent extremism, and this research seeks to fill this gap. It will further try to understand journalists’ attitudes towards rethinking investigative news workflows and any mental health impacts from the prolonged exposure to graphic content online combined with the pressures of financially sustaining within the current capitalist economy.

The broader purpose of this study is to determine the consequences of automation on investigative journalism in current digital newsrooms: by understanding how automation has affected investigative journalism in terms of change in work, especially through the use of open-source tools, the available scope for ‘augmenting’ investigative reporting with automated tools to tell better stories, understanding the mental health impact of open-source investigations while highlighting how a profit-driven capitalist economy is slowly eroding high-quality investigative journalism, and through it, the fourth estate's ability to hold power to account. By speaking to open-source investigative journalists, both freelancers and staff reporters, this study aims to bridge this research gap and highlight how open-source tools might free journalists from repetitive manual tasks to allow greater focus on analysis, experimentation and impactful investigative journalism.

The next chapter provides the theoretical foundations and framework of analysis for this study.

CHAPTER 3: THEORY FOUNDATIONS

3.1 Introduction

This chapter provides an overview of the theoretical foundations underpinning this research and sets out the framework of analysis for the findings of this study. It follows from the earlier literature review, which focussed primarily on empirical studies to provide a broad understanding of research already conducted in this area. Using the same structure, this chapter, divided into two main sections, will first delve into the theoretical debates related to the political economy of journalism and knowledge work, specifically: the change of working conditions of knowledge labour, the crisis in media/journalism, the resultant change in working conditions of journalists, more specifically the change in working conditions of investigative journalists. The second section deals exclusively with automation, specifically: automation of knowledge labour, then automation in journalism which is explored through automation in news production and distribution and automation in news consumption, before focussing on automation in investigative journalism, and ending with a summary of conclusions drawn from this theoretical review.

The chapter will involve delving into a number of key debates in cultural and economic sociology. These include the understanding of labour in Marxism and connected traditions, specifically the substitution of humans in the economic process through automation under capitalism (Marx 1992) as “machinery is intended to cheapen commodities and, by shortening the part of the working day in which the worker works for himself, to lengthen the other part, the part he gives to the capitalist for nothing. The machine is a means for producing surplus-value” (Marx 1992, 492). It will assess the impact of automation under capitalism through understanding how the means of labour in journalism adopted into the production process of capital

culminated in “the machine, or rather, an automatic system of machinery ...set in motion by an automaton... consisting of numerous mechanical and intellectual organs, so that the workers themselves are cast merely as its conscious linkages”, (Marx 1973 [1939], 693), producing what Pulitzer-winning Guardian investigative journalist Nick Davies calls “churnalism” by journalism standards of ethics (Davies 2008, 59).

This study specifically focuses on the possible impact of automation on investigative units through the emergence of AI-powered tools and, more centrally, the introduction of open-source investigative tools (OSINT tools), which have created technological disruption within workflows and impacted journalists within the industry. Although computers get exponentially more powerful every eighteen months (Moore 1965), there is a lack of consequential increase in ease of working within a newsroom, increased knowledge output through investigative journalism, or time banking through a shorter workweek for investigative journalists (Berry and Kenny 2008), resulting in the elimination of jobs, not work (Bowen 1966, 9) due to capitalistic framework of profit maximisation.

This is because of the antagonism of productive forces and the relations of production within capitalism:

“The contradiction between the general social power into which capital develops and the private power of the individual capitalists over these social conditions of production develops ever more blatantly, while this development also contains the solution to this situation, in that it simultaneously raises the conditions of production into general, communal, social conditions. This transformation is brought about by the development of the productive forces under capitalist production and by the manner and form in which this development is accomplished” (Marx 1976, 373).

While capitalism seeks to advance automation in a bid to increase productivity, it also creates joblessness and through it, has a negative impact on consumption and demand, resulting in an increasing cost for maintaining technology.

Fuchs, reflecting on the asymmetry of labour distribution, argues that:

“capitalism in the 21st century is being shaped by a contradiction between overtime and precarious labour: On the one hand there are professions such as software engineering, where people work very long hours, whereas on the other hand there are people who work precariously, hardly find employment, have low incomes, or are unemployed. The only real solution is to reduce labour time from the average standard of 40 hours to 30 hours or less with full wage compensation. Capital, however, does not welcome such reforms because paying more workers a living wage for fewer standard hours is less profitable than paying fewer workers who work overtime... [thus,] the history of the working day is a history of class struggle and the fundamental antagonisms of capitalism” (Fuchs 2016, 133–134).

This is not to say, however, that technological development does not have positive potentials to socialise labour – if automation is employed to reduce labour time, and complemented with full wage compensation for workers, then it would create more ethical working conditions. The economic system of capitalism, however, does not allow for such reforms, because paying workers a living wage or allowing them to work fewer hours in a day would be less tenable in a system that only measures progress by one metric: profit.

3.2 The Political Economy of Journalism and Knowledge Work

Political economy is defined as the study of the social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources, including communication resources (Mosco 2009). This study of power relations specifically focuses on the business of how journalism works in practice, originating with producers, moving through distributors to reaching readers, whose attention is then “fed back into new processes of production” (Mosco 2009, 19). Within the realm of journalism and knowledge work, political economy has

attempted to look at the interactions between the political and the economic, and how their mutual influence affects society at large, by asking questions like how power and wealth are related (Hardy 2017; Clark 1998), and how these influence media, communication, knowledge production and knowledge work (Fuchs 2016).

Mosco, therefore alternatively suggests that an ambitious definition of political economy is the study of control and survival in social life, with control referring to the internal organisation of group members who adapt to change, and survival referring to how people produce what is necessary for continuity. Processes of control are, therefore, both political and economic, because those who control the markets can exercise control over journalism and its content, and through it, determine what/who it serves and who profits (Nichols and McChesney 2010). Within Marxist analysis, it refers to examining the relationship between capitalism, the dominant economic system within the media, and social change (Marx 1992), or more contemporaneously, whether a transition is possible from journalism as a strictly capitalist – and therefore business run primarily for the profit of media owners – to journalism as a public service operation (Downing 2010) in order to upload civic values like democracy and human rights.

This section looks at the change in working conditions of knowledge labourers through this lens of political economy of knowledge work, and more specifically, the political economy of journalism in the media. It interrogates the crisis in media and journalism prevalent now through available theoretical literature and presents the discourses around the change in working conditions of journalists as a result of this crisis, with a particular focus on the change in working conditions of investigative journalists.

3.2.1 The Change of Knowledge Labour's Working Conditions

Vincent Mosco, writing about knowledge labour in the aftermath of the 2008 financial crash and the sudden apparent “resurgence” of Marx and *Capital*, notes interestingly that Marx’s primary reflections, which are currently used to define what we now know as knowledge and immaterial labour, were being written at the same time as Marx was employed as a journalist, being paid for the same knowledge labour (Mosco 2012).

Knowledge labour is labour that produces and distributes information, communication, social relationships, affects, and information and communication technologies (Fuchs 2010). Fuchs argues that knowledge workers could both exist in direct (either employed as wage labour in firms or outsourced, self-employed labour) work that produces knowledge goods and services that are sold as commodities on the market (e.g. software, data, statistics, expertise, consultancy, advertisements, media content, films, music, etc.) and indirect knowledge workers that produce and reproduce the social conditions of the existence of capital and wage labour such as education, social relationships, communication, sex, housework, common knowledge in everyday life, natural resources, nurture, care, etc. These types of unpaid but necessary labour are predominantly performed by houseworkers, the unemployed, retirees, students, precarious and informal workers, underpaid workers in temporary or part-time jobs, and migrants (Fuchs 2010).

DIRECT	INDIRECT
<ul style="list-style-type: none"> • Software • Data • Statistics • Expertise • Consultancy • Advertisements • Media Content • Films • Music 	<ul style="list-style-type: none"> • Education • Social Relationships • Affects • Communication • Sex • Housework • Common Knowledge In Everyday Life • Natural Resources • Nurture • Care

FIG 3.2.1.1 TYPES OF KNOWLEDGE WORK (Fuchs 2010)

Marx's theories on knowledge labour are foregrounded in *Grundrisse*, where he writes about the value of information for a creative worker:

“Nature builds no machines, no locomotives, railways, electric telegraphs, self-acting mules etc. These are products of human industry; natural material transformed into organs of the human will over nature, or of human participation in nature. They are organs of the human brain, created by the human hand; the power of knowledge, objectified. The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, and to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect and been transformed in accordance with it” (Marx 1973 [1939], 704).

For Marx, the value of knowledge labour is to be based on the creative worker; he sees it as “neither the direct human labour he himself performs, nor the time during which he works, but rather the appropriation of his own general productive power, his understanding of nature and his mastery over it by virtue of his presence as a social body – it is, in a word, the development of the social individual which appears as the great foundation-stone of production and of wealth” (Marx 1973 [1939], 705).

Commodification of creativity is only achieved when “large industry has already reached a higher stage, and all the sciences have been pressed into the service of capital” causing invention to become a business, “and the application of science to direct production itself becomes a prospect which determines and solicits it” (Marx 1973 [1939], 704).

In our current reality, there are four main types of knowledge identified by Fuchs: a) inherited historical knowledge such as educational knowledge, b) cultural goods such as music, theatre performances, literature, books, films, artworks, philosophy, etc., c) practical knowledge, and d) technological knowledge, a new entrant among the more traditional forms of knowledge. The final one, technological knowledge, within the framework of capitalism, exists to help corporations increase profits by increasing productivity and is directly employed in the production process by capital,

or, technological knowledge which is produced by society, is individually appropriated as a means of production by capital (Fuchs 2010).

1. Educational knowledge (inherited historical knowledge in the form of organisations that allow the development of skills)
2. Entertainment knowledge through cultural goods (music, theatre performances, literature, books, films, artworks, philosophy, etc.) that contribute to mental reproduction
3. Practical knowledge (traditional practices as aspects of education and socialisation)
4. Technological knowledge (objectified in machines and practices that function as means for reaching identified goals so that labour processes are accelerated and the amount of externalized labour-power can be reduced)

FIG 3.2.1.2 TYPES OF KNOWLEDGE
(Fuchs 2010, 145)

Mosco, in his analysis of *Grundrisse* (1973 [1939]), reflects that the focus on general intellect has significant implications for the study of labour and especially for labour in the communication industries, notably as Marx acknowledges that capitalism's need to commodify all of the creative industries would naturally extend itself to the commodification of the general productive capacity of an individual (Mosco 2012):

“No longer does the worker insert a modified natural thing as middle link between the object and himself; rather, he inserts the process of nature, transformed into an industrial process, as a means between himself and inorganic nature, mastering it. He steps to the side of the production process instead of being its chief actor. In this transformation, it is neither the direct human labour he himself performs, nor the time during which he works, but rather the appropriation of his own general productive power, his understanding of nature and his mastery over it by virtue of his presence as a social body – it is, in a word, the development of the social individual which appears as the great foundation-stone of production and of wealth” (Marx 1973 [1939], 705).

Under this premise, capitalism, therefore, demands the entire “social body” of the individual, stressing the requirement for knowledge labour, and capital requires the labourer's subjectivity in order to channel it into productivity:

“In essence, the *Grundrisse* suggests that understanding the labour of knowledge, cultural, and creative workers is central to understanding the future of capitalism. What is capital’s capacity to control these workers? What are their capacities for resistance? What is capital’s ability to control their labour process and what is their ability to give it new direction? It is not just a matter of understanding or even of dismantling capitalism, which fills the pages of *Capital*, it is also a matter of appreciating what is to be won, i.e., full control over one’s humanity, including the creative potential of both intellect and affect.” (Mosco 2012, 573).

Marx also anticipated the exploitation of producers of knowledge labour, predicting that in the future, a time of accelerated capitalist development would arrive where ‘general intellect’, the ‘power of knowledge, objectified’, ‘general social knowledge has become a direct force of production’(Marx 1973 [1939], 706). Under capitalist class relations, knowledge workers are part of an exploited class.

Within journalism, it creates a unique dichotomy where the workers/journalists are knowledge labourers working for managers/editors who are also knowledge labourers trapped between class relations, who in turn answer to executives who manage the company/broadcasting corporation. In terms of the flow of power, it creates a pyramid of knowledge workers exploiting other knowledge workers in the hierarchy of class relations, which ultimately profits the very small group of executives and their massive pay packets at the top, who set the direction for the company as a whole.

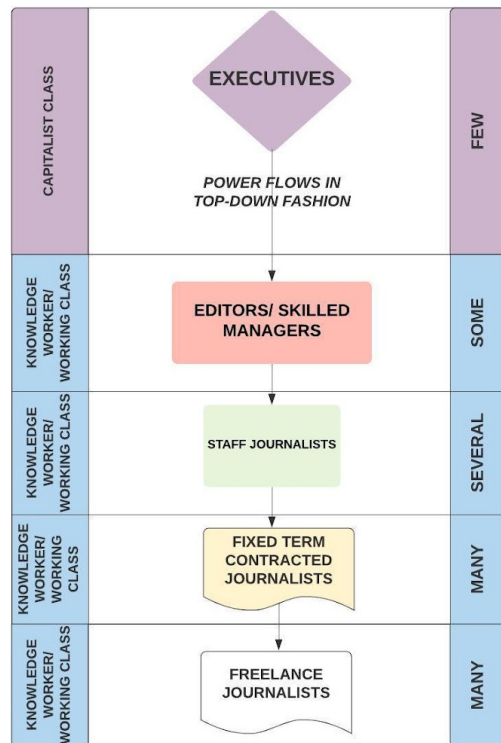


FIG 3.2.1.3 RELATIONS OF PRODUCTION AND POWER IN A NEWSROOM

According to a Marxist perspective “any laboring activity, material or immaterial, is productive labor so long as it produces surplus value for a capitalist” (Koloğlugil 2015, 127). By this definition, “exploitation today is also the exploitation of human creative capacities” and the “expropriation of the common” (Fuchs 2010, 188). Along the same line, according to Hardt and Negri (2005), “relationships, communication, and knowledge are goods that are produced in common, but are appropriated by capital for economic ends” (150).

The characteristics of a typical knowledge worker have undergone changes, from being task-oriented autonomous workers to workers that have to continuously innovate and be engaged in simultaneous training and learning, making it impossible for an assessment of knowledge workers’ performance to be conducted using a quantitative approach (Osaul 2020). In the collected volume *Academic Labour, Digital Media and Capitalism* (Allmer and Bulut 2018), academic labour is explored in its contradictory position with respect to the production of value, class, subjectivity.

Intellectual labour in academia is aggravated by socio-economic experiences such as inability to find permanent work and instability, with a growing sentiment of rejection of academia among scholars allowing them to push through the demands and pressures of academic institutions that continue to subsist within neoliberal conditions: “Hence, while academic labour experiences higher and higher level of capital subsumption – thus in many ways more integrated with dominant dynamics of cognitive/knowledge/informational capital accumulation, its liminal position still cannot find a comfortable place in the social organisation of production” (Briziarelli and Flores 2018, 124).

To summarise briefly, this section set out the definition of knowledge work, i.e. labour which creates non-tangible and non-material products such as information or cultural devices, social relationships and technologies to aid in their creation. Within capitalism, the entire social body of the knowledge worker is commodified, while at the same time, the compensation provided is based on metrics that do not take into account the experiential and creative value of the knowledge worker, thereby consistently shortchanging the worker. This extends to most creative industries such as media, academia, etc. The following section delves into the crisis of media and journalism and its links to the capitalist economy in detail.

3.2.2 The Crisis of Media and Journalism

Journalism, in its function of maintaining democratic social order (Deuze 2017 [2008]), consists of two chief acts: bearing witness (Cohen 2009) and holding power to account (Alexander, Butler Breese and Luengo 2016). The first act is commonly associated with news reporting, while the second, holding power to account through muckraking (Schiffrin 2019), is cited as the key function of investigative journalism.

If one cannot have journalism without democracy (Carey 1996), then a crisis in journalism is reflective of a crisis in democracy. At the heart of this crisis in journalism is the monopolisation of the media by corporations (McChesney 2008) to further their

own economic and political aims through commercial messages and hire-fire power over industry professionals (McChesney 2004). The result is a shift in goals from the old values of fact-checking, exposing, and contextualising to hold power to account to an advertising-based model of profit (McChesney 2015), introducing cost-cutting profit-maximising strategies (Herman and McChesney 1997).

In addition, the disruption in the media economy with the advent of the Internet through falling advertising revenue and dying print circulations has contributed to the popularity of 'clickbait' to compete for reader attention and online advertising revenue (Chakraborty et al. 2016). With the rise of the "content-machine" (Bhaskar 2013) and the industry's 'pivot to video' or 'repurposed' journalism (Bell et al. 2017), the change is not just in media format but also in the content (Pavlik 2001) and knowledge labour required of journalists: content that is "churnalism" (Davies 2008, 59) or "dumbed down news" (Hargreaves 2003, 2); through labour that is assembly-line work to create glorified powerpoints (West 2017) slowly becoming a euphemism for the changing priorities of the new media that prefers clickbait to fact-checked investigations. Thus, the end result of the corporate monopoly on the press (McChesney 2015) is cutbacks and redundancies that create a mass dissolution of and exodus from organisations with award-winning investigative units and a decline in the quality of reporting as a result: both through the anxiety of being laid off affecting staff journalists, and investigative units being purged to maximise profits through commercial content (Packer 2014).

There is also, in essence, a change in labour within newsrooms (Fenton 2009), as a direct result of technology intensified by capitalism, leading to a reconfiguration of the key roles within it (Deuze 1999) in the Second Machine Age (Brynjolfsson and McAfee 2014) where "the machine... performs with its tools the same operations as the worker formerly did with similar tools" (Marx 1992, 495). Although Davies, an investigative journalist himself, uses his analogy of "churnalism" to describe the unverified reproduction of news, it is not just the content that is repackaged but the labour in itself that is also replicated in the classical factory definition of assembly-line production (Jackson and Moloney 2016), and through it, the

“churnalistic” reproduction of news as a ‘bullshit job’ (Graeber 2019), which was described by anthropologist David Graeber as a job “so completely pointless that even the person doing it won’t try to deny it, at least, if they’re absolutely sure their boss isn’t listening” (Ganguly 2017b, n.p.). The old values of fact-checking, exposing, and contextualising to hold power to account, have suffered a decline, while the new tools have overburdened journalists who are expected to multi-skill in conditions that are fiercely competitive, with less pay and shorter deadlines (Fenton 2009), resulting in the creation of “churnalism” (Davies 2008, 59).

In addition to media monopolies and technological changes, there is a third more imminent threat contributing to the crisis in journalism: government censorship and state control of the media (Simon 2014), often ignored by Western critiques of media crises. In countries like Russia and Saudi Arabia, the media ecosystem itself is regulated by those in power to regurgitate state propaganda and create national ‘filter bubbles’ (Curran 2019), with severe punishment and even death reserved for those who digress even outside the confines of the nation-state; a most recent prominent example of this is the murder of Saudi critic and journalist Jamal Khashoggi in the Turkish consulate by Saudi crown prince Mohammad Bin Salman’s men, for daring to criticise the royal family and the regime’s crackdown on freedom of expression (Rugman 2019). In addition, dissidents within the state are penalised with repressive laws, such as the 1000 lashes meted out to Raif Badawi, a blogger in 2014 (Curran 2019), or the jailing of journalists en masse in Turkey, causing the country to be dubbed the “world’s largest prison for journalists” by Amnesty International (Eski 2019, n.p.).

State-issued editorial guidelines such as in Iran (Rahimi 2015), Russia (Arutunyan 2009), Belarus (Herasimenka 2016); state-sanctioned special courts to monitor and prosecute media organisations and journalists such as in Iran (Rahimi 2015) and Philippines (Herr 2020), and finally state licensing of media organisations as a method of control in Zimbabwe (Mukasa 2003), Libya (Baker 2018), Yemen (Curran 2019), are all key methods of control that limit freedom of the press and deepen the crisis in journalism. Adding to that is the attacks on the free press by sitting heads of

state or state representatives – most recently by President Donald Trump (Gutsche 2018) or warnings to toe the party line issued by the UK Conservatives to public service broadcasters like the BBC (Hope 2021) – and the operation of secret blacklists of press organisations to prevent transparency through Freedom of Information requests (Tobitt 2020), contribute to a hostile environment for journalists and the media. With more and more media using the internet, state surveillance and censorship of internet service providers in countries such as China (Dowell 2006), Ethiopia, Bahrain, Uzbekistan (Zittrain et al. 2017) show the long arm of governments to intimidate, control and curb media freedom. Finally, escalating “informal” intimidation (Curran 2019) – threatening phone calls, trolls attacks online on journalists, especially female journalists, threats of assault, are all in practice by governments of Russia, Syria, India, Mexico, Saudi Arabia, while links between the state and organised crime have a “chilling effect” on the media landscape. These are all highly effective methods of control that contribute to the current crisis we see in media and journalism.

In addition, a crisis of facts arising from misinformation and disinformation (Bergmann 2020), some state-sanctioned or conducted by malicious actors, others promoted by the unchecked virality on social media platforms that are mostly negligent in effective community moderation (Andersen and Sille Obelitz 2020), have also contributed to a polarisation that has been heightened by the Covid-19 pandemic. Undisputed facts are labelled as “government propaganda” (Brennen et al. 2020, n.p.) or “left-wing”, coupled with a resurgence in right-wing propaganda and right-wing news networks like the new Fox News styled station being set up in the UK (Landler 2021) – these contribute to the crumbling away of a shared scientific reality that creates trust in journalism and democracy, leading to more power being attributed to racist/sexist/xenophobic opinions and hate speech under the guise of “free speech” (Guiora and Park 2017, 959).

To summarise briefly, this section set out the intentions of journalism as the fourth estate holding power to account, and how this ability has been handicapped by a capitalist economy which is at odds with the public service ideals of journalism,

specifically investigative journalism, thereby indirectly aiding the erosion of democracy. It looked at various factors responsible for this erosion: media monopolies, state crackdowns, the gig economy, the rise of churnalism, and the misinformation pandemic. The following section will detail the changes in working conditions of journalists as a result of these upheavals.

3.2.3 The Change of Journalists' Working Conditions

All of these factors outlined above have cumulatively or individually led to a dramatic and unmitigated change in the working conditions of journalists. Never before have journalists faced so many existential threats, and as a result, the current media industry has undergone a dramatic transformation through cost-cutting measures (Harris and Miller 2020) which have been further exacerbated by the financial crisis triggered by the 2020 pandemic, and “content” overshadowing real fact-based journalism, paving the way for the introduction of the gig economy (Vallas and Schor 2020), rise in freelancers (Gollmitzer 2014), cuts in staff positions (Bird 2009; Bell 2019), reduced pay for journalists, limited budgets, undefined work hours, poor wages (Gollmitzer 2014), multi skilling (Nygren 2014), multi tasking, self-promotion & influencer-style journalism (Hobbs 2019), increased occupational stress and poor mental health (Monteiro and Marques-Pinto 2017), lack of job security and long-term contracts (Glickhouse 2020; Pithan, Vaclavik and Poleto Oltramari 2020), lack of union power (Porter 2020), and so on.

As outlined in the political economy of knowledge work section, journalism too is subject to the process of commodification, where capital acts to separate conception from execution in order to reconstitute the process of labour at the point of production (Braverman 1998). In Braverman’s seminal work on labour and degradation of work, he writes about the extension of this process into knowledge labour, and this is crystallised in the introduction of a digital “gig” economy being introduced by mainstream media publications whose output is reliant on precariously

employed part-time or freelance journalists on low wages and almost no work benefits or rights, instead of staff journalists (Gerald 2009; Cohen 2015).

While the casualisation of labour is a global phenomenon, a growing research area in sociology (Smith 2010), and well-accepted among journalism organisations (Frontline Freelance Register n.d.; International Federation of Journalists n.d.), it has mostly been neglected by journalism scholars who have chosen instead to focus on role perceptions and notions of professionalism rather than working conditions (Gollmitzer 2014). This is based on a flawed assumption that independence from the employer and the market creates better journalism without fully acknowledging the fact that the freelance journalist is forced to participate within the same profit-driven capitalist economy as their staff journalist counterparts, and is therefore dictated by the very same rules set by the journalism “market”. “Atypical work”, defined as work that does not accommodate job security, health benefits, adequate pay, parental leave or any benefits symbolic of permanent jobs, is becoming the typical work of journalism (Gollmitzer 2014, 827).

As Gollmitzer (2014) points out, recent reviews of the literature on online news production have not focussed on the changing working conditions of journalists, choosing instead to track technological changes in isolation and trends in professional self-perceptions. Singer et al.’s (2011) review of participatory journalism exclusively interviews newspaper editors and staff journalists, without any mention of freelancers who work primarily in online journalism (Deuze 2011). Deuze is one of the few media scholars looking into the casualisation of labour in journalism, concluding that a “shifting towards a model of individualized and contingent contracts” has resulted in a “deterioration of working conditions for journalists” (147) and made news work more “uncertain, stressful, and market-driven” (142).

A response to the uncertainty and precarity of freelance work is the rise of self-branding entrepreneurial or influencer-style journalists. The rise of network-based social media platforms like Twitter have allowed individual journalists, and not just news organisations, the opportunity to cultivate their own audience and

build a “following” by becoming a credible news provider (Picard 2014), and thereby guarantee a steady source of income. Freelance journalists, on average, tweeted more than their staff counterparts, producing 60% more tweets (Brems et al. 2017).

Describing the journalist as influencer, Allegra Hobbs (2019, n.p.) writes:

“After all, to be a writer today is to make yourself a product for public consumption on the internet, to project an appealing image that contextualizes the actual writing. But the image management that once seemed incidental, or at least parallel, to the literary profession seems now one of its most necessary, integral functions. In the age of Twitter and Instagram, an online presence, which is necessarily public and necessarily consumable, seems all but mandatory for a writer who reaches (or hopes to reach) a certain level of renown, especially for anyone dealing in personal essays or cultural criticism. In the way that the influencer uses her image to sell her swag, the writer leverages her life to sell her work, to editors and audiences” (Hobbs 2019).

What Hobbs neglects to mention or factor in is that most of these “influencer writers” were precariously employed freelancers who, along with commodifying their journalism, had commodified themselves as “large industry has already reached a higher stage, and all the sciences have been pressed into the service of capital” causing invention, here identity, to become a business (Marx 1973 [1939], 704). Shannon Keating describes it as the dusk of the first-person industrial complex leading to the dawn of the influencer, within an “even more complicated and ethically murky digital economy of self-exposure and service content” (Keating 2019, n.p.).

Gerbaudo points out that structurally, social media websites like Facebook, Twitter and Instagram “allow individuals to construct their personal identities online, through various forms of ‘self-presentation’ and ‘self-broadcasting’”:

“By choosing a specific profile picture and self-description, or by adopting a certain language and posting a particular kind of content, in the form of text, photographs or videos individuals are encouraged to ‘present a highly selective version of themselves’ (Mendelson & Papacharissi, 2011, p. 252), the ‘version’ of themselves they would like their targeted audience to find about. This process of self-presentation can acquire highly narcissistic

connotations as epitomized by the selfie craze, the taking of one's own picture by smartphone for posting on various social network sites often as a way to parade one's beauty, wealth or lifestyle. For techno-pessimists, such as Evgeny Morozov, the 'networked individualism' (Wellman, 2002) prevalent on the Internet does not provide the necessary conditions for the development of effective collective action.'" (Gerbaudo 2015, 920)

Thus, we see that "the role of capitalism in shaping cultural work and the resulting power relations are obscured in many accounts" (Cohen 2015, 40). While Braverman's hypotheses on labour and monopoly capital primarily looked at the power dynamics of the process and workers' movements, it also, perhaps more crucially for this study, stressed how the labour process being transformed was experienced differently by knowledge workers based on their class, gender, and race (Mosco 2009).

What this means, however, for the purposes of this study, is that there is a consequent *lack* of change in working conditions when it comes to issues of class, gender and race, insofar as discrimination on the basis of these criteria is concerned.

In 1979, the American Society of News Editors pledged that "the right thing to do in the industry's economic self-interest" was to match the percentage of racial and ethnic minorities in newsrooms by the year 2000 to that of the population at large. In 2018, American newspapers still had only 17% of minority newsroom staff and 13% of minorities in leadership positions, despite minorities making up 40% of the general population (Arana 2018). Oscar Gandy's (1998) book *Communication and Race* provides an overview of the problems associated with structural racism and representation in media in the U.S., which could also be applied to its counterparts in the UK. In the "social construction of race", Gandy explores race as a concept that situates an individual within a social hierarchy based on racial characteristics, which in turn define privilege or the lack of it. Social class is also deeply linked to the distribution of power, resources and access, and thus through this matrix of race and class, a social position of the worker or lack of privilege is determined

(Thurston-Jackson 2003). This lack of privilege is interrogated by Gandy through the reproduction of racism in mass media, and the profit-making motives of the corporation determining the output of the media platform, but within the ecosystem of the newsroom also plays out in similar ways when people of colour are introduced. Newsrooms both in the US and UK have appalling rates of inclusion when it comes to diversity (Mosco 2009), and even when journalists of colour managed to make their way into the system, the system, which remained changed, turned its hostility towards these journalists through internal workplaces racisms like microaggressions, favouritism, erasure, marginalisation, improper crediting, lack of career progression (Merrefield 2020).

Another issue with diversity in newsrooms is the inclusion of women: “reporters, editors, audiences, and sources are gendered” (Steiner 2012, 219). The business of organised journalism, however, is still very much a man’s world, putting women at risk of quitting the news business (Burks and Stone 1993; Chambers, Steiner and Fleming 2004; Reinardy 2009). Persistent gender-based pressures left women with no option except to quit or go freelance and face the additional burdens of precarity and poor pay (Massey and Elmore 2011).

Writing in 1996, Walsh-Childers et al. concluded that “significant numbers [of women journalists] ... obviously feel discriminated against by their employers” in terms of pay, work assignments and promotions (Walsh-Childers, Chance and Herzog 1996), but pay discrimination continues to be a persistent problem especially in broadcast media (BBC News 2018). Within newspapers, women faced more role overload and exhaustion compared to men and felt they received less support from their managers due to their gender (Reinardy 2009).

To understand this, we need to take a step back. In the 1970s, the second wave of feminism brought with it ideas of the woman who could “do it all”– balance families and successful careers much like men. But by the 1990s, women found themselves questioning the premise of this idea, as they faced different responsibilities and challenges to their male counterparts (Djerf-Pierre 2007). Part of this came from a

flawed idea of the working week, which was structured in such a way that a stay at home mother was in charge of the unpaid work of housework while the man earned money during the week (Coote and Franklin 2013). When women went to work, they found that doing it all came with a certain air of impossibility unless mitigated by class privileges.

Third-wave feminists maintained that women were culturally different to men, and their own “standpoint” was at odds with a patriarchal society that prioritised men’s needs, accomplishments, and desires. Therefore, this male-dominated world also extended to the newsroom, where women’s needs were deemed secondary, their stories niche, and their concerns deprioritised. The hierarchical and bureaucratic newsroom, constructed by male needs and definitions of news, was in conflict with female journalists’ reporting, creating “a gendered nature of journalism”: where male and female journalists considered different angles, sources and ethics to be important (Djerf-Pierre 2007).

Pierre Bourdieu’s analysis linked field, power and gender as determining the conditions of women at work and in society. For Bourdieu, a field refers to the setting within which the social positions of agents are located, and the positions exist as a result of interaction within the rules of the field, such as the social, economic, and cultural capital. The interactions create a hierarchy of power and class relations (Bourdieu 1993). Toril Moi, in her feminist interpretation of this framework, explains how agents use strategies to acquire power and influence. Moi injects the analysis of class capital and gender as a form of symbolic capital, showing how journalism as a field is gendered intrinsically (Moi 1999).

To summarise briefly, this section set out the transformation in working conditions of journalists, such as the casualisation of labour, the rise of influencer-style journalism, normalisation of the gig economy, and the reinforcement of structural oppressions of gender and race in the industry, leading to the exclusion of journalists of colour, especially women and immigrants.

The following section hones in on the specific impact of these changes on investigative journalists' working conditions.

3.2.4 The Change of Investigative Journalists' Working Conditions

Investigative journalism has always been under threat (Houston 2010) – whether physically, legally, or financially (Houston 2010). This is an important fact that is often forgotten amidst the current crisis engulfing the media, where investigative journalism is always hit the hardest because, at its heart, it is a cost and energy-intensive exercise that has no practical profit-making mechanism within the capitalist framework of the current media ecosystem, and in fact guarantees losses whether it be through lawsuits, state-sanctioned attacks, mental or physical injuries that need time and medical attention, or the very basic expenses of enduring a multi-year multi-reporter operation, which most hard-hitting investigative projects are.

There is a certain adversarial quality to it that makes investigative journalism both impressive and non-negotiable, critical to holding power to account in every age, and also a threat to those who abuse that power. In fact, one of the origins of investigative reporting can be traced back to the religious reformers of sixteenth-century England: “Many elements of the prophetic tradition – the spirit of righteousness, the indignant moralism, the effort to maintain the purity of values, the call for spiritual and ethical renewal, the fierce sense of corruption abounding everywhere – are as typically found in today’s best investigative reporters or crusading editors” (Underwood 2008, 23).

Current discussions on the political economy of investigative journalism focus on the disappearance of quality watchdog reporting following the rise of the internet age causing “the explosion of power struggles for the control of social media assets” (Gerbaudo 2016, 186) and the change in revenue streams. But in a 2009 PBS programme on investigative journalism called “Exposé”, Laura Frank found something different– the shift by newspapers towards prioritising profit margins over

quality journalism began much before that in the 1980s and 1990s; specifically, the cost-cutting that led to the decline of investigative journalism started much earlier than the advertising crisis brought on by the digital age:

“The story line has been repeated time after time: The Internet is killing mainstream media, sending the Fourth Estate into record-breaking revenue declines. Online ads garner only a fraction of the dropping print revenue. When faced with cuts, investigative reporting is often the first target. Investigative journalism takes more time and more experienced journalists to produce, and it often involves legal battles. It’s generally the most expensive work the news media undertakes” (Frank 2009, 1).

This confirms our original hypothesis that it is not the digital economy per se that is at fault when it comes to the decline of investigative journalism but the very model of capitalist production itself that aims to place profit over public service. Instead of holding power to account, a media that prioritises commercial interests produces “news fit to print” that in turn helps to uphold the interest of capital over the interests of the public (Herman and Chomsky 2002), and the rise of media monopolies correlate directly to the neglect of investigative journalism (Curran 2002).

And while investigative journalism is in crisis, public confidence in facts itself is waning with the onslaught of fake news eroding faith both in a shared reality and journalism as a public service (Ireton, Posetti and UNESCO 2018). The design of social media algorithms enable the spread of fake news by rewarding virality, allowing misinformation to spread faster than fact checkers can combat it, and since most people receive their news via social media, the fake news phenomenon is a pandemic by its own measure (Bridgman et al. 2020). Eliot Higgins of Bellingcat summarises the role played by social media giants in this crisis succinctly:

“Social-media giants... do not want to promote dangerous material, nor do they want to curb free speech. But they operate with a conflict of interest, running a profit model of ‘engagement’ that nudges users to emotionally stirring content, which is not necessarily truthful. If social-media giants ever resolve to fight fake news and conspiracy theories in earnest, they will need to change recommendation algorithms and add vast numbers of moderators.

Even this would probably not suffice. Imagine a moderator jumping into the middle of an online argument, which could be on any subject. Is hexamine a marker of sarin gas produced by the Assad regime? What about the treatment of members of Falun Gong imprisoned in China? Is France illegally supplying arms used in Saudi airstrikes in Yemen? What a moderator must evaluate could be part of a disinformation campaign or part of a genuine public debate. It could be a genuine debate based on disinformation” (Higgins 2021, 124).

While Nick Davies, in his seminal book *Flat Earth News* (2008), talks about the spread of “churnalism”, the repurposing of un fact-checked news by sloppy tabloids, the digitisation and democratisation of the media brought about by social media has given people the power to manufacture their own versions of reality, that are peddled directly to the masses without a middle man.

Added to that the hate-filled rhetoric targeting investigative journalists from autocrats across the world, from Modi in India to Trump in the US, and suddenly the working conditions of the current investigative journalist appears to be a battlefield (UN News 2020), except the journalist has rapidly diminishing reserves of armaments/funding, has no allies/industry support due to competition, and is under attack from all sides, both from civilians and the state.

Holding power to account, and, educating and informing the public, are the chief functions ascribed to investigative journalists within a democracy (Communications Committee (House of Lords) 2011). Chiefly, it is investigative journalism that typifies the function of the fourth estate as we understand it, and therefore the attack upon investigative journalism has grave consequences for democracy. Within the function of holding power to account, investigative journalism performs a range of functions, from *checking abuse of power in government, exposing fraud and corruption*, to *exposing the mafia state*, organised criminal networks, *revealing information of historical or political value that adds to a public debate, exposing injury and grave injustice, promoting reforms to right a wrong, acting as the moral compass* to expose the obligations of the aggressor towards the victim, and any kind of wrongdoing that

needs to be exposed in the public interest (De Burgh 2000; Ettema and Glasser 1998; Schudson 2008).

Castells, in his network communication theory, argued that the internet plays a democratising role which allows citizens to subvert the traditional hierarchies of power through the flow of information (Castells 2013), which hints at the creation of a more inclusive digital public sphere in the 21st century, free from the gatekeepers of newsrooms mentioned in the previous section. Castells highlighted how digital tools allowed for collaboration across continents and newsrooms, and allowed previously impossible quantities of data to be parsed, to come to conclusions.

While the profit motives of capitalism are at odds with the goals of investigative journalism, there are some notable exceptions. One is Hamilton's (2017) cost-benefit analysis of investigative reporting, where he concluded that investigative journalism is economically as well as normatively viable, providing an alternative framework to the political economy perspective (Hamilton 2017). This framework is helpful to understand the current popularity of investigative journalism (Greenslade 2019), even more so in light of the current global crisis, as investigative journalism thrives in challenging times despite the risks posed by cost-cutting measures and a financial crisis (Houston 2010). In addition, the rise of fake news has also led to a consequent rise in the fact-checking movement (Graves and Amazeen 2019) (Ireton, Posetti and UNESCO 2018), with public bodies like the United Nations calling for media literacy to help combat it.

Hamilton's framework provides a useful analysis to understand the rise in collaborative or cross-border journalism initiatives, such as the Panama and Paradise Papers or FinCEN Files (International Consortium of Investigative Journalists n.d.), and the shift from single newsroom investigative journalism to collaborations, the use of crowd-sourcing, data, multimedia and innovation in storytelling to adapt to changing economic conditions through innovative approaches to investigative work which enable journalists to fulfil fourth estate functions (Carson and Farhall 2018).

It is within this framework that the rise of Open Source Intelligence-based journalism must be understood because it harnesses two key gifts of the digital age: the *ability to automate and analyse using digital tools the masses of data made available* through satellites, databases, leaks, social media, and other channels; and the *ability to collaborate using the internet across time zones*, leading to not just a more collaborative journalism model, but a new form of investigative in itself, typified by the most well-known investigative unit thriving and growing despite severe economic challenges: Bellingcat. A tangential critical factor in the rise of OSINT is the popularity of citizen journalism, or “the people formerly known as the audience [who] wish to inform media people of our existence, and of a shift in power... A highly centralized media system had connected people “up” to big social agencies and centers of power but not “across” to each other. Now the horizontal flow, citizen-to-citizen, is as real and consequential as the vertical one” (Rosen 2008, n. p.).

Bellingcat began with the realisation of a simple idea in the wake of the News International phone-hacking scandal (Davies 2015), which led fact-checkers to the disclosure of a massive dump of 14,400 emails between the Murdoch press and corrupt policemen, that “if you searched online, you could find facts that neither the press nor the experts knew yet” (Higgins 2021, 6), leading to the birth of the OSINT movement, which slowly improved into a community that taught each other the latest investigative hacks, combining crime journalism, rights advocacy, and investigative reporting. “The currency of our community was verified information – who found the fact did not matter greatly, except to flag that person as someone worth following on Twitter. The same principle remains at Bellingcat. Open-source investigation is not about formal qualifications. Your reputation is your results,” explains Higgins, stressing the need for transparency or the birth of journalism that shows its workings and how it came to a certain conclusion, away from the closed sources Deep Throat style investigative journalism (Higgins 2021, 20).

That is not to say that the old methods of investigative journalism were unceremoniously discarded; rather, the success of OSINT based investigative

journalism drew some foreign correspondents of the mainstream press, most of them freelancers and cheaply hired without job security, so that the traditional form of conflict reporting was coordinated with OSINT reporting, to create a new hybrid model which supplanted frontline journalism with evidence found online to back it up and “triangulate the truth” (Higgins 2021, 24). What Higgins and his contemporaries subconsciously utilised was the very automation that threatened the livelihoods of the mainstream press under capitalism.

To summarise briefly, this section set out the adversarial nature of investigative journalism, which places it under threat of dissolution, dating back to before the advertising crisis often blamed for the death of the presses. Watchdog reporting is also under threat from the waning public confidence in facts, heightened polarisation caused by social media algorithms, and attacks from autocrats. While the profit motives of capitalism are inherently at odds with the goals of investigative journalism, the internet has allowed for cross border investigative journalism that did not exist before, and the rise of OSINT style journalism, epitomised by independent outlets such as Bellingcat.

3.2.5 Conclusion

In conclusion, the understanding of labour in this research comes from Marxism and connected traditions, and the focus is on the political economy of journalism and knowledge work.

Knowledge labour is labour that creates non-tangible products such as information or cultural devices, social relationships and technologies to aid in their creation. Within capitalism, the compensation provided to a knowledge worker is based on metrics that do not take into account the experiential and creative value of the knowledge worker, thereby consistently shortchanging the worker.

Investigative journalism is journalism that holds power to account in the public interest by exposing what was hidden, subverting oppressive power structures, comforting the afflicted and afflicting the comfortable, and ultimately changing the coordinates of social reality using emancipatory politics.

Within this framework, the crisis in the media sector is understood as one that has a significant impact on democracy and erodes the public service ideals of investigative journalism. At the heart of this media crisis are various factors responsible for this erosion:

- Media monopolies
- Technological changes to maximise profit
- State crackdowns
- The gig economy
- The rise of churnalism
- The misinformation pandemic.

This crisis in the media is further intensified by the transformation in the working conditions of journalists. These are:

- The casualisation of labour
- The rise of influencer-style journalism
- The normalisation of the gig economy and precarity
- The reinforcement of structural oppressions of gender and race in the industry leading to the exclusion of journalists of colour, especially women and immigrants.

The adversarial nature of investigative journalism places it under threat of dissolution, but watchdog reporting is also under threat due to various factors:

- Capitalist modes of production due to lack of profitability of investigative journalism
- The waning public confidence in facts
- Heightened polarisation caused by social media algorithms
- Attacks from autocrats.

While the profit motives of capitalism are inherently at odds with the goals of investigative journalism, the internet has allowed for cross border investigative journalism that did not exist before, and the rise of OSINT style journalism, epitomised by independent outlets such as Bellingcat.

The following section looks at the impact of automation and technological advancements on knowledge work, journalism and, more specifically, investigative journalism.

3.3. Automation

This section provides an overview of the theoretical foundations underpinning the understanding of automation used to construct this study. It cites relevant literature from theorists such as Marx, Rifkin, Srnicek, discussing the contradictory nature of automation as highlighted by Marx in *Capital* (1992) and *Grundrisse* (1973 [1939]), of the capacity for machinery to be introduced to exploit the workforce and create 'the automation jobless' (*Time* 1961, n.p.) and contrast it with the liberating potential, by freeing human labour from tedious unskilled tasks leaving time for meaningful creative tasks such as investigative journalism. At the same time, it uses the framework of the Marxist separation of labour and capital to understand the automation of knowledge work focussing specifically on automation in journalism and how it has been implemented within news production and distribution and news consumption processes to contribute to the current crisis. Finally, it will delve into the theoretical debates of automation in investigative journalism before summarising the key theories in this section.

3.3.1 The Automation of Knowledge Labour

It would be remiss to begin a section on automation without referring to *Grundrisse* (Marx 1973 [1939]), where Marx's "Fragment on Machines" argued that advances in automation, when combined with the transition to a post-capitalist society, would allow for less time devoted to work in the lifetime of a worker and more to leisure activities, made possible with the gradual replacement of the worker by machines. However, within the capitalist model of economics where growth is measured purely in terms of profit or accumulation of capital, the development of a life free from work, or beyond work where there is a reduction of labour time, is not possible, as the surplus generated by the automated processes would belong in the hands of the capitalist, as long as the workers themselves do not own the means of production:

"The machine, which is the starting-point of the industrial revolution, replaces the worker, who handles a single tool, by a mechanism operating with a number of similar tools and set in motion by a single motive power, whatever the form of that power. Here we have the machine, but in its first role as a simple element in production by machinery." (Marx 1992, 497).

Marx further adds that workers have the potential to revolt against capitalist technology as the technology becomes a competitor against the worker and destroys working "conditions of existence", because technological automation substitutes labour by capital, creating layoffs and joblessness: "The worker becomes unsaleable, like paper money thrown out of currency by legal enactment" (Marx 1992, 557). In addition, the autonomous nature of the machinery would allow it to be weaponised by capitalists against strikes of workers, reducing bargaining power, leaving workers to struggle for existential survival (Fuchs 2016).

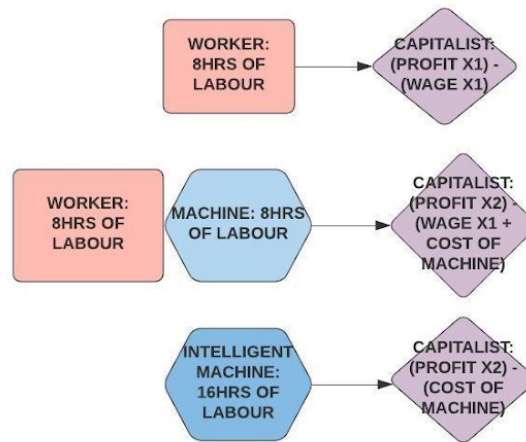


FIG 3.3.1.1 HOW AUTOMATION IS IMPLEMENTED IN CAPITALISM:

The first instance shows the relation between worker and capitalist without machinery; the second on augmentation of worker's labour with machinery to maximise profit; the third shows full automation and replacement of the worker by intelligent machinery to incur the highest profit for the capitalist.

Thus, when a capitalist introduces automation, the goal is not to improve the working life of the worker through a lightened load or reduced workday, but rather to improve the efficiency and productivity of labour and, through it, maximise profit, eventually substituting these same workers for machines. The main law of capitalism, a competitive free market, would doubly ensure that every other capitalist would also try to increase their profit margins by augmenting the labour process with machinery. Therefore, technological innovation within the workplace is conducted from the mindset of increasing productivity and cheapening commodities, rather than the reduction of labour time itself: "The use of machinery for the exclusive purpose of cheapening the product is limited by the requirement that less labour must be expended in producing the machinery than is displaced by the employment of that machinery... The limit to his using a machine is therefore fixed by the difference between the value of the machine and the value of the labour-power replaced by it." (Marx 1992, 515).

In conjunction, the cheapening of labour-power value is measured by the value of commodities deemed necessary to sustain the working-class family, such as food,

shelter, clothing, education and healthcare. What the application of machinery then does is cause an increase in surplus value for the profit-making capitalist, and in turn, the cheapening of the value of labour-power, as from the perspective of the capitalist, the non-waged automaton performs the labour for free.

Jeremy Rifkin's seminal work, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era* (1995), published half a century later, seemed to address this impending worldwide unemployment caused by the growth in dependence on information technology and automation. Rifkin draws on Marx's hypothesis of the last metamorphosis of labour where "an automatic system of machinery" is imagined to be replacing humans in the economic process, and writes that "technological innovations and market-directed forces [...] are moving us to the edge of a near workerless world" (Rifkin 1995, xvi). Rifkin forecasts the elimination of blue-collar nine-to-five jobs in the millions but restricts this automation to three stages of the capitalist economy: manufacturing, agriculture and the service sectors.

For the workers disenfranchised by automation, Marx writes:

"The real facts, which are travestied by the optimism of the economists, are these: the workers, when driven out of the workshop by the machinery, are thrown onto the labour-market. Their presence in the labour-market increases the number of labour-powers which are at the disposal of capitalist exploitation... The effect of machinery, which has been represented as a compensation for the working class, is, on the contrary, a most frightful scourge. For the present I will only say this: workers who have been thrown out of work in a given branch of industry can no doubt look for employment in another branch... even if they do find employment, what a miserable prospect they face! Crippled as they are by the division of labour, these poor devils are worth so little outside their old trade that they cannot find admission into any industries except a few inferior and therefore over-supplied and under-paid branches. Furthermore, every branch of industry attracts each year a new stream of men, who furnish a contingent from which to fill up vacancies, and to draw a supply for expansion. As soon as machinery has set free a part of

the workers employed in a given branch of industry, the reserve men are also diverted into new channels of employment, and become absorbed in other branches; meanwhile the original victims, during the period transition, for the most part starve and perish.” (Marx 1992, 567–568).

In contrast, writing exactly two decades later than Rifkin in *Inventing the Future: Postcapitalism and a World Without Work* (2015), Nick Srnicek and Alex Williams reiterate the ability of capitalism to provide employment to all, arguing that there is now “a growing population of people that are situated outside formal, waged work, making do with minimal welfare benefits, informal subsistence work, or by illegal means” (Srnicek and Williams 2015, 103–104). Srnicek envisages four pillars of this end of work utopia: a *reduced workweek*, *universal basic income*, *full automation*, and the *death of the work ethic* where unwaged labour is not valued compared to waged labour.

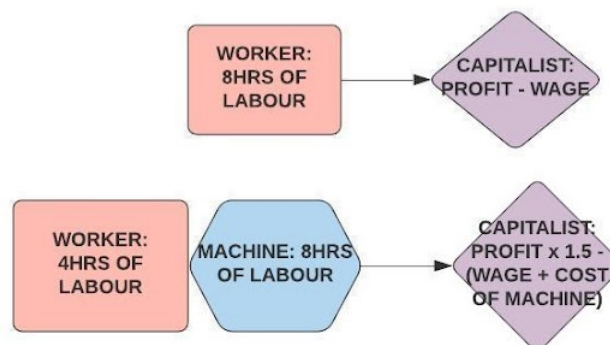


FIG 3.3.1.2 HOW AUTOMATION OF “BULLSHIT JOBS” (Graeber 2015) COULD BE IMPLEMENTED TO REDUCE WORK TIME

And they have a point. Most jobs in the sectors Rifkin identified involved assembly line processes, which were tedious and easily automated to allow workers more time off to pursue more fulfilling ventures instead of creating a job crisis. These jobs could therefore be easily described as “bullshit jobs” or a completely pointless task (Graeber 2015). In an alternative economic system that did not measure progress simply through the marker of profit, this automation of “bullshit jobs” would be a

godsend, but irrationally it is seen as being at the heart of the current economic crisis rather than capitalism itself.

Within the realm of knowledge work within capitalism, automation has been deployed to automate knowledge processing of “routine cognitive tasks”, such as the creation of intelligent software systems that can parse through large amounts of data and provide results, or even learn on the go (Naik and Bhide 2014). Most of this has been made possible by the introduction of neural networks in AI and machine learning, which has increased the capacity of data that can be processed, and how quickly these systems adapt based on commands. But these systems too have their limits, so while the applications are capable of supporting decision making through functionalities like search, pattern recognition, recommendation, the automation is limited to tasks that are otherwise labour intensive, routine, and boring (Dörr 2016).

What these machines, however, continue to lack, as a result of being unable to do non-linear thinking or processing, is *make judgements effectively, make creative decisions or simulate human relationships*. This presents an ethical problem. Joseph Weizenbaum argues that while it may be possible to create a functional AI, it is not ethical to allow computers to make decisions that adversely impact human life on the basis that a machine will *always* lack the human qualities of compassion and wisdom. He describes computational decision-making as a programmable activity distinct from the human product of comprehensive judgement, which is to choose. The latter has the capacity to contextualise non-mathematical factors such as emotions, without quantifying factors in a reductionist fashion:

“a computing system that permits the asking of only certain types of questions, that accepts only certain types of ‘data’ and that cannot even in principle be understood by those who rely upon it, such a computing system has effectively closed many doors that were open before it was installed” (Weizenbaum 1993, 250).

While Zuboff’s law claims that everything that can be automated will eventually be automated (Zuboff 1988), there is no significant power shift between labour and

capital happening as a result of it. In other words, the workers who have to augment their processes with this technology and who are severely impacted by it have no say currently in how this technology is produced, tested, and deployed. Moreover, due to a systemic lack of diversity within the STEM fields responsible for this advancement, the workers who bear the brunt of this change are overwhelmingly workers of colour from the “Third World” in Asia and Africa, who have no say in the development and the ethical issues raised by the technology mostly developed in San Francisco, USA. Zuboff presents two paths: to continue automation for automation’s sake while risking further alienation of workers, or to create a system where the workers are involved in making critical and collaborative judgments (Zuboff 1988).

One of the recurrent themes of knowledge work within capitalism in the current age is precarity, which manifests itself through the gig economy, and outsourcing of workers, brought about by the flexibility incorporated into digital production (McKercher and Mosco 2008). In addition, the outsourcing of work to “Third World” countries which were historically established as part of the colonial as well as neocolonial enterprise of transnational production, further delineates the power hierarchy (Gerald 2009). As a result, workers within the dispersed and now automated digital assembly lines are even more alienated than they were before. Within Marxist theory, the theory of alienation looks at the impact of capitalist production from the focus of the human beings whose physical and mental states, as well as the social processes, suffer neglect at the altar of profit. Alienation differs based on the social class of the worker and their afforded class privileges, and as a result, the proletariat or working class bear the brunt of its worst form (Ollman 1976). Marx speaks of man as being separated from his work where he plays no part or has no agency in deciding how to do it or what to do, in other words, a separation between the worker and the products he creates, and through it, a break between man and the material world. Automation of knowledge work accelerates this automation until nothing remains of the knowledge worker’s relationship with his material world, or “the abstract existence of man, as a mere workman who may therefore fall from his filled void into the absolute void” (Marx and Engels 2011, 86).

3.3.2 Automation in journalism

This section looks specifically at the automation in journalism processes. While journalism scholars have been quick to use the term “automated journalism” to describe how newsrooms are using automated technologies to generate news output (Carlson 2015, 417; Montal and Reich 2017), the reality could not be farther from the truth. The product of journalism, whether it be reports, videos or documentaries, are performed exclusively by journalists or producers, and this process has now been augmented by technological innovation, creating a hybrid media, in the same way that the Gutenberg press allowed for the rise of print journalism. To attribute algorithms with the ability to “generate news output” would be to vest these algorithms with the ability to make human judgements and form human relationships, which it simply cannot do (Thurman et al. 2016; Thurman, Dörr, and Kunert 2017; Thurman 2018).

What automation in journalism has allowed for instead is the codification of journalism knowledge (Lindén 2017a). The digital revolution has created an explosion in the amount of data available together creating “Big Data” (Fairfield and Shtein 2014), and this, coupled with the increase in processing power of machines, has allowed for the development of computational journalistic processes (Lindén 2017a).

In 1965, Gordon Moore, one of the founders of Intel, makers of computer microchips, postulated a theory: the processing power of a computer doubles every two years while the cost is halved (Moore 1965). Moore also added that this growth is exponential. By that logic, the average Macbook in 2025 would be given away for free, simply because the cost of manufacturing has bottomed out – but that does not happen for the same reason that automating processes do not result in leisure time – it is of no profit to the capitalist economy.

In order to understand the theoretical analyses of automation in journalism, it is essential to delineate the processes within journalism being discussed, namely, news production and distribution, which are amalgamated into the same step as a result of digitisation, and news consumption.

Most theoretical understandings of automation in journalism have either used Bordieu's field theory to explore how the political, economic, and cultural fields have influenced the journalistic field (Benson 2006) (Krause 2011) or to explore automation in journalism from the point of view of the technological firms, who now find themselves having to work with journalists (Wu, Tandoc and Salmon 2019a); or have used actor-network theory (ANT) and its re-imagination of the social to understand the associations between "heterogeneous elements that may be assembled in new ways" (Wu, Tandoc, and Salmon 2019b, 1441), justifying it by categorising journalism as one of the "situations where innovations proliferate, where group boundaries are uncertain, and when the range of entities to be taken into account fluctuates" (Latour 2005, 11). However, ANT "allows analysts to recognize and critique the hybrid actors that are becoming increasingly characteristic of journalism in a multi-media environment", based on the idea that journalism is a field where "lines blur between institutions, individuals, and technology as its contributing agents".

Now, this may be true, but when discussing journalism, which at its core is a check on the powers that be, the focus perhaps should be on the power relations, and the changes within power relations happening as a result of it, which the discussions using ANT simply cannot accommodate by looking at all these actors as "contributing agents", because power within a capitalist framework is not defined by who gets to contribute to the journalism but rather who profits from it and owns the means of production. Power here is seen as it relates to the machine augmenting news production, as something that "enable others to do something, force them to do it, or stop them from doing it" (Domingo, Masip and Costera Meijer 2015), without taking into account the social and power relations of the economy within which this machine and those wielding the machine exist.

What automation adds to it is the introduction of technological companies providing tools and automated services which affect the journalistic workflow in two ways: a) it requires a *reallocation of capital and resources* specifically to purchase these products, causing a drain on resources otherwise allocated for the wages of human journalists, b) it *introduces tools* which are developed without the critical input and direct collaboration of journalists using them, thereby creating another barrier between the means of production and the journalists.

In addition, ANT, by definition, is a structuralist lens of analysis that is redundant as the tools are not independent and do not exist in a vacuum – they are part of the political economy of knowledge production within capitalism. By defining tools as autonomous and capable of replacing humans in workflows, there is an ontological assumption that they are able to replicate human behaviour. Hubert Dreyfus' (1979) seminal critique of artificial intelligence (AI) hits out at this ontological assumption of AI research, which is the psychological assumption that the human mind functions through a series of computations bound by algorithmic rules which in turn can therefore be mathematically codified within a machine. He argues that it is *impossible* for us as humans to be able to understand our own behaviour in an objective fashion, through scientific laws free of context (Andler 2000), which are also echoed by Alan Turing in his seminal thesis on whether machines can think:

"we cannot so easily convince ourselves of the absence of complete laws of behaviour ... The only way we know of for finding such laws is scientific observation, and we certainly know of no circumstances under which we could say, 'We have searched enough. There are no such laws' (Turing 1950, 452).

Therefore, creating a machine that can simulate human-like intelligence would require the prerequisite of it having existed in the world as a human, interacting within society, a claim echoed by psychologists (Lakoff and Johnson 1999) and artificial life researchers (Brooks et al. 1998) alike. The use of ANT is critiqued in

specific detail in the following section, which looks at automation in investigative journalism.

The cost of purchasing machinery for automation is relative to the cost of wages of the labourer; here, the cost of purchasing automated tools is relative to the cost of the wages of a journalist:

“Since the division of the day’s work into necessary labour and surplus labour differs in different countries, and even in the same country at different periods, or in different branches of industry; and further, since the actual wage of the workers sometimes sinks below the value of his labour-power, and sometimes rises above it, it is possible for the difference between the price of the machinery and the price of the labour-power replaced by that machinery to undergo great variations, while the difference between the quantity of labour needed to produce the machine and the total quantity of labour replaced by it remains constant.” (Marx 1992, 515)

The use of any machinery is dependent on the relative price of the tools versus that of the wages of those using the tools (Mosco 2012). In an environment of a weak labour market such as journalism, the cost of employing journalists is low, and investment in tools will be even less, so where power relations are concerned, there is a global disenfranchisement of journalists.

Therefore, automation anxiety (Akst 2013) is a natural product of these circumstances of hybrid media. Economist W. Brian Arthur, studying the impact of digitisation, argued that “the second economy will produce wealth no matter what we do” and that the challenge had become “distributing that wealth.” He added that “wealth has traditionally been apportioned in the West through jobs, and jobs have always been forthcoming. When farm jobs disappeared, we still had manufacturing jobs, and when these disappeared, we migrated to service jobs. With this digital transformation, this last repository of jobs is shrinking – fewer of us in the future may have white-collar business process jobs – and we face a problem” (Arthur 2011, 8).

The issue posed within capitalism is that this lack of jobs or disappearance of jobs is not a technological problem but a distributional one, or in other words, it is a political problem. Akst writes:

“Automation presents some of us with a kind of windfall. It would be not just churlish but shortsighted if we didn’t share this windfall with those who haven’t been so lucky... inevitably, if only to maintain social peace, it will mean a movement toward some of the universal programs – medical coverage, long-term care insurance, low-cost access to higher education – that have helped other advanced countries shelter their work forces from economic shocks better than the United States has, and control costs while they’re at it. The robots will surely keep coming, and keep doing more and more of the work we long have done. But one thing they won’t be able to do – at least not anytime soon – is tell us what we owe each other. Surely we can figure that out for ourselves.” (Akst 2013, 13)

If the fate of journalism determines the fate of democracy, then these universal programs are a small price to pay to ensure national security.

3.3.3 Automation in News Production, Distribution and Consumption

This section briefly covers the particulars of automation when deployed within the processes of news production and distribution and news consumption.

As mentioned earlier, one of the results of digitisation within news processes is the amalgamation of news production and distribution. Within production workflows, newsrooms using automated technologies to process data are directly performing tasks performed traditionally by human journalists. In this sense, there is a direct replacement of labour within the process. While some news organisations are also branching out into robot-written news, using self-learning systems, the implementation of that has been fairly limited across the full breadth of the mediasphere (Fanta 2017).

However, using machines in the production of news is not an altogether new phenomenon. In fact, it goes back as far as the 15th Century with the invention of the Gutenberg printing press, which gave rise to mass media. Automation in news production as we know it only began in the 2000s, when computers became affordable and accessible to newsrooms and became a staple within traditional media organisations (Wu, Tandoc and Salmon 2019b).

The advent of Big Data (Sagiroglu and Sinanc 2013) and the popularisation of neural networks have allowed for both access to vast amounts of data that are otherwise impossible to decipher, and the ability to process it at speed to arrive at results. This has allowed for the creation of digital tools that augment the process of news reporting, which has made reporting more accessible and efficient.

At the same time, it has given rise to a metrics-driven media, where the distribution is determined by the metrics of audience, which in turn determine metrics of advertising revenue, which finally determine the metrics of profit. What that has ultimately resulted in is a drive towards audience-driven news curation. This audience-driven news curation works in two ways: first, *through social media and aggregation search engines*, which is how most people consume news, the algorithms are designed to work using the psychology of confirmation bias, thus showing people news they want, rather than the news they need to see irrespective of credibility leading to political polarisation; and second, through the use of *recommendation algorithms on news websites*, which enables the creation of echo chambers and feedback loops based on demand and supply. Both methods are destructive in their own ways.

The social media and aggregation search engines have no fact-checking capabilities to match the quantity of data they handle, and more importantly, they do not distinguish between factually correct reporting and “content”, a term now loosely used to describe a digital product for mass dissemination. In addition, automated news content personalisation actively promotes filter bubbles and echo chambers (Bruns 2019; Nechushtai and Lewis 2019). While for social media platforms such as Facebook, the personalisation is driven by masses of user data that is constantly

mined and enacted to maximise user engagement, so that the attention of users could be sold to advertisers without any editorial oversight of the content recommendations made (Bodó 2019), creating the metric-driven attention economy, for news publishers, the personalisation is done differently, driven by a desire to sell news subscriptions, to engage users using quality information and hard news by promoting journalistic integrity.

Most scholars see automated news recommendations negatively, with the only exception being Natali Helberger's study into whether algorithmic news recommenders pose a threat to the democratic role of the media (Helberger 2019). In it, Helberger sees news recommenders as tools that can be designed to advance values and goals that we consider essential in a democratic society, encouraging citizens' participation, rather than serving individual users' interests. Bodó's study too differentiates between the two, aggregation by social media giants and by news organisations, and while the latter is ethical in comparison to the former, both automated processes are designed to maximise profit. While a news organisation may try to promote journalistic authority and try to break even, the reality is that most don't break even, because hard news, in comparison to "content" or "churnalism" dished out by social media giants, lacks popular appeal; within the capitalist framework of demand and supply, it simply cannot compete with these social media platforms to survive.

Alongside that, while the automation of news consumption through the digital revolution has benefited consumers by making news "free" (Lindén 2017a), it has also, through the redirection of advertising revenue from media organisations to social media and search aggregators, had a direct impact on the loss of jobs in journalism (Franklin 2014).

An additional problem with this idea of news as a product is that within the capitalist economy, all products are subject to demand and supply. Any kind of corruption of power is generally hidden away from the public to avoid consequences. Therefore, there cannot be expected to be a demand for something that simply doesn't exist as

a product, or in other words, the public does not know what it does not know, and it cannot, therefore, demand it. The job of journalism, or investigative journalism, in particular, is to create a demand for justice by exposing the hidden, among its other functions.

Journalism, in its core function, is not supposed to be a product for the masses, but rather is supposed to perform the higher functions of discovering and publishing information that replaces rumour and speculation; resisting and evading government controls; informing and empowering voters; subverting those whose authority rely on a lack of public information; scrutinising the action and inaction of governments, elected representatives and public servants; scrutinising businesses, their treatment of workers and customers, and the quality of their products; comforting the afflicted and afflicting the comfortable, providing a voice for those normally not heard in public; holding up a mirror to society, reflecting its virtues and vices and also its cherished myths; ensuring that justice is done, is seen to be done, and investigations carried out where it is not so; and promoting the free exchange of ideas, especially by providing a platform for those with philosophies alternative to the prevailing ones (Randall 2016). The chapter on the literature review preceding this provides an overview of empirical research that delves more deeply into the examples of automation in journalism that have been put to use, are being tested, or have the potential for future applications.

To summarise briefly, this section set out the theoretical parameters of automated journalism, which loosely refers to the codification of journalism knowledge within the production stage. Most theoretical understandings of automation in journalism do not use a political economy lens and therefore fail to acknowledge that the tools are products of labour rather than “actants” themselves and exist within a knowledge economy. However, as with any technological augmentation of knowledge labour, there exists automation anxiety due to distribution under capitalist modes of production. Within production workflows, newsrooms using automated technologies to process data, and audience metrics drive distribution, the latter being problematised through the popularity of social media and the rise of misinformation.

The following section specifically focuses on automation in investigative journalism and its possible implications.

3.3.4 Automation in Investigative Journalism

Automation in investigative journalism has been made possible by certain key developments mentioned earlier, such as digitisation and the increase in the availability of data. Specifically, it is advances in technology making accessible satellite imagery and camera-enabled phones for documentation of incidents, digital social networks and an increase in publicly accessible data (Dubberley, Koenig and Murray 2020) that has allowed for the growth of both online digital investigations, and the automated tools that make it possible.

But it would be incorrect to say that it is automation in itself that has allowed for new ways of investigating. This is because while automated discovery tools have made radical advancements, the automated analysis tools are rudimentary at best and unusable at worst, leaving space for human involvement and judgement. The mechanical reason for this is the way linear programming works, or in other words, the lack of ability to think creatively or tangentially that is so central to breakthroughs in human investigations. As a result, it's given rise to a new way of investigating that augmented the normal investigations workflow with automated tools while still leaving humans at the heart of the investigation. One good example of this is Amnesty International's "Decoders" project, which uses a vast network of volunteers to solve one of the main issues related to open-source investigations: finding focus points for investigation amidst a vast unstructured dataset (Amnesty International n.d.(a)). It has also allowed for the kind of cross-border collaboration in investigative journalism that is only possible with the data revolution. As Higgins in his book *We Are Bellingcat* writes: "The past, present and future of open-source investigation is collaboration" (Higgins 2021, 215).

What this augmentation has resulted in is a shift in power within the knowledge production process itself: it has created *a secondary narrative* to challenge or bolster the dominant one, and it has disrupted the production flow in two ways, one, by *enabling a new class of investigators* to challenge power using automated tools to expose or document what was once hidden, and two, by *enabling a new class of technologists* involved in creating these automated tools to engage in the process of knowledge production. McPherson, Guenette Thornton and Mahmoudi (2020) classify this transformation as a type of knowledge controversy:

“A knowledge controversy can occur when previously settled and taken-for-granted practices of knowledge production.. are unsettled and questioned because of the introduction of a novel element in the form of new participants, data, methods, and/or norms. The rise of open-source investigations is part of a knowledge controversy ... This particular knowledge controversy is driven by the adoption of new technologies in the production and evaluation of human rights information for evidence.” (McPherson, Guenette Thornton and Mahmoudi 2020, 68)

Originally developed within the field of science and technology studies (Barry 2012), what a knowledge controversy does in this particular case, is result in a questioning of the established modes of knowledge production, and through it, the type of knowledge produced by the practice (Whatmore 2009). What this means in practicality is a questioning of traditional expertise in investigative journalism, and through it, authority figures (Barry 2012), as there is a dynamic shift in knowledge production creating new authorities that use new sources of information to ascribe meaning to world events.

The networked nature of open-source investigations or investigative journalism using open-source tools allows those not directly at the site of conflict to become involved, reducing the risk of physical harm generally associated with first-person research in conflict zones. The automated tools are described as “actants”, “co-creators of journalism” that are capable of engaging in the process of news creation, in literature that uses analysis from a network actor perspective (Primo and Zago 2015), and

conduct the repetitive assembly line tasks, leaving the human journalists to pursue analytical aspects of the story. Domingo, Masip and Costera Meijer (2015) too use ANT to define this reconfiguration with tools as a “news network”, concluding that by relieving researcher of defining what journalism is, it allows them to discover “what counts as journalism [from] the output of [their] empirical enquiries” (Domingo, Masip, and Costera Meijer 2015, 60).

In the collection *Digital Witness* (2020), the authors of the aforementioned chapter suggest that automated tools, by virtue of making information analysis decisions autonomously, could themselves be considered new actors with technologists acting behind them. But this is inconsistent with a political economy analysis because it negates any understanding of the means of production of these tools themselves, and the fact that these automated tools have shifted the balance of power in two ways: one, from the gatekeepers of investigative journalism who have the sole authority to hold power to account, to citizen journalists and technology geeks who have the ability to make advanced use of automated tools to challenge power more effectively, and two, create a market for the demand and supply of these very automated or Open-Source Intelligence (OSINT) tools that exist, however inextricably linked with their “OSINT for good” counterparts, within the for-profit capitalism marketplace. The latter implies a natural market progression from the open-source roots of these tools towards more proprietary tools that could be sold for vast sums of money. In fact, if data be the new oil (*The Economist* 2017), then would the oil refineries not have a vested interest in profit-making from the mining? Similarly, in the age of Big Data, companies that buy up large datasets and create algorithms to automate discovery as a product stand to make a large profit and do not necessarily align themselves with the “OSINT for good” community keen to hold power to account, and who often, due to previously explained reasons, are cash-starved and unavailable to afford these same tools, in effect, losing the means of production once again.

More critically, tools that are not open-source by default create another issue with knowledge production and their use within the investigative workflows. One of the

foundations of open-source investigations is transparency, or the ability to “show your workings”. Proprietary tools often function as a black box, which provides answers but without any explanations, or creates systems that do not communicate with users and therefore cannot be trusted as partners in the critical act of uncovering crucial evidence to hold power to account. There is a need for transparency in these automated tools so as to allow investigators to understand how they reason and come to conclusions. In other words, “people need to understand algorithms, otherwise they cannot anticipate the actions and limits of the automation” (Carr 2014, 164).

Within the investigative journalism community using automation then, some have more access than others. This is not just marked by the resources to build and sell tools, but rather historic inequalities dating back to colonialism and how resource is and has always been divided between the West and the East. It is reflected in the shape and transparency of tool design, the designers of the tools themselves who have the technical knowledge, and the Western communities around OSINT tools which have more connections to technologists than those from former colonial nations (Alston 2013). As a result, the automation in investigative journalism tools reflects the priorities of the West and their direction of human rights knowledge (Okafor 2014), rather what we understand as accountability journalism too is shaped by Western-centric thinking that does not create the space for the very basic problems of developing nations, such as internet speed (Thorat 2019), access to technical education, documentation practices (Adam 2019, 2), or representation within these communities that are mostly white male-dominated spaces.

In fact, while human rights discourse is heavily embedded in the open-source investigative community, it is worth bearing in mind the fact that most post-war anti-colonialists avoided this human rights discourse as it bore too strong a resemblance to Western concepts of emancipation, which were used to justify colonialism and its various atrocities (Moyn 2012). Self-determination was the discourse used to work towards collective emancipation rather than the discourse stemming from the Universal Declaration of Human Rights (UN 2015 [1948]).

However, it bears mentioning that while the most visible members of the investigative journalism community using automated OSINT tools for human rights are white and male, it is not to say that investigators or women of colour within this field do not exist (the author herself is evidence to the contrary), simply that they have been marginalised and omitted from the platforms like most historical discourses, and the ones that continue to persevere despite this subconscious bias or discrimination are attempting to combine the discourses of self-determination and human rights to give it new meaning. This study will interview these investigators of colour to understand better the impact of automated tools in OSINT based investigative journalism.

3.3.5 Conclusion to Automation Theories

Automation here is understood within the Marxist analysis of machinery that cheapens human labour and gives rise to “the automation jobless” (*Time* 1961) rather than liberating humans from banal, repetitive tasks. Within capitalism, automation is introduced to incur a higher profit than to improve labour. It has similarly been deployed in knowledge work to automate “routine cognitive tasks”.

Despite the crisis in media as a result of the limitations of the capitalist economy, where technological advances have forced journalists into reskilling and multiskilling and resulted in large-scale job losses, the result is a lack of power shift between labour and capital, even in journalism where “automated journalism” is becoming a popular scope of analysis. However, the automation deployed in journalism is not absolute; it augments existing workflows. In the context of Big Data and digital tools, it has allowed for the rise of new ways of investigating that would’ve been impossible before, key among which is OSINT investigations.

OSINT investigations, through their impact, have in turn created a knowledge controversy (Dubberley, Koenig and Murray 2020), or shifted the power dynamics to

question established norms and figures of authority, and shaped our understanding in a new way by exposing what was once hidden.

What this augmentation has resulted in is a shift in power within the knowledge production process itself: it has created a secondary narrative to challenge or bolster the dominant one, and it has disrupted the production flow in two ways, one, by enabling a new class of investigators to challenge power using automated tools to expose or document what was once hidden, and two, by enabling a new class of technologists involved in creating these automated tools to engage in the process of knowledge production.

3.4 Conclusion

In conclusion, this chapter offers an overview of the theoretical foundations underpinning this study, specifically those in the political economy of knowledge work, such as journalism, and automation. Political economy here is defined as the study of power relations between productions and distribution of resources, especially communication resources that constitute knowledge labour (Mosco 2009). Within the Marxist tradition, knowledge labour is based on the creative worker rather than the output.

The crisis in media is contextualised before delving into its interaction with knowledge labour such as journalism. The crisis in the media has led to a decline in democracy due to the loss of powers of the fourth estate to hold power to account. At the heart of this crisis is capitalist modes of production, leading to media monopolies pushing out their agendas for profit and a change in labour within newsrooms due to technology. This has resulted in precarious employment coupled with pressures on journalists to multi-skill while at the same time fending off attacks on the press from the state and populist leaders and a crisis in facts among the public.

Of this, investigative journalists are hardest hit simply because they don't help make profits and instead cost organisations money, despite upholding the function of the fourth estate. OSINT investigations however have seen a rise in popularity despite this due to the sheer impactful nature of its findings and a collaborative model to compensate for cost cuts.

Automation in this study is understood as machinery intended to cheapen labour and create the 'automation jobless' due to capitalist modes of production, whose goal is not to improve labour but to make profits. Within journalism, automation has been the topic of much analysis due to its ability to free journalists from repetitive menial tasks; however, its implementation has resulted in an augmentation of "routine cognitive tasks".

The advent of Big Data and the popularisation of neural networks have allowed for access to vast amounts of data and the tools to interpret them, leading to the rise of OSINT. This popularity of OSINT has, in turn, created a change in power within knowledge production, questioning authority figures and their understanding through its impactful findings.

This has resulted in the introduction of OSINT jobs within mainstream media newsrooms, which this study focuses on, as well as the interaction of the tendency of precarious labour in journalism with the advent of OSINT and other automated tools.

The next chapter will delve into the methodology which outlines this empirical study's design as informed by the literature review and the theory foundations discussed here.

CHAPTER 4: METHODOLOGY

4.1. Introduction

The purpose of the methodology chapter is to outline the method of empirical research chosen for this study, namely: the sampling to be used in the research; how the research questions will be operationalised through the method chosen; the ethical considerations involved in conducting this study, e.g. the political context of the research, the training and personal values of the researcher, any conflicts of interest; and, the methods to be used in data collection and data analysis.

It follows from the literature review, which provided an overview of: existing empirical research in the political economy of journalism and knowledge work, the crisis of media/journalism, and the impact of automation on knowledge labour and investigative journalism. Critically, the previous chapter identified a significant gap in empirical studies that examined the usage of open-source automated technology and tools within the investigative workflow outside of violent extremism, and this chapter will illustrate how the research questions outlined in my study fills this gap. In addition, the literature review enabled us to assess the pros and cons of various research methods, concurrently producing a stronger argument for the methodology chosen for this research, expounded upon in this chapter.

The research design outlined in this chapter consists of 6 steps: identifying the sampling cases for the study; outlining the operationalisation of the research strategy through the creation of an interview guide; describing the collection of data; the analysis of data; providing a demographic overview of the data collected, and the ethical considerations that must be borne in mind for this study.

4.2. Sampling

4.2.1 Introduction

This study employs purposive sampling, being a qualitative study, where units in direct relation to the research questions are selected to be studied (Bryman 2012). The research questions for the study already provide the guidelines for the categories that are to be the focus of attention, i.e. the newsrooms or news communities of choice.

Most qualitative studies employ some form of purposive sampling, which in turn can be of various types as described by Patton (1990) and Palys (2008): a) *Extreme or deviant case sampling*, described as sampling cases that are “unusual or that are unusually at the far end(s) of a particular dimension of interest (Bryman 2012, 419); b) *Typical case sampling* described as sampling a case as it is found to exemplify a dimension of interest; c) *Critical case sampling*, described as sampling a crucial case that “permits a logical inference about the phenomenon of interest” (Bryman 2012, 419) – so allowing, a case to be chosen precisely because the researcher expects that it might allow a theory to be tested; d) *Maximum variation sampling*, described as sampling to ensure “as wide a variation as possible in terms of the dimension of interest” (Bryman 2012, 419); e) *Criterion sampling*, described as sampling all units (whether cases or individuals) which meet a particular criterion; e) *Theoretical sampling*; f) *Snowball sampling*; g) *Opportunistic sampling*, described as sampling which capitalises on opportunities to collect data from certain individuals who are otherwise hard to reach but who may provide valuable data that is relevant to the research question for the study (Bryman 2012).

Of the prominent types of purposive sampling identified, this study employs critical case sampling, where the institutions or communities practising a particular type of

investigative journalism (open-source type) have been included to permit a logical inference about the phenomenon of interest (Patton 1990)– automation, and its consequences on investigative journalism. Due to the author’s professional connections within the media industry, some of the interviewees could also be described as opportunistic sampling; and since this study focuses specifically on investigative journalism within the larger news apparatus, also stratified purposive sampling, exploring typical cases within subgroups of interest (Palys 2008).

The purpose of this proposed study is to determine the consequences of automation on investigative journalism in current English-speaking digital newsrooms, mainly in the United Kingdom, especially the BBC and BellingCat, as well as outside of these newsroom spaces / countries within online communities such as investigative journalists at the New York Times, investigators from Berkeley Law’s Human Rights Investigations Lab, and investigators with well-know human rights organisations working in the OSINT space. Open-source investigations using automated tools, the primary focus of this study, are still a relatively new phenomenon and only catching on within mainstream organisations like the BBC and the New York Times. Moreover, the author can attest from her own varied newsroom experience that a majority of the open-source stories published by such big outlets are commissioned to freelancers, who often work remotely online. This has its advantages and disadvantages.

The online nature of such investigations do make it easier for anyone with a working internet connection, patience, and digital forensic skills to be able to do the work remotely, which is an advantage for journalists not living in/who cannot afford to live in metropolises like London or New York, where most big newsrooms are based. However, the literature review highlighted the emergence of the gig economy in digital media, and its impact on freelancers in terms of rising precarity and increasing stress, which requires further interrogation through this study. In addition, the literature review covered several cases of investigations of online extremist content – which is often extremely graphic. The Dart Centre for Journalism and Trauma has perhaps the only guidance on secondary trauma from exposure to such content, but

only for broadcast journalists (Rees, Slaughter and Gering 2019). Open-source investigations require lengthier exposure to graphic content, and in much greater detail, such that the long-term impact of it on the mental health of open-source investigators cannot be ignored. Thus, the research will also involve communities of freelance open-source journalists, such as through the Facebook group 'OSINT Tricks' (name changed to preserve the anonymity of interviewees) and those curated by the author from social media. The research will try to determine how automation has affected investigative journalism in terms of change in work, the introduction of open-source investigations and the available scope for 'augmenting' investigative reporting with it to tell better stories, as well as the mental health impact of open-source investigations.

The previous chapter highlighted the large communication gap between the journalists who use the tools and the developers and trainers who create them. This study aims to fill this gap by speaking to journalists who actually use the tools but often do not have the technical language or the opportunity to communicate those needs. The interviews conducted in this study will hopefully paint a more holistic picture of the needs of the open-source community and how they are changing the face of investigative journalism.

4.2.2 Sampling Strategy

The key method of sampling used in qualitative research is 'purposive sampling', where the selection of units (people, departments, documents) bear a direct reference to the area being studied or research questions asked (Bryman 2012).

Instead of random sampling, participants in this study were chosen strategically for an interview so that their answers provide solutions to research questions; besides, as the research questions have implicit in them the sampling approach (Teddlie and Yu 2007). In terms of categorising cases, two levels of sampling were initially chosen: sampling of context and sampling of participants (Yin 2009). For the

sampling of context, the media institutions and communities were chosen as per the criteria outlined earlier.

The two main media organisations chosen, the British Broadcasting Corporation (BBC) and BellingCat, were selected as they present apparently opposing characteristics. While the BBC is a heritage institution, part of mainstream media with a global audience, and slowly coming to grips with open-source investigations through units like AfricaEye; Bellingcat was formed organically by volunteers who have been practising open-source investigations since 2014, and due to their success, have developed itself into an institution whose progress is closely followed by the BBC from the World Service teams Africa Eye and Arabic Investigations. With respect to the economic models, while the BBC is a public service broadcaster paid for through the licence fee, BellingCat has until recently survived on crowdfunding online and have received recent cash influxes through grants. The inclusion of a third category of journalists, i.e. freelancers, will help provide enough interviewees for data saturation in the study. These freelancers have been sourced from Twitter.

Journalists from the OSINT community on Twitter have been included to fully reflect the impact of the gig economy on journalism through the rise of freelancers. Since the author of this study is an OSINT freelancer too, she has industry knowledge and is aware that Twitter is the primary space of networking among freelance journalists. Therefore a shortlist of 10 male freelance journalists was compiled based on the opportunistic sampling of some of the most active OSINT investigators working in human rights with high social media following/popularity among the open-source community for practising OSINT for human rights and/or collaborating with media organisations for investigations. No geographical limit was placed on the investigators being shortlisted, except for spoken English, which was a filtering criterion as the research is being conducted in this language.

OSINT, like most fields of computer science, digital technology, or STEM (Science, Technology, Engineering, Mathematics), has an inherent gender and racial bias. As

an immigrant and a woman of colour, the author has personal experience dealing with workplace microaggressions on the basis of gender, race, nationality. Therefore considerations have been made to avoid replicating the same biases that exist within these newsrooms and communities. This is done to provide a holistic picture of the open-source community as well as to highlight the women who exist in the community but who are often erased, ignored, or disregarded in favour of their male colleagues.

The second Tuesday of every October is internationally celebrated as Ada Lovelace Day, to celebrate the achievements of women in STEM, in commemoration of Ada Lovelace, aka Ada Gordon, the “first computer programmer”, born in 1815. Lovelace developed the ideas of Charles Babbage, “father of modern computing”, in her essay “Sketch of the Analytical Engine, with Notes from the Translator”, which included the earliest versions of what is now known as a computer program (Lovelace 2009 [1843]). Lovelace’s essay was one of the critical works that inspired Alan Turing’s work on modern computing and AI, described in the previous chapter (Turing 1950). The celebration of the Day is a recent phenomenon, started in 2009 through a UK pledge online (Ada Lovelace Day n.d.). It is now one of the most popular trending topics worldwide.

On Ada Lovelace Day 2019, the author used her personal Twitter account to put out a call urging the visibility of women in the open-source community (Ganguly 2019). This resulted in a large number of women being tagged. Ten of these women have been selected for an interview in this study.

Thus, with respect to the approach used for purposive sampling, a critical case sampling technique was used to permit the logical inference around the development or phenomenon being studied (Patton 1990), i.e. how the influx of automated tools is changing the work process within investigations. Moreover, the BBC and BellingCat, through their contrasting models and directions of development, provide enough ground to test the theory that the use of automated tools is resulting in more open-source investigations and allows one to study how. In addition, the earlier

literature review had identified a communication gap between journalists who use automated tools, and programmers who develop such tools for journalists. The two communities chosen allow us to understand the reforms necessary to enable seamless augmentation of the investigative workflow.

The table below provides a visual representation of the sampling that was attempted at the beginning of the study, prior to the interviews taking place. A total of 30 interviews have been conducted. The names of the interviewees have been anonymised and assigned alphabets for ease of reference to prevent any negative impacts on their job from the interview, especially when discussing harsh working conditions, abusive management practices, and mental health, which is often stigmatised; for example, henceforth they will be referred to as Respondent A/B/C or when quoting, be indicated as Interview G/H/I.

Particular attention has been paid to the anonymisation process – this includes not publishing a full transcript of the interviews conducted in this study to avoid jigsaw identification – while also retaining details that are crucial to understanding the argument made by the respondent.

FIG 4.2.3 VISUAL REPRESENTATION OF THE SAMPLING

5 x BBC journalists	5 x BellingCat journalists	10 x Male freelance journalists	10 x Female freelance journalists
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4.3 Operationalisation

Operationalisation refers to the stage of qualitative research where the concepts that the study wishes to examine are broken down into measurable indicators. The term originally derives from physics to refer to the operations by which a concept (such as temperature or velocity) is measured (Bridgman 1927).

Bulmer (1984) described concepts as categories for the organisation of ideas and observations. In qualitative research, if a concept is to be employed, it is necessary to measure it. Once the measurement is complete, the concepts could provide an understanding of a certain aspect of the social world, in this case, an understanding of the world of investigative journalists working with open-source digital technologies.

Concepts in social research are measured through the devisement of indicators, which is either actively devised or already existing. In this study, the indicators have been devised through a series of questions in a semi-structured interview; the questions concern their habits, attitudes, mental health, and social situation. Multiple indicators have been used in the study as there are potential problems with relying on a single indicator or treating problems within human ecosystems as monoliths.

4.3.1 Interview Model

Triangulation strategy was initially considered for this study but was discarded as triangulation entails using more than one method or source of data to study social phenomena (Bryman 2012), whereas the richest source of data for this study come from one source/method: interviewing journalists facing the problem this study interrogates.

Overall the study uses a semi-structured interview model in order to reflect the interviewees' point of view faithfully and acquire rich, detailed answers which offer insight into the development process (Bryman 2012), as well as the emergence of themes that could be incorporated into the developing interview guide (Mazmanian, Orlikowski and Yates 2013). This also offers the added advantage of allowing interviewees the room to pursue subjects of particular interest, which is critical to understanding the change in workflow with the advent of automated tools.

A total of 30 interviews were conducted. For the first research question, the interview questions will be structured to cover the following roles/areas: job profile, automated

tools, working conditions, mental health. For the second research question, the questions will relate to understanding what kind of automated or machine-learning tools are used (if any), how they are being used, and reflections on the pros/cons of this usage. The final research question looks at the mental health impact of the implementation of digital work on the investigative journalists themselves.

4.3.2 Research Questions

The main research question has been interrogated through three sub-questions with appropriate labels to compartmentalise the three key points of inquiry, which have in turn been matched to the sections of the interview guide they correspond to. The nature of the research means that questions in the interview guide will not be mutually exclusive.

RESEARCH QUESTION:

What are the consequences of automation on investigative journalism?

RQ1.	How are automated tools changing the work of investigative journalists?
RQ2.	What are the risks and advantages of conducting investigations using automated tools?
RQ3.	What are the risks for the mental health of investigative journalists in the context of digital work?

4.3.3 Interview Guide

1. Name	Basic Details
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<ol style="list-style-type: none"> 2. Age 3. Gender, 4. Ethnicity/Race 5. Job Title & Organisation 6. How long have you worked in this job 	
<p><i>This study is focused specifically on automated tools being used in investigative processes. By that, we are referring to any digital tool that has replaced a mechanical task you had to do: for example, finding the original of an image being replaced by reverse image search or sourcing of historical satellite imagery. Most of these tools, when used in conjunction with one another to investigate openly accessible information, result in what is termed as an “open-source investigation”.</i></p> <ol style="list-style-type: none"> 1. What digital tools are you using to conduct investigations? 2. How many of the investigations you have conducted do you consider to be open-source investigations? 3. What are the five automated digital tools/technologies that you cannot do an investigation without? 4. When you think of each of these, what are their biggest advantages for your work? 5. And when you think again of each of these, what are the biggest drawbacks and disadvantages for your work? 	RQ 2
<p>A. Job Profile</p> <ol style="list-style-type: none"> 1. Describe what a typical day of work in investigations looks like to you. <p>B. Automated Tools</p> <ol style="list-style-type: none"> 1. Can you give me examples of how you use automated digital technologies in an everyday work situation? 	RQ1

2. And how would you say using such automated digital technologies has changed your workday?
3. Can you give me an example of how you produce and distribute news by making use of such technologies?
4. When a new tool emerges that supports conducting investigative journalism, how do you find out about it? Can you give me an example?
5. And how long does it, on average, take you to learn how to use such a tool?

C. Working Conditions

6. Have you in the past 12 months experienced stressful working conditions? Can you give me an example?
7. How many hours per week do journalists like you work on average?
8. Do you think there is overwork in journalism? If so, why do you think that's the case? In your view, what are the sources of stress that journalists experience?
9. Has your work-life balance in the context of digital technology that supports investigative journalism changed? If so, how?
10. In what respect have working hours in investigative journalism changed during the time you started working as a journalist? Has your dealing with digital technology to support investigations played a role in how working hours have changed – if so, how?
11. a) Do you think automated tools will result in more unemployment in the sector?
b) In 2018/19, Bloomberg introduced automated market updates, making certain reporters redundant. Do you know of any situation where there has been a similar replacement of human work by technologies?

<p>c) Have any new jobs been created as a result of automation?</p> <p>12. How do you experience dealing with the large amount of data available online and the speed at which you have to digest it? How do you experience keeping up with tech progress? Can you give me some examples?</p>	
<p>Mental Health</p> <ol style="list-style-type: none"> 1. Do you know colleagues who are struggling with work-related mental health issues such as insomnia, anxiety, Post Traumatic Stress Disorder (PTSD), and depression? Can you give me examples without naming the colleague? 2. What do you think are the causes of such problems? 3. Do you think that when there is work pressure and overwork combined with significant amounts of time invested for the use of digital technologies in the investigation process, that this has an impact on the mental health of journalists? If so, do you know examples you can give? What do you think is the role of digital technologies in the cause of journalists' mental health? 4. There have been recent layoffs at publications like Bloomberg where reporters have been replaced by an automated bot that does the same job. How do you assess this example? Do you know of similar cases? 5. Are there parts of your job which you fear will be automated in 5-10 years? Do you think there is a danger that automated digital technologies can make journalists redundant? 	<p>RQ 3</p>

4.4. Research Ethics

4.4.1 Ethical Considerations

Research ethics in social sciences are formally codified through statements of professional principles. The one used as a reference for this research comes from the British Sociological Association (BSA)'s Statement of Ethical Practice (2017).

Discussions about ethical principles can roughly be broken into four categories (Diener and Crandall 1978):

- Whether there is harm to participants
- Whether there is a lack of informed consent
- Whether there is an invasion of privacy
- Whether deception is involved.

The issue of harm to participants is addressed in the BSA code through confidentiality of records. Identities and records of the research participants will be kept confidential throughout the course of the study, to the extent possible. The list of interviewees or respondents will not be accessible in its entirety to any participant. However, due to overlapping employing institutions/companies, there is a risk that participants might organically discover who else from their community has responded to this study. Care will be taken to ensure all identities are anonymised during the presentation of the final findings. While making sure individuals are not identifiable, it is useful to acknowledge that when presenting interview transcripts, there is a risk of jigsaw identification of participants.

All participants in the study will be required to sign an informed consent form prior to or closely following the conclusion of the interview. The BSA statement says:

“As far as possible participation in sociological research should be based on the freely given informed consent of those studied. This implies a responsibility on the sociologist to explain as fully as possible, and in terms meaningful to participants, what the research is about, who is undertaking and financing it, why it is being undertaken, and how it is to be disseminated and used” (British Sociological Association 2017, 5).

In addition, with the introduction of the General Data Protection Regulations Act (GDPR) in the European Union (Logemann 2016), there is a legal imperative to ensure that any data collected in the course of this research is carefully collected, suitably anonymised in the records, and safely password-protected until publication.

While there is no involvement of deception or invasion of privacy, the practical considerations of this study are to ensure the integrity, quality and transparency of the research, as outlined by the European Social Research Council in their framework for research ethics (Economic and Social Research Council n.d.).

A final consideration is to be made for the author’s personal values, affiliations, training, and associations. The author notes that she has been a contracted employee of the BBC for the past four years, primarily as an investigative producer using open-source techniques. Prior to that, the author has trained and freelanced with the open-source investigative group BellingCat and has been a member of the online ‘OSINT Tricks’ group. During the course of the author’s investigations, she has encountered most of the journalists included in this project. Therefore, an effort will be made to not let personal biases interfere with the research goals.

At the same time, it is arguable that the process of taking sides is pervasive in much of sociology and often forms the basis of the hypotheses that determine research. In this particular case, the author has been a witness to the impact of automation in the form of redundancies (most recently when the BBC laid off 450 employees in 2020 to increase digital output), is currently part of the gig economy as a freelancer, directly affected by the 24-hour news cycle in the form of loss of work-life balance, and engaged in conducting investigations which are often affected by funding constraints despite accusing those in power of serious human rights abuses, as well as been

affected by the internal structural barriers based on gender, class, race and nationality.

It is also quite evident that without these personal connections, gaining access to these organisations would have been difficult if not impossible, and that the act of negotiating any interview is a political process in itself.

Regarding the practicalities of ethical approval, an application for ethical approval for this study was submitted to the Institutional Ethics Committee at the University of Westminster. The author confirmed that this research proposal does include Research Participants and that the study does involve issues relating to personal and/or sensitive data. As a result, the following measures have been taken prior to the commencement of the research interview:

- Participants were digitally provided with a Participant Information Sheet prior to obtaining informed consent, which can be kept by the participant.
- The procedure was briefly described to participants in advance so that they were informed about what to expect.
- Informed consent was sought for the study.
- Participants were told that they might withdraw from the research at any time and for any reason.
- Participants were given the option of omitting questions they did not want to answer.
- Participants were told that their data would be treated as confidential and that, if published, it would not be identifiable as theirs.
- Feedback to participants was provided at the end of their participation, when requested (e.g. give them a brief explanation of the study and its outcomes).

A risk assessment and hazard analysis conducted for this study also included the following:

- The responses of all participants will be anonymised to protect personal data. Identifiable information will only be accessible to the research author.

- The author will ensure that the study is GDPR compliant with regard to personal data.
- The interview guide has questions related to the work environment and mental health, which are potentially sensitive topics for those in active employment within an organisation. However, these questions are necessary for understanding the full impact of automation on investigative journalists.
- Copies of the informed consent form were ultimately destroyed following the completion of the interview process.

4.4.2 Informed Consent Form and Study Information Sheet

Each participant in the study was required to read the following Study Information Sheet and digitally sign the Informed Consent Form prior to commencing the interview process. The below form is based on examples from the UK Data Archive (UK Data Archive n.d.).

STUDY INFORMATION SHEET

Thank you for agreeing to participate in this study. This Information Sheet explains what the study is about and how we would like you to take part in it.

The purpose of the study is to determine the consequences of automation on investigative journalism, especially those using open-source techniques. The research will try to determine how automation has affected investigative journalism in terms of change in work, impact on mental health, and the available scope for 'augmenting' investigative reporting with automated tools to tell better stories. It will also delve into key debates in the media economy to highlight how a profit-driven capitalist economy is impacting high-quality investigative journalism, and through it, the fourth estate's ability to hold power to account.

The interview will be conducted by the undersigned, Manisha Ganguly. I am a PhD researcher in the field of media and communication studies at the University of Westminster's Communication and Media Research Institute.

If you agree to participate, the interview will be audio-recorded and will last approximately between one hour and ninety minutes.

The information provided by you in the interview will be used for research purposes. It will not be used in a manner that would allow the identification of your individual responses.

The study has been considered by an Institutional Ethics Committee at the University of Westminster and has been given a favourable review.

If you have any questions about the research at any stage, please do not hesitate to contact me.

Manisha Ganguly

*Doctoral candidate,
Communication and Media Research Institute,
University of Westminster
manisha.ganguly@my.westminster.ac.uk*

INFORMED CONSENT FORM

- *I, the undersigned, have been given the study information sheet and/or had its contents explained to me*
- *I have been given the opportunity to ask questions about the Study.*
- *I understand that taking part in the study will include being interviewed and audio recorded.*
- *I have been given adequate time to consider my decision, and I agree to take part in the Study.*
- *I understand that my personal details such as name, age, demographic will be anonymised for use in this study.*

- *I understand that my words may be quoted in publications, reports, web pages, and other research outputs outside the project, but without identifying me or releasing any identifiable personal data.*
- *I agree to assign the copyright I hold in any material related to this project to the author of this study [Manisha Ganguly]*
- *I understand that I have the option of omitting questions I do not want to answer.*
- *I understand that I can withdraw from the study at any time, and I will not be asked any questions about why I no longer want to take part.*

Name of participant _____ Date:

Researcher signature _____ Date:

4.5. Data Collection

The data collection strategy for this research was formulated in 2019. It was initially supposed to involve two sets of arrangements: figuring out the location where the semi-structured interviews could be conducted face to face wherever possible, and figuring out the documentation strategy.

However, following the coronavirus outbreak in 2020, most countries in the world, including the UK where the author was based, went into lockdown, with social distancing measures in place to prevent the transmission of the Covid-19 virus. Therefore, to ensure health & safety, as well as compliance with national bans on any social gatherings or meetings, these interviews have been conducted online.

The initial idea was to seek permission for the interviews of BBC journalists to be conducted at New Broadcasting House, Portland Place, London, where the newsrooms are based, so as to give the interviewer the opportunity to add observational notes to the analysis, and also add questions to the interview based on

it. However, due to the change in circumstances preventing that, the interview guide has been sufficiently edited to accommodate questions that hopefully compensate for the lack of observational notes.

Being an open-source investigative unit mostly operating online, Bellingcat did not have an established newsroom at the centre of its operations at the time of this study. The same problem of a physical location also applies to OSINT freelancers sourced via Twitter. However, since no in-person interviews are possible, all interviews for this study have been conducted via Zoom conference calling to preserve the high level of interaction and observational analysis possible in face to face, albeit digital, situations.

For all of these interviews, three forms of recording were made. During the course of the interview, an ordinary digital audio recorder was used, attached to a mic, to make a complete recording of the whole interview. A secondary recording was made simultaneously via the Otter app, which uses AI to provide a live audio transcription with timestamp (Otter App n.d.). This software eliminates the time needed for transcription, as it is (in the author's opinion) relatively accurate with American or British accents, although it requires some editing post-production. A third form of documentation, in terms of note-taking, was also involved, to highlight key sections of the interview for coding at a later stage and also include observational analysis.

Otter app has a limit to the minutes of transcription available for free. Since this study required more than 4000 minutes, the Premium or Professional version of the app was purchased for use.

The data collected from interviews, aided by the auto transcription, was analysed in between interviews and iteratively informed the questionnaire to allow for constant improvement and honing of questions closer to the research aim.

4.6. Data Analysis

Conducting 30 interviews in a semi-structured format generates an extensive, rich database, often described by qualitative researchers as an “attractive nuisance” (Miles 1979, 590) because of the attractiveness of the rich data coupled with the difficulty in establishing analytic pathways.

Unlike quantitative analysis, qualitative studies don’t have a rigidly codified set of analytic procedures, and social scientists would argue that this would not be desirable anyway (Bryman 2012). The ones available, broadly, include analytic induction, grounded theory, thematic analysis and narrative analysis (Hycner 1985).

Of them, grounded theory, with its iterative approach, is the most popular. However, both analytic induction and grounded theory are incompatible with this study, which uses a deductive-inductive methodology with theory informing research design.

Bryman notes, with chagrin, that while thematic analysis has no fixed definition, the sheer volume of studies conducted in the social sciences using this technique necessitates a serious discussion of its merits and its inclusion as a valid method of qualitative analysis. Its focus is on the emergence of themes, whether through a predefined coding scheme (Allen 2017) or a cross-case comparative analysis (Mathison 2005). The strategy suggested by the National Centre for Social Research in the UK is called Framework, which is a “matrix based method for ordering and synthesising data” (Ritchie and Lewis 2003, 219).

This is done by first constructing an index of central themes and subthemes, which are in turn represented in a spreadsheet of cases and variables. The themes are noted from a careful reading of the transcripts and are informed by the key themes already extensively identified in the literature review. The data is then organised into the grid by core themes, then classified into sub-themes for each case. The fragments used in the matrix will retain the language of the research participant as far as possible and indicate its position in the transcript.

Ryan and Bernard (2003) provide guidance on how to look for themes: repetitions, indigenous typologies, metaphors and analogies, transitions, similarities and

differences, linguistic connectors, missing data; and the use of social science concepts outlined in the literature review as a springboard for themes (Ryan and Bernard 2003). While Bazeley rightly has reservations about the vague identification used by social researchers to justify themes often (Bazeley 2013), the ones explored in the previous chapter, especially the theme of automation anxiety, have been well-founded and supported by studies.

One of the recent developments due to digitisation is the advent of Computer-Assisted Qualitative Data Analysis Software (CAQDAS) (Fielding and Lee 1991). Most of these programs use the logic of code-and-retrieve, allowing the researcher to code the text in a retrievable format. Ironically, this too is an example of automation of a seemingly manual task within the academic sphere of knowledge work, as discussed extensively in the previous chapter. CAQDAS allows the computer to “take over the physical task of writing marginal codes, making photocopies of transcripts or field notes, cutting out all chunks of text related to a code, and pasting them together” (Bryman 2012, 591). However, like the shortcomings of full automation explained previously, the researcher still has the responsibility of actually interpreting the data and coding it.

While software like NVivo might be a natural choice for coding 40 interviews, the use of CAQDAS has some severe shortcomings. It cannot, for example, help with the actual coding of materials (Sprokkereef et al. 1995). The fragmentation process of coding text into chunks which are then put together into groups by relation risks decontextualising the data (Fielding and Lee 1991). And finally, Stanley and Temple (1995) have suggested that the code and retrieval features could easily be adapted to Microsoft Word, thus saving on the lengthy period that would otherwise have been devoted to learning entirely new and somewhat complicated software. While Paulus, Lester and Britt (2013) have condemned the cautionary attitude towards CAQDAS as based on an outdated understanding of software, the author argues against automating for the sake of automating and instead automating for accessibility.

The data was analysed aided by a set of Office tools from Google to codify the data manually. The passages were manually transcribed only for relevant sections, with

the rest being automated. The transcripts were then transferred and analysed on Google Documents, which has the additional advantage of tracked changes, version history, and cloud storage. A matrix was created in Google Docs, with thematic coding per topic and interviews corresponding to their respective numerals demarcated clearly for ease of access and cohesion of format across all the sheets. The analysis chapters are divided by themes, with sections including quotes and analysis. The chapters will be categorised by research question categories of the study: impact of automation on work; risks and advantages of automated tools; impact on mental health; and suggested changes needed to sustain quality investigative journalism.

Ethical considerations have been made for the third-party data sharing policies of Google's Office suite and Otter, and sufficient anonymisation has been used throughout the transcription, coding and analysis process to ensure both anonymity and data privacy.

4.7 Demographic Breakdown of Respondents

This section provides a brief overview of the demographic breakdown of the respondents into the study before launching into the findings in the following chapters.

The breakdown is a quantitative guide to the study but should not be exclusively used for conclusions without additional context as this is primarily a qualitative study. This section is for information purposes only unless specified otherwise in the analysis chapters that follow.

4.7.1 Age

OSINT is a field that has become popular relatively recently, i.e. in the past five years, so it is not surprising to note that a majority of the practitioners in this study, who work for award-winning institutions or are pioneers in the field, are under the age of 35.

AGE BREAKDOWN OF RESPONDENTS

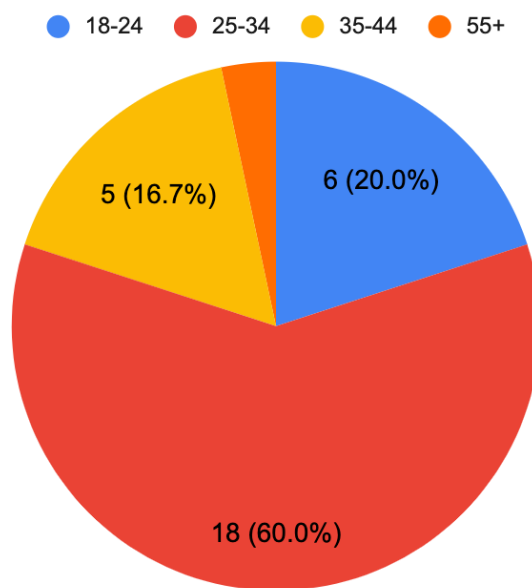


FIG 4.7.1.1 AGE BREAKDOWN OF PARTICIPANTS IN THIS STUDY

4.7.2 Gender

While OSINT is a visibly male field, due to the reservations made for female respondents in this study, the gender makeup of this study is almost 50:50 male-female. None of the respondents identified themselves as gender non-binary or trans, so those categories are not presented in this diagram.

SELF-IDENTIFIED GENDER BREAKDOWN OF RESPONDENTS

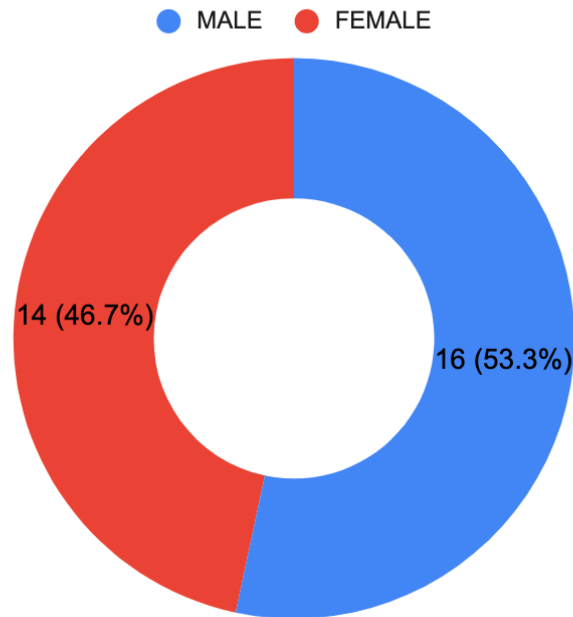


FIG 4.7.2.1 GENDER BREAKDOWN OF PARTICIPANTS IN THIS STUDY

4.7.3 Ethnicity

The OSINT community on Twitter as well as in the majority of mainstream media organisations are visibly white – in stark contrast to the subjects of their study, which mainly deal with non-white populations. This gap was identified, and care was taken during sampling to include OSINT investigators of colour, especially women, who are doing equally important, if not groundbreaking research but are not nearly given the same amount of respect or visibility due to the lack of white privilege. For the purposes of this study, the respondents were asked to identify as white, non-white, or mixed race. Due to the reservations, 1/3rd of the respondents of this study were OSINT investigators of colour.

RACIAL MAKEUP OF RESPONDENTS

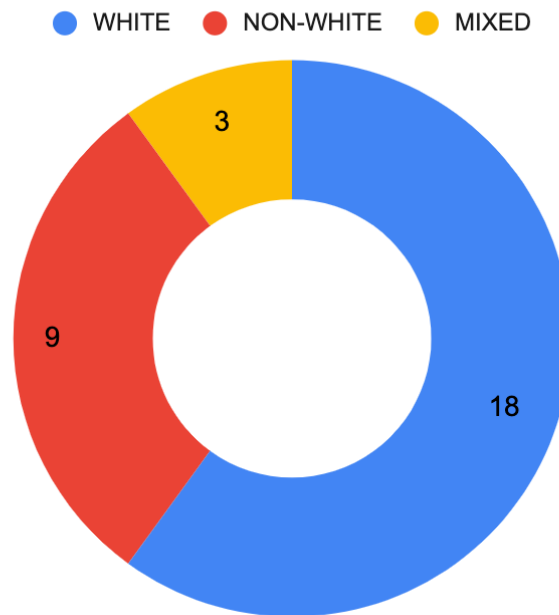


FIG 4.7.3.1 ETHNICITY BREAKDOWN OF PARTICIPANTS IN THIS STUDY

4.7.4 Employment Status

The employment status of OSINT investigators has a direct impact on the work stresses they face, their conditions of work, and how they are being affected by the gig economy of digital labour (which is a significant focus of this study and identified as a key theme through the literature review section).

When respondents were approached to participate in this study, 15 OSINT investigators were staff reporters, and 15 were identified as freelance investigators. However, during the course of interviewing, many freelancers acquired new positions as staff investigators, so the makeup is not 50:50 as planned.

EMPLOYMENT STATUS OF RESPONDENTS

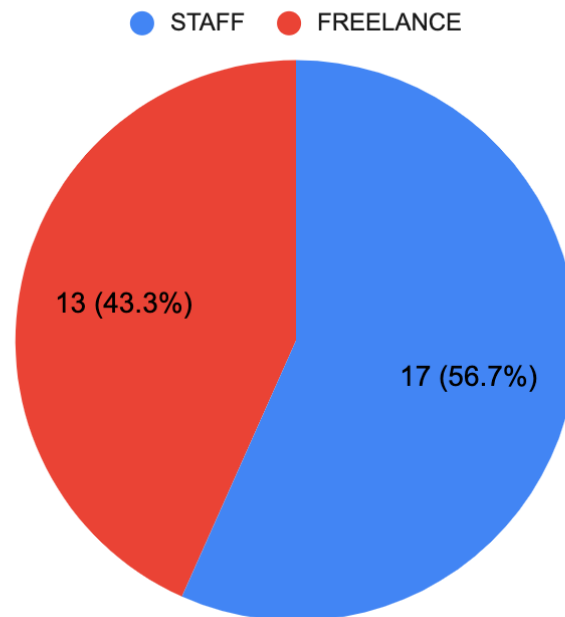


FIG 4.7.4.1 EMPLOYMENT STATUS OF PARTICIPANTS IN THIS STUDY

4.7.5 Years of Experience

For this study, it is essential to understand if there is a direct correlation between age and experience, especially since OSINT is a new field in investigative journalism. Furthermore, the author made an effort to contact/invite respondents who were both veterans in the field and pioneering newcomers.

The final breakdown shows that a majority of the respondents in this study have less than five years of experience working in Open-Source Intelligence-based investigative journalism, while three veterans interviewed have almost half a century of experience in OSINT combined.

This contrast in experience is crucial to achieving data saturation during the interview process, and more practically, understanding how the working conditions of OSINT

based investigative journalists have changed with the advent of digitisation in the media industry.

YEARS OF EXPERIENCE IN OPEN-SOURCE INVESTIGATIVE JOURNALISM

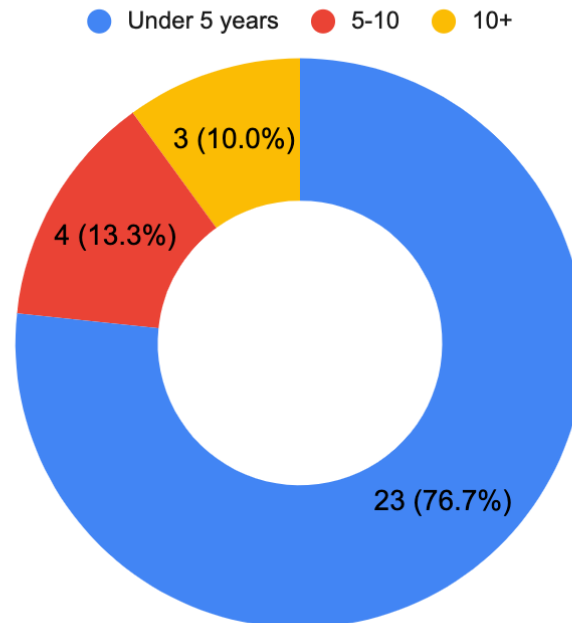


FIG 4.7.5.1 YEARS OF EXPERIENCE IN OSINT OF PARTICIPANTS IN THIS STUDY

4.8 Conclusion to Methodology

In conclusion, the research will employ a purposive sampling strategy with one main method of inquiry, semi-structured interviews, to draw out the responses to the research questions. The interview guide has been prepared to measure the multiple indicators formed from the concepts introduced in the previous chapter.

The advantages of this qualitative research methodology is the balance between theory and praxis in its study of existing theories on labour and automation within the context of journalism, and combining it with the praxis of understanding the actual level of implementation possible through tools being used or could be used through the emergence of themes guided by the theory; combining an ontological study with a technical solution-based result at the end of it. Also, having been acquainted with the newsrooms mentioned, access could be easily negotiated. However, there are

certain disadvantages to this method: the research will need to be very tightly scheduled to ensure that availability of the interviewees are taken into account, and factors such as timing, technology, etc. to do with logistics might be potential impediments to getting the interviews done in time. Data protection and ethical considerations are to be noted, and the data analysis will need to be transparent as software will not be used to aid the process.

A total of 30 interviews have been conducted, and a demographic breakdown of the respondents provided to contextualise their responses. The majority of respondents, despite the author's best efforts at diversification, are white males under the age of 35 with under five years of experience working as an OSINT investigator or an OSINT investigative journalist, mainly in a staff capacity.

The next few chapters outline the empirical findings of this study.

CHAPTER 5: OPEN-SOURCE INTELLIGENCE (OSINT) TOOLS FOR INVESTIGATIONS

5.1 Introduction

This section of the analysis deals specifically with the second research question i.e., what are the risks and advantages of conducting investigations using automated tools, focussed specifically on open-source investigative journalists' use of these tools. This is being tackled first, ahead of the rest of the analysis, to set out the foundational definitions that will be used throughout the rest of the thesis. Later in this study, this analysis will be used to contextualise the impact of these risks arising from open-source investigative work online, conducted by those who either identify as investigative journalists or work as investigators to contribute to open-source analysis of human rights-related investigative journalism.

The study is focussed specifically on automated tools being used in investigative processes. By that, we refer to any digital tool that has replaced a mechanical task investigative journalists' previously had to do: finding the origin of an image replaced by reverse image search or sourcing historical satellite imagery. Most of these tools, when used in conjunction with one another to digitally investigate openly accessible information, result in what is termed as an "open-source investigation".

The tool usage section was designed to understand the types or broad categories of automated tools available and in use by open-source investigative journalists so as to develop a typology of OSINT tools. This is done in three ways: one, through discussion of the tools most frequently used by investigative journalists – to help us understand the tools most useful to OSINT investigators and journalists, and how prevalent their use was in investigative journalism overall; two, discussing how they characterise OSINT investigations; and finally, determining the biggest advantage

and biggest drawback for these tools – to understand the ‘automatability’ of various knowledge processes in investigative journalism.

In this chapter, first the typology of tools will be outlined in the following section; followed by a discussion of the top tools suggested by investigators and their perceived risk or advantage to OSINT investigative journalism; before delving into the prevalence of OSINT investigations through the experience of these journalists and concluding with a summary of the key findings.

5.2 Typology of OSINT tools

To develop a typology of OSINT tools used in investigative journalism, respondents were asked to outline the broad categories of tools they used and what specific five tools they used the most. Their answers were then analysed in combination to create a classification of the various types of tools available in OSINT, which helps understand the ‘automatability’ of these processes.

Overall, the OSINT tools covered three broad stages of the investigation process:

- *discovery*, which consists of various monitoring tools or involves search engines for direct searches;
- *analysis*, which is the most complex section as it involves the most number of tools for various pathways of inquiry (and while these tools are labelled as analysis tools, they perform data fetching functions that then aid in human analysis, as opposed to purely automated machine analysis unaided by human interference, such as for the verification of images or video found during the discovering process);
- *visualisation, or presentation tools* used to lay out the findings or what the data fetched implies;
- and finally, *utility tools* which are not directly connected to OSINT but make the OSINT process possible, for example tools used for online communication aiding the mostly collaborative nature of OSINT, etc.

This echoes the information management system outlined by the Berkeley Protocol, which is an international protocol endorsed by the United Nations outlining the professional standards and guidelines for open-source information in international criminal and human rights investigations. The protocol outlines six main phases of the investigation process: (a) *online inquiry*; (b) *preliminary assessment*; (c) *collection*; (d) *preservation*; (e) *verification*; and (f) *investigative analysis*, but these steps are seen as part of a cycle rather than a linear procedure, to be repeated throughout the course of an investigation (Freeman, Koenig and Stover 2020, 53).

While the protocol outlines these stages with the outcome being the use of open-source evidence in international legal and accountability processes, it must be noted that the process for media production for open-source information in investigations would naturally differ slightly, due to considerations of storytelling, appeal to audiences, contextualising, and other factors such as medium of publication, format, and resources available. With that in mind, the tools of these three categories, as well as utility ones, were listed according to their function, and the results are presented in the table below.

DISCOVERY	ANALYSIS	VISUALISATION	UTILITY
<ol style="list-style-type: none"> 1. Search engines 2. Social media sites and monitoring tools 3. Satellite imagery 	<ol style="list-style-type: none"> 1. Image and video forensics, and verification 2. Databases: leaks, corporate, shipping, insurance, customs, etc 3. Geolocation tools 4. Chronolocation tools 5. Weapons analysis 6. People search tools 7. Tracking tools: Vessels, aviation, vehicles 8. Website analytics 9. Web scripting tools 10. Cryptocurrency tracking tools 11. Facial recognition 12. Network analysis 	<ol style="list-style-type: none"> 1. Data visualisation 2. Design tools 	<ol style="list-style-type: none"> 1. Archiving tools 2. Security tools 3. Communication tools 4. Collaboration tools 5. Efficiency tools

FIG 5.2.1 BROAD CATEGORIES OF OSINT TOOLS USED BY INVESTIGATIVE JOURNALISTS

5.2.1 Discovery

The *discovery phase* consists of two kinds of discovery: *passive monitoring*, such as through social media websites, or *active searching based on leads*. The Berkeley Protocol also uses these two categories, for either “discovering information and information sources through the use of general or advanced search methodologies; or discovering new information through the consistent and persistent review of a set of constant sources” (Freeman, Koenig and Stover 2020, 56).

While using automation, the final judgement of what is or isn’t worth investigating seems to reside exclusively with the OSINT investigator sifting through data. Discovery essentially involves the usage of three broad types of automated interfaces or tools: *for active searches*, the use of *search engines* using Boolean operators or keywords to hone down or discover information about a topic; *for monitoring*, it involves the use of two kinds of sources— *social media websites and specialist monitoring tools* tailored to their databases; and *satellite imagery sources* to monitor movements in a particular geographic area of interest.

The protocol stresses the combination of careful observation and systematic inquiries required to establish facts in a digital environment:

“Open source investigators must use a critical eye to vet online content and be able to assess the ways in which digital material can be distorted or manipulated. They should also apply a structured approach to querying the Internet, accounting for algorithmic bias and inequality regarding the availability of open source information pertaining to specific groups and the dynamic nature of online information. Every alleged fact should be rigorously examined.” (Freeman, Koenig and Stover 2020, 55)

5.2.2 Analysis

Once the topic has been identified, the analysis stage involves: *finding supplementary data for verification, structuring that data, archiving it* before it gets

deleted, and *finally analysing all the data* put together to come to a conclusion or a finding.

This is the most complex stage of all as it has the most categories of tools available (12), which each represent unique lines of inquiry depending on the nature of the project:

a) *image and video forensics tools* used for verification of the authenticity of such media or to pinpoint where it originated from and the context of its usage– this is the first step to any visual verification process, whether it be for a misinformation detection project or even a traditional character-led investigation;

b) *databases* are a rich and varied source of data that aren't essentially a new discovery but, with the advent of the internet and digitisation, have become a valuable tool both for analysis and discovery of new leads– databases range from leaks databases to corporate registries, as well as registries for shipping, customs, and insurance;

c) *geolocation tools* are an invaluable part of any OSINT investigation involving visual elements as it helps to geographically locate where a photo or video was taken or where an incident occurred and provides additional context or leads– geolocation tools are essentially mapping or satellite tools used to pinpoint the exact location, but the detection of clues found in the media is exclusively a human endeavour;

d) *chronolocation* is the second step after geolocation – it is the determining of the exact time when a photo or video was made using the available shadows in the medium to calculate the position of the sun in the sky and therefore the sky, and is a modern digital incarnation of the sundial;

e) *weapons analysis* involves the usage of various open-source weapons databases to track their sale, usage and flow and while the tool is labelled as analysis, barring the information found in the databases themselves, this analysis is a human process of inference and deduction;

f) *people search tools* are invaluable and self-explanatory – they help find people who are often witnesses, victims, or aggressors in an investigation and could thus provide valuable testimony or corroborate facts;

- g) *tracking tools* using GPS or similar technology to track the movement of transportation vessels, from ships and aircraft to cars, and often either form the basis of an investigation by itself or add context or valuable clues within a larger one;
- h) *website analytics tools* help investigate and extract the data behind the website, such as who created it, when, where, how, etc. and are the most important tools in online fraud or scam investigations;
- i) *web scripting tools*, for advanced users, involve the use of coding languages like Python to write custom scripts for a specific function and help the investigator navigate when there isn't a single tool that provides a quick fix – however, web scripting is mainly seen as optional by most of the interviewees in this study;
- j) *cryptocurrency tracking tools* are specialist tools that enable one to track the flow of what is supposed to be untraceable cryptocurrency like Bitcoin, mostly to expose funding of criminal networks or other financial crime;
- k) *facial recognition tools* go hand in hand with people search tools and are used when the name of the person in a visual is unknown or used to locate public accounts of an individual via their photo;
- l) *network analysis tools* are usually used to fetch data about influence operations or trends on social media networks or simply across the internet, such as of a recurring advertisement.

5.2.3 Visualisation

Once the data analysis is complete, and a conclusion is reached, the next step is to visualise it for its audience, whether for a film, a private client, or subscribers to a news website. With OSINT investigations, there is a particular challenge in visualising the investigation as the visualisation itself must depict how the open-source investigation was conducted and be open to scrutiny, because transparency is one of the central tenets of open-source investigative journalism.

In addition, because an OSINT investigation uses various formats of inquiry: text, visual, data points – there is a particular challenge in presenting all of this accurately.

Visualisation tools are subdivided into two broad categories of data visualisation tools, and design tools like Adobe Photoshop or animation to depict abstract concepts and disparate data sources combined to reach a conclusion.

5.2.4 Utility

The final major category of tools, titled utility, involves tools that are not strictly seen as “OSINT tools” but without which an OSINT investigation would be impossible, or worse, reach the wrong conclusion – they exist to provide a smooth flow of operations and minimise inaccuracies, help collaboration, documentation, while also ensuring the security of the information being investigated.

Utility tools have been divided into five main sub-categories:

- a) *archiving tools*, either manual or automatic, that help preserve digital evidence in the event of its removal or deletion;
- b) *security tools*, that ensure the safety of the devices the investigations are being conducted on – open-source investigations are done online and must be protected from online attacks like malware, phishing or government surveillance;
- c) *communication tools*, and d) *collaboration tools* which go hand in hand because OSINT investigations are mostly group projects, and both of these types of tools ensure that teams can collaborate on a shared interface and communicate with each other; and finally,
- e) *efficiency tools*, which don't add anything directly to the OSINT investigation but help speed up some of the manual or 'clunky' or time-consuming digital processes that run parallel to an OSINT investigation like import-export and javascript blocking tools.

Despite the prevalence of tools, most interviewees were quick to insist that tools only aid in the investigation and don't form the bulk of it, and the gaps in between the tools are filled in with critical thinking. Respondent D said, “People probably look at this space and think it's obviously a technical computer science space. But it's not.

It's people who are stubborn and exhaust every option, and a ton of data entry. I think it's a lot of seeing. Complicated things like web scripts take a lot of time to learn, which I don't have." Respondent I also argued that they kept it "fairly low tech", and it helped them achieve results. Respondent V from the award-winning OSINT unit Bellingcat agreed, "People often think we do use high tech tools, but in general, we use very little tools except for the ones that are freely available out there."

Respondent W added: "Most of the work I do by hand because this is really focusing on details, I don't do a lot of things in bulk, although it might sometimes be useful, but the main tools that I will use could bring together information from different kinds of databases across different countries. So in this sense that there's a bit of automation, but it's still not the main focus."

Respondent X, who was among the ones with the most experience of OSINT for the BBC spanning several decades before "OSINT" became common parlance, explained the difficulty with classifying what is or isn't OSINT tool-based:

"In 1995, we had one computer in the BBC office that had the internet on it, and they didn't want us to use it because they just thought it was full of mad people and porn – which was entirely justified in some respects. In those days, it was newspapers, starting with the broadsheets. Given my background in computers which predates the BBC, if we weren't using the web, we were using newspaper databases, so it's always been OSINT– I don't go to libraries, I don't call up people, I don't look through bins. It's all digital for me a hundred percent."

To briefly summarise this section, the typology of tools developed from responses gathered from 30 OSINT investigators showed that tools were of 4 broad categories: discovery tools, analysis tools, visualisation tools and utility tools. Discovery tools ranged from search engines and satellite imagery to social media sites and their monitoring tools and open databases. Analysis tools are varied; they range from image and video forensics tools, databases, network analysis tools, geolocation and chronolocation tools, weapons analysis tools, people search and facial recognition

tools, tracking tools of transportation vehicles, website analytics and web scripting tools, and finally, cryptocurrency tracking tools. Visualisation tools depend on the medium of publication and broadcast, and utility tools range from archiving and security to communication, collaboration and efficiency tools.

5.3 Risks and Advantages of the Top Tools for Investigations

To understand the risks and advantages associated with the usage of OSINT tools, respondents were asked to list their top 5 tools in their OSINT toolkit, and for each of the tools, to list one advantage and disadvantage. The reason for doing this is two-fold: first, to understand the wide variety of the most popular tools in use by top OSINT investigators and thus gain an insight into the ‘automatability’ of specific processes in an investigative workflow; and second, to understand the issues arising from the use of these tools themselves, whether technical, ethical, or otherwise.

For the 30 OSINT investigators interviewed, a total of 150 tools responses were recorded, but as expected, some tools appeared in every response and were found to be overlapping with others, while others were anomalies based on specialisation. One main takeaway from the interviews was that most interviewees had a specific focus like verification, network analysis, cryptocurrency tracking, or geographic areas they specialised in. The tools they used catered to those needs – *no respondent regarded themselves as an expert in all the various types of OSINT*. However, some like Respondent K argued, “Because my focus is verification, I’m relying on everything that’s out there like geolocation, reverse image search, video verification, satellite imagery, or map services.”

Below is a list of advantages and disadvantages as detailed by respondents in their interviews. It is worth noting that no tool described was perfect, so tools were assessed to see if, on balance, the advantages outweigh the disadvantages to being

included in that category and vice versa. The advantages and disadvantages have thus been presented alternately to capture that nuance.

5.3.1 Advantage: Automated Image Forensics

Some tools were seen to have automated time-consuming manual processes. Among the ones most frequently mentioned were the visual forensics tools like Google reverse image search and TinEye – most found it to be a good starting point, especially for verification purposes.

“I found it really helpful with coronavirus fake news to figure out where an image has come from but also in what context is being used in other parts of the world, and how it’s kind of misconstrued,” explained Respondent A, but then added, “For me sometimes it is really annoying because I find that sometimes I’ll have an image, and I cannot locate it.”

Another similar forensics tool focussing on video, InVID, fared better– it was seen as helping to identify where a video been posted and how it’s travelled, and in what context it’s being used: “the data that you get back from it is quite good” (Interview A).

5.3.2 Disadvantage: False Sense Of Exhaustiveness

Respondent A2 said the tools in visual forensics also gave “a false sense of exhaustiveness”. Respondent H called Google Reverse Image Search an “almost miraculous piece of technology that you can give a computer picture, and it will find that picture” but lamented that “they don’t work 100% of the time”.

5.3.3 Advantage: Easier To Locate People

People searching was the second most popular category of tools used, with Pipl being the most mentioned. Respondent A said it helped them “identify during the Black Lives Matter movement, people who are being spoken about and trying to kind of find them in a way that is not as invasive because Pipl has their phone numbers of course on there, but also there's emails, there's Facebook, Instagram.”

Another automated people search tool that is quite popular is Skopenow, where one can enter someone's name or a handle or a phone number or email address and then it returns a dossier on the person. “That's just incredibly useful for if you have one piece of information you want to plug into something just to see if there's anything connected to it,” explained Respondent O. “Both Skopenow and Pipl are great at just picking up on low hanging fruit, essentially.”

5.3.4 Disadvantage: Human Judgement Still Indispensable

People searching would be impossible without the automated tools mentioned; however, respondents added, “Because it's the internet there are so many possibilities, you can't really narrow down who you want to find so it can be very hard at times, and sometimes I'll start with people and be like, actually, ‘This is easier if I just Google search it.’” (Respondent A). Despite the information gathered by Pipl, it was not always the best tool, and human judgement was always involved.

5.3.5 Disadvantage: Expensive

Automated tools that worked and did not involve a steep learning curve were proprietary tools and, therefore, expensive. One such tool was Maltego, a data mining tool for people search. “An advantage of it is that it allows you to perform things like email reconnaissance very quickly and efficiently, which can otherwise take a lot of time, and the disadvantage to it is that you're limited in the number of automated searches, so you have to pay or keep creating free trials which are

cumbersome” (Interview C). And while it was seen to save vast amounts of time as machines can do what humans cannot, it could also be “wildly inaccurate” (Interview C2).

5.3.6 Disadvantage: Too Many False Positives

A common downside to automated tools mentioned in the study was the prevalence of false positives among data mining or aggregator tools. For Maltego, Spiderfoot, and a lot of people search tools, investigators reported spending a substantial amount of time filtering out false positives (Interview U).

5.3.7 Advantage: Remote Online Collaboration

Google Sheets was indispensable for most open-source investigations that were collaborative – it provided a common ground for research that allowed multiple people from various locations to work together aided just by a working internet connection and a Google account – and it was often used in the information gathering stage to sort multiple data points. It is worth noting that despite being the go-to choice for most investigators, it was seen to have limited functionality compared to Excel (Interview A2).

5.3.8 Advantage: Accessible Tools

Google overall emerged as the top winner in the tools development category, whether it be for its advanced search operators that can be used in a Google search to narrow down results, to their collaborative platforms like Google Sheets or Google Docs, to their free satellite imagery software Google Earth Pro which had unparalleled customisation abilities deemed indispensable (“provides historical imagery, terrain mapping” (Interview A2); “3D modelling” (Interview B); “it’s free, and

it covers pretty much every metre of the earth but provides a seamless workflow, and you can make notes and use postmarks polygons to work out the size of areas of land” (Interview C); “remote monitoring of war zones” (Interview G); “user-friendly” (Interview I); “features that let you measure the height of a building, how far is the distance between one location and the other. It’s also fun to play around, and you can collaborate” (Interview K); “We don’t have to have any specialised GIS training” (Interview P).

5.3.9 Disadvantage: Information Asymmetry

Google was the most popular due to the universality of its tools – both in terms of availability and coverage. However, most respondents whose research involved coverage of Asia and the Middle East described their satellite imagery as a “blackbox in terms of regions they cover and how often they update imagery” (Interview S). Google was described as “biased in terms of language and geography” (Interview A2), while others said that Google did not have imageries at all of some regions of Afghanistan or Libya, and if they did, they were very old and of the poorest quality (Interviews B and G).

There was a sense of loss of information or a loss of control over the quality of information from developing ones compared to developed ones. While substitutes like Sentinel were available with more frequent imagery, the quality was often deemed inadequate for investigative purposes (Interview B).

Respondent M described how in the absence of imagery, investigators had to come up with creative solutions to their problems: “We don’t get access to very expensive or more security and military-oriented tools. You have to persevere to get very creative with a lot of other tools you have; for example, two or three years ago, you could trace the movement of servicemen jogging around a secret base in Mali. And by seeing that same exact pattern, people understood the size and shape of this object nobody could see from the sky, which was a secret base in the desert. And I

think it's a huge gap that we have with satellite imagery, especially when last year Terraserver closed down. I think it left a huge gap in the market of fresh imagery.”

Terraserver was the most popular satellite imagery provider for human rights OSINT investigators, providing high definition satellite imagery for journalists and investigators on limited budgets – it shut down in early 2020, leaving OSINT investigators scrambling to find alternatives and having to resort to Google tools, which already have a monopoly on the OSINT market.

5.3.10 Advantage: Easily Sift Through Social Media Data

Twint, an automation scraping tool, bypassed Twitter's API key in a way that allowed one to easily filter online content, “which is an advantage because it stops you from being able to see 200 tweets and results” (Interview C). However, like with Graph Search or any advanced tool, one disadvantage was the learning curve involved, as one needed to know how to input the right queries to results, and do it through a command prompt.

5.3.11 Advantage: When Combined with Local Human Knowledge, Helping to Map Social Media Behaviour Patterns

“In the United States, younger folks think Facebook is a dinosaur. If you start doing open-source investigations into social media, you know Facebook plays an incredible role in terms of how people are associated with one another. From doing criminal investigations in India, I know that people don't worry about privacy settings as much on Facebook. So a lot of the information is very public. You can definitely see tons of photos on Facebook and who's friends with whom, who they're married to. It's less privacy-oriented” (Interview T).

5.3.12 Advantage: Boosts Human Creativity

Creativity was another human aspect to OSINT investigations, described in earlier chapters as the ability to think laterally to solve problems that an automated tool, or a machine programmed to work incrementally, could not possibly replicate. One example was the use of Whatsapp not as a communication tool, which is how it is designed, but as a people search tool: “You can enter a phone number on your contacts, and if the person's on WhatsApp it'll let you know and a good amount of the time they'll have a profile photo.” (Interview T)

5.3.13 Disadvantage: Osint Tools are No Silver Bullet to Automate the Process Fully

No one silver bullet automated the entire process of filtering social media platforms to investigate. “Because in most cases, you have to get an overview of a complete profile to understand the person's psychology behind it,” said Respondent U. “So I also don't really see the benefit of the tools there.” Respondent G, who specialises in social media investigations, added that “even if you had magic tools that investigated for you, I would not trust the results as machines make errors like humans do, and could miss something important to the case.”

5.3.14 Disadvantage: Data Monopoly by Big Tech

Monopolies were also a problem when it came to social media investigations – OSINT investigators had to change tactics every time companies like Facebook changed their algorithm, operating as a “walled data garden”.

“Facebook really makes it hard to search for things, so you end up having to scroll through Facebook for like 5000 years if you want to get information about a particular

event,” said Respondent B2. Respondent P agreed, “Ever since Facebook disabled Graph Search, it has become a lot more difficult to find content on Facebook. You know there are lots of historic posts where a person has spoken about something, but it's no longer possible to view that post because Facebook has locked down. It's been quite frustrating in that respect.” Graph Search was an advanced search option available to OSINT investigators to customise their query and run third-party tools to find information from the Facebook ecosystem.

Respondent G, however, believed that the number of OSINT investigations coming out exposing criminal networks or wrongdoing on Facebook platforms had caused the company to shut its content down, contrary to the popular narrative being promoted by Facebook that it had tightened its data control following the Cambridge Analytica scandal in 2018:

“Investigations were coming out showing how openly war crimes were being shared on Facebook and being used to incite hatred and exposed how Facebook moderators were failing to get a lid on this. And then there were other stories about how the moderators themselves had PTSD and were being mistreated by the company, so the best thing for them to stop all the bad press was to kick all the journalists out. After they locked down graph search, their press office said they would have a solution for investigators like me, but after a month of chasing them, I never heard back – this was a year ago. Facebook never deals with journalists in good faith, and it is more apparent now than ever” (Respondent G).

And yet, OSINT investigators couldn't do without Facebook. “It's just such a large slice of the world's population, nearly half of the world, so it's outstanding. In terms of searchability, it is getting slightly better. It's still frustrating, given what we used to have. Back in the old days, you could only search for three things, then it got scarily brilliant with Graph Search, I mean frightening,” added Respondent X.

Regarding Twitter, respondents described using scraping tools like Tweetdeck and Twint to get through the sheer volume of content posted there. “Twitter encourages

emotional engagement over facts, which can mean that if you're presenting a piece of information, even if it's factual, it will not get as much traction as a non-factual piece of information that connects with someone emotionally. And that also means that not only is it more difficult to present that information on Twitter, it is also more difficult to find that information on Twitter because people tend to alter or invest emotion into that information making it more visible,” explained Respondent P.

5.3.15 Advantage: Easy Digital Archiving

The Wayback Machine was the most cited archiving service in this study, lauded for being freely available. It is another example of creative usage – it is primarily used to make a reliable record of how something exists on the internet at a point in time (Interview H) or to check older versions of websites (Respondent X: “For example, when a government advisor tells you that he was writing about coronavirus a year ago and you go to his blog, and he was, but then you can go back in time and discover that he was a sneaky liar. And he hadn’t”). But it can also be used to safely browse the web by visiting websites without going there directly with one’s IP address (Interview W).

5.3.16 Advantage: Specialised Tools to Manoeuvre State Censorship

One of the main parts of OSINT is social media investigations. As China has a very specific social media ecosystem native to its population only, the OSINT investigators needed to be aware of the tools that can work in this ecosystem. OSINT investigators focussing on China had to have specialist tools under their belt because of the Chinese Firewall and censorship by the Chinese government that handicapped ordinary OSINT tools with lack of data access. Thus, local knowledge, in this case, trumped general OSINT knowledge.

5.3.17 Disadvantage: Can Fall Victim to State Censorship

“There is a common disadvantage of all conventional OSINT platforms,” said Respondent N. “In China, they have to censor things before anything gets published. You really have to know the right accounts and keywords to find the information you need, or sometimes people post critical information using euphemisms here. You have to keep switching the platforms based on the kinds of information. When people upload a video, sometimes it's a really important video, but then the name is so random you can't find it unless you know about the account.”

5.3.18 Disadvantage: Expert Knowledge Necessary To Assess Safety and Efficacy of OSINT Tools in the Investigation

With the use of automated tools, one ethical issue was the creation of these tools themselves: who built or funded the development of the tools. “InVid is a really good tool for reverse image search, but the EU government funds it – which is not necessarily a bad thing; of course, there's a lot of government-funded things. But when you're using open-source tools, thinking about where the products come from and how that could impact how the data is used is critical,” explained Respondent I.

Human knowledge to decide what tools to use, where, and when was always the primary factor behind the investigative process, echoing what Respondent N described earlier in needing to specialise in China-specific tools for their investigations.

5.3.19 Conclusion

To briefly summarise, the questions in this section were designed to elicit an understanding of the most popular tools in use by top OSINT investigators. Most interviewees had a specific focus in their investigations and used specialised tools.

For visual forensics tools, while the advantage was the automation of the image forensics process, the disadvantage was the false sense of exhaustiveness which comes with overreliance on one tool/one particular set of tools.

For people searching, OSINT tools had made it much easier to locate people but were often very expensive and replete with false positives, so they required human judgment.

Digital tools like those offered by Google had made remote online collaboration much easier, and made OSINT tools much more accessible. However, information asymmetry was still an issue with such tools, which often had patchy information about developing regions.

OSINT tools had been massively implemented to sift through social media data quickly, and when combined with local human knowledge, they were very helpful in mapping out social media behaviour patterns. They were also versatile and boosted human creativity. However, OSINT tools were no silver bullet to automate the process entirely, and they were also heavily reliant on the data monopoly by Big Tech.

The tools available have made digital archiving and safe browsing much more accessible. Specialised tools exist to manoeuvre state censorship in regions like China, but they also require constant monitoring as they often fall victim to state censorship. A final disadvantage was that OSINT tools overall required expert knowledge to assess the safety and efficacy of the investigation.

The chart below collates all the different types of tools reported to have been used by the OSINT investigators in this study, grouped according to the typology established in the earlier section.

FIG 5.3.1 TYPOLOGY OF TOOLS USED BY OSINT INVESTIGATORS

DISCOVERY	ANALYSIS	VISUALISATION	UTILITY
Search engines <ul style="list-style-type: none"> Google Advanced search Duckduckgo Yamli 	Image and forensics and verification <ul style="list-style-type: none"> InVid Google Reverse Image Search TinEye RevEye Yandex Baidu Google Lens Exiftool Redfin Amnesty Video verification Trulymedia 	Data visualisation <ul style="list-style-type: none"> QGis KML viewer (Chrome extension) 	Archiving tools <ul style="list-style-type: none"> Wayback Machine Hunchly Snagit (Chrome extension)
Social media sites and monitoring tools <ul style="list-style-type: none"> Facebook Twitter LinkedIn Instagram Youtube Twint Tweetdeck Buzzsumo Tencent video SAMdesk 	Facial recognition <ul style="list-style-type: none"> Facesearch Microsoft Azure 	Design tools <ul style="list-style-type: none"> Adobe Photoshop Animation tools 3D Modelling tools 	Security tools <ul style="list-style-type: none"> ProtonVPN
Satellite imagery <ul style="list-style-type: none"> Google Earth Google Maps Yandex Maps Sentinel Hub Planet Labs Baidu maps Tencent maps 	Network analysis <ul style="list-style-type: none"> SpredFast Google Ads search Who posted what Crowdtangle Tweetdeck Buzzsumo 		Communication tools <ul style="list-style-type: none"> Slack Signal Messenger
Databases: leaks, corporate, shipping, insurance customs, etc <ul style="list-style-type: none"> PACER Wikileaks OCCRP Electoral rolls 	Geolocation tools <ul style="list-style-type: none"> Google Earth Google Maps Yandex Maps Sentinel Hub Echosec Wikimapia 		Collaboration tools <ul style="list-style-type: none"> Google Sheets Libre spreadsheets
	Chronolocation tools <ul style="list-style-type: none"> Suncalc 		Efficiency tools <ul style="list-style-type: none"> One Tab (Chrome extension) Import genius Panjiva No script (Mozilla plugin) Google Translate

	Weapons analysis <ul style="list-style-type: none"> • Jane's database • University of Geneva small arms database • SIPRI • Arms trade treaty 		
	People search tools <ul style="list-style-type: none"> • Pipl • Spiderfoot • Maltego • Sherlock • Skopenow • Whatsapp 		
	Tracking tools: Vessels, aviation, vehicles <ul style="list-style-type: none"> • Marine Traffic • Flightradar24 • ADSB Exchange 		
	Website analytics tools <ul style="list-style-type: none"> • Spiderfoot • Domain tools • DNSlytics • Urlscan.io • Domainbigdata 		
	Web scripting tools <ul style="list-style-type: none"> • Python 		
	Cryptocurrency tracking tools <ul style="list-style-type: none"> • Google Dork • Block explorer (blockchain.com) • Wallet explorer 		

5.4 Prevalence of OSINT Investigations

In this interview question, respondents were asked how many OSINT investigations they had conducted to date (i.e. till the summer of 2020 when these interviews were conducted), and this was done to gain an insight into the prevalence of OSINT investigations being commissioned by editors from the OSINT investigators engaged in a staff or freelance capacity, or were being read by subscribers online and

requested through popular demand. By 'OSINT investigations', respondents were asked to name an average number of investigations they had conducted that had some open-source aspect to it, as it is understood that OSINT is often used in conjunction with traditional methods of investigative journalism, or was used to verify leads acquired through traditional leads and to uncover other leads hiding in the public domain.

It is difficult to gauge an investigators' experience in OSINT by the number of investigations reported, as an OSINT investigation can be of variable lengths – a simple verification investigation might be something that could be produced quickly in the course of a day; however, a complex long-term OSINT investigation is often a multi-year time-consuming and resource-intensive enterprise with several moving parts – so if an interviewee claims to have completed 200 OSINT investigations, it is not a demonstration of OSINT expertise so much as it is a feature of their 'beat' or the style of investigations; and this interviewee is in no way more qualified than one who has only produced three investigations in the past five years, but has spent the better part of 2 years meticulously uncovering serious wrongdoing in one focussed investigation.

OSINT investigators working on the verification beat have a reactionary job similar to breaking news reporters– their task is to battle disinformation and misinformation before it clouds the truth and do it as swiftly as possible and as many times as needed. The process is three-step: to find dis or misinformation, verify it, and declare it true or false – and a dedicated misinformation reporter, for example like the BBC has, is sufficient to do this relatively simple daily investigative job. In contrast, those working on an investigations or documentary team have a job where they are expected to uncover evidence that has never been reported on before, in a high stakes investigation their audience will want to watch, fact-checked as accurately as possible using open and closed sources. This takes time, like most of the specialised investigative processes, and years of mastering or trying new OSINT techniques to crack the case.

The chart below shows the breakdown of experience in OSINT investigations by respondents in this study. It must be noted that since OSINT is a new field of investigative journalism, most respondents have only been practising OSINT for under five years, so a high volume of investigations does not necessarily indicate higher years of experience.

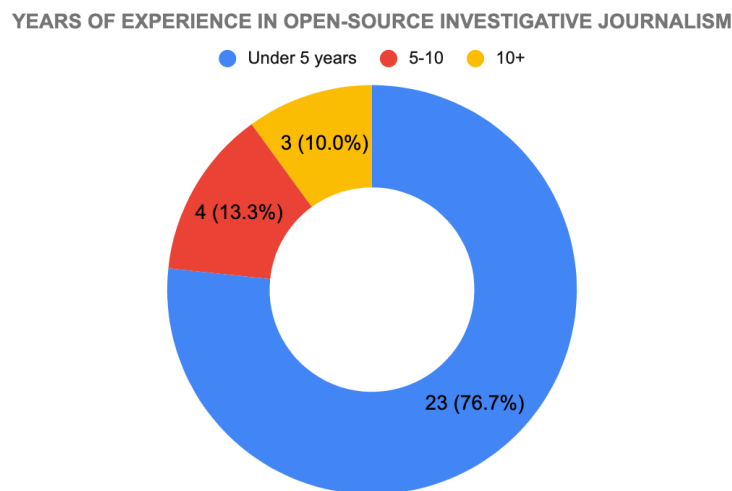


FIG. 5.4.1 BREAKDOWN OF YEARS OF EXPERIENCE OF RESPONDENTS IN THIS STUDY

Bearing both these factors in mind, the chart below depicts a breakdown of the responses collected in this study:

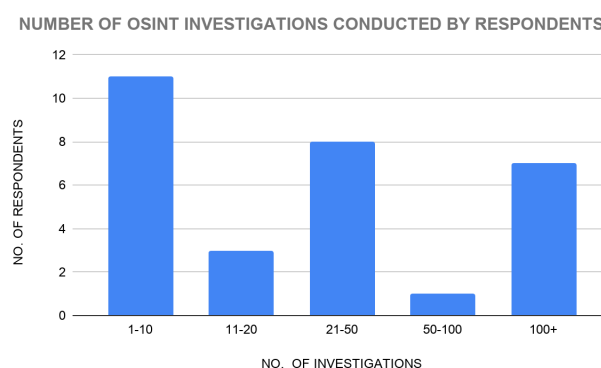


FIG 5.4.2 BREAKDOWN OF NUMBER OF OSINT INVESTIGATIONS REPORTED BY RESPONDENTS IN THIS STUDY

Most interviewees who worked on long-term investigations referred to them as “multi-year projects” (Interview A2, J) or preferred to describe them as “big

investigations” (Interview X). Others found it difficult to arrive at an average number of investigations because they argued that all their investigations had an open-source aspect to them (Interviews W, G).

“I find the open-source versus everything else distinction quite hard to justify because now literally every kind of research is open-source, unless you're actually in a private intelligence agency,” added Respondent R, who had conducted 20-30 OSINT investigations.

The number of investigations reported was inversely proportional to the size and complexity of investigations. Respondents who quoted having conducted between 50 to 100 investigations focussed on specific issues like the involvement of Iran in Syria or UAE in Libya using vessel tracking (Interview S). Respondent O said that in their current day job as a private investigator, OSINT investigations formed part of their daily routine in everyday work, outside of their journalistic contributions in their free time. As a result, they conducted at least 300 OSINT investigations. Another respondent said they had to conduct one investigation a week for a period of 3 years, so the number of OSINT investigations was in the hundreds (Interview E).

Respondent F, a freelance journalist, said, “Officially, I’ve done at least three investigations published by global media and research organisations, but there are many ‘Offline’ investigations not published yet. In addition, I did hundreds of verification cases when working with a fact-checking initiative.”

In addition, two other conditions also accounted for a high number of OSINT investigations in less than a decade. Respondent C2 ran a popular blog, which focuses on OSINT tools, debunking fake news, and short OSINT investigations. As a self-described OSINT hobbyist in their free time spent blogging, and as a professional OSINTer formerly working in law enforcement, the blog had a growing band of subscribers resulting in a greater frequency of posts and investigations.

For self-taught OSINT investigators like Respondent G and N, both women of colour now working at award-winning publications, the only way to get hired in an OSINT investigative capacity was to go out and do OSINT investigations themselves without

getting commissions from editors, and so the number of investigations they conducted included both short and long ones and a higher number due to sheer determination.

Others moved from an OSINT investigator role to a managerial position overseeing various OSINT teams – in this case, the number of OSINT investigations personally conducted dropped drastically with the change in status as they described their daily routine changing from spearheading OSINT methodologies to “making conversations and managing international operations” (Interview Q).

To summarise, OSINT investigations were prevalent in both breaking news and traditional investigative capacities like in documentary teams, although the frequency differed greatly depending on the pace and complexity of the project. The higher the number of investigations reported, the lesser the complexity/time spent on it.

Verification-based fake news debunking investigations had a shorter turnaround time, and therefore, respondents reported having conducted a higher number of investigations, but this is not to be correlated with experiential value as verification was a 3 step process, and could be a part or process within a long-term OSINT investigation being conducted in visual investigations teams, which were more complex, multi-year, multi-layered projects, fewer in number but required advanced OSINT skills.

Respondents found it hard to distinguish between OSINT and normal investigations because the general feeling was that OSINT was indispensable to any investigation in the digital age. OSINT investigators who had an OSINT-based day job or a popular blog following had a higher turnout of investigations, as did those who were self-taught and had to pitch to editors as freelancers before being hired in a staff capacity.

5.5 Conclusion

In conclusion, this chapter set out to answer the second research sub-question: What are the risks and advantages of conducting investigations using automated tools? It found that OSINT tools have been implemented in discovery, analysis and visualisation, with advantages such as automated forensics, ease of access, online collaboration. But the tools also carried risks such as false positives, information asymmetry, etc, discussed briefly below. Overall, human judgement was indispensable to tools, and while there was great scope of augmentation using OSINT, full automation is impossible and ill-advised.

Briefly, this chapter provided an overview of what the risks and advantages of conducting investigations using automated tools are, explicitly focussed on open-source investigative journalists' use of these tools to develop a typology of tools, the context of their use, and their prevalence in media organisations.

Broad stages of OSINT investigation process

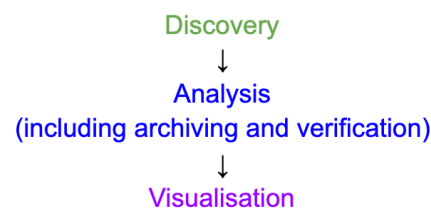


FIG 5.5.1 STAGES OF OSINT INVESTIGATION PROCESS IN JOURNALISM

The tools usage section was designed to understand the types of broad categories of automated tools used by open-source investigative journalists to develop a typology of OSINT tools. Respondents were asked to outline the broad categories of tools they used. Overall, the OSINT tools covered three broad stages of the investigation process: discovery, analysis and visualisation, and utility tools which make the OSINT process possible.

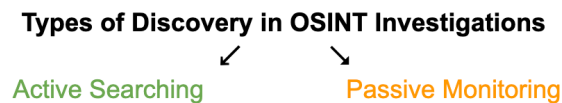


FIG 5.5.2 TYPES OF DISCOVERY IN OSINT INVESTIGATIVE JOURNALISM

Discovery tools involved search engines, social media sites, databases (also used in analysis) and social media monitoring tools, satellite imagery. Analysis tools included image and video forensics tools for verification; databases like leaks, corporate, shipping, insurance, customs; geolocation and chronolocation tools; weapons analysis tools; people search and facial recognition tools; web analytics and scripting tools; cryptocurrency tracking tools and network analysis tools. Visualisation tools were of two types: data visualisation and design tools. Utility tools ranged from archiving tools, security tools, communication and collaboration tools, and efficiency tools.

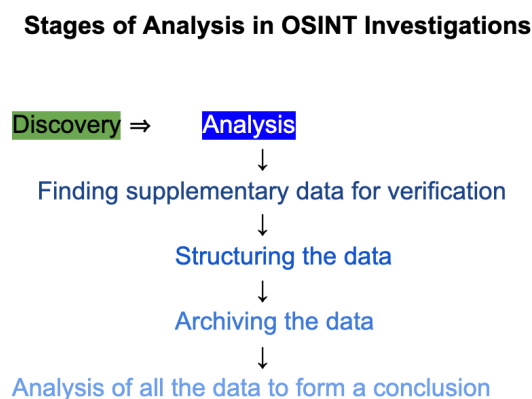


FIG 5.5.3 STAGES OF ANALYSIS IN OSINT INVESTIGATIVE JOURNALISM

Human judgment played the most critical role in decision-making between discovery and analysis stages; human creativity and critical thinking played a large part in presenting the conclusions from analysis visually or via text, so the tools themselves augment the OSINT investigative process without automating it fully. Respondents stressed the importance of an investigative methodology over tools, with tools helping as aggregators while still needing to be fact-checked by humans.

To understand the risks and advantages of using OSINT tools, respondents described the top 5 tools in their go-to toolkit. Most toolkits were tailored to the investigator's specialism, with no one silver bullet solving a problem. Factors like human knowledge of local social media patterns played a large part in the choice of tools used for location-specific investigations and often determined the success of an investigation.

The below table presents the main advantages and disadvantages recorded concisely:

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> Automated image forensics 	<ul style="list-style-type: none"> False sense of exhaustiveness
<ul style="list-style-type: none"> Easier to locate people 	<ul style="list-style-type: none"> Tools are expensive Too many false positives Human judgement still indispensable
<ul style="list-style-type: none"> Remote online collaboration 	
<ul style="list-style-type: none"> Accessible tools 	<ul style="list-style-type: none"> Information asymmetry
<ul style="list-style-type: none"> Easily sift social media data When combined with human local knowledge, helping to map social media behaviour patterns Boosts human creativity 	<ul style="list-style-type: none"> OSINT tools are no silver bullet to fully automate the process Data monopoly by Big Tech
<ul style="list-style-type: none"> Easy digital archiving Improved digital security 	
<ul style="list-style-type: none"> Specialised tools to manoeuvre state censorship 	<ul style="list-style-type: none"> Can fall victim to state censorship despite that
	<ul style="list-style-type: none"> Expert knowledge required to assess the safety and efficacy of OSINT tools in investigations

FIG 5.5.4 RISKS AND ADVANTAGES OF OSINT TOOLS IN INVESTIGATIONS

No one universal toolkit had all OSINT tools for solving every problem arising from an investigation. Often, tools had to be researched mid-investigation and creatively deployed to find a solution.

To understand the prevalence or popularity of OSINT investigations, the 30 respondents, mainly staff journalists or freelance investigators, were asked to

provide an average number of OSINT investigations they had conducted in their lifetime. A majority of respondents had begun working in this relatively new field around five years ago, so there was no direct correlation between the number of investigations and years of experience. The lengths of investigations and their complexity also varied wildly, from long term investigations going on for years to daily verification ones which numbered in the hundreds – therefore, there is no direct correlation between a high volume of investigations and higher experiential knowledge.

Respondents working on longer-term projects, therefore, had a lower number and higher complexity, and vice versa.

Relations between number of investigations, size and complexity

$$a \propto 1/(b \times c)$$

and

$$b \propto c$$

where

a= number of investigations

b= size of investigations

c= complexity of investigations

$$a(b \times c) = k;$$

where k is the proportional constant

FIG 5.5.5 PROPORTIONALITY IN INVESTIGATIONS: NUMBER, SIZE, COMPLEXITY

Others found it difficult to provide an exact number because conducting an investigation in the current age without some form of open-source intelligence, no matter how rudimentary (such as Google search) was impossible. Those who reported higher numbers of investigations worked in debunking misinformation, where they were at the frontline battling the deluge of fake news using verification tools. Investigative teams using OSINT had a task that was more complex and larger in scope: to find original stories that would resonate with their audiences and combine both OSINT and traditional forms of verification in the process.

Despite the difficulties in quantifying OSINT investigations due to its various use cases, the 30 respondents had among them conducted 1513 OSINT investigations,

which showed a very high prevalence, averaging out to approximately 50 investigations each.

The next chapter looks at the change in work in investigations as a result of these introduced OSINT tools and technologies.

CHAPTER 6: THE CHANGE IN INVESTIGATIVE JOURNALISTS' WORK DUE TO OSINT TOOLS

6.1 Introduction

This chapter of the analysis deals specifically with the first research question, which is central to this study, i.e., How are automated tools changing the work of investigative journalists in the context of digital work? For the purposes of this study, the analysis will present what a typical working day of an investigative journalist using automated or OSINT tools currently looks like; what the working conditions are like, following on in the next chapter with how they have been impacted by the use of these tools, such as stress, work-life balance, employment-related anxiety or automation anxiety (Akst 2013).

The section on change in work was designed to understand how automated technologies like OSINT tools were changing the structure of investigative journalists' workday, and through it, what impact that was having on their general working conditions such as work-life balance, stress levels, and any automation anxiety experienced as a result of the introduction or integration of these tools within the workflow.

The chapter first looks at the change in the structure of work. The exploration is done through four sub-sections: the first looks at the structure of a typical day of work for an OSINT-based investigator or investigative journalist in broad strokes; the second goes into specifics of their interactions with automated tools through examples or case studies of how these digital technologies are being deployed in an everyday work situation to augment the investigative workflow; the third section looks at the change in the workday of an investigative journalist or investigative analyst as a result of OSINT by asking respondents to critically evaluate how the use of these technologies has changed their workday when compared to a time when the work was not dependent on OSINT tools, and how long it takes for them to learn how to

use a new tool; and the last section focuses on understanding how investigators find out about new emerging OSINT tools that support their work.

6.2 The Typical Work Day of an OSINT Investigator and Investigative Journalist

Respondents were asked to describe what a typical day of work in investigations involves or looks like for them. This was done to understand whether their workdays were structured or unstructured and whether there was any particular pattern to how OSINT tools dominated their investigative processes or other factors related to their employment status or organisational needs.

The interviewees in this study were chosen because they either work as an OSINT journalist for the two main organisations chosen for analysis in this study, i.e. the BBC or Bellingcat so that the workdays of these journalists could be compared, or as an OSINT investigative journalist for a publication. Others were chosen because they excelled at OSINT either as a freelance journalist or worked as an analyst in an OSINT investigative capacity. This was done so that the workdays of staff and freelance journalists could be compared to understand the impacts of the gig economy and the lack of job security for OSINT journalists. Some of the journalists interviewed who began as freelancers also gained employment for innovative journalism outfits like Lighthouse Reports, which forms newsrooms around investigations or projects rather than operating as a traditional media organisation; or the Human Rights Lab in Berkeley which also works in a collaborative project-based format. Thus, understanding and comparing the structure of their typical workday helps us understand the different alternatives to the “typical workday” of a journalist as we know it.

6.2.1 The Stages of Staff Journalists' Typical Workday

The relative new-ness of OSINT-based reporting means there is limited academic literature on the subject; however, studies on transparency of newsgathering state the importance of providing context from a variety of sources while also sustaining the balance between reported voices of those impacted and the reporting, to alert readers to issues of public importance (Kovach and Rosenstiel 2001, 52–53).

“The new media landscape, where news is not manufactured by interaction between agents of reality (sources) and agents of representation of reality (journalists), demands new rules. The higher a news source’s stakes are, the more ‘context’ is needed in a story. With visibility of sources comes credibility of claims and accountability of actions” (Rupar 2006, 128).

The staff journalists of mainstream media organisations interviewed for this study, primarily the BBC and also the New York Times, who were working in investigations using OSINT tools, seem to follow the three-step linear structure of news reporting: *monitoring*, *pitching*, and *production*. Respondents described their typical workday as either being *in the middle of an investigation* or *prospecting*.

This echoes some of the information management system outlined by the Berkeley Protocol, which is an international protocol endorsed by the United Nations outlining the professional standards and guidelines for open-source information in international criminal and human rights investigations. The protocol goes into much more detail to outline six main phases of the investigation process: (a) *online inquiry*; (b) *preliminary assessment*; (c) *collection*; (d) *preservation*; (e) *verification*; and (f) *investigative analysis*, but these steps are seen as part of a cycle rather than a linear procedure, to be repeated throughout an investigation (Freeman, Koenig and Stover 2020, 53).

6.2.1.1 The Monitoring Stage

Also known as *the prospecting stage*, this is the stage where journalists use available resources, mainly social media and curated open-source digital news channels, and some closed source tip-offs to find a critical incident worth investigating.

For prospecting, journalists described a dependency on Twitter and other social media channels to get “leads” that could lead to investigations. One journalist described their process as “a lot of monitoring TweetDeck columns, monitoring Telegram channels, contacting sources and potential leads, almost to the point where sometimes it can feel like all I’m doing is like reading Twitter” (Interview I). Respondent A said that the first thing they do after waking up is to look at social media instead of newspapers to “find out what people are talking about, how they’re talking about it, who’s talking about it, and why they’re talking about it”. Others described having customised Twitter lists tailored to their interests, the geographical remit of their team, etc., complemented with Google Alerts, etc. to collect “visual evidence”:

“So if I hear about an event where there’s a lot of video or a lot of pictures, a lot of photographs or a lot of accounts on social media posted then that tends to be a sort of something that I would flag. I’ve got a flagged list for developing stories, which I will then review after an initial search, see if there have been any developments, and then I might strike them off the list, or I might elevate them to stories to dig into. There needs to be serious wrongdoing that we can expose through using Open-Source Intelligence, and because it’s documentary filmmaking, it depends upon visual evidence.” (Interview C).

6.2.1.2 The Pitching Stage

This stage involves formulating a strategy of investigating the incident and presenting to editors for a green light along with preliminary evidence. The process described consists of explaining or convincing the editor why an incident warrants

investigation: it could be due to “serious wrongdoing” as mentioned, or due to some other relevance that explains “how it matters” (Interview E). Determining relevance, however, is a difficult task in itself through cursory evidence collection. The decision on whether to investigate is challenging, before the actual investigative work has been completed – presenting a sort of chicken and egg problem. As a result, one respondent described not taking on in-depth investigations and focussing instead on “low-hanging fruit” just to meet the requirements of pitching at their Monday meetings (Interview E).

While freelance journalists also have these two stages in common, the key difference for staff journalists is that this pitching happens during the daily meetings where the executive editor decides what gets commissioned for investigation and what gets abandoned.

6.2.1.3 The Production Stage

This stage in itself has three sub-stages:

- *the analysis stage* where the pitched incident is explored in detail using OSINT tools;
- *the verification stage* where the open-source information is sometimes corroborated with other closed sources or is fact-checked by a colleague;
- and finally, *the publication stage*, which involves liaising with editors, lawyers, and other members of staff to get the final investigation published (Interview I, N, Z, Y).

For the investigation, if the final output is a video, the workday would involve multitasking (common in journalism): writing the script, finding video evidence online and adding that to the script, and so on, described as a “kind of a back and forth of producing and reporting” (Interview I). In documentary teams, when there is substantial evidence with a proper script, that is when the story is “commissioned” by the editor, meaning it receives the green light to trigger the filming and development stage and gather the story elements for publication. Once it is commissioned, a

typical workday can involve logistics purely to bring these elements together: script editing in the morning, interviewing people on camera in the afternoon, liaising with lawyers or with editorial policy officers in the evening (Interview Y).

For Bellingcat journalists, the dual modes of operating, prospecting and investigating, hold true with one addition – Bellingcat offers workshops on OSINT, so this additional task is the third way a typical workday is often structured. However, in lieu of regular morning meetings or editorial briefings, investigators at Bellingcat kept up to date on goals and investigations via their internal Slack communication channels, because they worked remotely and lacked a physical newsroom. Their typical workday also had less structure, as investigators were given more freedom and less supervision. “If we’re doing workshops, then it’s very structured. But if it’s not workshops and if there are no meetings, then it’s very unstructured as we have a huge amount of freedom to do the research, whenever we want, whatever time of the day or day of the week,” explained Respondent V.

6.2.2 Story Cycles

While this was the general structure of the investigative process that determined what was done in a typical workday, investigative journalists using OSINT also operated in two modes of *story cycles*, depending on the size of the investigation or urgency of it.

Short-term investigations with “quick turnarounds” tend to be triggered by breaking news and involve verification or reconstruction type investigations that are time-sensitive and need to be completed within a day. “Sometimes a story breaks when you are on enterprise investigation, like the George Floyd protests in the US in June, when everyone stopped what they were working on to cover the breaking news. We worked a whole week straight, from one Sunday to the next Sunday, until 11 pm”, said Respondent N.

Breaking news investigations tend to dominate the workday or take precedence over the second kind of investigations, which are *long-term* or “*enterprise stories*”– these tend to take longer because they are complex and require in-depth research over months, or are not time-sensitive because the story is exclusive to the investigator and contains elements that could not be “broken”, relieving the time pressure or competitive element tied to breaking news.

6.2.3 Non-news Models of Workday

Several of the respondents in this study, who worked as staff OSINT investigative journalists or investigators, worked for NGOs or private organizations that operated on different models depending on their employer, as mentioned earlier. One respondent, working as an OSINT analyst for a human rights NGO, described a workday that was quite similar to mainstream journalists when it came to staying in regular contact with on-ground sources, in this case, a military unit, as their job description involved locating incidents of alleged civilian harm. But in terms of output, instead of a documentary or a news report, they were compiling a structured database as a matter of record, in collaboration with external developers and designers (Interview A2).

Another, working for Lighthouse Reports, described how instead of functioning as a publishing platform like most news organisations, the organisation created newsrooms, like a consortium, to investigate specific incidents, and the respondents’ typical workday involved providing open-source support to old-school reporters.

A couple of investigators worked for organisations that did not publicly publish their findings from OSINT investigations and did not “commission” stories – instead, they operated more like a company where “clients” set objectives for OSINT investigators to meet (Interview L). While they did not have “story cycles”, a mix of short and long term investigations were also found here, and clients were billed according to the “time budgets” estimated by OSINT analysts: “With OSINT, you don’t know how long

something will take— because tasks either take very little time or disrupt your routine” (Interview T).

Within a lab-style setup, there were several similarities with the typical workday of a staff journalist at a mainstream media organisation: two hours per week was set aside for a team meeting, during this meeting an agenda was set after researchers talked through their projects, and a feedback loop existed between the manager and the researcher for guidance. The lab was split into teams of researchers working on a project but was also not defined by a strict nine to five schedule. However, similar to Bellingcat, there was a third mode of operating: which was to handle media requests, for those in an administrative position (Interviews B2, R and Q).

6.2.4 Stages of Freelancers’ Typical Workday

In contrast to staff investigators, freelancers had different and often unstructured workdays. Several freelancers worked on OSINT journalism projects in their free time or on weekends as their weekdays were taken up with their day jobs. Some respondents didn’t mind the encroachment onto their weekends: “OSINT is also a field you’re in because you really do like it, you have kind of a passion. So, there is no nine to five, because most of the time when I’m testing out new tools, or I’m getting an update on something new, I’m doing it in my free time” (Interview K).

One respondent described a typical workday as, “Long hours of sitting in front of the screen, more smoking than work, not much food. Investigating stuff throughout two shifts of basic work (to meet living needs). And, of course, heavy texting via emails, and social apps with managers”. (Interview F).

Some freelancers who had an unstructured workday and were not juggling multiple jobs were in full-time education and therefore juggling multiple projects. “I’ve always been a student while I was working as an investigator, so I could OSINT only during certain hours,” said Respondent L. “I’m a private investigator by day, and I have also

been with Bellingcat for five and a half years. If I have downtime when I'm not working on cases during my nine to five, I'll often bone up on blogs and research regarding new open-source tools and techniques," said Respondent O. Others described a lack of structure stemming from dealing with multiple time zones in their freelance work.

Freelancers typically had less supervision compared to a typical staff investigator or journalist. Respondent K provided a typical example: "We'll keep in contact with the team once a week, and a couple of times a month we'll have calls with other researchers and editors for planning a story."

Patterns of work on a typical workday for most freelancers were often governed by their specialisms, which contributed to what looked like a lack of structure when judged by the parameters of a traditional nine to five – however, unstructured did not equate with unproductive. And despite the structures, all workdays could be divided into prospecting or investigating, the two states analysed earlier.

Several of the interviewed freelance OSINT investigators and OSINT journalists ran newsletters, blogs, or podcasts for the community that took time away from investigations. One respondent, who formerly worked in military intelligence, explained:

"The initial phase until I find something is very unstructured. And if I do start a full-blown investigation, that's when things change. I sit down, figure out what questions I want to answer: Where can I get this information? Which tools would I need? So basically following the intelligence cycle, and then it is very structured. Otherwise, you'll end up going down all kinds of different rabbit holes again." (Interview U).

Respondent M, who specialised in weapons analysis, also had a similar process, with every workday tailored to what was missing in the investigation. Respondent X added: "I tend to go through spurts of activity, and it's not nine to five really, sometimes I've had my best thoughts at three in the morning". The only respondent whose routine stood out was Respondent D2, who was an expert in vessel-tracking:

“I do physical ship-spotting because of my location next to [redacted] and very close to three major airports. There's always major traffic in the sea or in the sky. I start with physical observation, and then track online if, for example, I see a ship carrying small arms from Bulgaria to Saudi Arabia.”

6.2.5 Conclusion

In conclusion, the typical workday of a staff journalist involves the three steps of: prospecting, pitching and production. This is while operating at any given time on story cycles of either breaking news or enterprise investigations. In contrast, non-newsroom models such as labs or client-based OSINT had fewer sources invested in the final output compared to the efforts that go into a news package or documentary. Freelancers working in OSINT had unstructured workdays with less supervision, and several were juggling other work or academic commitments.

The next section delves into how automated tools or OSINT tools are implemented within the workflow of a typical workday.

6.3 How Automated Tools Are Implemented

This section explores how the automated OSINT tools described in the previous chapter are actually implemented in an everyday work situation. While the previous section looked at the broad strokes and patterns of work in a typical workday, this section goes into the granularity of how the OSINT tools are logically implemented in a typical workflow to arrive at a conclusion. One respondent used the analogy of driving a car when describing this section: “You respond to the situation with your car, if you have to turn right you indicate and move the steering wheel, then if you

need to park you put the car into reverse and go back. So, whatever the situation is, I will use the tool that I know could help.” (Interview X)

The tools used within a standard OSINT workflow are generally selected depending on the function they perform, which allies with the data needed to prove something. While the practice might be different based on the needs of the investigation, it follows the logical 3 step process of discovery, verification and analysis.

The practices depend on the type of investigation being conducted, but broadly, they can be of the following types:

- To find human sources/interviewees to understand the human impact of a phenomenon documented online
- To record evidence of criminal wrongdoing or human rights abuses
- To fight misinformation through fact-checks
- To reconstruct events of a crime to shed light on the incident
- To expose the abusers of a documented crime
- To expose serious or systemic criminal wrongdoing

The tools referenced in this section have been discussed in greater detail in the previous chapter, which is devoted entirely to OSINT tools, their typology, use cases, pros and cons. This section instead explains in detail how these tools are implemented, as mentioned already.

6.3.1 To Find Human Sources/Interviewees to Understand Human Impact of a Phenomenon Documented Online

One example of finding human sources/interviewees to understand the human impact of a phenomenon documented online is the Black Lives Matter protests of 2020 that erupted in the wake of the killing of George Floyd in the US.

Respondent A described how they were first trawling Twitter and Reddit to find instances of police brutality that's been filmed:

“A lot of this is people just sharing the same videos, and I want to talk to the people behind these videos, so I have to download the video, put it into Invid and try to find the source of the video so that I can talk to this person. The InVID system breaks the video into photos; from there, I reverse image search through tools like TinEye, and that will lead me to eventually the first person who shared it or the person who filmed it. Then I go to Pipl, put their name in, so I can start finding out who this person is and how I can contact them.”

6.3.2 To Record Evidence of Criminal Wrongdoing or Human Rights Abuses

Six of the thirty respondents interviewed explained the necessity of implementing these OSINT tools within a workflow to identify, verify and record evidence of criminal wrongdoing, either for justice and accountability processes or for the public record. The cases described either dealt with recording attacks on hospitals and civilian infrastructure in conflict zones like Syria, Libya and Yemen, which were denied by the party responsible, or the destruction of churches in China as part of China’s religious persecution, or the creation of detention centres for Uyghur Muslims in China which China denies. The tools were implemented to gather information, verify and maintain a public record of wrongdoing or human rights abuses.

Respondent A2, monitoring airstrikes, described compiling a research document with images gathered from social media, proving civilian harm from an airstrike. The process is similar to the one described earlier – reverse image search tools are used to verify the source of the photos. Then, the location of the airstrike is verified using mapping services and satellite imagery, and this is then used to establish a date and time range of the attack and add it to the database.

Respondent B2, documenting attacks on hospitals in Yemen using a similar method also described a similar process, but not being a native Arabic speaker, also made use of online translation services to find locations, published articles and evidence surrounding the attack. The translated keywords were plugged into websites like

Youtube, to find videos of the hospital before the attack to compare with the aftermath, and to verify features of the building to corroborate details of the attack. In addition, cybersecurity tools like Virtual Private Networks (VPNs) are also used throughout the process, “especially in Yemen because there's so much surveillance of the press”.

Another process is plane-spotting in a conflict region, possible due to the various open-source flight tracking websites. These help paint a picture of bombardments, arms embargo violations, reinforcements being sent in, etc.

“First, I find an interesting flight – usually they disappear before they land somewhere, so I want to know where they went. I will access some recent satellite imagery of air bases or airfields. The aircraft was last seen at 6am, for example, and then the satellite passed by and spotted the aircraft on the ground and then I saw the aircraft fly back.” (Interview S).

Along with the usual difficulties of verifying information from a conflict zone (satellite imagery not existing / imagery obscured by clouds / non-verifiable videos or images), OSINT investigators looking at China have another hurdle – trying to find information through China’s regime of censorship, which extends to universal OSINT tools like Google Maps, etc. Respondent D explained:

“When I'm locating a church that has been destroyed in China, I usually start with either an article I found on Radio Free Asia or a place called Bitterwinter, which is like a watchdog group for religious persecution, or a group called China Aid which is specific to like Christian persecution in China. I need to get down to the most granular level in China where that church is located, which often requires multiple sources. I'll use Google translate to help me figure out the most appropriate Chinese characters for the church's name. I'll then search the name of the church on Google. And from there, get more sources – sometimes it's just super easy, and it takes me five minutes, sometimes it takes me an hour, depending on the topic.”

Respondent J, also specialising in China investigations and working on a multi-year project documenting China's persecution of the Uyghur Muslim minority, described having their own internal database with an online tool that they specially built for Xinjiang investigations to be secure and enable verification. "When I find a location that looks like a detention centre in Google Earth, I start to search other databases and other researchers' work to see if anybody else has linked to it in a publication. Once I have that, I update our databases, and look at the photographs to match them to historical satellite imagery."

Respondent K, also monitoring Uyghur detention centres, had a similar process that involved using satellite imagery to narrow down the location, and then match with eyewitness or other reports found online. Since the respondent was a native Chinese speaker, they had the added advantage of having the knowledge and access to native Chinese tools that could be manipulated for verification, like Tencent Street View Imagery, which is then compared to Google's satellite imagery.

6.3.3 To Fight Misinformation Through Fact-checks

While verification is an essential part of the OSINT investigative process, it can also be the standalone end goal for fact-checking misinformation or targeted disinformation campaigns, especially state-backed ones. Respondent E was monitoring local elections in Moldova and found a malicious video going viral. They used image verification tools to identify the video and monitor the spread of the video on Facebook, Twitter, and Russian social media to check for bot campaigns using a tool called Truthnest. They found that while the video was being shared by real people, the video itself was fake, taken from an Arabic news programme and edited with fake subtitles to defame a contesting politician.

Another example of critical fact-checking conducted via the implementation of OSINT tools was the verification of a viral video of a group of doctors in the US who had a

press conference and falsely claimed that there was an existing cure for Covid-19 in the early months of the pandemic.

“I felt like this is one of the biggest viral misleading pieces of content I've ever seen. I opened Crowdtangle immediately, which let me know how it became viral – Breitbart shared it to their 3 million followers on Facebook, then President Trump retweeted it, Donald Trump Jr. retweeted it, and I saw it had like 600,000 shares in six hours, which is madness. I used Crowdtangle to track it from the moment it started spreading, all the different versions of the video spreading, exactly which communities on Facebook were spreading it, Instagram accounts, which subreddits. And then we published it to let people know they were being misled,” explained Respondent Z.

6.3.4 To Reconstruct Events of a Crime to Shed Light on the Incident

Reconstruction is an effective and powerful tool of attributing responsibility in conflict situations and is one of the most popular ways OSINT tools have been used recently. They allow a contentious incident to be verified, factually analysed to proportion blame where wrongdoing has occurred but could also be used to understand a disputed incident with competing narratives in detail to arrive at facts that get at the truth of the situation.

An excellent example of this is the reconstruction of the George Floyd killing that Respondent V was working on: “I used Google Earth to make a map of the area. I wanted to find as much footage as possible, in the highest quality– to search for those videos, I used reverse image search and just read as much as I could about the topic. Then I made a chronological overview using Google Docs.”

In another case in Syria, Respondent B was investigating Russian airstrikes, especially double-tap attacks, which is a war crime widely condemned for targeting first responders. Beginning with satellite imagery of the area, in this case from

Sentinel, B mapped out the craters visible and analysed it in conjunction with verified video content to show when the first bomb fell, followed by the second. This helped to create a timeline of events, which is evidence of a double-tap attack.

Similarly, in the summer of 2018, when protests in Nicaragua reached a peak, a 15-hour siege occurred where paramilitary troops were sent in to crush student protests at the National Autonomous University of Nicaragua. Respondent I was reconstructing the incident to show how the situation escalated – they began by using Tweetdeck to filter tweets surrounding the incident, and then the media found in the discovery process was verified using the image and video verification tools. Google Earth was used to geolocate the scene of the attack, and finally, the exact timings of the videos verified were triangulated to create a timeline:

“If I find a Facebook page, I'll use something like Hunchly (an archiving and preservation tool) to capture that, so I have all of the content there, and it's kind of how all of these tools work together to build the picture of what your investigation is and what happened – I've used it for countless investigations, for example in Hong Kong when we reconstructed this mob attack on protesters in a train station, or when the Sinaloa cartel took over an entire city because El Chapo's son was arrested. These tools come back again and again, and of course, the output can be different, but I think those kinds of reconstructions are a great example of how these tools come together.”

6.3.5 To Expose The Abusers of a Documented Crime

Reconstructions also serve the dual purpose of exposing the abusers of a documented crime, such as the killing of George Floyd by police officers or the Nicaraguan paramilitary sent in to assault students.

Identifying abusers helps with the accountability process, such as in the case of Sudan's protestors being massacred while live streaming their protest in Khartoum. Investigators used a monitoring tool called Twint, which allowed scripts to

automatically scrape Twitter for videos that had a certain hashtag, supplemented by a manual search, to develop an enormous database of visual evidence of the event. The database was then changed to a CSV format and moved to a collaborative platform like Google Sheets for a team of researchers to analyse, which involved using mapping services to geolocate, and identifying individuals attacking protesters. “We would geolocate things in a way that allowed us to understand what direction bullets were being fired, and also what direction the protesters at that moment were travelling,” explained Respondent C, who was part of the project.

The identification can also be the sole purpose of the investigation without reconstructing the events around an incident– such as when identifying child abuse victims:

“Often, when we get new images that have never been seen before, we have to find out who the kid is. The first inquiry will be to find their username on Snapchat or Instagram, etc., and then I would use Sherlock to run through 200 other sites because people use the same username across multiple sites very often, so we’ll try and find where they have social media profiles and then see if that gives us any information as to who they are in real life so that you can find them. The tools gather all the raw data and do the initial analysis for you, so it speeds things up quite considerably,” added Respondent C2.

The tools have also been implemented to locate fraudsters. Respondent O described being contacted by a victim, who supplied them with a domain used to spoof the victim’s domain and steal millions of dollars from the victim’s company. O used domain tools to see how one domain connected to others, which happened to be registered under the fraudster’s actual name and a yahoo email address. The email address, in turn, was used to conduct a search, which helped map out how the fraudsters were spoofing other companies and banks to scam them.

6.3.6 To Expose Serious or Systemic Criminal Wrongdoing

Exposing wrongdoing is integral to human rights-based OSINT, but it can also be specifically used to expose wrongdoing that is being covered up by the aggressor or a rogue state. An excellent example of this form of implementation is the investigation conducted by Bellingcat into the Ukrainian airline plane crash in Iraq, caused by a rogue Iranian missile, which killed 176 people. Respondent H was alerted to the crash by a message on Slack, the instant messaging platform used internally by Bellingcat. H used flight tracking website FlightRadar24 to monitor the flight path and noticed that the flight data suggested the aircraft had exploded in midair because FlightRadar24 captures the speed and altitude of the aircraft at any given moment– the speed and altitude graphs were perfect until they stopped transmitting in midair.

“I've seen other plane crashes where if it's like engine failure, you'll see the speed kind of going up and down radically because the aeroplanes are struggling to stay up. But here, it looked like everything was going fine until it just disappeared.” (Interview H)

Respondent H began collecting eyewitness accounts posted on Twitter, Telegram onto a collaborative Google Sheet, and also archiving them. The collected information helped expose the fact that the Iranian government, already blaming engine failure, was trying to cover up the fact that the plane had been shot down by Iran's Islamic Revolutionary Guard Corps (IRGC).

Respondent M, who specialised in weapons tracking and monitoring violations of UN and international arms embargoes, used OSINT advanced search functions to both monitor information or official reports about weapons sales or acquisitions published by governments online, as well as sales records that stated costs and country of manufacture. Combining satellite imagery or mapping services, social media, and traditional news channels online, M tracked how the weapons changed hands, got

used, and compared that with data about crimes or violations published by NGOs like Human Rights Watch to understand the systemic nature of these violations.

Respondent P employed a similar method to expose how migrants and asylum seekers were being shot at on the Greek border, a claim denied by the Greek state:

“Our job was to use Google and social media like Twitter, Facebook, YouTube to find relevant images and videos. Once we found them, we put them into a Google Sheet with description, date, time and location. I would then attempt to place those videos and images in time and space. For space, I'd look at Google Maps, Google Earth. For time, some of those videos will be live streams and identify very distinctive bursts of gunshots. I'd use those temporal markers to match up all the videos and work out when they happened in time. So all the tools would help to find the content, to verify the content, place them in time and space to prove that they had happened.”

When China began building labour camps for Uyghur Muslims, Respondent N tracked exports of goods made in these camps. While there existed a long list of companies in this programme, N began with one company as a case study:

“I entered the company name in Baidu map and Tencent map, because of course, when I enter the company name on Google Map, there are no results. Baidu and Tencent map each returned a different location, but in the same town, so I had a region of focus at least. I found the two locations on Google Maps, got their coordinates and put them in Google Earth. And then I found photos online of the company's production side, and also the dormitory videos showing off the dormitory where the Uyghur workers lived, so using Google Earth, I now had the factory site with labour camps which proved they were using Uyghur labour.”

6.3.7 Conclusion

OSINT tools have been implemented in a variety of ways within the discovery-verification-analysis workflow to meet different investigative goals, from finding human sources/interviewees to understand the human impact of a phenomenon documented online; to recording evidence of criminal wrongdoing or human rights abuses; fighting misinformation through fact-checks; reconstructing events of a crime to shed light on the incident; exposing the abusers of a documented crime; and, exposing serious or systemic criminal wrongdoing.

The following section details explicitly the ways in which the workday has been impacted by OSINT.

6.4 Changes in the Workday due to OSINT Implementation

This section looks at the impact of OSINT implementation in a typical workday, focusing on positive/negative/no impact, before delving into the final section on understanding the time investment of investigators into learning new OSINT tools.

6.4.1 Impact of OSINT on the Workday

In order to assess the impact on the structure of a typical workday as a result of augmented investigative workflows by OSINT, respondents were asked to describe how they think their workday had changed as a result of the OSINT technologies being used to investigate.

Before we delve into the findings in this section, the demographic details of the respondents need to be borne in mind – precisely the fact that 60% of the respondents are in the 25-34 years old bracket, with most respondents (76.7%)

having less than five years of experience working in OSINT-based investigative journalism, due to the newness of the subject area.

AGE BREAKDOWN OF RESPONDENTS

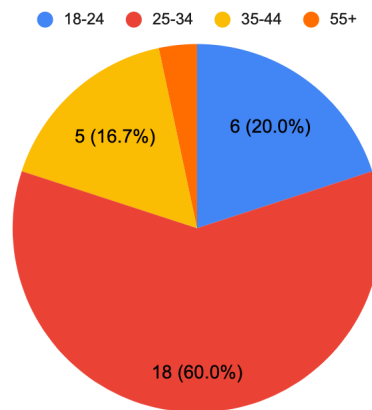


FIG 6.4.1.1 BREAKDOWN OF RESPONDENTS BY AGE

This meant that most respondents working in OSINT were young and had been part of the industry for the past five years, during which time there had been rapid technological progress in digital media and development in forms of digital and visual investigations enabled by OSINT.

It is therefore not surprising that multiple respondents credited OSINT with getting them their first job in journalism. Most noted that there had been no change in their workday, because the introduction of digital tools in investigations, irrespective of the OSINT label, had been around as long as they have been employed, leading to no significant changes in their workday.

YEARS OF EXPERIENCE IN OPEN-SOURCE INVESTIGATIVE JOURNALISM

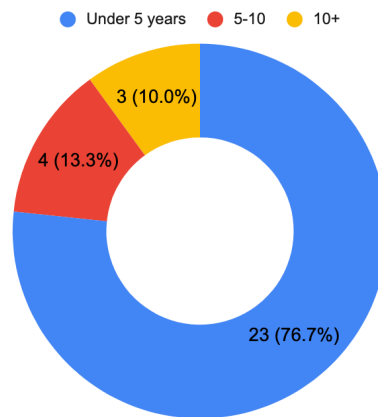


FIG. 6.4.1.2 BREAKDOWN OF RESPONDENTS BY YEARS OF EXPERIENCE

Respondent B, a native Arabic speaker with a degree in journalism, was working as a translator before working in OSINT as an investigative journalist. He described his previous job as “not good pay” and recalled being disrespected as “just a translator” because he could not find employment as a traditional journalist with a mainstream publication in an EU country, which was going through an economic downturn.

“OSINT tools got me into journalism. After my degree in media & communications, I never wanted to work as a journalist on some website, just copy-pasting news.

Open-source [investigative journalism] is empowering. I was always good at looking at things and people online but never thought this is a thing.” Respondent D also added that this was the only kind of work they’d always done and they “wouldn’t be able to do this work if Google Translate or Google Earth and Google Maps did not exist”.

6.4.1.1 No Change

For those who said they had no change in their workday or were native digital investigators, respondents came from different backgrounds that helped them adapt to an OSINT work setting. Respondent L began open-source work in an apprenticeship setting, working for a human rights lab, where the “tools were presented to me alongside the methodology”.

Respondent I, who also trained in a similar lab-style set-up and now works for a mainstream publication, describes themselves as being a “digital native”: “My first instinct when something happens is always, Okay, I’m going to go to Twitter to find my sources instead of, Oh, I can call our local stringers and ask them to connect with people – in my mind, it’s faster. My workflow has always existed through these tools.”

Another respondent credited OSINT tools with shaping the way they conducted investigations: “These technologies let me develop my skills, and I apply these digital tools through daily reporting, not only when working on an investigation.” (Interview F)

In contrast, both Respondents H and G came from an academic research-led background and worked on their PhDs while working part-time as an OSINT investigative journalist for a media publication. H said, “Before I joined Bellingcat, I was doing a PhD on protests policing in [redacted] and I was using open-source methods.” However, they added that before joining Bellingcat, they didn’t spend much time online, as their PhD research required them to spend time reading books, talking to colleagues, and attending some classes. “As soon as I sort of joined the industry or whatever you want to call this, this is the way it’s been”.

6.4.1.2 Positive Changes

Journalists described moving into OSINT as positive career development and an improvement in their journalistic practice. Those with already established careers outside of media/OSINT that they wanted to leave, described joining the industry due to OSINT and discovering their aptitude for it through accidental encounters. “This is completely different from the army, and the vast majority of what I did during my Masters, although obviously, I was using Google quite a lot at that point. And I didn’t understand certain other open-source aspects, but following that, I was doing open-source work for a company where we had a project ‘Searchlight’, which basically was a whole load of OSINT tools linked together,” said Respondent P.

Another Respondent described being drawn to OSINT because of the ease of access – one could sit behind a computer and investigate a story 10,000 miles away to find out exactly what happened, interview witnesses and complete the investigation without ever having set foot in the place. For established investigative journalists bored of the news cycle, this ability to cover otherwise inaccessible areas or the ability to initiate investigations based on information found online is what drew them to OSINT. Previously, M worked in a mainstream organisation where they would wait for official data or request data to be released and corroborate with human sources, both of which were time-consuming processes with capacity for error. With OSINT, M could verify the information themselves in their workday without relying exclusively on witness testimonies, hearsay, official documents being released, or being blocked by the organisations they are investigating. Their workday was more active rather than passive. Respondent K too described discovering “how much you can detect by using open-source intelligence, so you are not just waiting. You can think of something yourself, like I can sit at home and just find detention centres. And I've never been to Xinjiang. And that opens up a new field and new world in my profession”.

OSINT tools are also seen to have given more autonomy and freedom to investigate within a typical workday, specifically “the freedom to research without someone looking over my shoulder, as I don’t think I would be able to do it otherwise” (Interview V).

Other journalists who moved into OSINT also described getting more work done during a typical workday as a result of OSINT:

“It brings speed to inquiries, especially when you're doing stuff at scale. I still like to do things on my own time, manually with fewer tools. But when you have a high volume of work, you have to have some degree of automation because the amount of data you need to get grows, and it's growing exponentially seemingly. So yes, it has made my work faster. And it has allowed me to do far more work and take on far more cases than I would have done otherwise. It probably leaves more time in the whole course of

investigation for the analysis and reporting than the gathering phase at the outset. So if I can do the gathering phase very quickly. I've got more time to go through it and actually turn it into something meaningful," explained Respondent C2.

The speeding up of the investigative process was also cited by Respondent C, who previously worked as a local reporter and credited OSINT with allowing them to investigate new issues usually outside their remit, although they added that open-source investigations by themselves tend to be "very, very time consuming".

The ability to verify using visual investigative techniques enabled by OSINT tools also removed the overreliance on human sources, as mentioned earlier, and for Respondent Y, it meant a lot of free time for solitary working, which sped the investigation up.

At the same time, it reduced some of the human contact aspects of the workflow, as tools for people search, for example, have now replaced chasing contacts for the contact details of an important source. Respondent D2, who agreed that there was time freed by lack of dependency on human contacts, nevertheless added that human contacts were "invaluable for expediency, for heads up or to learn in advance what's going to happen, etc."

D2, who specialised in vessel tracking using various tracking websites, satellite and mapping services, and physical vessel spotting, added that they had situations where, "Russians were turning off their transponders, you're going to have electricity cuts in Libya, and the local antennas are not going to work. You're going to have many cloudy winter days, so when you look from a satellite picture, you're not gonna see anything. At the end of the day, you know, human contact is absolutely the best, but all these tools make the investigation more detailed."

The tools themselves seemed to evoke mixed responses for reliability. Respondent Q said that the tools have made the work they do more reliable, as OSINT tools helped to break the workflow up into steps to be assigned to different people, such as discovery and verification. The group dynamics enabled by OSINT was helpful for

identifying information that one person wouldn't have thought of, and helped mitigate blind spots. In contrast, Respondent E said that while the tools had sharpened the investigative capabilities and workflow, sometimes they tended to have the opposite effect where investigators didn't trust an OSINT tool completely, and ended up using the tool but doing the same thing manually. "There's that trust-building aspect involved in adopting any kind of OSINT technology, especially as an investigator because you know we have been trained to be extremely detail-oriented." (Interview E).

OSINT tools had enabled the discovery of content that was extremely graphic and triggering during a normal workday. So the advent of these tools within a workday had made investigators more conscientious about how they engage with social media for work. Before OSINT, Respondent B2 would spend more time working alone late at night, especially in their bedroom. But OSINT and an OSINT-training programme on building resiliency skills meant that B2 now spent more time working in teams. The resiliency programme they were part of taught them at the very beginning that OSINT investigations on human rights violations were likely to be traumatic, that vicarious trauma existed but could be counteracted with good habits like working with partners about the impact of the research so that investigators didn't develop PTSD.

6.4.1.3 Negative changes

Nevertheless, there were two negative ways OSINT was seen to have impacted or changed the workday.

First, that due to the OSINT tools, there were now too many channels to monitor and too many lines of inquiry possible, and tracking down sources had never been easier so an OSINT investigation was a test of both speed, accuracy, and efficiency. Within a breaking-news capacity that meant creating news-lines from investigations

developed into a race for information without any kind of break for the investigator (Interview V).

Second, that there was an adverse impact on work-life balance that correlated directly with the efficiency of finding information using OSINT, such that respondents described “no longer working from home, but living at work”:

“My job entails just finding all types of information online. So I'm always online because I have access to the internet all the time. If something urgent comes up, I don't have to wait to get into the office. I can jump on it immediately. The pandemic has shown the reality of that, especially because I'm at home all the time” (Respondent T).

The following section relates to a separate interview question designed to understand how much time is taken by respondents to learn a new OSINT tool during the course of their workday.

6.4.2 Time Investment In Learning A New OSINT Tool

Aside from the need to keep abreast of the latest digital technologies available to do OSINT investigations, whether out of habit or to overcome a particular investigative hurdle, there is also the time taken to learn a new OSINT tool that has a tangible impact on a typical workday.

Based on responses of the 30 interviewees in this study, the overall time taken to learn a new OSINT tool seems to depend on three factors:

- a) *The complexity of the tool*
- b) *The learning curve of the investigator*
- c) *The number of applications of the tool*

A majority of respondents in this study (11) said that it took them an average of one to several hours to master a new tool; the second-highest cluster of respondents (10)

stated that it took them between five to ten minutes up to a maximum of thirty, or half an hour; some said it took them several days (5), or a month (4), while one respondent said it took them several months to a year to use an OSINT tool confidently.

6.4.2.1 Mapping Tools Take Longer To Master

Due to the range of complexity in OSINT tools available, and the various specialisms in OSINT that deal with specific sets of tools, it comes as no surprise that some OSINT tools are unanimously seen as taking the longest time to master – these are Google Earth Pro, a free satellite imagery & mapping service which offers a range of functionalities aside from the basic ones, that take months to master; flight tracking, which can be used at a basic level through apps like FlightRadar24, but also come with additional features that take months to understand and unlock.

With Google Earth Pro, even during the study, most respondents cited it as their top tool but had completely different ways of applying it to investigate. It was described as taking an hour or less to understand how to use the OSINT tool at the surface level, but the full list of features is seen to take months to fully understand (Interview K, H, G),

Flight tracking had a similar interface, where it can take an hour to go from zero to knowing how to use it for OSINT, but one investigator who specializes in flight tracking investigations and worked on some of the most high-profile OSINT investigations to date said that it had been two and a half years since they started using these tools for OSINT and they were “still learning stuff about flight tracking” (Interview H).

6.4.2.2 Github Tools and API Described as Taking Longer

The other two sets of tools seen as complicated and therefore time-consuming were tools from Github, described as not user friendly (Interview C) (with user-friendly being used to describe a tool that takes 5-10 minutes), and Twitter API based tools.

Investigators without a background in programming were at a disadvantage and therefore had a steeper learning curve when it came to these tools.

“I'm not a programmer, so I have to spend quite a lot of time with it to find out exactly what it does and how it works with stuff that is a little bit more user friendly. Twitter API was one of the ones I spent quite a lot of time learning exactly how to use, and how to use the information and the data they give you, and not make mistakes. I've made plenty of mistakes that I'm not proud of, but you have mistakes to learn. So I have to go through the tutorials provided by Twitter, from beginning to end, over days,” explained Respondent Z.

6.4.2.3 Data Gathering/Scraping Automated Tools Simpler To Implement

In comparison, data gathering tools were often simpler to understand, as they usually involved the insertion of parameters an investigator was looking for, to arrive at a result. While there is a range of data gathering tools for various types of data, they tended to have similar interfaces and were therefore more easy to pick up and use during an investigation (Interview C2). Others described finding interfaces similar to other popular tools easier to use and learning faster (Interview M). Intuitive interfaces, or OSINT tools that needed no tutorial to understand, were easier to learn; for example, for a new reverse image site, one has to click on the ‘Upload’ button, upload the image and get results (Interview M). One respondent suggested that the learning curve of a new tool, aside from depending on the interface of the tool and the investigator’s skill, also depended on the “OSINT mindset” of the investigator:

“If you're ‘a true investigator’, you should really be able to apply that same mindset to a new kind of platform. And if you know how to conduct already the simple stuff like Google advanced searches if you know how people interact with each other online generally, then learning a new tool or a specific platform like Tik Tok shouldn't take long; it's just applying that same mindset that you always work with, to a new medium” (Interview T).

The time taken to learn a new tool, as asked in the interview for this research, was distinguished from the actual use of the tool, which came with confidence, practice, or for some, the implementation of the OSINT tool within an ongoing investigation was the only way to confidently and adequately learn an OSINT tool, aside from knowing the functionality of what the tool did and how to use it (Interviews I, B2, G).

“It's all about having the opportunity to really use it. The learning curve and timeframe it takes to pick up a new tool are really dependent upon that tool's applicability to whatever you're working on at the moment, especially when you work in the news, because we're always kind of under time pressure. So there's time to play around to prospect as I said, but it's not always viable to spend a week training myself to be the best in this new tool if it does not apply to what you're currently reporting on,” said Respondent I.

One exception was Maltego, a data mining tool for people search: “There are so many different buttons and things you can do. And I took the hundred-page user manual to the beach to just sit down and read through it” (Interview O). Another said: “Maltego takes 5000 years to learn. I think we spent a six-hour work session where my lab director showed us everything about it, and at the end, I was still confused. I gave up on Maltego, to be very honest, even though I still have it bookmarked in my toolkit, but I don't think I've ever used it because it's just so cumbersome, it's so complicated.”

6.4.2.4 Lack of Time to Master Complex Tools

Several respondents echoed that they did not have the time to persist with newer tools in the market that take a long while to master, as they saw it as an unnecessary expense they would have otherwise gone through in the early years of their career when they were less “impatient” or had more time— now they reserved such tools for a strictly “as needed” basis, i.e. if they were stuck with a particular problem and nothing but that tool could find the solution to proceed to the next step, they were then inclined to invest time to learn it (Interviews D2, L, C2).

Respondents described a lack of time available to learn complex tools they would otherwise find useful, but which took up a lot of time: “When I am already into an investigative effort, I find myself screenshotting, or saving a bookmark for this other tool I'm going to explore later, because it needs more than a day, and in that specific context I don't have enough time to explore it” (Interview M). Another respondent described not having the ability to sit and learn a tool for more than six hours, which some tools demand (Interview R).

6.4.3 Conclusion

To summarise, respondents were asked to recall changes to their workday due to OSINT tool implementations, before focussing on the time investment of investigators into learning new OSINT tools. Those who reported having no change in the workday were previously working in digital settings that helped them adapt or came from academia or similar intensive settings. Respondents who reported a positive impact did so due to the speed, accessibility, adaptability of OSINT, and mentioned that OSINT gave a new lease to their career or gave them their first break in journalism; while the negative changes had to do with OSINT creating more work and upsetting work-life balance. OSINT tools, on average, took between 5-30mins to several hours for a majority of respondents to master. Mapping tools, Github tools, API took longer to master, while automated data collection tools were simpler to implement. There was a general feeling of lack of time to master complex tools among respondents.

The next section looks at the information ecosystem of OSINT tools.

6.5 Information ecosystem of OSINT Tools

This section of this study looks at the information ecosystem around the OSINT tools and their users, more specifically, understanding how investigators come by or find out about new tools, and how much time they typically spend to learn a new tool. This is because finding the right OSINT tool could be such a critical part of the investigative workflow described above, and impacted the workday.

Respondents interviewed described four major sources of information about new OSINT tools; they are presented in order of importance as:

- a) *Twitter*
- b) *Colleagues, or closed channels of communication related to OSINT at their work*
- c) *Open-source channels like OSINT related blogs, podcasts*
- d) *Own research*

Respondents described using a combination of these methods to keep themselves abreast of the latest tools used for open-source investigations, due to two reasons: first, a constant influx of new tools being developed and introduced that required trials, and second, tools that existed before and were found to be extremely useful were often taken down (e.g. Terraserver) or were made obsolete by changes in the algorithm of the platform it investigated (e.g. graph search for Facebook becoming redundant due to Facebook changing their algorithm). Therefore, to continue to develop OSINT skills, investigators had to make a conscious effort to constantly experiment and learn.

A key theme that ran through all four information pathways is the need for trust and community verification. “It takes a lot of trust in the community to test out something new. If I upload a video to this tool to get the metadata, where does that information

go? And that's the process of the community testing and vetting these products,” explained Respondent I.

A group consensus of efficiency was needed for a tool to filter down into common usage. One example is of the same facial recognition software cited earlier, called Pim Eyes: “One of our colleagues posted in Slack and said, this might be interesting. And so we tried that a few times, and it didn't seem to work with us or with our images. We debated whether to buy a membership. And that's generally how it progresses, so I'll say, ‘Hey, This is interesting’. People try it out, and then we'll kind of reach a decision whether to use it or not, or if we have to pay for it or not.” (Interview R)

Due to the current popularity of OSINT, there was also an oversaturation of vendors pushing expensive OSINT tools, which was often distrusted in favour of word of mouth recommendations (Interview C2). One respondent recalls:

“There was one particular tool called Scrapestone, which I saw recommended on Twitter. And I went and did a little bit of research on that tool, and it turned out to be run by these scammy malware vendors. The company behind it was headquartered in China and had many apps pulled out of the Google Play Store for spreading malware. I am very suspicious of these kinds of recommendations, like, ‘Just download this tool and it will do amazing things for you for free’, and you never ask, what's the business. Someone's put money into this, and they must make money somewhere.” (Interview R).

This was one of the main pitfalls of implicitly placing trust in tools in the open-source community.

6.5.1 Twitter

Almost all of the respondents interviewed for this study agreed that Twitter, the social media platform, was the “centre of gravity” for finding out about new tools: it was the main platform where, within the OSINT Twitter bubble, OSINT investigators posted

information, demonstrated skills; and it was the place where investigative journalists working with OSINT posted new investigations and formed one of the primary groups of people posting about OSINT (Interview U).

Twitter also allowed for a community that readily shared information and knowledge. “It's quite good for being able to ask people questions. Through that, I got into a discussion about dates and Google imagery to find that the date that Google displays in Google Earth is actually the date the image was captured, for example, and so somebody pointed me towards a tool which maps which satellites were capturing what area or what time.” (Interview J).

6.5.2 Colleagues and Closed Channels of Communication Related to OSINT

Within mainstream newsrooms like the BBC or New York Times, or even newer ones like Bellingcat, there was a healthy culture of knowledge sharing when it came to tools. Respondents described finding out innovative methods of OSINT-ing through their colleagues in the teams, or friends who work for the same or different organisations.

“I found out about Spredfast from BBC Trending and Stories colleagues because they both swear by it, and they don't just use it for social listening,” said Respondent A. Respondent D2, a freelance journalist who often worked with several mainstream newsrooms said, “I will find out about OSINT tools mostly from my other friends in the BBC Africa team, or because it was used in a New York Times investigation. With tools, it's like you suddenly hear about it because somebody else uses it, or I hear it via Twitter direct messages from other investigators.”

Another way of finding out about tools was the organisation's internal chat groups, such as Slack for those working for Bellingcat. Bellingcat came across as savvy when it came to knowledge sharing and collaboration, which comes as no surprise as it grew out of a collaborative team of digital sleuths crowdsourcing intelligence to solve cases. Alongside their internal Slack, Bellingcat launched a Discord channel

with 600 participants at the outset, with some of the discussion centred around new tools that have been tried and tested, such as the facial recognition platform PimEyes, which was shared by a Bellingcat member (Interview W, H).

“I've got dozens and dozens and dozens of chats, some tied to organisations and some are groups of freelancers or just open-source investigators, but I know them, and they know me. And I trust them. When they say this is great for doing this or for doing that, then I instantly trust them.” (Interview Z)

Another way colleagues at the BBC or New York Times shared knowledge was to request new tools, test them out, and then organise tutorials for the rest of the investigative team:

“One day, my colleague just said, Oh, we got this new tool and licence called Hunchly which helps archive automatically. Some colleagues first try it out and then give us a tutorial session, and then we all start to use it if we find it useful. And this is one of the tools that I got from my colleague, which replaced the tool that I used to use for archiving a web page before it disappeared. Sometimes you will forget to archive, and this tool is automated. It's like a browser extension, and you're just like turning on, and then it just automatically archives.” (Interview N)

For veterans of the OSINT circuit, practising before OSINT came into common parlance, there was a distinct lack of infrastructure available to share knowledge about OSINT tools in the early days. So Respondent X started a Facebook Group with one other colleague to share resources on which tools were new and which had become obsolete.

Experts in OSINT who offered workshops, like X or members of Bellingcat, also came across new tools from the participants who sometimes introduced them to it.

6.5.3 Open-source Channels Like OSINT Blogs, Podcasts

Open channels of communication included a rich variety of resources, but some were notable enough to have been cited by multiple participants. One was the blog run by Twitter user @Sector035 called “Week in OSINT”, where the user posted a regular summary of the newest OSINT tools or innovative ways of investigating with them (Interviews K, G, O, B). “I got a great tip from this that when you’re speaking with the source, and you want to get a video with metadata, you can do that on WhatsApp by sending it as a document, rather than a video,” added Respondent B. The second was the Bellingcat OSINT Handbook, which contained a handy list of tools divided by type and use case (Interviews B2, G), described as a “classic repository of OSINT tools”.

Other resources cited include the “We are OSINT Curious” community posts, as well as the Bellingcat newsletter. “I found out about Trueface.ru from Bellingcat when researching secret Russian mercenaries,” added Respondent G. OSINT Curious also ran a podcast, and one of the contributors interviewed for this study explained that the show was a mix of their own findings, as well as tools submitted by listeners, who were mostly all ‘OSINT geeks’ (Interviews C2, R).

Then, there were dedicated individuals who ran their own websites and compiled reviews of the newest tools weekly, such as the blog run by nixintel or tools developed by Henk Van Ness (Interview G). The creators of the tools themselves also often posted on Twitter within these communities or reached out to the investigators running these blogs or podcasts for reviews (Interview E).

6.5.4 Personal research/Toolkits

Some researchers had their own OSINT tool monitoring routines through sophisticated monitoring setups they built themselves (Interview W), or created their own alerts of new tools through Twitter lists (Interview W, G). Others said that it was difficult to keep a constant eye on the evolution of OSINT tools, so one way out was to follow the right people on Twitter and, when facing a challenge, search through their published works to find solutions (Interview M).

6.5.5 Conclusion

To briefly summarise, this section dealt with the information ecosystem around the discovery of new OSINT tools, which included four channels: Twitter, professional networks, open-source web blogs or podcasts, and personal research. Most respondents used a combination of channels to keep abreast of new developments and also garner feedback on which tools to trust when investigating.

6.6 Conclusion

To summarise, this chapter partially addressed the first research question, which is central to this study: How are automated tools changing the work of investigative journalists in the context of digital work? Briefly, OSINT tools have changed the way journalists find sources, gather evidence, track systemic wrongdoing or misinformation. Most OSINT investigators were digital natives, so they described imperceptible changes in a workday as a result of the implementation. Time

investment in learning new tools was not a part of the workday, unless it was to solve an immediate problem. There was a growing information ecosystem of OSINT tools whose locus was Twitter, followed by closed and open-source channels, and personal toolkits.

To explore further, the chapter explored how automated tools, specifically OSINT or open-source intelligence tools, were changing the work of investigative journalists through changes to the typical working day, OSINT tool implementation changes in investigative workflows, and changes to the typical day as a consequence of it.

Respondents were asked to describe what a typical day of work in investigations involved to understand the structure of their workdays, either as a result of OSINT tools dominating their investigative processes or other factors related to their employment status or organisational needs.

The staff journalists interviewed for this study, from the BBC and the New York Times, followed a three-step structure: a) the monitoring stage; b) the pitching stage; c) the production stage. This general structure determined what is done in a typical workday, but investigative journalists using OSINT also operated in two modes of “story cycles”: short-term investigations with “quick turnarounds” and longer-term enterprise investigations.

In contrast, freelancers had different and often unstructured workdays, with patterns of work for a typical workday governed by their specialisms. Several freelancers worked on OSINT journalism projects in their free time or on weekends as their weekdays are taken up with their regular jobs.

In terms of implementation of OSINT automated tools, tools were generally selected depending on the function they perform, which allied with the data needed to prove something. It followed the logical 3 step process of discovery, verification and analysis.

The function of the analysis depended on the type of investigation being conducted, which is presented in the table below:

- To find human sources/interviewees to understand human impact of a phenomenon documented online
- To record evidence of criminal wrongdoing or human rights abuses
- To fight misinformation through fact-checks
- To reconstruct events of a crime to shed light on the incident
- To expose the abusers of a documented crime
- To expose serious or systemic criminal wrongdoing

FIG 6.6.1 OSINT ANALYSIS: PRACTICES OF INVESTIGATIVE JOURNALISM

When asked about changes to their workday due to OSINT, most said they had no change in their workday or were native digital investigators. Journalists who moved into OSINT described getting more work done during a typical workday as a result of it. The ability to verify using visual investigative techniques enabled by OSINT tools also removed overreliance on human sources. The negatives were that due to there being too many OSINT tools, it often became overwhelming for the investigator, and there was also an adverse impact on work-life balance that correlated directly with the efficiency of finding information using OSINT, such that respondents described “no longer working from home, but living at work”.

Respondents interviewed described four major sources of information about OSINT through which they found out about new tools, with Twitter emerging as the main source.

BREAKDOWN OF SOURCES OF INFORMATION FOR OSINT TOOLS

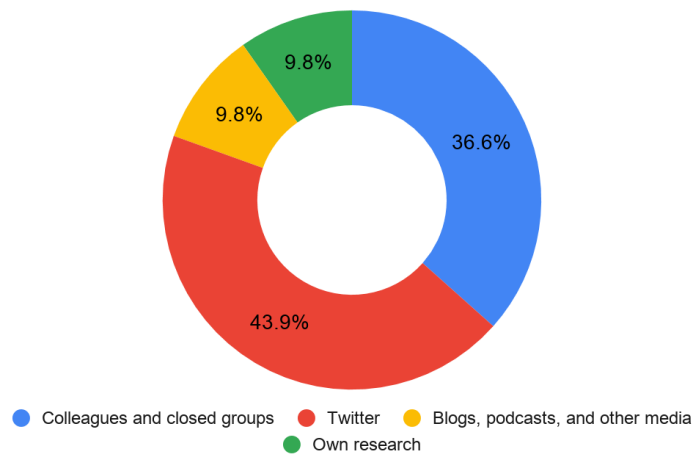


FIG 6.6.2 BREAKDOWN OF SOURCES OF INFORMATION FOR OSINT TOOLS

TIME TAKEN BY INVESTIGATORS TO LEARN A NEW OSINT TOOL

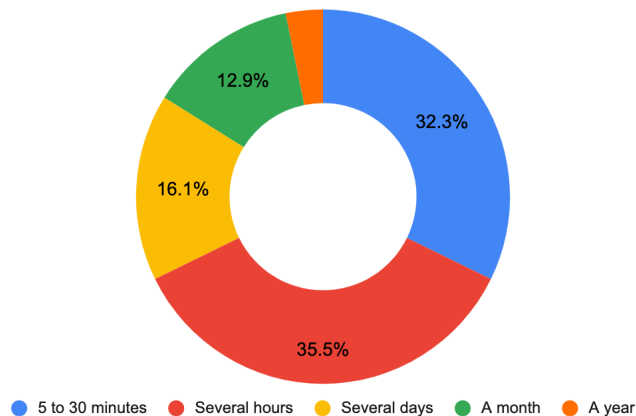


FIG 6.6.3 TIME TAKEN TO LEARN AN OSINT TOOL

A majority of respondents in this study said that it took them an average of one to several hours to master a new tool, and most complained that they did not have enough time to learn new complex tools during their workday.

The next chapter addresses the overall impact of the change in work recorded in this chapter, as a result of introduced OSINT technologies in investigative workdays and workflows.

CHAPTER 7: THE IMPACT OF CHANGE IN INVESTIGATIVE JOURNALISTS' WORK

7.1 Introduction

While the previous chapter dealt with the change in working conditions, specifically understanding how the introduction of automated digital technologies had changed the investigative workflow and typical workday, this section goes into detail about how these changes in working conditions have impacted the investigators or investigative journalists themselves, vis-a-vis changes in stress, rate of overwork, and automation anxiety. In other words, this chapter aims to partly respond to the first research question: How are automated tools changing the work of investigative journalists?

Stress, overwork and automation anxiety are the key factors discussed in this chapter. These three were chosen as a result of the literature review, which identified these factors as having an impact on the work of journalists (especially investigative journalists) and also identified a knowledge gap on the impact of these factors on specifically OSINT work, which this study aims to fill. The analysis of these three factors also functions as a segway to the final research question, which looks at the mental health impact of OSINT-led investigative work, the results of which are explored in detail in the next chapter.

Stress in journalism is a known factor; in fact, a 2015 landmark study from the Reuters Institute on journalists' perception of future work had 71% of respondents (509 journalists across the Western world) agreeing that journalism will be more stressful than other white-collar professions in the future because of new media, and require more avenues of work, suggesting an increase in overwork (Picard 2015). A year before, another study too recorded journalists facing more stress and overwork,

with a general increase in anxiety due to layoffs (Ekdale et al. 2015). Stress is seen to have an overwhelming and historical premise when it comes to journalism (Fedler 2004) impacting both health and life expectancy of journalists (Fischer 1985). In addition, this study focuses on the work of investigative journalists or investigators using OSINT, who are exposed to heightened forms of stress due to increased exposure to crises (Backholm and Björkqvist 2010). In many cases, this exposure without stress mitigation leads to Post-Traumatic Stress Disorder / PTSD (discussed further in the next chapter); as well as new forms of stress such as automation anxiety (Akst 2013) that add to the anxiety of layoffs mentioned earlier.

With that in mind, this chapter is divided into three sections: the first attempts to understand how respondents are defining stress, the reasons for it and the various sources of stress, and how that stress may be unique to OSINT. The second section looks at overwork, its prevalence within the investigative journalism and OSINT community through working hours, and balancing work-life needs, whether there have been any specific changes in work-life balance as a result of OSINT, and if so, why. The third and final section looks at automation anxiety, if it is indeed something that investigators working with OSINT experience and if so, how they deal with it, and how it impacts their day to day working.

It explores the impact of the change in working conditions by exploring the prevalence of stressful working conditions; how many hours per work OSINT investigators work on average; whether in the subjective opinion of the respondents there is overwork in journalism and if so, what the sources might be and why; how their work-life balance in the context of OSINT tools and methods of investigation has been affected; how working hours might have changed since the time they began working as a journalist or investigator and whether the digital technology used in OSINT has played a role in how working hours have changed.

The section on automation anxiety looks at whether respondents think that automated tools will result in more unemployment in the journalism sector; whether it has created any new jobs; whether there are parts of the investigation they fear will

be automated in the recent future; what the awareness is of direct automation in this sector rather than augmentation as is seen in OSINT; and how they experience dealing with the large amounts of data available and the speed at which an OSINT investigator is expected to digest it, or more specifically, what is the experience of the OSINT investigative journalists or investigators interviewed of keeping up with technological progress; before concluding with a summary of all the main findings related to change in work as a result of OSINT in this research study.

7.2 Stress

Before delving into the findings of this study, it is worth noting that stress in itself isn't a bad thing. The National Institute for Mental Health in the UK writes:

“In a dangerous situation, stress signals the body to prepare to face a threat or flee to safety. In these situations, your pulse quickens, you breathe faster, your muscles tense, and your brain uses more oxygen and increases activity – all functions aimed at survival and in response to stress. In

non-life-threatening situations, stress can motivate people” (NIMH n.d.).

But stress in excessive amounts, or daily work-related stress, leads to a range of negative responses that are cognitive, emotional, physical, behavioural, or a combination of the four (The Stress Management Society n.d.), and prolonged exposure to stress has been linked to heart disease, a compromised immune system, stroke, ulcers, diabetes, miscarriage, and overall shortening of the life span (Nabi et al. 2013; Agarwal and Marshall 2001; Tsutsumi, Kayaba and Ishikawa 2011; Levenstein 1998; Lloyd, Smith and Weinger 2005; Li et al. 2012; Razzoli et al. 2018).

Hans Selye, who is credited with introducing the term “stress” to the public in 1936 (Bienertova-Vasku, Lenart and Scheringer 2020), defined it as “a syndrome produced by diverse nocuous agents” (Selye 1936, 32), which he later distinguished as being of two types: “distress” and “eustress”. Distress was described as a negative stress response, while eustress referred to positive, stimulating factors,

later adding that “[stress] is not so much what happens to you, but the way you take it that is crucial” (Selye 1979, 79).

For this study, respondents were asked if they had experienced stress in the past year and were asked to provide an example of it to further understand how they were defining stress, later expanding on how this stress affected their functioning. Of the 30 respondents in this study, 80% (24) responded saying they had experienced what could be described as stressful working conditions, while only 20% (6) answered saying that they did not experience any work-related stress. Since most of the impact later described is negative, the stress described by the 80% here is distress.

NUMBER OF OSINT INVESTIGATORS/JOURNALISTS WHO EXPERIENCED STRESS

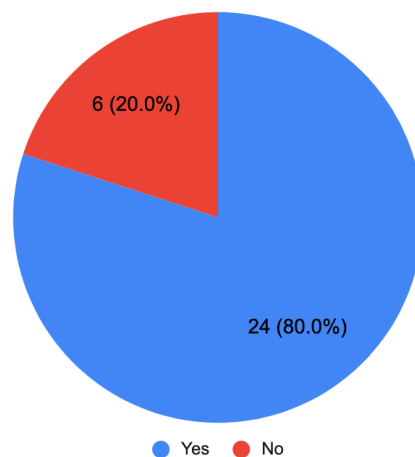


FIG 7.2.1 BREAKDOWN OF RESPONDENTS REPORTING WORK-RELATED STRESS

The various negative stressors described by the respondents were broadly divided into three categories: one, *stresses specifically originating from or related to OSINT investigations*; two, *stresses native to the journalism industry*; and three, *stresses arising from the gig economy*.

7.2.1 Stresses Originating From or Related to OSINT Investigations

7.2.1.1 Graphic Violence/Content

The chief source of stress for OSINT investigators was dealing with content depicting graphic violence, with the potential to cause vicarious trauma. One respondent said the most stressful work experience was having to look through graphic footage of violent conflicts in Myanmar, “lots and lots of just dead bodies, all the time, and I could do it for a couple of hours but then I would just have to stop and put it down and not touch it again for a day or two, because it was kind of hard psychologically” (Interview R). Another described working on an online investigation into drug traffickers and having to watch hundreds of videos of people shooting up heroin, as well as pornographic content, and said it was “really, really draining to go through all of that in addition to the normal stresses of working in an office environment” (Interview T).

One journalist was working on an investigation into the 2017 Syrian chemical weapons attacks, and the goal of the investigation was to verify if the attack had taken place by doing imagery analysis. The attacks themselves were the target of disinformation campaigns, some of which involved recycling images of children receiving emergency medical treatment, so to verify if they were authentic, the journalist had to go through hours of historical footage of children who had survived attacks in warzones receiving medical treatment frame by frame, which resulted in the journalist getting so traumatised that they had to leave the investigation. However, quitting an investigation of such stature due to graphic content also led to feelings of guilt, causing added stress: “I know that I should have kept at it because it's not very fair of me to put my feelings ahead of someone's legacy being tarnished because there were doctors, first responders who were either killed or injured. And that would be targeted by disinformation, and I felt it was up to me to help them make a point, but after a while, it was just too much” (Interview E).

Another journalist working on the reconstruction of the George Floyd killing (which sparked the Black Lives Matter protests in the summer of 2020) said that the most stressful part of the investigation was not acquiring the police bodycam footage, but the “65 minutes of watching a man slowly be killed”. They added:

“Then you have to watch it over and over again because you need to count every single time this police officer tries to check his pulse. That's obviously very stressful, and then that stress is multiplied because you have no time to step away and say I really can't watch it again. We want to get expert opinions on whether the police responded correctly, whether the medical personnel responded correctly or whether they were delayed in their response. And when you're moving quickly, there's more concern that you might make a mistake. All of those stressors combined in 24 hours to make a very intense working environment” (Interview I).

One journalist working in breaking news as an OSINT investigator described how in the immediacy of the moment, there is very little time to prepare oneself mentally. If one is traumatised at work when one is a freelancer, the repercussions are more significant:

“You have your TweetDeck open, you have graphic content coming in, so you kind of make your eyes small so that you are just opening it when you see something that fits your investigation.

But when there's no breaking news, and suddenly there's a graphic video where someone was shooting someone, and it was really close and loud so I wasn't prepared. I kept on working. And then I had a physical reaction when I was going shopping. We still don't have a routine on how to deal with that kind of content. I'm happy that I can talk openly, but I'm not sure about other freelancers because, of course, we are always afraid of losing shifts” (Interview K).

7.2.1.2 Management Uninformed About Vicarious Trauma

The second leading cause of stress was management, in several ways. Being managed by editors or managers who did not understand the risk of trauma or were unwilling to support employees dealing with it was a significant stressor. Multiple respondents described a “toxic work environment” where editors were “unsupportive” when investigators were working on investigations heavy with “traumatising graphic materials” (Interview A2, B). “For open-source people, when you work a lot on something, you end up dreaming about it. I dream about boats drowning and murdered people,” said Respondent B.

7.2.1.3 Lack of OSINT Literacy In Management

A lack of OSINT literacy leading to mismanagement and friction in investigators’ working days was the other significant source of stress. “When you are working with people who don't have open-source literacy, it's very difficult to adjust their expectations about what sort of material can be found. It's pretty cool what we can dig up, but it sometimes isn't what they want,” said Respondent L, “open-source isn't magic.”

A couple of respondents said that management did not fully understand what was necessary for the investigator, such as autonomy or time leading to creativity, which caused immense stress (Interview V). “Some of the expectations from editors were also slightly misaligned because they didn't understand how the tools work or how long things might take and how much actual manual labour was involved in the workings of actually doing the open-source investigation. So that resulted in some extremely late nights but also a feeling of not fully being appreciated for what was being done because there was no understanding of what was being done,” added Respondent Y.

7.2.1.4 General Lack Of Support For OSINT Projects

Finally, a general lack of engagement in supporting investigators' with their projects was the other source of stress for OSINT investigators, coming from management. Another described a lack of coordination by editors in a breaking news situation leading to stress for investigators who were left wondering, "How can I contribute to this? I don't know if there's anything my colleagues haven't already discovered on social media. I don't know where to start. And how should I stay in this game? Should I leave?" (Interview N).

7.2.1.5 Uncertainty & Structure Of OSINT Investigations

The other primary source of stress was a structural one: the uncertainty of OSINT investigations and the resulting stress and anxiety investigators had to deal with. "A lot of times, you're chasing something that has no end. So there isn't the video that you think you're going to find," explained Respondent L. Another respondent pointed out that it was difficult to predict where the investigation might lead due to the various OSINT pathways available to explore, leading to a loss of focus and stress. "You're trying to cover one story, but then in the middle of the story, you're somewhere else, so you are no longer able to frame the story. The story turned out to be more complicated, less focused, and you don't know how to write it to meet your reporting goals" (Interview N).

OSINT investigations often deal with complex data pathways and channels of information, and condensing that complexity into a coherent narrative to make it legible for publication or a case, was a significant source of stress for several respondents (Interview C2, Z), and a stress that was not often understood by editors (Interview Z). It must, however, be noted that part of this stress could be arising from the fact that the success of an OSINT investigation was being measured by the

barometer of traditional reporting, the rules of which simply cannot continue to apply within an augmented workflow.

7.2.1.6 The Stress of Archiving

Added to that were the stresses caused by the challenges of OSINT investigations themselves: to capture evidence or incriminating data before it is deleted or taken down by social media companies for violating their community guidelines (Interview P, Q, G). One respondent, who started off doing OSINT in their free time, described returning from their 9 to 5 job at a bank to set up their desk at home and work on collecting as much evidence as possible till late at night before it got deleted (Interview P).

7.2.1.7 Volume Of Data for Investigation

The infinite nature of data that must be parsed as part of an OSINT investigation was an added source of stress.

“It's a very peculiar field of work, where we are constantly analysing an infinite amount of data. The more time you spend looking for things, the more you find, which goes beyond what you need. There are so many more elements you can add to it if you keep on going, so I don't know when to stop. I find that stressful, sometimes in the way that you want the story to be complete and perfect. You have to force yourself, based on resources, whether it's budget or time, to apply some objective judgement, and lose the little ends that potentially do provide more, more, more elements to your story,” explained Respondent M.

Another added that this was also due to how much information is out there, how much time one has to gather and how much time one gets to make sense of it– none of which could be predicted, so some investigators ended up getting obsessive: “Because when you don't understand something, and when you have to write about

something, you get stressed because you can't write about something you don't understand" (Interview D).

7.2.1.8 The Race to Catch "The Bad Guys"

Constant competition, not just within the industry but to catch the "bad guys" being investigated, was seen as an added stress for journalists working with OSINT:

"For most people, OSINT isn't a career choice; it is just a lifestyle, or at least becomes that at some point. The pressure is very much internal so that people are pushing themselves way too hard because they are probably chasing the bad guys from the comfort of their living room. It's just never been easier to be a hero. All you need is a computer; you don't need a complex setup, so even when you're home, you're still doing it sometimes" (Interview E).

7.2.1.9 Lack of Defined Work Hours in OSINT

And finally, the ability to do OSINT anywhere with a working internet connection and a laptop, while a reason for its popularity, was also felt to be one of the principal stresses of the job as it created a lack of defined working hours and an inability to find that boundary between work and home life especially within the confines of one's home (Interview M, G).

The following section looks at the stresses faced as a result of being a journalist.

7.2.2 Stresses Native to the Journalism Industry

The stresses native to the journalism industry, which OSINT investigators also felt, were of three main types.

7.2.2.1 State Aggression and Backlash

The first was state crackdown and aggression towards journalists, especially those covering the Middle East. One respondent, based in a North African country, said that the pressure of poor salaries and job prospects was compounded by having to operate within a police state (Interview F). Sometimes the stresses of their day job for those doing OSINT in their free time was difficult to separate. Respondent R, working for a think tank for their day job covering Chinese state-funded disinformation, described intimidation campaigns from the Chinese government: “We've had people outside the offices taking photos or taking photos of cars in the garage, cyber-attacks, which make work very stressful.”

7.2.2.2 Online Attacks on Journalists

The second was the ongoing online attacks on OSINT journalists, especially those countering state propaganda, by online trolls. Respondent H, a long-time Bellingcat investigator, said that the public attention they received from state entities was at times stressful, especially coordinated attacks to discredit them by labelling them as spies – it was difficult for journalists not to internalise the constant negative onslaught. Another said that releasing high profile reports meant they had to be locked down prior to it from a cybersecurity perspective as much as possible, which was stressful, and once the report was out, the barrage of hateful comments from online state-backed trolls meant that they would often switch off their phone as social media ended up causing crippling anxiety (Interviews O, H).

7.2.2.3 Discrimination Based On Race, Gender And Nationality

The third was a systemic issue within the journalism industry as a whole— which is that journalism, in particular investigative journalism, was predominantly a white male-dominated profession. Race and gender-based microaggressions faced by journalists, especially women of colour and immigrants, caused enough stress to make their jobs extremely difficult. These stresses often went unaddressed because editorial or management positions were further dominated by white males who had no conception of how these stresses might affect journalists of colour, or women, or both.

“The stress tends to stem from microaggressions at work and gatekeeping in journalism which allows white male Oxbridge bred journalists more access, and when they rise to positions of power, they block out women of colour like me from entering the profession,” said Respondent G. Another respondent said, “Speaking as a person of colour and as a female, you have to work harder, because you're not taken seriously and because men have this way of demanding that they should be doing things whereas I feel like I need to prove that I should be commissioned to this story so I would do the extra work around it and show you. And I think the biggest stress is when management doesn't acknowledge the inequalities that affect me personally” (Interview A).

The following section focuses on stresses faced by freelancers.

7.2.3 Stresses Arising from the Gig Economy (Faced by Freelancers)

The final collection of stresses faced by investigative journalists practising OSINT stemmed from the gig economy and almost exclusively affected freelancers.

7.2.3.1 Constant Insecurity and Poor Pay

Most freelancers felt stressed as they had multiple projects ongoing to compensate for poor pay or the constant competition within the industry. The economic insecurity felt as a freelancer working on contract-based projects was often compounded by the pressures of remote work (Interview L, G), and the overarching stress was the race to find the next story (Interview L, B).

For freelancers investigating using OSINT, the uncertainty of OSINT investigation outcomes also affected their payday and economic situation: “When investigating airstrikes in Syria for a TV channel, I was working with a freelance producer. We had to pay people on ground for footage before we pitched it. I spent three months working on two reports and another two months on another project before leaving halfway due to conflict with the producer. I ended up not getting paid. It gives you this constant sense of insecurity that makes you accept the worst situations. Even if your goal isn’t money, it’s still bad for your mental health” (Interview B).

7.2.3.2 Unsustainable/Poor Conditions of Work

The other limitation of being freelance was that sometimes one investigation, if it was very complex, needed to be completed before one could dive into the next one, so there was often no capacity to have multiple projects on the go. This meant that when the project was finally completed, the freelancer had to start hunting for the next story without any commission in place which guaranteed a paycheck (Interview M). One freelancer, based in a non-Western country, also added that their national currency crisis forced them into doing additional consulting work as they could not live off OSINT investigations alone which had no salary guarantee (Interview D2).

7.2.3.3 Pressure to Overwork and Multi-Task

Several respondents, all freelancers, reported juggling multiple jobs, with some doing OSINT investigations on the weekends alongside full-time jobs, while one

respondent described working at two different media institutions at the same time just to make ends meet and then doing the investigative work they felt passionately about in their spare time (Interview D, F). The pressure of having to take their own initiatives was also seen as a burden that added stress to freelancers' lives— OSINT investigators felt an “enormous expectation to be a self-starter” (Interview C).

The following section briefly discusses the causes behind those reporting no stress.

7.2.4 Addendum: Those Reporting No Stress

For the respondents who reported not feeling any stress in the past working year, the reasons were a combination of autonomy caused by financial security, which came to those who were comfortably “established” enough to no longer have to hunt for work, and good management.

One respondent, who attributed it to “dumb luck” (Interview B2), said they had never been assigned a “tonne of projects”, or so many that they felt overwhelmed, which could be chalked up to good management practices. The executives they worked for actively tried to make the work environment less stressful, taught investigators about resiliency, vicarious trauma and compassion fatigue, and focussed on mental and physical wellbeing over the outcome of projects. This instilled in investigators a sense of personal responsibility and the gravity of the content they dealt with: “I understood for myself that I need to follow these guidelines because if I don't follow them and mess up, I'm gonna give myself PTSD” (Interview B2).

Another respondent, who reported not having a stressful environment, said that they had seen “a lot of crap on military deployments so stressful images or things like that don't affect me as much anymore because I've seen things like that in real life” (Interview U).

The following section looks at overwork, its prevalence, and its impact.

7.3 Overwork

This section is a continuation of the analysis of the impact of change in working conditions of investigative journalists, especially those changes which have occurred as a result of the introduction of OSINT technologies within the workflow. While the previous section looked at stress and the various forms of stress specific to OSINT or otherwise, this one looks explicitly at overwork, its prevalence within the OSINT community, its impact on work-life balance, the working hours maintained by OSINT based investigative journalists and whether there has been any change in them as a result of technology.

7.3.1 Hours of Work in OSINT

To begin with, respondents were first asked how many hours per week they work, with the average workweek being 35-40 hours ('Average Actual Weekly Hours of Work for Full-Time Workers (Seasonally Adjusted) - Office for National Statistics' n.d.). 40% of respondents or 12 of the 30 investigators interviewed reported having a normal workweek, with no recorded overwork. In comparison, 60% of respondents reported working overtime, some even reporting 75 to 80 hour work weeks during extremely stressful investigation launches. The average hours of work calculated from the 30 responses in this study came to 47.8 hours, well above the average working week.

HOURS OF WORK PER WEEK AS REPORTED BY OSINT INVESTIGATORS/JOURNALISTS

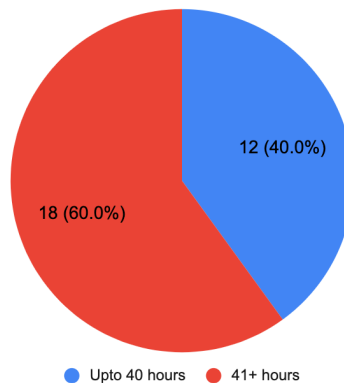


FIG 7.3.1.1 HOURS OF WORK PER WEEK REPORTED BY OSINT INVESTIGATORS

Most respondents said their workweek depended mainly on the type of investigations or caseload and their deadline. The increase in working hours was directly proportional to its proximity to the deadline, as final verification or checks, preparation for publication added additional administrative tasks which led to longer working hours. Longer working hours also resulted from breaking news investigations that responded to a public emergency, like the Black Lives Matter protests in the aftermath of George Floyd’s murder or the downing of the Ukrainian airliner by Iran, where there was a scramble to gather information and analyse it to inform the public.

7.3.2 Prevalence of and Reasons for Overwork

Following that, respondents were asked if they thought there was overwork in their journalism field, and if so, why they thought that was the case. All except one of the 30 respondents in the study responded saying overwork was very much present in OSINT-based investigative journalism. The one respondent who said they did not think there was overwork nevertheless said that working overtime “was the nature of the industry” (Interview O). Several of the respondents specifically highlighted

overwork as a proponent of the investigative community and the journalism communities.

IS THERE OVERWORK IN JOURNALISM?

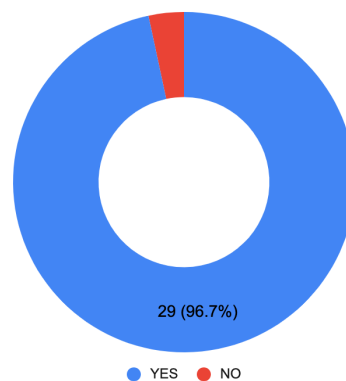


FIG 7.3.2.1 BREAKDOWN OF RESPONDENTS REPORTING OVERWORK

The reasons for overwork faced by the respondents in this study can be classified based on the following types of factors: one, OSINT-related reasons for overwork; two, journalism-related factors for overwork; three, factors for overwork linked to being freelance or part of the gig economy.

7.3.2.1 OSINT-related Reasons for Overwork

> *Competition and/or personal attachment*

The first among the OSINT-related factors leading to overwork was a combination of competition within the OSINT industry to get the information or analysis out first, alongside a deep personal attachment or investment in the stories being investigated. One-third of respondents in this study attributed this combination of factors to causing overwork.

“I think journalists who work in this field really care, and it can be hard just to pull yourself away when police are killing people, people are being bombed in hospitals in Syria, and what right do I have to step away right now because I'm tired. The other part of it just comes from journalism's competitiveness, it's a time crunch – you want to be first,” explained Respondent I.

Another respondent added that “when you have a human rights mandate, with the guilt that a lot of times comes with working in human rights in general, and you combine this with the gamification of open-source, in which there is a limited pool of money to be distributed (that there's also people who treat this as a video game, instead of dealing with people's lives). You combine all these factors together and what you end up having is overwork and burnout, because people don't know when to stop, they can't stop, and the information doesn't allow you to stop” (Interview L).

Respondent A felt that their ability to care was why they had become a journalist in the first place, “so if you can't do that within a day, then you will take as long as you can or put in as many resources as you can to make sure it is the way that you wanted to be, especially if you're working on human rights social justice stories. And the second reason is competitiveness – when you see people around you kind of staying longer, then you're like, Oh God, am I not working hard enough?”

> *The gravity of OSINT investigations: “more than a job”*

The stress of the importance of the information compelled investigators to “go beyond what the normal working hours would be”, which was easier to do in the case of OSINT as investigators weren't tied to their office and could work from home, according to Respondent M. This guilt propelled the undefined overtime work hours.

Another respondent called OSINT investigations “more than a job” (Interview A2), while respondent B pointed out that stories developing in real-time contributed to the sense of competitiveness. “I definitely think there's overwork, and I think it's because there's so much happening in this world: the fact that we always have to ensure that information is out there and it's trustworthy, and it's critical, but at the same time it's timely makes it very difficult not to stop what you're doing,” said Respondent Q, explaining the need for verification based OSINT work.

> *Social media and 24/7 news*

Twitter, where many OSINT investigators “hang out”, also created this appearance of some people being online almost 24/7, creating competition and promoting overwork

(Interview S). The news cycle, as mentioned earlier, with the advent of broadcast journalism with rolling coverage and digital news, created this illusion that “the news never stops”.

“You can never predict when the next big story is going to happen. It can be in the middle of the night, two in the morning, five hours after you've just finished your shift. And if you want to do your job properly, you can't just sign off.

There's this big story happening, and it's related to my line of work, man oh man, I'm on— because if you don't do that, you're already out of the loop, out of the story at the pace at which stories now develop, particularly online on social media. If you haven't started looking already when the story began developing, there's no way you can cover it properly” (Interview Z).

The growing demand for OSINT due to news organisations understanding its usefulness also contributes to the competition, which fuels overwork (Interview C2).

> *Bad management practices*

The next OSINT-related factor leading to overwork is simply bad management, with managers not understanding how OSINT works, leading to lax attitudes towards vicarious trauma, lack of resources, and unrealistic expectations. “The stress at my job that I experienced was really acute. Management didn't really care about the mental health impact of us looking at these graphic images of airstrikes because they did this initial resiliency thing as a tick-box exercise and thought that was it. So when issues were flagged to them during work, they went ignored,” said Respondent A2, who also felt that such negligence fed into the flawed idea that some people have in their DNA to do the job, and others didn't, which in turn created a hostile environment by excluding anyone who might have a closer relationship to the materials that made them more vulnerable, but also meant they were better qualified to contribute to the investigation.

> *Lack of resources and OSINT literacy*

The issue with overwork in OSINT-based investigations tied to mainstream media organisations was a direct result of work overload from a lack of resources, which came from a lack of awareness of how much work OSINT required. “Someone's

always saying, can you also do something like what the New York Times is doing, and then I'm pointing out how many people were working on this, and they are all experts in the field," added Respondent K.

> *OSINT tools creating more work*

The next contributing factor to overwork in OSINT-based investigative journalism was the OSINT tools themselves, as their introduction was lengthening the investigative workflow, not always for the better. "You always have to put in what feels like 80,000 hours of effort for one small tidbit of information, for example, sometimes five or six hours even to geolocate one video," said Respondent B2, who often works with video analysis.

Another respondent added:

"The flip side of having more automated tools has produced more data. And although the gathering of things is automated, fundamentally, analysis is still a human task and will remain a human task for a very long time. So although you have tools to help with the gathering of stuff, actually processing it, and turning it into a criminal investigation or turning into news stories, things like that still require a lot of work" (Interview C2).

The vast amounts of data out there for investigation could only be interpreted and analysed within the time allocated for the investigation, and that too was mostly hard to predict (Interview D).

> *Going down the "rabbit hole"*

The final OSINT-specific reason for overwork was the "rabbit hole", getting obsessive over the details and being led astray into a Russian doll of links:

"Open-source methodology is quite rigorous on the researcher. There is something that I call falling down the rabbit hole – having no finishing point. Often, when you find one element, you keep going, and it's the datafication and fragmentation of information or of open-source material that traps you in the process. So you're stuck rolling through endless amounts of data, or just endless amounts of body counts" (Interview L).

The rigorous demands of the open-source methodology or the pressure to perform exhaustive research on a lead led directly to overwork, and that was often justified by adopting OSINT as a lifestyle, along with the guilt of potentially missing a lead and letting the bad guys go: “For most people, OSINT isn't a career choice it is just a lifestyle, or at least becomes that at some point. People are pushing themselves way too hard because they are probably chasing the bad guys from the comfort of their living room. It's just never been easier to be a hero. There's a lot of that pressure to keep doing that. All you need is a computer; you don't need a complex setup, so even when you're home, you're still doing it sometimes” (Interview E).

The following section explores the reasons for overwork native to journalism.

7.3.2.2 Journalism-related Factors for Overwork

The main journalism-related factors causing or contributing to overwork were: the current model by which investigative journalism was funded and conducted, the uncertainty of investigations, and the pressures of a fixed deadline. All of these issues were structural and therefore unavoidable within the current rigours of investigative journalism.

> *Lack of funding for investigative journalism*

First, the problem was systemic in the sense that investigations, which are of any standard, involved holding power to account and took a very, very long time compared to the pace of breaking news. By comparison, there was a very small workforce to do this kind of work because investigative journalism is not a lucrative business model:

“It costs far more than it makes because most of the time, you're holding power to account, and that doesn't make money for you. If anything, you run the risk of lawsuits; you run the risk of being sued for defamation. Your

professional instinct is that there is some kind of wrongdoing, and sometimes you get there, and you realise that actually there isn't, or it's not provable, or it's not strong enough or it's not interesting enough in journalism, you know, it's not like law enforcement where if they're breaking the law, they're breaking the law – journalism has to be interesting. It has to meet your audience. You know, it's going to have to get clicks, it's going to have to get people interested,” explained Respondent C.

> *Uncertainty of investigations*

Another said that the uncertainty of where an investigation might lead, and the likelihood of it sometimes leading into a “rabbit hole” where the “story” could no longer be framed within the original parameters, either due to lack of access, evidence, relevance, complexity, led to overwork as journalists tried to control the various moving parts (Interview N, C). In addition, the pressures of juggling multiple stories and never being able to unplug from them fully led to extreme overwork, eventually causing burnout. “I've had analysts that left our team because they felt they were always thinking about the investigations, even when they left for home, it's always on their mind, and they can't even enjoy their weekends,” said Respondent T.

> *Deadline stress*

Deadlines, the other major journalism-related factor for overwork, usually brought about a frenzy of activity that went well beyond normal working hours. And this was due to the pressure to get the facts right, complete final verifications in high-stakes investigations, or external factors creating the need to publish urgently (Interviews B2, H, I, V).

The following section briefly details additional factors for overwork for freelancers.

7.3.2.3 Factors for Overwork Linked to the Gig Economy/Being a Freelancer

For freelancers, overwork seemed to be wired into their daily routine as they juggled multiple jobs, projects, assignments, deadlines to get their pay on time and ensure some semblance of job security.

“If you want a raise, you'll have to be constantly on the hunt for something, and if you are working for a newspaper etc. you have to justify your position because of a very competitive business environment constantly,” said one respondent, while another pointed out that being self-employed meant there was no-one to allocate some of the work to, and another quoted the limitation of being freelance as being on a constant chase to pick up the next story after a big deadline and not being afforded any breaks (Interviews D2, I, M).

The following section looks at the impact on work-life balance.

7.3.3 Impact of Overwork on Work-Life Balance

To understand the full impact of this overwork, respondents were also asked if their work-life balance in the context of digital technology that supported OSINT-based investigative journalism changed, and if so, how.

More than half the respondents in this study (63.% or 19 out of 30) said it had negatively impacted their work-life balance, while 20% (6 out of 30) said it had had a positive impact, and a further 17% (or 5/30) said it had had no impact or created no noticeable change.

CHANGES IN WORK-LIFE BALANCE AS A RESULT OF OSINT

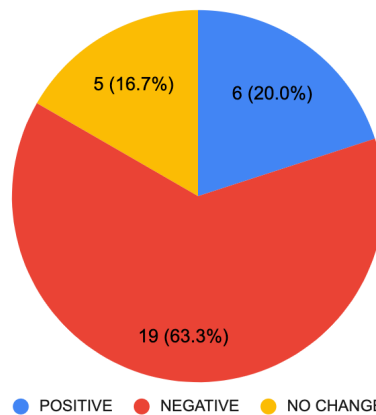


FIG. 7.3.3.1 IMPACT OF OSINT ON WORK-LIFE BALANCE OF JOURNALISTS & INVESTIGATORS

7.3.3.1 Negative Impact

Respondents who said that OSINT had had a negative impact on their work-life balance attributed it variously to: addiction to digital media; creation of more work; creation of repetitive tasks; and blurring of boundaries between work and home.

Respondents attributing it to digital addiction described being unable to switch off, like being “a game or sports addict” (Interview V), being “completely addicted to my phone” (Interview A), “spiralling online late at night” (Interview B2), “hard or impossible to be off the internet for long periods” (Interview C2), “constantly having to focus on multiple things and then balancing a family life like pulling a train with your bare hands” (Interview F), the “expectation to be online more” (Interview G), having to force or train themselves to “put the cell phone away and not touching it till the next day” (Interview K),

“It’s really easy to sort of lose that work-life balance because you’re doing what you love,” added Respondent T, “I think a lot of successful people in the

OSINT space have that investigative mindset where they're like, once you get into an investigation, you kind of don't want to leave any stone unturned. So when you make a career out of that, it gets really really difficult to step out of that.”

For journalists, there was the added burden of needing to be constantly online, not just with colleagues but also with sources, which made it harder to be away from work or added to the pressure of having to constantly react to things as they unfolded (Interview Y), even when they were on their honeymoon according to one respondent (Interview X) or from the hospital (Interview G).

The introduction of OSINT tools, rather than freeing us with automation, have instead created more work. Respondents described spending more time “doing repetitive tasks online which I didn’t enjoy” (Interview A2) or creating “higher expectations of what can be delivered due to more technology being available while managers don’t understand the amount of work that needs to be done to deliver the requested results” (Interview Y). “These tools open new doors that a lot of other people or other journalists wouldn’t be able to open. But the cost of being able to open those doors is that these techniques take a long time. So for geolocating something, sometimes it can come down to brute force geolocation, which just involves scrolling through captured satellite imagery” (Interview C).

The tools themselves did not change the bulk of the work but added credibility to independent findings, allowed for discovery and verification like never before, but the due diligence for these processes were time-intensive, creating more repetitive tasks, longer workflows, longer workdays, and loss of work-life balance (Interviews H, L, O, Y).

The blurred boundaries of work and home, although a positive when it came to being able to do OSINT with the relatively low resource setup of laptop or smartphone and WiFi, also severely impacted work-life balance, unsurprisingly so, causing the line

between being at work and not being at work to not exist (Interview I, Z) and leading to burnout.

7.3.3.2 Positive Impact

OSINT investigators who reported a positive impact on work-life balance mostly did so due to awareness of vicarious trauma and rigorous self-regulation rather than any external incentives. “When I was studying OSINT, I learned from other investigative journalists to not glorify burnout,” said Respondent B2, who added that their work-life balance has improved because they understood how to set boundaries with work and to be strategic with doing overtime.

One respondent said that OSINT had reduced the amount they would normally travel for journalism, thus restoring work-life balance (Interview N), while another said that transitioning from a hobbyist to doing OSINT for a day job had helped them regain work-life balance (Interview P). Another interviewee added that working non-stop since school for almost three decades had instilled in them a keen sense of the importance of having a good work-life balance, with a greater focus on life than work (Interview D2).

7.3.3.3 No Impact

For the five respondents that said they had seen no change in their work-life balance, it usually came down to either hyperactivity due to personal drive or coming from a background like academia where work-life balance was usually negatively impacted by work almost consistently (Interviews J, M, V).

“I remember going to work on holidays just because I wanted to do more research, even though nobody was paying me for that extra work, and I think that is something common to the people that are into this profession – it’s

always people that would do more, rather than less, and they don't stick to working hours. My transition to open-source happened because of the limitations of the traditional sort of investigative work, so I started consulting open-source material on my own,” added Respondent M.

The following section analyses the reported consequences of automation on investigative journalists.

7.4 Automation Anxiety

This section deals with the impact of automation in the workplace, specifically, the incidence of automation anxiety as a result of it, and asks respondents to gauge the “automatability” of their workflows.

7.4.1 Perceived Threats due to Automation

Respondents were first asked whether they felt that automated tools would result in more unemployment in the sector. Of the respondents in this study, 77% or a majority said they did not see a threat of unemployment arising from automated or OSINT tools, while 17% agreed and 6% remained undecided.

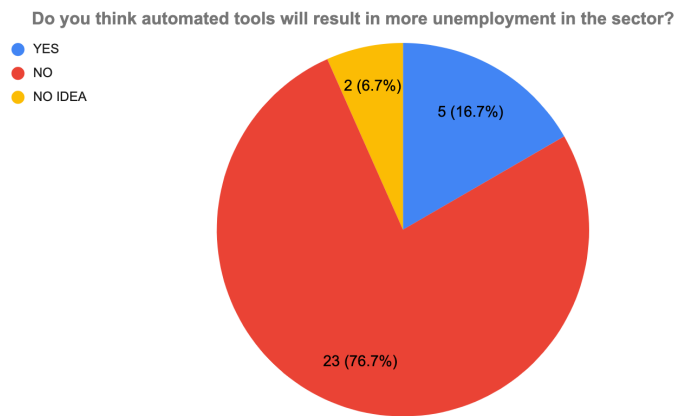


FIG 7.4.1.1 BREAKDOWN OF RESPONSES ON PREDICTED UNEMPLOYMENT DUE TO AUTOMATION

7.4.1.1 No: Creation of More Work and Jobs

A majority said it created more opportunities for employment as it was “creating more work” due to the immense data available online to analyse and the fact that digital tools still need human oversight (Interview B2, C2). “There's so much more work to do now than before, plus some automated jobs now need human moderators like at Facebook to, for example, prevent election meddling in Myanmar” (Interview B2).

7.4.1.2 No: Full Automation Impossible

Others said that it was simply impossible to automate the task of an OSINT investigator (Interview C, A): “There is no tool that will allow you to uncover abuses of power. These tools can help an investigative mindset achieve more and find out more information more quickly, but they can't be that investigator” (Interview C).

7.4.1.3 No: Humans Indispensable to OSINT

A section of investigators saw OSINT tools as replaceable, while humans were considered indispensable to the process.

“Tools come and go, anybody can learn how to use the tool, not anybody can actually make sense of what the tool is telling you, or not everybody will take the time to. I don't see any tool replacing being able to write a comprehensive article about what's going on right now” (Interview D).

Tool literacy was also seen as an essential human characteristic that could not be automated; the sheer process of finding new tools to do the job or finding new ways of investigating with the same tool required a certain human ingenuity (Interview L).

With the investigation process itself, while data gathering could be automated through OSINT tools that were quite good, those same tools were “less good at analysing and making qualitative decisions about the data gathered” (Interview C2).

As one interviewee stated:

“If you're asking me to make a judgement about where this location might be, and what's the risks to this child in this photo, and who's the abuser, all these questions are hard to answer with automated techniques. The future of automation is in the gathering and scraping stage, but in the analysis stage, it will be people supplemented by automation, I think rather than replaced” (Interview C2).

7.4.1.4 No: OSINT Tools Not Error-free

A final common issue flagged was the number of errors committed by these OSINT tools. Even if the automated process returned a near-perfect result, a human was still needed to verify the results (Interview H, E), and in fact, “human analysis can often spot patterns which lie within the context”, such as during reporting, which was impossible to automate (Interview O).

The tools themselves required constant human intervention, perhaps more than before due to customizability (Interview Y), while another interviewee pointed out that the tools themselves were man-made and would need humans to update and track performance (E).

7.4.1.5 Yes: Broken Journalism Business Models

Among those fearing rising unemployment, interviewees did not see automation as a direct threat but saw the threat arising from the current business model of journalism and the shrinking space for real investigative journalism within capitalism. “Broken business models will result in more unemployment, and they’ll be a tendency to use automation and different kinds of investigative tools to fill in those gaps,” said respondent Q.

Interviewee L described current contracting practices as the newest threat: “Somebody can be hired for like six months because they have access to a bunch of technology. They don’t even need to enter the office that they’re working for. They don’t need to be paid to be relocated or anything like that. They don’t have as much job security. So I’ve seen an increase in those sorts of freelancers being hired and a decrease in staff workers”. D2, a veteran journalist, added, “There is an argument that new tools create new jobs, but since the beginning of this century there have been fewer jobs.”

7.4.2 Awareness of Automation

In the next question, reporters were told of one instance where a media company introduced automated market updates, making certain reporters redundant. They were asked if they knew of any situation in journalism where there had been a similar replacement of human work by technologies. 63% or a majority (19) did not, while 37% (11) provided examples of automation being implemented in journalism.

In 2018/19, Bloomberg introduced automated market updates, making certain reporters redundant. Do you know of any situation where there has been a similar replacement of human work by technologies?

● YES
● NO

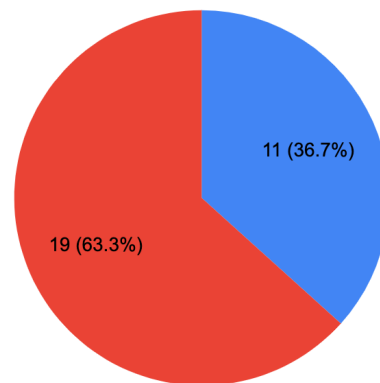


FIG 7.4.2.1 BREAKDOWN OF RESPONSES ON AUTOMATION IN NEWSROOMS I

Respondents were more aware of automation in the industrial sphere, especially at Amazon warehouses. Respondent F mentioned Washington Post’s robot journalist authoring more than 850 stories (Moses 2017), while respondents G, W, Y had all come across news of MSN replacing news curators with algorithms (Waterson 2020). Sports journalism was also an area where automation was seen to be taking place as the reporting was formulaic (Interview I). Respondent I mentioned “higher levels of automation happening in open-source, for example, machine learning that can identify this specific type of cluster munition in a video to help streamline the process. But none of us wants to lose the value of open-source, which is that a human can look at it and confirm it. That’s why we do open-source for that level of transparency.”

On the other hand, Respondent T recalled seeing the opposite of automated analysis:

“A lot of our clients initially hired agencies that rely on big data analytics. They got back messy data: giant spreadsheets and crazy visuals. Then they came to us because they prefer deep dives and methodical investigations that

people can follow, as opposed to just running these huge algorithmic programs”.

7.4.3 New Jobs From Automation

Respondents were also asked if they knew of any new jobs being created as a result of automation. Several of the respondents pointed out that their current roles at work did not exist five years ago, and 70% or most of them agreed automation had created new jobs. For respondents from Bellingcat and BBC, their staff roles had not existed until a few years ago.

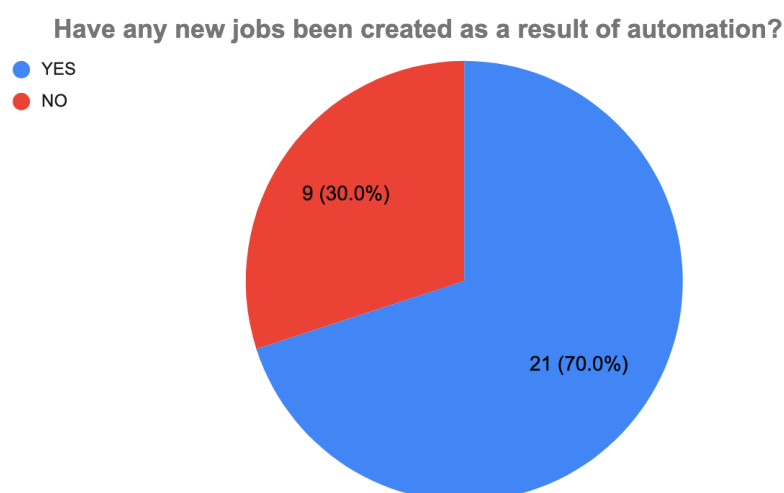


FIG 7.4.3.1 BREAKDOWN OF RESPONSES ON AUTOMATION IN NEWSROOMS II

Within journalism, the roles identified included OSINT investigative journalist, dis/misinformation journalists, OSINT news gatherers, OSINT visualisers, while the roles of OSINT researchers and analysts for corporate reconnaissance or insurance fraud investigations were also relatively new. The popularity of OSINT had also led to a large community of OSINT tool developers, while automated content moderation had led to more jobs for human moderators at social media organisations.

7.4.4 Prevalence of Automation Anxiety

Following that, respondents were asked if there were parts of their job that they feared might get automated in the next five to ten years. The question is similar to the one in an earlier section dealing with automatability– or the ability to automate parts of the investigation process, but the emphasis here is on the fear or anxiety caused by this automation. All respondents, barring a few, felt that they did not feel any immediate anxiety from the threat of automation, mainly because they saw it as an impossibility in the near future.

Respondent D further added that due to the digital divide between first-world nations and the “third world”, even if the changes were to happen in the Western world, they felt no anxiety as it would not be implemented immediately where they practised journalism. Others felt no anxiety as investigators simply because OSINT was analysis-heavy work and required logical uncovering of facts that then needed to be explained in an understandable fashion – something a robot couldn’t do – but added that if they were a reporter, they would definitely feel the anxiety (Interview G).

There was still a lack of anxiety for those who felt greater automation in OSINT was possible. This was due to the nature of what could be automated; for example, network analysis style investigations could be automated, but as the social media detection tools were notoriously bad, investigators needed to be part of the process (Interview V). Others expressed the opposite of anxiety – they said that automated processes such as auto-saving of information or archival searches would actually alleviate a lot of the everyday stress and anxiety journalists face (Interview W & Y). Both agreed that they felt a lack of automation anxiety simply because OSINT investigative journalism relied a lot on human intelligence to verify, analyse and present information, which would be impossible to automate, according to them.

7.4.5 Experience of Keeping Up with Technological Advances/ Infinite Data

Finally, respondents were asked what their experience of dealing with the large amount of data available and expectation to digest it at speed was, or in other words, how they experienced keeping up with technological progress.

A majority of 14 respondents used the word “overwhelming” to describe this experience, with some examples being: “It overwhelms me - I feel like I have to be on top of so many different sorts of websites like, tools and resources, it causes anxiety and frustration” (Interview A); “somewhat overwhelming, that's just something that you're always aware of” (Interview E); “it can be very overwhelming, so I have to streamline myself” (Interview I); “I find keeping up to date really challenging” (Interview J); “there is an overwhelming amount of data, but you can only process it at the fastest rate your brain will allow” (Interview H); “it can definitely be overwhelming when you're searching for something, and you get a bunch of hits back. You can have two reactions – look at all this data and this is so much data” (Interview O).

Respondent C2 said it initially used to cause him stress, but he realised: “It's about understanding methodology. If you understand how to conduct a rational inquiry, and ask the right questions, then you choose the tool to do that. And I think the danger of trying to keep up with every single tool, every single bit of technology is sometimes the tail ends up wagging the dog.”

Another pointed out the direct link between mental health and content or length of exposure:

“The more tools you have, the more there is to investigate, which means the work never ends. I just never leave my laptop when I'm searching for something. Because there are no exhaustive searches that you can do, which means you just keep at it. More time spent online leads to alienation. So it's not just the fact that you're alienated from your immediate surroundings. It's

also just the impact it has on your personal relationships, your inability to connect with them because you're spending so much time online or because you're expected to do that by an industry that somehow doesn't value mental health quite as much or doesn't see the impact it has on mental health” (Respondent G).

Respondents A2 and R both mentioned they didn't feel this pressure because they didn't work in the news or their work did not directly link to the news cycle, which seemed to be one source of this tension.

Another couple of respondents (C and L) accepted this tension as the “nature of the game”: “It takes up a lot of your time as a person, it means that you might spend some evenings reading about the latest tools that are going to come out or the newest ways to employ a certain technique instead of relaxing” (Interview C). “We invest so much of our identity and worth and organisational value on how we interact online, so we're constantly consuming it. And I don't think that there's enough mitigation because we keep pushing it, datafying everything. And it's one of the only ways that we understand ourselves now,” added Respondent L.

Only two respondents said they felt “excited” (Interview B2) or “saw it as a challenge” (Interview S), while some of the remaining respondents admitted the stress it caused but found ways to mitigate it through specialisms (Interview D2, V, U, X): “So there's such a huge, huge amount of data around, that it's too much for one person to cover. So I've learned to make choices, I know what type of data is worth it to investigate and what data I can't really do at that time” (Respondent V).

7.5 Conclusion

In conclusion, this chapter addressed the first research sub-question, i.e., How are automated tools changing the work of investigative journalists? It focussed on the stress OSINT journalists face and how they are unique to OSINT; overwork and its prevalence within the investigative journalism and OSINT community; and finally, automation anxiety. Overall, the results indicated that OSINT had compounded the negative stress faced by investigative journalists as a result of various factors, and this, in turn, had led to overwork, which already existed within journalism, but had been exacerbated by the non-mitigation of stress. The final section on automation anxiety indicated that there was low to almost no automation anxiety when it came to investigative journalism simply because humans were indispensable to the workflow and full automation of investigations in journalism even using OSINT was virtually impossible, even in the near future.

80% of respondents in this study said they had experienced negative stress in the past year. The main causes of negative stress in OSINT investigations have been presented in the table below:

OSINT-related	Journalism-related	Gig economy-related
<ul style="list-style-type: none"> • Graphic violence/content • Management uninformed about vicarious trauma • Lack of OSINT literacy in management • General lack of support for OSINT projects • Uncertainty & structure of OSINT investigations • Archiving stress • Volume of data for investigation • The race to catch “the bad guys” • Lack of defined work hours in OSINT 	<ul style="list-style-type: none"> • State aggression and backlash • Online attacks on journalists • Discrimination based on race, gender and nationality 	<ul style="list-style-type: none"> • Constant insecurity and poor pay • Unsustainable/poor conditions of work • Pressure to overwork and multi-task

FIG 7.5.1 CAUSES OF STRESS AMONG OSINT INVESTIGATORS/JOURNALISTS

For the respondents who reported not feeling any stress in the past working year, the reasons were a combination of financial security and excellent management.

Respondents were also asked how many hours per week they work, with 60% of respondents reporting overtime work.

Following that, respondents were asked if they thought there was overwork in the field of journalism they were in, and if so, why they thought that was the case. All except one of the 30 respondents in the study responded saying overwork was very much present in OSINT-based investigative journalism, with the reasons outlined below.

OSINT-related	Journalism-related	Gig economy-related
<ul style="list-style-type: none"> • Competition and/or personal attachment • The gravity of OSINT investigations: "more than a job" • Social media and 24/7 news • Bad management practices • Lack of resources and OSINT literacy • OSINT tools creating more work • Going down the "rabbit hole" 	<ul style="list-style-type: none"> • Lack of funding for investigative journalism • Uncertainty of investigations • Deadline stress 	<ul style="list-style-type: none"> • Juggling multiple assignments/deadlines • Poor pay • Lack of job security

FIG 7.5.2 CAUSES OF OVERWORK AMONG OSINT INVESTIGATORS/JOURNALISTS

To understand the full impact of this overwork, respondents were also asked if their work-life balance in the context of digital technology that supported OSINT-based investigative journalism had changed, and if so, how. More than half the respondents in this study (63% or 19 out of 30) said it had negatively impacted their work-life balance, while 20% (6 out of 30) said it had had a positive impact, and a further 17% (or 5/30) said it had had no impact or created no noticeable change.

Negative	Positive	No impact
<ul style="list-style-type: none"> • unable to switch off • creation of more work • creation of repetitive tasks • burnout 	<ul style="list-style-type: none"> • awareness of vicarious trauma • rigorous self-regulation • reduced travel time to work 	<ul style="list-style-type: none"> • hyperactivity • coming from an overworked background (eg. academia)

FIG 7.5.3 IMPACT OF OSINT-RELATED OVERWORK ON WORK-LIFE BALANCE

Respondents were asked if they felt threatened by automation to assess automation anxiety: 77% or a majority did not, while 17% agreed and 6.7% remained undecided.

No (Reasons)	Yes (Reasons)
<ul style="list-style-type: none">• creation of more work and jobs• impossible to automate the task of an OSINT investigator• human judgment indispensable to investigations• OSINT tools are not error-free	<ul style="list-style-type: none">• broken journalism business models/capitalist modes of production

FIG 7.5.4 PERCEIVED THREAT FROM AUTOMATION AMONG OSINT INVESTIGATORS

In the next question, reporters were told of a media outlet that had introduced automated market updates, making certain reporters redundant. They were asked if they knew of any situation in journalism where there had been a similar replacement of human work by technologies. A majority (19) did not, while 11 respondents provided examples of automation being implemented in journalism and other industries.

MEDIA INDUSTRIES	OTHER
<ul style="list-style-type: none">• Washington Post's robot journalist (sports)• MSN (news curation)• ID of cluster munition (OSINT)	<ul style="list-style-type: none">• Amazon warehouses

FIG 7.5.5 REPORTED EXAMPLES OF AUTOMATION IMPLEMENTATION

Respondents were also asked if they knew of any new jobs being created as a result of automation. Several of the respondents pointed out that their current roles did not exist five years ago, and 70% or a majority of them agreed automation had created new jobs. For respondents from Bellingcat and BBC, their staff roles had not existed until a few years ago.

Following that, respondents were asked if there were parts of their job that they feared might get automated in the next five to ten years. The question is similar to the one in an earlier section dealing with automatability– or the ability to automate parts of the investigation process, but the emphasis here is on the fear or anxiety caused by this automation. All respondents, barring a few, felt that they did not feel any immediate anxiety from the threat of automation, mostly because they saw it as an impossibility in the near future.

Journalism roles	OSINT investigative journalist, dis/misinformation journalists, OSINT news gatherers, OSINT visualisers
Technology roles	OSINT tool developers, Human content moderators at social media organisations
Other roles	OSINT researchers and analysts for corporate reconnaissance or insurance fraud investigations

FIG 7.5.6 NEW ROLES CREATED DUE TO OSINT

Finally, respondents were asked what their experience of dealing with the large amount of data available and expectation to digest it at speed was, or in other words, how they experienced keeping up with technological progress. A majority of respondents used the word “overwhelming” to describe this experience.

Automation anxiety or the fear of being replaced by programs, did not feature in any of the stresses described by OSINT journalists. While the fear of being redundant was prominent, most journalists seemed to believe that complete automation of OSINT investigations was impossible due to the analysis-heavy nature of the work. In fact, most seemed optimistic about automation making the discovery phase of an investigation easier or augmenting the process to remove repetitive or time-consuming tasks.

The next chapter looks at the mental health impact of OSINT investigations as reported by respondents in this study.

CHAPTER 8: THE MENTAL HEALTH IMPACT OF OSINT-BASED INVESTIGATIONS

8.1 Introduction

This chapter of the analysis deals specifically with the third and final research question, i.e. What are the risks for the mental health of investigative journalists in the context of digital work? For the purposes of this study, the analysis will represent the risks arising from open-source investigative work online, conducted by those who either identify as investigative journalists or work as investigators to contribute to the open-source analysis of human rights-related investigative journalism.

This mental health section was designed to understand if knowledge workers in this sector were suffering from mental health issues like insomnia, depression, or Post Traumatic Stress Disorder (PTSD) in the context of or as a direct result of open-source investigative work; what the potential causes of these issues might be; and, what the role of digital technologies is in journalists' mental health.

The chapter first highlights the prevalence of work-related mental health issues or awareness of the prevalence of work-related mental health issues among investigative journalists, such as insomnia, depression, or PTSD; before delving into the causes of these mental health issues according to the journalists interviewed in the next section; and in the final section, the interviewees are asked to reflect on whether overwork and work pressure, when combined with large amounts of time spent online, has had an impact on the mental health of journalists (to show the toll digital labour and undefined work patterns might have on them); before concluding with a summary of all the main mental health findings in this research study.

8.2 Mental Health Issues

Respondents were asked if they knew a colleague who suffered from work-related mental health issues such as depression, insomnia, anxiety, or PTSD, and if they did, if they could elaborate further without naming the colleague. Respondents were reminded that they could abstain from answering these questions if they felt the subject was too sensitive.

Of the pool of respondents interviewed for this study, all except for a couple said they either knew a colleague who suffered from insomnia, depression, PTSD, or themselves suffered from it. The ones that said they didn't also flagged that "nobody talks about it", which in part exacerbated the mental illness itself, or that the repression made it harder to discuss PTSD. "I do know people that work... with child sexual exploitation and things like that. And I'm pretty sure they have seen very, very ugly things. But as often with these mental issues, it remains under the surface," Respondent U said.

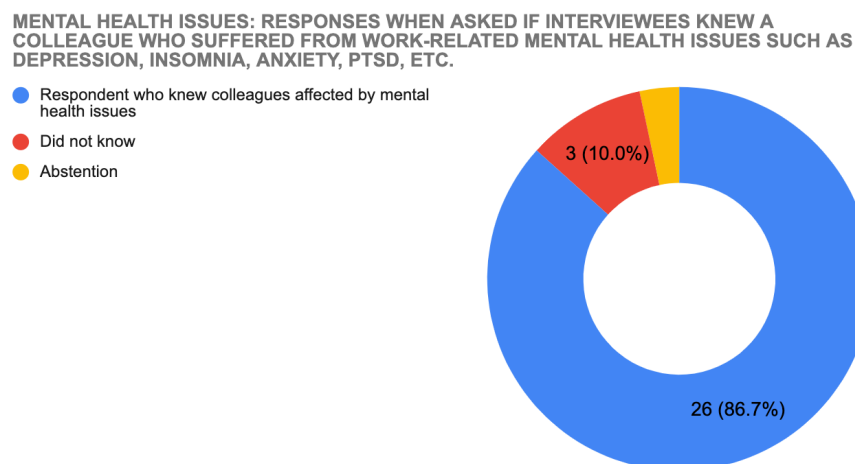
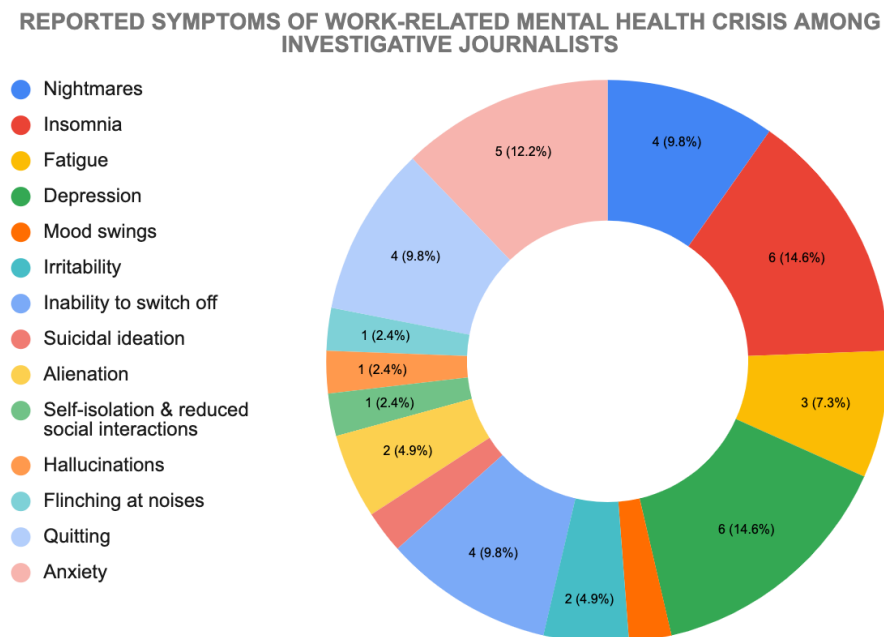


FIG 8.2.1 BREAKDOWN OF RESPONSES ON AWARENESS OF MENTAL HEALTH ISSUES AMONG OSINT INVESTIGATIVE JOURNALISTS

The main symptoms reported by respondents in this study have been presented in the pie-chart below and explained in further detail in the following subsections.



**FIG 8.2.2 BREAKDOWN OF VARIOUS SYMPTOMS OF MENTAL HEALTH CRISES
AMONG INVESTIGATIVE JOURNALISTS**

It must be noted that the charts present quantitative results, and this analysis is not representative of all journalists. The chart must be interpreted in conjunction with the findings in the rest of this chapter. The sample selected represents 30 of the leading OSINT journalists/practitioners, and the analysis that follows discusses the results from this sample.

8.2.1 Sleep issues: Nightmares, Insomnia, Hallucinations

Most respondents reported graphic imagery as the main factor behind the symptoms of depression, insomnia, sleeping too much/fatigue, or nightmares. Sleep was the

most significant collateral damage in this line of work for investigators— and often the first sign that something was deeply wrong.

Respondent I called nightmares “a classic symptom of watching videos of people being shot at all day” and described “an inability to stop” as a sign of mental health reaction to the work. In addition, there was also an increased need to sleep due to depression fatigue; Respondent U described needing to “sleep constantly” and falling asleep at work in the middle of the day because “my brain was shutting down”.

Nightmares could also result from “an inability to switch off from work because you’ve spent a year or so invested in the investigation,” according to Respondent T. Respondent D2 also highlighted that this inability to switch off was also related to being online constantly, which had an irreversible impact on their sleep patterns.

“It kind of goes back to that mindset that a lot of good investigators have, that they’re always thinking of different ways to attack a problem. Because of that, if you’re really invested in an investigation, especially a major one that you’ve been working on for like a year at this point, even if you’re off the clock, you’re either unable to sleep, or you’re going to sleep and dreaming about the stuff” (Interview T).

Insomnia was another major symptom, as were hallucinations stemming from lack of sleep or a blurring of boundaries between the conscious and subconscious state due to acute repression or trauma. Respondent I described “a very weird out of body experience” after months of working on the Syria bombing investigations:

“I was walking down the street in the city across a building under construction, and for a split second thought I was in Syria and was seeing the bombed-out buildings I was working on, oh my god, literally in the middle of the street. I freaked out, and then I was like, okay, we’re fine. But I think those kinds of reactions to the content are more normal than any of us would like to talk about”, she added, expressing a need for awareness about vicarious trauma.

8.2.2 Depression, Self Isolation, Social Withdrawal, Suicidal Ideation

Depression, when left unacknowledged, often mutated into suicidal ideation.

Respondent A described having to deal with a colleague who threatened to commit suicide, although it was a combination of personal & work pressures. Respondent G described struggling with thoughts of suicide due to graphic content: “It felt like I was witnessing the worst of humanity and didn’t think I could ever be happy again– I just wanted to die so I wouldn’t have to watch the constant suffering and feel like I was suffering with them.”

Respondent B recalled repeatedly dreaming about the unsolved aspects of human rights investigations he was working on, and the dreams further contributed to their feeling of isolation and alienation: “I would find myself spending time sitting with a group of friends but completely unable to speak because I’m still thinking about this horrible stuff which is not related, and so I cannot enjoy time with friends anymore”.

Respondent A described how a Black colleague was struggling with depression due to feeling “undervalued, unappreciated and ignored, and I can see the toll it’s taking on him – this is work-related due to microaggressions because he’s a black man. And this is not because we’re now covering George Floyd, you know, this is an ongoing issue.”

Lack of appreciation due to racism was also seen as the cause of depression in a colleague by Respondent F:

“One of my colleagues, a war correspondent and investigative journalist, was always expressing to me her anxiety and despair due to the poor appreciation of her work from the manager. She covered the wars in Yemen, Libya, Syria, Iraq. This non-appreciation made her worry about her career, the value of her work and if she was risking her life for nothing at all. It forced her to go on a long sabbatical to get away from work because she felt so neglected she could not continue working in that toxic space anymore.”

8.2.3 Vicarious Trauma and Post Traumatic Stress Disorder (PTSD)

Although most organisations seemed aware of the existence of trauma, the measures appeared to be inadequate. Respondent J worked for an organisation that provided training to prevent vicarious trauma, such as covering the screen with paper to hide the worst of the graphic content, or render an image in black and white, as well as having a therapist on-call to deal with mental health crises of the team working with graphic content from bombings in Syria. But J considered these methods to be inadequate as investigators tend to become emotionally involved: “You care about the fact that this is happening, and you see your work as contributing to helping stop it,” but she adds: “that’s the thing that draws people in in the first place.”

The emotional proximity to the work or the ability to relate to subjects could also be involuntary because so often, the stories journalists highlighted were relatable human stories. Respondent K described how a colleague on shift in the newsroom had a mental health crisis after seeing the first photos of Alan Kurdi, the dead Syrian boy, washed up ashore from the migrant crisis: “She told me that this was one of her hardest working days because she looked at the picture, and she was just thinking about her own kids.”

Therefore, the extent to which trauma was felt as a result of open-source work or personal issues, was difficult to establish even for the investigators themselves, according to Respondent P. Respondent G added that:

“The investigations we do, whether we realise it or not, are always deeply deeply personal – they may not be identical to our private anguish, but the themes are the same— displacement, pain, loss, death, and the lack of control over these things, or the lack of ability to prevent these from hurting the people we love, which often means we end up caring deeply about these

stories, our subjects, and are emotionally invested in ending whatever war we are reporting on.”

The blurring of lines between public and private seemed to occur most when children were involved as victims. Respondent C2, who worked with child abuse imagery, said younger investigators working with this content suffered from depression and stress as a result of doing that.

Respondent Q was also quick to highlight language ties as eliciting a more personal response to content. “I’ve seen colleagues react differently with investigations happening in their own community or in their country of origin or the same language. From that language, you will understand other conversations, and you hear a different context. So, if someone is investigating, say, Turkey, or another country, and that person is from that region, it matters very deeply, and they will, in addition, be really worried about being a part of it because it might affect their family.”

A few of the respondents had been diagnosed with or were aware that they had PTSD. Respondent G, diagnosed after two years of crippling depression, linked it to “working with graphic content after covering conflict in the field, and no work-life balance”. Respondent A2 knew of two colleagues who had PTSD, and noted that the one colleague who already had PTSD from fieldwork had their symptoms worsen due to open-source work, similar to Respondent G.

The uncertainty of the nature of content found in open-source, which arguably describes the process of open-source investigating, was partly to blame for the traumatic impact, according to Respondent B2: “If you open up a video and you’re just not prepared for it, and you see someone get shot or something, that will mess with you because you will relive looking at it.”

8.2.4 Fatigue, Burnout, Quitting

The 'nature of the job' itself was also seen as a reason for burnout. Burnout here is described as the inability to work anymore due to the sheer magnitude of the mental health impact. Respondent L, who managed a human rights-focused open-source investigative unit, described doing a survey on ethics and resilience, only to discover that inability to sleep, inability to stop investigating, changes in anxiety, and burnout were widespread throughout the unit, and colleagues expressed a need for "a foundation of resilience" as without it "we as an institution and also as a community violate an ethical responsibility– to both the researcher and the material at hand".

She adds:

"What we've seen is that when folks start experiencing a lot of these symptoms of vicarious trauma, flinching at noises, being unable to work, being unusually fatigued, quitting, we found that it also had a severe impact on the work being done for open-source. As soon as their resilience became a question, the quality of the work also suffered. And I don't just mean levels of productivity– it just became increasingly difficult to do your due diligence or to keep track of documents, or the methodology started falling apart."

Another added: "I've had a colleague who didn't really see an endpoint to their work every day, whether they wanted to or not, they're constantly thinking about the investigations, and how to better improve it or they're stressing out because it could be a Friday, but they know they have a deadline on Wednesday. So they just quit" (Interview T).

8.2.5 Anxiety

Anxiety from work arose as a result of the multitude of platforms and tools used to investigate, which "means the job is done only when you decide it is," said Respondent T. "It takes a lot of self-control and also of structuring your work in relation to what exact pieces you need for your story, because otherwise, the risk is, getting anxious, not being able to correspond precisely with the idea you had for your investigation," added T, also attributing the anxiety to a competitive media culture.

Anxiety was also seen as developing into insomnia due to working on multiple investigations at the same time and the stress of the work itself.

Staff work, which involved the interpersonal dynamics of working in a team or the politics of the newsroom, and freelance work, which often involved working alone, remotely, and with less job security, both had their own unique pressures that contributed to anxiety.

Precarity, or the lack of job security in journalism as well as the stress of a changing industry were identified as a source of anxiety by several respondents, while one pointed out that the industry was “shedding human talent”. Explained D2: “They easily say that we’re going to train this person, but if that person doesn’t have the capacity, or the correct family surroundings etc. to reinvent themselves or have an educational background, they find themselves redundant.”

8.2.6 Addendum: Empowerment

Despite the overwhelmingly negative impact on mental health due to overwork and lack of trauma consciousness, it is also necessary to highlight that some respondents described the experience of being able to do open-source investigations online as “empowering”:

“I was always good at looking for things and people online but never thought this is a thing. Before starting as an open-source investigator, I worked as a translator, which was not good pay. I heard this expression, ‘He is just a translator’, a lot of times, and for someone from Syria in a European country, I’m unable to get a journalism visa before open-source” (Respondent B).

The feeling of being “empowered” did mitigate the trauma simply because it bridged the disconnect between passive bystander and active participant; and additionally, the main root of PTSD is often the disconnect coming from feeling a loss of control, which OSINT seemed to restore.

8.2.7 Conclusion

The findings in this section show that a majority of OSINT investigators suffer from or know of colleagues suffering from various mental health issues, which included:

- *Sleep issues: Nightmares, Insomnia, Hallucinations*
- *Depression, Self Isolation, Social Withdrawal, Suicidal Ideation*
- *Vicarious Trauma and Post Traumatic Stress Disorder (PTSD)*
- *Fatigue, Burnout, Quitting*
- *Anxiety*

At times it was difficult to establish whether this was entirely work-related or had personal ties. The nature of trauma is personal in itself, so the vicarious trauma resulting from work was often caused by language or cultural ties to the investigation at hand, blurring the boundaries of the public and the private.

The nature of investigative OSINT journalism itself was blamed for these issues while being also accepted as an inevitable result of this kind of work. The nature of investigative OSINT journalism itself was blamed for these issues while being also accepted as an inevitable result of this kind of work. Finally, the empowerment of OSINT conversely was also said to decrease the trauma by reducing the sense of powerlessness, in one case.

The following section explores the causes behind these mental health issues.

8.3 Causes Behind Mental Health Issues

Respondents were then asked to describe what they think caused or contributed to the poor mental health faced by them or their colleagues.

8.3.1 Uninformed Attitudes to Trauma

Several respondents saw vicarious trauma from graphic imagery as an inescapable part of their job – an extension of the “problems of the planet that creates this content”, according to respondent B. The nightmares that resulted from prolonged exposure to graphic content were described as inevitable even with trauma awareness & training as they were seen to be seeping deep into the subconscious (Respondent D).

Respondent U, who had a military background, explained that while the graphic images did not affect him as much as he was used to “much worse in the field”, it was the disconnect between the field and the office where an online investigator worked that made the trauma impact that much worse, almost “soul-scarring”:

“Back in the early 2000s, when the war was waging in Afghanistan and Iraq, a lot of US Air Force pilots, piloting drones, were sitting in Nellis Air Force Base in the US remotely killing people. They would then finish their shift after eight hours, go pick up their kids from kindergarten and live their normal life, but they were killing people. So this just majorly messed up their minds, and for a long time, people could not understand this because they were just looking at a screen while playing a video game. And I think for a lot of us, it is very hard to understand that even if you cannot directly witness something like this, it will impact your mental health. If someone only sees this on a screen, there is nothing on the outside that will show that basically their soul is scarred.”

Respondent X added: “The nature of the news programme is it's a very fast turnaround and, if it's documentaries it's a lot more long term. And the nature of what

you're investigating if it is to do with violence or war, or if you're investigating the mafia and you're worried for your life or if it's extreme porn or whatever. The nature of the material that you're working with really impacts you as does the time frame”.

8.3.2 Personal Experience/ Social Background

Vicarious trauma was also exacerbated or seen to be caused by a predisposition to trauma due to family background or personal circumstances, or professional experience, which, when compounded with the pressures of the modern workplace and digital life, often resulted in insomnia (Respondent Y).

Others reported having insomnia or anxiety from their childhood, which was compounded by the nature of their work (Interviews Z, G).

For war correspondents dealing with open-source graphic imagery, the content could be significantly re-traumatising: “Colleagues who travelled to conflict areas like Afghanistan, Iraq have PTSD, and I think that adds to it” (Respondent K).

However, for non-white journalists reporting on their own communities, the chances of having a predisposition to trauma due to personal circumstances were higher– so in addition to the microaggression of race faced at work, they were also twice as likely to suffer from vicarious trauma– and therefore, were the most at risk in any investigation. “Especially if you're working on a place where you're from, might have near and dear to you where you really sympathise with the issues. And then also, if you're researching a country where your family's from, and you want to make sure that they're safe. That also really takes a toll on people,” said Respondent B2.

8.3.3 Mismanagement and Lack of Support From Peers

For staff employees, the workplace itself was also seen as a cause of the trauma itself – with a lack of understanding from management of how the work affected investigators being the chief reason behind it, according to Respondent G.

Respondent V said:

“I've had people in the past who could simply not stop with their investigation, it became their obsession, and then there's nobody there to tell them hey you should take a break or focus on other things or take a vacation, etc. I've experienced that myself where I felt overworked and I've seen that with others too where they become more agitated, or having more fights and stuff and becoming more emotional and stuff. If there are people who are under stress due to the investigation, and also from pressure from all the trolls who are out there or the state actors that are opposing them, and at the same time they're dealing with management issues or misunderstandings etc., that's a dangerous combination.”

Aside from this lack of understanding were the pressures of the industry itself: to get the investigation out, without burning through a budget, at the earliest possible time. So within these circumstances, mental health awareness or proper implementation of mental health guidelines were the first collateral damage, with the second being investigators of colour who often had to bear the heavy burden of laying the foundational work due to specialism, local knowledge, language or cultural ties– the very same factors that made them more vulnerable to trauma.

Finally, it was also investigators working alone or as a freelancer, without management or team check-ins, who bore the brunt of its impact:

“There's also a feeling of constant pressure to keep up with the latest technological developments and muster the latest tools available. And that can cause a lot of stress, internal anxiety and potentially depression as well, I think isolation, because quite often you're working completely alone with a computer and dealing with a lot of data, and that can be quite unhealthy,

especially if you get stuck and feel quite stressed and anxious” (Respondent Y).

8.3.4 Class Status: The State of Being A Freelancer

For freelancers, having to juggle multiple jobs, the isolation of remote work, and the precarity of the gig economy were identified as additional factors. Several respondents described doing graduate degrees as well as their job as investigative journalists. “You are overwhelmed, constantly working and are also starting to have to say no to projects that you actually really want to be doing and specifically that is affecting the mental health, loss of sleep,” explained Respondent D. The isolation of remote work was also another reason the mental health impact of open-source investigations was not discussed.

Respondent F aptly summarised the multiple causes for poor health as:

“Poor appreciation of the work, low salaries, work insecurity and lack of career progression, fear of being laid off, long hours of work, government attacks on the press, and the constant anxiety of the future based on past experiences.”

Respondent W described how the immense workload, coupled with precarity, when working on a story with graphic sensitive content was a recipe for a mental health crisis. Alongside that, there was the anxiety of not doing enough projects: “You are constantly working and are also starting to have to say no to projects that you want to be doing, and this specifically affects the mental health” (Respondent D).

There was a general feeling of abandonment felt by most freelancers, coupled with a distinct disconnect from the newsroom & its security: “We are all by ourselves, we don’t even know what’s out there most of the time, so we can’t even prepare. And we can’t even filter out the graphic bits, we need to see the full picture to tell the story,” despaired Respondent K. And often, respondent G added, only a freelancer could

decipher the graphic bits as they were the only regional or language expert in the team.

“The stress of a changing industry and the fear of losing your job, combined in this dystopian present, I’m surprised more people are not cracking”, added Respondent X.

8.3.5 Repression of Emotions

One respondent described how mental issues – depression, insomnia– were a symptom of the shock or trauma caused by work which was immediately repressed to enable a journalist to focus on investigating an issue. Respondent X described an investigation into child pornography and the unique pressures of it: there was fear of breaking the law despite the law allowing legitimate research, and then there was the graphic nature of the images itself:

“Just seeing those images at the time wasn't upsetting because I was just so into the story, but then six months later, I was ill. I just didn't want to go online for a while, and just those images, I felt horrible. When you go through a shocking situation, I think it hits you hard about six months down the line. Unless you grieve, at the time– but you can't grieve and work at the same time you know if you're looking at pictures of bodies that have been hacked up, you either deal with it or you think, oh shit, I can't look at that, f— off I'm not working on that story.”

Another added: “This is not just for our work, but just any person that sits there staring at the screen all the time has a different amount of mental stress and is not able to decompress through volume, the activity that will cause a major problem” (Interview U).

8.3.6 Social Media

Social media was seen as a critical cause for worsening mental health among journalists, with both online trolls and the constant connection with human rights abuses overwhelming them, despite the positives. “The beauty of technology is that it allows us to connect with people, and obviously, that's a positive impact. But if I get on Twitter, I can see all of these tweets from exiled Uyghurs about their family members who are being forced into this labour programme while I'm working on that piece, and oh my god, I don't want to stop,” Respondent I said.

Respondent C added: “It's tempting to go further and further into the tunnel, but if you forget to put your head out of it, sometimes you can see it on your colleagues' faces where they'll just look stressed and just won't be themselves”.

Staff journalists, due to their stature and visibility, are an easy target for internet trolls. Respondent V described: “If there are people who are under stress due to the investigation, and also under pressure from all the trolls out there or the state actors that are opposing them, and at the same time they're dealing with management issues or misunderstandings etc. – that's a dangerous combination.”

Another respondent noted seeing messages on Twitter announcing breaks: “Just to get their minds on different things and have some time for themselves. They do that before the real trouble – so they don't reach the point of actual depression and insomnia” (Interview S).

In addition, the pressure to be constantly online made it harder to avoid these triggers. This pressure, as described earlier, was both internal – for career advancement – and external, coming from management or editors– to find the next story.

8.3.7 Power Imbalances

Perhaps the most succinct response came from Respondent L, who posited the meta-narrative that it all came down to power. Most investigators or journalists with decision-making power were white men in the global north – they had no personal proximity to the conflicts they were reporting on, creating a “digital divide”.

“They are unable even to process what life is like there. Researchers don't understand how to mitigate the power that is implicit in the methodology, particularly in the lack of informed consent, the lack of access to those spaces.”

During her research, L had found that many investigators experiencing trauma were unable to deal with the gap between them and the people experiencing the trauma, similar to the drone pilots described earlier.

One respondent added: “The work that you do does affect you as a person because it's what you're seeing, almost every day. And sometimes it's hard as an investigator when you see something from afar because you have the privilege to not be in that space where the conflict is happening, you close your laptop and then your day is different” (Interview Q).

8.3.8 Racism

Racism, abusive behaviour, and microaggressions within the newsroom dynamic were some of the causes behind mental distress. Respondent N, a staff journalist at an award-winning publication, described colleagues struggling to get a proper byline, not being given proper credit for work, and lack of respect as workplace stressors.

With regards to racism or microaggressions within the newsroom context contributing to poor mental health, respondent A explained that the microaggressions themselves were caused by ignorance or a lack of empathy or emotional intelligence:

“As journalists, we always pitch ourselves as moral saviours, and we try to do a story justice because it makes us feel altruistic. But if you're not doing that with your staff, or your colleagues, then, there is complete hypocrisy and disconnect. I have a friend right now who feels undervalued and appreciated and ignored, and I can see the toll it's taking on him – of the microaggressions because he's a black man.”

This disconnect further compounded the pain.

8.3.9 Gamification and Replication of Colonial Dynamics

The concept of OSINT as a video game with incremental steps to be followed to win the grand prize, or in other words, the gamification of OSINT, was seen as something far removed from the human rights ideals of Western democracy it purports to uphold. So within this context, OSINT hackathons, which were primarily held in the UK or US and heavily attended by straight white men, were skewed in favour of those who could stomach watching senseless violence without ever entirely relating to it: “the gamification of the work rewards you based on how much material you consume. So there is a benefit, especially for people who are distant from the conflict, to keep consuming that data” (Respondent L).

Those most vulnerable for vicarious trauma were investigators of colour, specifically those investigating wrongdoing in their own communities – or those tied by a common language.

“For me, one of the things that was really difficult was hearing the sound of women crying or mourning. That particular sound of wailing, especially in Arabic, sounded like my family. So because the rules of the game are developed by these white editors, by these white researchers, the standards are set by them. Then the realities of that work fall on the shoulders of freelancers who speak the language, who are from the place and do the dirty work. They're the ones who have to deal with the consequences of seeing that material” (Respondent L).

It is through this colonial, almost historical gap that gamification of OSINT was felt to be normalised, culminating in a distribution of work where freelancers shouldered the heavy burden of filtering through “soul-scarring” graphic imagery, but were ultimately more susceptible to being traumatised while paradoxically being seen by their white counterparts as being “less resilient” or “weak” for succumbing to this trauma.

8.3.10 Conclusion

To briefly summarise, the causes of recorded mental health issues among OSINT investigative journalists stemmed from power or the lack of it:

- a lack of understanding of the context or full implications of graphic content at hand;
- racism and marginalisation;
- one’s personal experience or social background or preexisting trauma;
- mismanagement and lack of support from peers;
- repression of emotions as a part of a culture of overwork;
- the pervasiveness of social media, whether it be the expectation to be online constantly or the nature of content present there often unannounced;
- the state of being a freelancer, surrounded by precarity and lack of support and security, coupled with poor pay, lack of appreciation, undefined hours of investigative work;

- the implicit hierarchies within an investigation that impacted investigators of colour, such as gamification, and the replication of colonial dynamics within the workflow.

The following section looks at the role of digital technologies in journalists' mental health.

8.4 Role of Digital Technologies in Journalists' Mental Health

Respondents were asked if they think that when there is work pressure and overwork combined with significant amounts of time invested for the use of digital technologies in the investigation process, this specific cocktail impacted the mental health of journalists, and of examples of such instances.

Almost all respondents, barring 3, responded in the affirmative, explaining how this cocktail impacted their mental health.

ROLE OF TECHNOLOGIES IN JOURNALISTS MENTAL HEALTH: CAUSES THE FOLLOWING

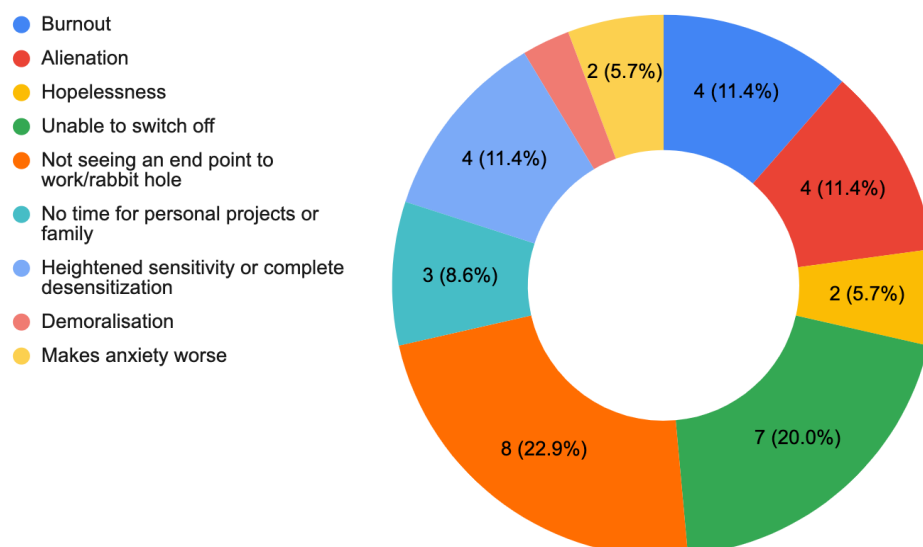


FIG 8.4.1 CHART SHOWING THE VARIOUS IMPACTS ON MENTAL HEALTH OF OSINT INVESTIGATIVE JOURNALISTS, CAUSED BY THE COMBINATION OF OVERWORK,

WORK PRESSURE, AND LONG HOURS SPENT ONLINE

8.4.1 Sudden Negative Changes in Emotional Behaviour

Respondents A and Q described how being constantly online, consuming media, severely changed emotional behaviour in the short term. A, who was covering the Black Lives Matter protests in the US following the killing of George Floyd, described breaking down in tears while monitoring protests on social media: “I will be looking through videos and instead of becoming desensitised, my emotions are actually heightened. And I don't know if it's because of the current climate that we're in or whether it's because I'm so invested in the story. I think it just plays with your emotions, especially because you're on social media the whole time.”

Respondent Q described a similar scenario but with an opposite emotional response – instead of an outburst, they described shutting down completely. The content of social media investigations was often traumatising, and while the investigation was ongoing, there was a lot of pressure on the investigator, especially in the case of a high-stakes investigation, to keep the matter secure and confidential. However, it is this secrecy that created feelings of isolation; which, when coupled with the divide between the “field” where things “happen” and the “off-site” where the investigation was done, resulted in a feeling of acute alienation which made it difficult for the investigator to connect with their emotions fully, or actively repress them for the duration of it.

8.4.2 Mental Health Issues Exacerbated

Mental health conditions were described as being worsened by this cocktail of overwork, work pressures, and the use of digital technology or being online for long

periods. It was seen to exacerbate underlying conditions like anxiety (Respondent D) while having a net negative effect due to the constant connectivity. In the early internet days, the instant messaging feature was seen as a boon for journalists, especially those reporting internationally, but the ease of access has meant that journalists were constantly, often against their will, online and more likely to come into contact with distressing news that could affect their mental health – one respondent described trying to relax on Twitter but being affected by the cries of help from Uyghur families being forced into China's detention and labour programme– a topic the respondent was currently researching and finding hard to separate from her personal life.

“I think it's made accessible graphic imagery, high-end volumes of open-source materials that are potentially traumatic and also at high speeds in a very, very unfiltered way. So I think it's increased exposure,” said Respondent A2.

Another respondent said that “living on the worst parts of the internet” for online investigations affected the way they perceived society, made them lose faith in humanity which often led to feelings of anxiety or depression (Interview E).

For those journalists who did feel able to switch off, the constant influx and availability of news also made it harder to switch off – in extreme cases, where a journalist had spent long hours witnessing graphic content that made them feel “traumatised”, constantly being surrounded by news made the feeling of trauma worse. Respondent A explained:

“You switch off, and then someone puts the news on at home. They don't understand because they think you're a journalist, so you just want to be surrounded by it, but I've just come across a video of a policeman pushing over an old white man. And as soon as he gets on the floor, something cracks, and he starts bleeding. And I'm like, Is this guy dead or not? I can't even tell you. And you're like, How do I deal with this?”

The sense of being traumatised is seen to be closely linked to a loss of control over what graphic content was being witnessed or caused by the unexpected graphic nature of it during regular scrolling.

8.4.3 Worsened Existing Pressures of Journalism

Respondents also described the digital space or OSINT worsening the existing pressures of journalism— with longer working hours as a result of “more things to do on your list”, explained Respondent B.

Respondents pointed out how the sheer quantity and diversity of material online posed a direct threat to investigators’ mental health. “If you are not exerting a very high degree of self-control, you’re drawn into this endless search for material,” said one respondent (Interview M). Being in the “rabbit hole” was described as a mental state that had adverse physical impacts too – one respondent said that they could sometimes see it in their colleagues’ faces when they started to look tired, stressed, or stopped being themselves (Interview C). Another respondent said that they became more agitated, had more fights, got more emotional (Interview V).

Another said that the nature of OSINT itself fed into the constant need to be online for “monitoring” (Interview N), while others described being “unable to stop” scrolling through social media.

“I’ve had a colleague who didn’t see an endpoint to their work every day, so they quit,” said Respondent T.

In fact, most respondents described two particular dynamics resulting from interactions with the digital space from which online or OSINT investigations arrived: firstly, a feeling of being unable to switch off, for fear of missing a story or an important clue; and secondly, during the investigation itself, not seeing an endpoint

to the process, or being so overwhelmed by the process itself that one could not physically stop, popularly known as “going down the rabbit hole”.

This endless stream of data or content or work meant journalists never fully had time to process the incoming data, making it hard to “stay on top of things” (Interview C2). The feeling of being trapped in a “ceaseless cycle of work” in OSINT-based investigative journalism was also exacerbated by the speed at which the news cycle moved or the speed at which things gain or lose relevance— this, in turn, was seen to lessen the value to the work or investigation itself as it was quickly forgotten or diminished in light of the next “thing”. This cycle also meant readers are left with very little time to spend on comprehending the significance of a newly released investigation and the connotations of its findings, especially if they dealt with human rights abuses (Interview D2).

Most agreed that it was “unhealthy” to be in front of a screen for most of one’s workday, irrespective of being in the rabbit hole, stressing a need for more time for other activities such as spending time on personal projects or with family (Interview O). One respondent pointed out the gradual trend of announcing “social media breaks” seen on Twitter to avoid burning out into a state of depression or insomnia (Interview S).

8.4.4 Online Attacks (Trolls/Bot Networks) Worsening Mental Health

Another significant pervasive problem with being overworked and online on Twitter was the mental health impact that trolls or conspiracy theorists, some state-backed in cases like Syria or Saudi Arabia, had on journalists. “I think that is a particularly galling thing to feel when you have done what you know to be good work on that subject and shown a conclusion. And that conclusion is not agreed with and indeed is often vehemently denied,” said Respondent P, who had just completed an eighteen-hour shift reporting on the ammonium nitrate-triggered Beirut port blast of

2020 and had then come across conspiracy theorists recycling photos of a bird claiming it was footage of an aircraft bombing Beirut.

8.4.5 Increase in Culture of Overwork and Burnout

The internal culture of a newsroom is such that overwork was often seen as a mark of “diligence” or “hard work” rather than a cry for help— “there's nobody there to tell them, hey you should take a break or focus on other things or take a vacation,” explained Respondent V.

However, there were several reasons for this increase in the culture of overwork and burnout in journalism. It was not always immediately tied to the online news cycle – it could also be a product of “perfectionism”, often combined with heightened competition, a characteristic of the journalism industry, especially in investigative journalism where projects were labour intensive, time-consuming, expensive, and often low reward with poorly paid positions. “If I'm onto something really important then I don't mind doing overwork”, admitted one respondent (Interview V). “Perfectionism” was previously identified in the literature review as a factor that increased the risk of trauma.

It must be noted nevertheless that not all ‘perfectionism’, despite seeming like an internal impulse, was always internal because of the social conditioning by the media industry to be constantly engaged, alert, and working; or the rewarding of those characteristics despite the toll on mental health by management or the industry.

The “hard work” ethic seen among investigative journalists was not entirely a compulsion— it also arose from the risk attached to it if not done well, and this risk ranged from getting facts wrong to failing to get people to care about a particular victim central to a tragedy (Interview C2).

The peculiar nature of online investigations, a form of knowledge labour, meant that oftentimes, the direct impact, especially on the ground, was not immediately visible. This added to the feeling of being overworked when investigators spent huge amounts of time online, but “not knowing what is actually happening with the thing you did, unlike someone working in the factory”, resulting in an inability to decompress (Interview U).

In addition to the anxiety of a high-risk investigation which involved long hours online looking at graphic content, there was an added peripheral pressure to keep up with the latest technological developments and master the latest tools available. “That can cause a lot of stress because you feel like you could become obsolete at any moment,” explained Respondent Y.

8.4.6 Alienation and Disconnect between Virtual and Real

Twitter, described almost unanimously as the place to network and “hang out” for OSINT investigators and journalists, demanded and rewarded constant online presence, especially for freelancers who felt the need to “show off their skills” in order to get “gigs”, practice the latest techniques (Interview J). This led to undefined work hours, which often intersected with the trauma of experiencing graphic materials due to the nature of Twitter and OSINT (Interview F).

One respondent, who had PTSD due to a combination of work and personal reasons, described how they joined a mainstream broadcaster as a freelancer but had to always be online to get the next story commissioned while simultaneously working on a commissioned project that involved long hours of analysis of graphic footage from war zones; they said “the combination of the content and prolonged exposure f—ed me up” (Interview G).

Another respondent added that “having to live in like the worst parts of the internet, it really affects the way you perceive society and humanity at large, which can easily contribute to feelings of anxiety or depression” (Interview E).

8.4.7 Increase in Vicarious Trauma

In fact, it is very much the evolution of digital technologies that led to an over-pervasiveness of graphic imagery online, especially on social media. “I can imagine a time where you had to be there to see a kid's head hanging from a tree, and they might have reported it, but it was never published. Now it's all on there,” said Respondent K.

K worked on a project identifying airstrikes in Yemen, which had a lot of child casualties. They were tasked with verifying an image of a kid in a hospital who'd been mangled by a bomb, and to do the verification, they had to analyse hundreds of similar images of mutilated children in hospitals— something that wasn't possible 20 years ago when smartphones or the internet did not exist.

8.4.8 Decrease in Physical Trauma

Despite an abundance of testimony describing negative mental health impacts from the cocktail of work pressure, being overworked, overreliance on digital technologies like social media for work creating a need to be constantly online, one respondent felt that OSINT, within the context of war reporting, lessened the physical trauma for the very obvious reason that it created a barrier between the field and the investigator via the screen, thereby minimizing the risks associated with being physically in a warzone akin to “Marie Colvin-style reporting”. (Interview B2).

8.4.9 Conclusion

Thus, the overwhelming verdict among investigators interviewed was that overwork and work pressure of investigative journalism when combined with long hours spent online doing OSINT had a detrimental effect on their mental health. This produced a range of impact, which was overwhelmingly negative, such as:

- sudden negative changes in emotional behaviour;
- worsening of mental health issues;
- worsening the existing pressures of journalism;
- online attacks by trolls or bot networks negatively impacting mental health;
- worsening of existing trauma;
- increase in the culture of overwork;
- virtual world eclipsing reality;
- increase in vicarious trauma.

The only recorded positive was a decrease in physical trauma.

8.5 Conclusion

Briefly, this chapter addressed the final research sub-question: What are the risks for the mental health of investigative journalists in the context of digital work using OSINT? The findings suggested an increased risk of vicarious trauma due to the graphic content of OSINT investigations into human rights abuses, which, when coupled with an unsupportive work environment, did result in PTSD. Bad management practices, lack of trauma-conscious workflows were rampant and normalised, putting OSINT investigators at risk. In addition, workplace attitudes towards gender, race, and as well as general power imbalances contributed to

feelings of alienation. Freelancers were most at risk of suffering from mental health issues due to lack of institutional support, especially women of colour and immigrants. Digital technologies, when combined with overwork and work pressure, adversely affected the mental health of journalists, and yet most newsrooms had no mitigation strategies in place against it, nor were they equipped to support journalists from online attacks.

To expand further, the research questions in this section set out to explore if there were widespread mental health issues among OSINT investigative journalists as a result of the work they do, and what the awareness of these issues was within the community and/or how openly these issues were discussed among colleagues. Most respondents knew a colleague or themselves suffered from mental health issues which were caused or exacerbated by work, but due to the blurring of boundaries between life and work, either due to the intensity of investigations or the digital technologies used to conduct them, several seemed unable to tell apart work-related mental health issues and personal ones because the triggers from work often brought up personal issues or vice versa.

The symptoms via which these mental health issues manifested were quite severe but often indistinguishable due to the accepted work pressures within the investigative journalism community. They are presented in the table below.

COGNITIVE	PSYCHOLOGICAL	PHYSICAL	BEHAVIOURAL
<ul style="list-style-type: none"> Inability to switch off 	<ul style="list-style-type: none"> Nightmares Insomnia Depression Suicidal ideation Hallucinations Anxiety 	<ul style="list-style-type: none"> Fatigue Flinching at noises 	<ul style="list-style-type: none"> Mood swings Irritability Alienation Self-isolation & reduced social interactions Quitting

FIG 8.5.1 BREAKDOWN OF SYMPTOMS OF MENTAL HEALTH ISSUES REPORTED BY OSINT JOURNALISTS/INVESTIGATORS

The reasons behind these symptoms or the causes of these mental health issues were manifold, complex, and often dependant on various factors that ranged from institutional or cultural to personal circumstances, such as whether an OSINT investigative journalist was employed in a staff capacity or a freelancer, as well as identity or demographic factors like race, gender, nationality, ethnicity, which often determined privilege, or the power dynamics of the relationship between the subject and the journalist, or how closely tied to the journalist and their personal history the atrocities being documented were.

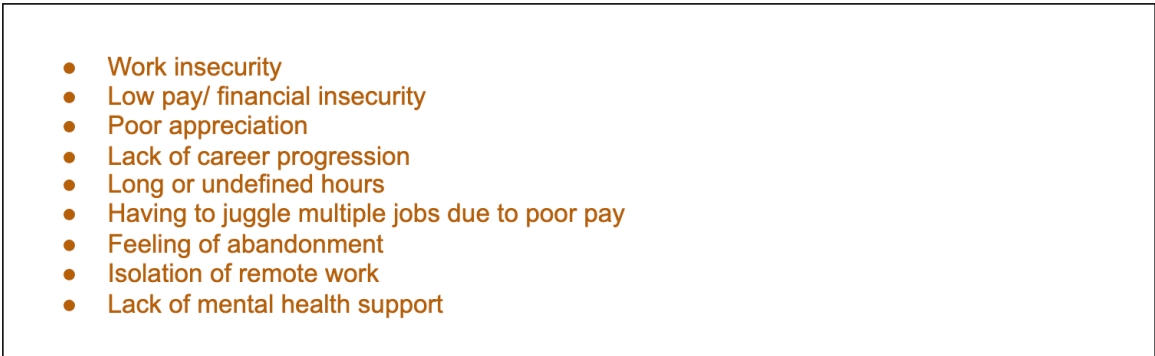
INSTITUTIONAL	IDENTITY	CULTURAL
<ul style="list-style-type: none"> • Uninformed Attitudes to Trauma • Mismanagement and Lack of Support From Peers 	<ul style="list-style-type: none"> • Race/Class/Gender/Ethnicity • Personal Experience/ Social Background • Class status: The State of Being A Freelancer • Gamification and Replication of Colonial Tropes • Power Imbalances 	<ul style="list-style-type: none"> • Repression of Emotions • Social media

FIG 8.5.2 SUMMARY OF CAUSES OF MENTAL HEALTH ISSUES AMONG OSINT INVESTIGATIVE JOURNALISTS

Mental health issues that were not personal were either institutional, meaning they stemmed from the way newsrooms and the media industry were designed or functioned, or they were directly related to the work at hand, meaning they stemmed from the subject of inquiry for the investigation. Institutional or work-related reasons include the prevalence of graphic imagery; addiction to technology due to social conditioning; online intimidation from state-backed actors; online intimidation by trolls; government attacks on the press; social media attacks from trolls; inability to disconnect from sources due to social media; lack of mental health awareness; the endless nature of investigative work online; lack of proper implementation of mental health guidelines; pressure from management; workplace microaggressions and racism; gamification of OSINT; rewarding consumption of graphic content stripped of

context. Of the personal reasons, the primary factors were race, gender, nationality and the privilege these factors bestowed or stripped one of; the need to repress trauma to work on a story with no time to grieve; language & cultural ties leading to emotional involvement or overinvestment in the investigation; lack of boundaries; and pre-existing mental health conditions.

The issues specific to staff reporters were few: they mostly dealt with the interpersonal dynamics of teamwork in a newsroom and the fear of being laid off; while in contrast, for freelancers, the list ranged from work insecurity to low pay, poor appreciation for work done, lack of career progression, long or undefined hours of work, the need to juggle multiple jobs due to lack of job stability or low pay, the feeling of abandonment or exploitation, and the isolation of remote work.

- 
- Work insecurity
 - Low pay/ financial insecurity
 - Poor appreciation
 - Lack of career progression
 - Long or undefined hours
 - Having to juggle multiple jobs due to poor pay
 - Feeling of abandonment
 - Isolation of remote work
 - Lack of mental health support

**FIG 8.5.3 CAUSES OF MENTAL HEALTH ISSUES AMONG FREELANCE OSINT
INVESTIGATIVE JOURNALISTS**

Respondents were also asked what they felt was the role of technologies in journalists' mental health.

- Sudden Negative Changes in Emotional Behaviour
- Mental Health Issues Exacerbated
- Worsened Existing Pressures of Journalism
- Online Attacks (Trolls/Bot Networks) Worsening Mental Health
- Worsens Existing Trauma
- Increase in Culture of Overwork and Burnout
- Alienation and Disconnect between Virtual and Real
- Increase in Vicarious Trauma
- Decrease in Physical Trauma

FIG 8.5.4 IMPACT OF THE COCKTAIL OF WORK PRESSURE, OVERWORK, AND LONG HOURS USING DIGITAL TECHNOLOGY ON THE MENTAL HEALTH OF OSINT JOURNALISTS & INVESTIGATORS

Most described the impact as severely negative and attributed it to mental health issues like burnout, demoralisation, heightened sensitivity to violence or complete desensitisation, being unable to switch off, while also impacting the time for their family or personal projects, and feeling hopelessness or an acute sense of alienation; all stemming from the cocktail of overwork, work pressure, and being forced to be constantly online either as a result of an ongoing investigation or on the lookout for the next one. In addition, one respondent highlighted online trolls, either state-sponsored or otherwise, as an added stress factor of doing OSINT based investigative journalism, as it attacked not only the work being presented but also the value systems of the journalists behind it, who often tended to do this work for ideological reasons such as a belief in human rights and the need for justice and accountability for victims of atrocities.

The next chapter looks at the theoretical interpretations of the empirical results discussed in this and the previous chapters and explores how the theoretical foundations introduced at the beginning of the study apply to this context.

CHAPTER 9: THEORETICAL INTERPRETATION OF FINDINGS

9.1 Introduction

This chapter is a companion to the empirical analysis provided in the previous few chapters— it provides a theoretical interpretation of the findings in this study and sets out how they confirm or digress from the theoretical framework outlined for this research.

Each of the previous chapters, namely Open-Source Intelligence (OSINT) tools for investigations, the change in work as a result of these OSINT tools, the impact of the change in work within the investigative workflow, and the mental health impact of this work on investigators and journalists, outlined in detail the empirical findings, to answer the research question: What are the consequences of automation on investigative journalism?

This chapter looks at the theoretical implications of that answer and is divided into sections modelled after the six areas that affect the working conditions within a capitalist economy: means of production, labour, relations of production, the production process, the outcome of production, and finally, the impact of the state within which the worker subsists (Fuchs and Sandoval 2014).

According to Fuchs and Sandoval (2014), the dimensions of the labour process can be explained as follows:

1. The *means of production* include the tools of work, such as machines and equipment and other resources that shape the experience of work and impact the working conditions and work processes.

2. The *workers* are the subjects of the *labour* process, and this is studied through three dimensions– the workforce composition in terms of age, gender, ethnic background, etc.; the physical health, mental health and safety of workers, and how the means of production affects it; as well as the subjective experience of the working conditions.
3. The *relations of production*, which essentially map the relations between capital and labour that in turn, determine the power dynamics of this transaction, governed by wages, or the remuneration paid to the workers in exchange for labour; labour contracts or the circumstances governing this transaction as well as work roles, working hours, and responsibilities; and finally, the tension between labour and capital as a result of ongoing negotiations between the two, which can take the form of collective bargaining or even protests.
4. The *production process* also broadly looks at the working conditions through the dimensions of space, time, activity and control that determine the essential nature of working conditions and are key parts. The first in the production process is the site of work where the production itself takes place; then the work rhythm such as the flexibility of hours, overtime, normal working hours; it also looks at how the production process itself is executed by interrogating the types of work activity performed at various levels of skill, from knowledge to physical work which in turn affect the conditions of work; and finally, it looks at the management of work and its impact on working conditions through how the work is controlled.
5. The *product* is the end result of the production process, and its relation to the worker (who supplies their time and energy into it) requires some consideration.
6. The final section is *the state*, which can have an impact on the working conditions through the enactment of laws, labour and otherwise, and through it, regulate/have an impact on the working conditions in the production process (Fuchs and Sandoval 2014).

9.2 Productive Forces: Means of Production

The means of production include the equipment or tools being used and the resources needed to produce; in other words, they encompass the instruments of labour and the object of labour.

The technology being utilised in the case of this study were automated tools used for open-source investigations, popularly referred to as OSINT tools. The typology of OSINT tools formulated covered three broad stages of the investigation process: discovery, analysis, and visualisation, with analysis having the most complexity in terms of tools due to the multiple pathways of inquiry possible. All three stages were augmenting a human-led methodology, thereby proving that it was not possible at the current level of technological process to automate the entire investigative workflow.

The resources used during the production process were highly specialised, as most interviewees in this study had a specific focus like verification, network analysis, cryptocurrency tracking, or geographic areas they specialised in, and had premium subscriptions or advanced tools that they had access to. The evolution of this market for OSINT tools occurs within capitalist modes of production, where the cost of purchasing machinery for automation is relative to the cost of wages of the labourer; here, the cost of purchasing OSINT tools was relative to the cost of the wages of a journalist. Since most journalists started out experimenting with OSINT on their own initiative, whether within a mainstream organisation, a fledgling startup, or as a freelancer, costs of the tools of labour as well as training using these tools were borne by the labourers themselves because initially, the lack of demand for OSINT meant there was no profit-making incentive to invest in them as a news organisation. Marx explains this succinctly:

“Since the actual wage of the workers sometimes sinks below the value of his labour-power, and sometimes rises above it, it is possible for the difference between the price of the machinery and the price of the labour-power

replaced by that machinery to undergo great variations, while the difference between the quantity of labour needed to produce the machine and the total quantity of labour replaced by it remains constant” (Marx 1992, 515).

Within the weak labour market of journalism, the cost of hiring a journalist or OSINT specialist is low, and there is a consequent lack of investment in tools.

However, with the rise of OSINT, this has changed, with mainstream outlets like BBC Africa Eye teams creating news roles and purchasing tools for staff. The landscape for freelancers, however, has not altered, with most if not all of them bearing the brunt of the cost of proprietary tools that are central to their OSINT work.

The OSINT tools themselves ranged from open-source and freely available to proprietary or paid tools that were often extremely expensive. But the flip side to proprietary tools that were too expensive to afford, was free tools that are in turn overrun by Big Tech monopolies. For example, a suite of free tools from Google, which were indispensable for OSINT, and range from Google Sheets which allowed for collaborative work, to Google Earth which provided free good quality satellite imagery from several providers and was the go-to tool for journalists and human rights defenders alike, to Google Lens for identification of visual objects, and so on. While Google’s primary source of revenue is advertising, it reinvests some of the surplus money to develop and make available these free tools as both a branding exercise and also to retain a monopoly on the digital market.

This affects OSINT investigations in two ways: firstly, the tools that were free to use were out of the control of users and within the control of large multinational tech conglomerates who functioned within a capitalist economy and were at liberty to kill projects with no explanation, if it did not fit within their agendas, causing, in turn, a disenfranchisement of journalists and activists who cannot access resources and face a second layer of precarity, along with their precarious employment prospects as a result of the media market. This was the case of Terraserver operated by Microsoft, a source of high-resolution satellite imagery, used by journalists globally, especially in the Middle East to investigate violations in conflict zones such as Syrian

prison deaths in Assad's regime (Loveluck and Zakaria 2018) and missile studies (Gordon 2020), which was abruptly shut down with no explanation. It was seen as "a vital tool" for investigations (Gordon 2020).

Secondly, the social media platforms serving as grounds for investigations mined vast amounts of Big Data but operated as a "walled data garden". When Facebook repeatedly changed their algorithm to prevent investigative journalists from using their platform to expose human rights abuses that Facebook itself did not moderate, it was at liberty to do so unchallenged because it has a market monopoly on that specific kind of data and as a private company, was free to operate as such. Structurally, as a for-profit company, Facebook decision-making is beholden to a key small group of players, with power flowing in a top-down manner, much like a dictatorship. When this ecosystem of corporate dictatorship collides with the OSINT ecosystem, it is at liberty to completely shut down access as it owns all the data and has no independent oversight (the Facebook Oversight Board is on company payroll (Akhtar 2021)). In turn, this requires OSINT journalists specialising in social media, or SOCMINT investigators, to be in a constant state of re-skilling or multi-skilling as a result of market pressures (Nygren 2014). As Marx writes: "The division of labour develops this labour-power in a one-sided way, by reducing it to the highly particularised skill of handling a special tool. When it becomes the job of the machine to handle this tool, the use-value of the worker's labour-power vanishes, and with it, its exchange-value. The worker becomes unsaleable, like paper money thrown out of currency by legal enactment" (Marx 1992, 557).

These monopolies are also at odds with the idea that the internet allowed for egalitarian participation, most prominently by Castells (Castells 2013) in network communication theory. Gerbaudo argues that Castells' hypothesis rested "on questionable empirical grounds", citing that:

"scale-free networks follow power laws also known as Pareto distributions, that is, conditions in which highly connected nodes acting as 'hubs' tend to attract more new links than less connected nodes. This centralising tendency is also seen in the fact that despite its widely celebrated distributed and

de-centralised architecture the Internet has experienced strong forms of power concentration most glaringly manifested in the rise of digital titans as Google and Facebook (McChesney, 2013)” (Gerbaudo 2016, 189).

The proprietary tools, despite offering a semblance of control greater than the open-source ones, were nevertheless at odds with the open-source values of transparency and equity in their own ways. Due to the lack of access to understand how the tool analyses data, they functioned as a ‘black box’, antithetical to the values of transparency prized among OSINT communities, and also stripped these communities of the power to seize the means of production of such tools themselves by withholding the code.

Secondly, there was the ethical issue of the creation of the tools themselves – who designed them, for what audience, and who funded its development. One respondent detailed an OSINT tool as being possibly funded by allies of Russian intelligence without full disclosure, and it would not be surprising to find other superpowers doing the same, to both mine data about the investigations being conducted by journalists and human rights defenders, and also mine personal data about habits and practices that could be used for offensive purposes.

A final issue with OSINT tools were the colonial overtones of tools being designed by white male Western developers that were being applied to far-removed contexts – to investigate atrocities committed upon black and brown bodies, bodies that were often marginalised, disenfranchised, in parts of the world where there is both a dearth of data leading to information asymmetry, and a lack of agency caused by systemic racism, historic imperialism, and the consequences of centuries of colonialism that continue to mark development (or the lack of it) and stability (and its lack) in these regions. None of these tools came with the awareness of these implications and were often packaged as a product to fill a gap in the investigative “marketplace” that had appeared due to the critical success of OSINT investigations. The intersecting oppressions of race and gender bring with it their limitations of “motivation and resources, time and power—these are assets that are not evenly

distributed, even if the Internet has removed many of the old barriers to entry. They are inequalities that we must take into account when we talk about level playing field” (Taylor 2014, 220). What the OSINT space had done so far was replicate the same hierarchies of power and privilege that existed in harsh reality instead of using this opportunity to level those power imbalances and empower the communities these atrocities were inflicted upon.

When discussing OSINT tools, their sudden meteoric rise in popularity, and the gold rush to develop and sell them within the context of power, it is essential to place it within the commodity-structure and reification, the basis of which is that “a relation between people takes on the character of a thing and thus acquires a ‘phantom objectivity’, an autonomy that seems so strictly rational and all-embracing as to conceal every trace of its fundamental nature: the relation between people” (Lukács 1972, 83). Marx describes the basic phenomenon of reification as follows:

"A commodity is, therefore, a mysterious thing, simply because in it the social character of men's labour appears to them as an objective character stamped upon the product of that labour; because the relation of the producers to the sum total of their own labour is presented to them as a social relation existing not between themselves, but between the products of their labour. This is the reason the products of labour become commodities, social things whose qualities are at the same time perceptible and imperceptible by the senses ... It is only a definite social relation between men that assumes, in their eyes, the fantastic form of a relation between things” (Marx 1992, 52).

Because of this, it is labour that becomes independent of the labourer itself, acquires this autonomy that is alien to the labourer— in other words, the OSINT tools themselves a product of the labour of investigators and developers, acquired a ‘phantom objectivity’, an autonomy that was almost removed from the investigator themselves.

Lukács argued that this phenomenon had both an objective and subjective dimension: objectively it could be argued that the investigator could use this

specialised knowledge to his own advantage but was unable to modify the process by his own activity. Subjectively, in an economy as developed and saturated as the market for digital tools currently is, one's activity is estranged from oneself and becomes a commodity that participates within the economy as any consumer product does. "What is characteristic of the capitalist age is that in the eyes of the labourer himself labour-power assumes the form of a commodity belonging to him. On the other hand it is only at this moment that the commodity form of the products of labour becomes general" (Marx 1992, 170).

This gave rise to alienation, where the journalists and investigators did not control the OSINT tools and automated technologies they use. Marx terms this relationship between commodities and their market value commodity fetishism, here the economic value of the OSINT tools arising from the tools themselves: "The value-relation of the products of labour within which it appears, have absolutely no connection with the physical nature of the commodity and the material relations arising out of this... There the products of the human brain appear as autonomous figures endowed with a life of their own, which enter into relations both with each other and with the human race" (Marx 1992, 165).

The tools themselves evoked mixed responses when it came to reliability and changing the workday— respondents said the tools had made the work they do more reliable, as OSINT tools helped to make the workflow easier by breaking up the steps to be assigned to different people such as discovery and verification and the group dynamics enabled by OSINT are helpful for thinking creatively. Others said that while the tools had sharpened the investigative capabilities and workflow, they created mistrust due to the "black box" nature.

While proprietary tools and free tools offered by capitalist corporations were alienated technologies, there also existed a small ecosystem of not-for-profit OSINT tools created without a capitalist imperative, such as the "Youtube Dataviewer" from NGO Amnesty (Amnesty International n.d.(b)), the InVID project which is funded by the European Union's Horizon 2020 research and innovation programme (InVID

Project n.d.), the Fire Maps made available by NASA (NASA n.d.). All these tool examples were hugely popular, but in the absence of capitalist motives, the European Union and Amnesty International both have political ones, which must be borne in mind when using or citing them in investigations. A separate section of tools, created by OSINT experts like Paul Myers's "Research Clinic" (Myers n.d.) and Dutch investigator Henk van Ess' "Graph Tips"(van Ess et al. n.d.), which were effective, had a smaller audience and were underfunded due to its invisibility, not to mention reliant on the datasets of tech giants like Facebook to work, as mentioned earlier. While alternate tools built by OSINTers for OSINT investigators and journalists could exist with the appropriate level of funding (as is in the case of InVID), most journalists working in OSINT were too overworked to have the capacity to do so, as this study has found.

The following section focuses on labour within the productive process.

9.3 Productive Forces: Labour

This section relates to the subjects of labour, which are the workers; here, the investigative journalists and OSINT investigative specialists interviewed for this study.

There are three dimensions to the way this is studied: firstly, the characteristics of the workforce in terms of age, gender, ethnic background, etc.; secondly, the mental and physical health of the workforce as impacted by the labour process itself and means of production; thirdly, the work experience or how the journalists and investigators themselves describe their experience of the working conditions.

In other words, this section foregrounds the OSINT investigator and their subjective experiences. The three dimensions have been subdivided into their own sections below.

9.3.1 Workforce Characteristics

OSINT, as a relatively new field of investigative research, like other STEM fields, was white male-dominated. In addition, there was the marginalisation experienced by freelancers in the gig economy, as opposed to staff journalists who often received the most attention for OSINT work. For this study and in the interests of hearing from respondents who were often marginalised, this study spoke to 30 interviewees, 40% of whom were non-white/mixed race.

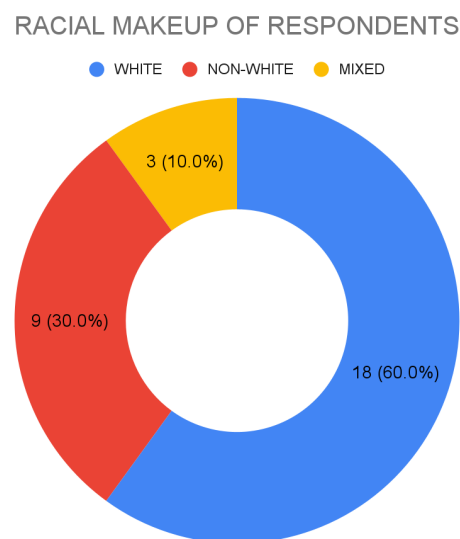


FIG 9.3.1.1 ETHNICITY BREAKDOWN OF PARTICIPANTS IN THIS STUDY

An effort was also made to ensure gender parity among interviewees, with 46.7% of the respondents identifying as female, as explained earlier in the methodology chapter, which detailed the demographic breakdown more prominently.

SELF-IDENTIFIED GENDER BREAKDOWN OF RESPONDENTS

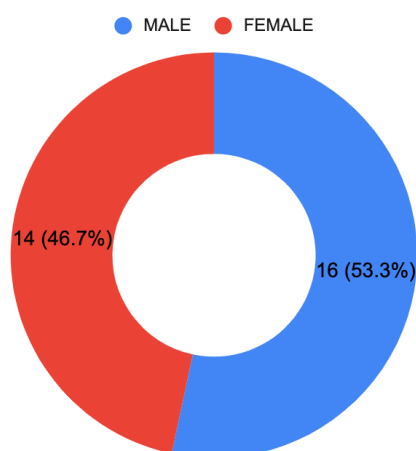


FIG 9.3.1.2 GENDER BREAKDOWN OF PARTICIPANTS IN THIS STUDY

In an industry composed of the precariat, a special effort was made to interview and understand the trappings of freelancing. Although when the interviews were arranged, there was a 50:50 freelance: staff ratio, the ratio changed slightly to 43:57 as more and more freelancers sought to ditch precarity for job security.

EMPLOYMENT STATUS OF RESPONDENTS

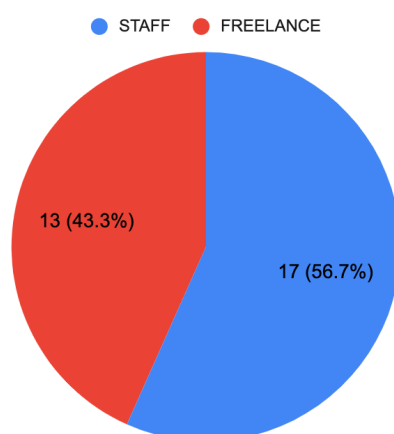


FIG 9.3.1.3 EMPLOYMENT STATUS OF PARTICIPANTS IN THIS STUDY

One of the leading causes of stress identified by respondents in this study, half of whom were women and/or people of colour, was systemic gender and race-based discrimination within the journalism industry as a whole – with investigative journalism, in particular, coming off as a predominantly a white, male-dominated

profession, where race and gender-based microaggressions often faced by women of colour are either ignored or erased.

This was not unique to OSINT-based investigations; the power dynamics within the newsroom and the media industry as a whole often resulted in the contributions of women of colour being minimised, not attributed in bylines, and not resulting in the same level of acclaim that the work of their white, often male peers get. There was also the issue of career stagnation faced by marginalised groups within newsrooms as a consequence, with their work and efforts often remaining in the background, in research or behind the camera while their white/male peers fronted the stories in front of the camera and/or were often implicitly given more credit than their non-white/non-male peers due to racial/gender biases in audiences.

If patriarchy is understood as a gendered distribution of power where one gender dominates the other genders through control over economy and politics, then it is power relations that are the dominant dimension of patriarchal societies, replicated in most global newsrooms. Sylvia Walby (1989) defined patriarchy as

“a system of social structures, and practices in which men dominate, oppress and exploit women. The use of the term social structure is important here since it clearly implies rejection of both biological determinism and the notion that every individual man is in a dominant position and every individual woman in a subordinate one...” and added that, “patriarchy is not reducible to capitalism even in a mediated way” (Walby 1989, 214).

To that end, Walby also outlined the levels of social structures patriarchy operated from:

- patriarchal modes of production
- patriarchal relations in paid work
- patriarchal relations in the state
- male violence
- patriarchal relations in sexuality

- patriarchal relations in cultural institutions, such as religion, the media and education (Walby 1989, 214).

Within the newsroom or the domain of investigative journalism, it manifested in various ways: with regards to the modes of production, only a few of the investigative journalists interviewed had had a female investigative editor, with power flowing in a top-down manner when it came to commissions and contracts. Most of the respondents identifying as OSINT tool developers, barring one, were also overwhelmingly male, therefore contributing to a gendered mode of production.

This is not to claim, however, that every man in a position of power to control the modes of production was deliberately or maliciously excluding women, but simply that the patterns showed that they were overwhelmingly male and enjoyed privilege as a result of that fact, which protected them from suffering any of the discriminations or oppressions consistent with being a woman in the media workforce.

This power structure complemented the existing power hierarchies within cultural institutions like the media, with mainstream newsrooms enjoying critical success still seemingly remaining the bastion of white males. There were outliers, of course, as evidenced by the 2021 Pulitzer win by two female investigative journalists from BuzzFeed for exposing the Uyghur camps being built by China (The Pulitzer Prizes n.d.), but women with such accolades won despite the odds, not because of it. Patriarchal relations in paid work were evidenced by the wage gap, which even public service broadcasters were complicit in, most recently in the case of broadcaster Samira Ahmed who sued the BBC for £700,000 in back pay (Waterson 2020). And it is no secret that women journalists were at greater risk when it came to both online and in-person attacks, seen as a softer target for trolls and the state alike (Wilson and Hess 2021).

Similarly, if racism is a social relation born out of the misinformed unscientific ideological biases based on the colour of one's skin, and born out of the legacy of

colonialism and slavery, then it is this power relation that dominates any non-decolonised society or newsroom.

“Racism appears... not as an incidental detail, but as a consubstantial part of colonialism. It is the highest expression of the colonial system and one of the most significant features of the colonialist. Not only does it establish a fundamental discrimination between colonizer and colonized, a sine qua non of colonial life, but it also lays the foundation for the immutability of this life.... All the efforts of the colonialist are directed toward maintaining this social immobility, and racism is the surest weapon for this aim. In effect, change becomes impossible, and any revolt would be absurd” (Memmi 2003, 74).

Memmi argued that colonial racism was built on three ideological pillars: the gap in culture between the colonialist and the colonised, the exploitation of this gap for the benefit (and profit) of the colonialist, and the statement of racism as absolute fact (Memmi 2003, 71). “Racial regimes are constructed social systems in which race is proposed as a justification for the relations of power” (Robinson 2012, xii). Robinson (2021), in his theory of racial capitalism, posited that capitalism, as it is understood today, was intrinsically tied to the ideas of historic structural racism, and was inseparable in its wealth from colonial exploitation and the transatlantic slave trade. He argued that capitalism, by its very nature and existence, was racist.

When the racism of capitalism is understood within the context of capitalism which reproduces itself through commodification, it results in the creation of what Cornel West called:

“those hollow men that T. S. Eliot was talking about, to create these morally vacuous, spiritually empty creatures, whose sense of being in the world is to be titillated by the bombardment of commodities. So they don’t have assets to these nonmarket values, like deep love, deep justice, a deep solidarity, service to others, taking a risk in being of service to others, being with, not over and above, but alongside others” (West and Blakeley 2020).

Within the context of the media industry, it resulted in the creation of the white influencer journalist, specifically white female journalists moving into the influencer category to escape the trappings of the gig economy and patriarchy (Graham 2019)

and using the vacuous content machine in lieu of actual journalism to increase social media metrics which in turn created the illusion of credibility, which was rewarded in the media scramble to gain new audiences.

For women of colour, the oppression then was three-fold. Walby noted that “ethnic variation and racism mean that the chief sites of oppression of women of colour may be different from those of white women. This is not simply a statement that women of colour face racism which white women do not, but also a suggestion that this may change the basis of gender inequality itself,” (Walby 1989, 217) and added that the way gender and ethnic relations had interacted historically changed the very nature of the oppressions when taken together. bell hooks, criticising the women’s liberation movement, the radical feminist writers, and the suffragettes, in their exclusion, omission, and their misunderstanding of racism, wrote:

“... the issue is not whether white women are more or less racist than white men, but that they are racist. If women committed to feminist revolution, be they black or white, are to achieve any understanding of the ‘charged connections’ between white women and black women, we must first, be willing to examine woman’s relationship to society, to race... as it is and not as we would ideally have it be. That means confronting the reality of white female racism. Sexist discrimination has prevented white women from assuming the dominant role in the perpetuation of white racial imperialism, but it has not prevented white women from absorbing, supporting, and advocating racist ideology or acting individually as racist oppressors” (hooks 1990, 124).

An excellent example of the advantage afforded to white women journalists compared to women of colour caught in the double-bind of gender and race within capitalism was in the BBC Annual Report pay disclosures, which proudly showed women sharing the list with men in the list of top-paid presenters, and indeed the cover of the report itself displayed two women, to promote the BBC’s commitment to gender parity (BBC 2021), but the fact that they’re both white, in either case, was glaringly obvious.

NAME	SEX	PAY	ETHNICITY
Gary Linekar	Male	£1.36m	White
Zoe Ball	Female	£1.13m	White
Steve Wright	Male	£465,000	White
Huw Edwards	Male	£425,000	White
Fiona Bruce	Female	£405,000	White
Stephen Nolan	Male	£405,000	White
Lauren Laverne	Female	£395,000	White
Vanessa Feltz	Female	£390,000	White
Alan Shearer	Male	£390,000	White
Scott Mills	Male	£375,000	White

FIG 9.3.1.4 BBC'S BEST-PAID PRESENTERS (BBC 2021)

When discussing the cost of OSINT tools being borne by freelance investigators, two OSINT investigators in this study, both self-taught women of colour now working at award-winning publications, stated that the only way to get hired was to go out and do OSINT investigations themselves without getting commissions from editors. In this sense, there is a cheapening of their labour, caused due to the gig economy and due to discrimination faced in media hiring practices, in turn, caused by a lack of understanding about replicating colonial dynamics by hiring white male OSINT investigators to investigate human rights abuses in the Global South, Middle East and Africa.

There was no demand for equitable investigations because the focus was on quantity, and getting the best story or the first, instead of getting it right and empowering the communities affected so they felt heard. The idea of 'OSINT for good' is borrowed from the trend of "technology for good", which appeals for the use of technology for social good and "welfare growth" (Bughin et al. 2019, 80), while perpetuating the myth of ethical capitalism, contradictory to its roots which lie in the "anti-authoritarianism of post-1968 movements and by the techno-utopianism of hacker culture", based on "principles of openness, horizontality, and leaderlessness"

(Gerbaudo 2016, 186). Thus, the ethics of 'OSINT for good' are ironically eroded by the demand under capitalism.

The microaggressions and exclusion described were a symptom of universal alienation, the antithesis to which is "revolutionary humanism (Harvey 2014, 212). Harvey argued that "[w]e can through conscious thought and action change both the world we live in and ourselves for the better" (Harvey 2014, 282) while pointing out that humanism had been perverted and turned into a particularism that disguised itself as universalism but advanced "imperialist and colonial cultural domination" (Harvey 2014, 285), such as the patterns replicated in white journalists overwhelmingly analysing the Middle East, Africa and Asia without a critical understanding of colonial legacies. The solution is "secular revolutionary humanism" that counters "alienation in its many forms and to radically change the world" (Harvey 2014, 287).

In journalism, revolutionary humanism means going beyond the current superficiality of commercial enterprise and interrogating the power dynamics inherent in the processes of how we create journalism, who is empowered/given a voice/historiography, and how it actually impacts those on the ground/has a tangible impact on reality, while understanding and mitigating the internal inconsistencies and dehumanisation inherent in capitalist modes of production; in short, a greater awareness of humanism over profitability, personality politics, shallow identity politics that only stops at representation, and instead an active mitigation of the power dynamics and privileges to create and contribute to emancipatory politics that speaks truth to power actually to transfer some of that power to those without.

What is hopelessly lacking in journalism education or in the education and practice of a journalist now is a critical understanding of capitalism, patriarchy, colonialism, imperialism, racism, etc., i.e. the systems within which they unwittingly participate and willingly or unwillingly perpetuate despite their best intentions, and to unlearn, understand the crimes of the past, and be aware of the current privileges and omnipresent power dynamics enjoyed today as a result of the legacy of oppression,

genocide, colonial disinformation and theft on brown and black continents, and the subjugation of the other: women, queers, the non-white, the working class.

In terms of the newsroom, it means overhauling the standard hiring practices; interrogating the commissioning hierarchy in investigative units; threat-modelling impacts of stories on both journalists and victims; empowering victims to present their own stories; moving away from presenter-led documentaries (specifically white presenters fronting international stories in the Middle East, Africa and South Asia); valuing talent over star power; investing in the development of OSINT tools; investing in trauma-conscious workflows and training for management; setting aside training and career development times for staff; mentoring women of colour and immigrants and especially focusing on their career progression; hiring local reporters and giving them equal credits in international stories; reforming the terms of fixed-term freelance contracts to include adequate sick pay, holiday pay and mental health support; allowing women of colour and immigrants to front their own stories where applicable and get an equal opportunity to present where not; and more importantly, allow journalists to influence executive decisions about the future of news organisations that are too often run by political appointees or “suits”.

9.3.2 Mental and Physical Health of the Workforce

With regards to the mental and physical health of the workforce as impacted by the labour process itself and means of production, the work being done by OSINT investigators and investigative journalists carried with it very serious mental health consequences that range from mild (mood swings) to severe (PTSD, suicidal ideation). While the causes listed by respondents seemed to vary, from graphic imagery to bad management, the root cause was power, or the lack of it: whether it be a lack of understanding of the context or full implications of graphic content at hand that empowered white male journalists while marginalising investigators of colour; or the implicit hierarchies within an investigation where investigators of colour

were forced to do the difficult task of sorting through graphic footage while the credit for the actual investigation is given to their white male counterparts who do the analysis. For freelancers, in addition to the existing causes, there were the added pressures of the gig economy, which included poor pay, lack of appreciation, coupled with the undefined hours of investigative work.

It is essential to note here the work of Mark Fisher, in his book *Capitalist Realism* which discussed in detail the way mental health was regarded within a capitalist economy, to put these empirical findings into context:

“Capitalist realism insists on treating mental health as if it were a natural fact, like weather (but, then again, weather is no longer a natural fact so much as a political-economic effect). In the 1960s and 1970s, radical theory and politics (Laing, Foucault, Deleuze and Guattari, etc.) coalesced around extreme mental conditions such as schizophrenia, arguing, for instance, that madness was not a natural, but a political, category. But what is needed now is a politicization of much more common disorders.

Indeed, it is their very commonness which is the issue: in Britain, depression is now the condition that is most treated by the NHS. In his book *The Selfish Capitalist*, Oliver James has convincingly posited a correlation between rising rates of mental distress and the neoliberal mode of capitalism practiced in countries like Britain, the USA and Australia. In line with James’s claims, I want to argue that it is necessary to reframe the growing problem of stress (and distress) in capitalist societies. Instead of treating it as incumbent on individuals to resolve their own psychological distress, instead, that is, of accepting the vast privatization of stress that has taken place over the last thirty years, we need to ask: how has it become acceptable that so many people, and especially so many young people, are ill?” (Fisher 2009, 19).

In a larger sense, it is symptomatic of the universalisation of alienation described by Fuchs: “an asymmetry of power relations and conditions that hinder their control over certain objects, structures or products (external nature, the means of production, the means of communication, the political system, and the cultural system, etc.) so that

aspects of their subjectivity are damaged (concerning human activities, well-being, consciousness, mind/ psyche, body, worldviews, social relations)”
(Fuchs 2019, 137).

Alienation’s effect on the human psyche, or psychological alienation, has been variously described as disillusionment, disenchantment, estrangement (Stokols 1975) or the classic feeling of abandonment experienced by the existentialist (Sartre 1992), which stemmed from a lack of power, agency or control. So when it was videos of graphic abuse that investigators had to work with, it was not only the content itself, but the feeling of helplessness or impotence, combined with estrangement from accountability and separation from the reality where they had agency or self-efficacy, both of which were strongly associated with PTSD or as causing PTSD in trauma exposure (Dubberley, Koenig and Murray 2020).

A majority of respondents described sleep disturbances, which must be interrogated in the context of the relentless cycle of work journalists are trapped in, jumping from story to story of great significance and graphic imagery, either compelled by the need for financial sustenance or the news cycle, without having the time and space being afforded to fully process the shock or trauma they have encountered, thereby operating in a mode of auto-pilot, devoid of all human-like qualities where trauma is constantly repressed, and compartmentalised until it wreaks havoc through burnout or PTSD. A striking feature of this impossible task of repression of human emotions was the blurring of lines between public and private that seemed to occur to most investigative journalists, as they often felt passionately about the cases they worked on and identified perhaps most strongly with child victims. While it is common for an investigator’s personal association with an event or details of an event to exacerbate feelings of distress around it (Dubberley, Koenig and Murray 2020), it also betrayed the inhumane nature of the demand to separate oneself from the identification with the child or to relate to other humans, which is rooted deep within human psychology.

Alienation is primarily characterised as the condition of workers' lack of control in the economy, and the dialectic of control and non-control between organisations/news cycles/capitalist economy/editors and journalists, but is also a universal phenomenon that also permeated in "processes beyond the economy, such as... militarism, warfare, alcoholism, suicide, depression, bureaucracy, pollution, gentrification, or climate change" (Fuchs 2018, 456). Within this paradigm, the journalists were at the bottom of a hierarchy where they were consistently being expected to suppress all human-like qualities such as empathy, sadness, fear, anger, rage, helplessness that arose as a result of contact with people or images of conflict zones, in a hopeless bid for objectivity, and to produce "better journalism". Objectivity, in news parlance, is often used interchangeably with neutrality, but when documenting or investigating a state of war, to profess to be neutral is to either be untruthful or to take the side of the oppressor, in the words of Desmond Tutu (Younge 2009) –the simple reason being, the function of an investigation is to investigate and clearly delineate the crimes committed, who the victims are, and who the abusers are who must be brought to account– there is rarely anything neutral or objective about it because it would be impossible otherwise to hold power to account, or engage in the adversarial role that is the essence of investigative journalism, unlike other forms of media.

While a lot of the risks of trauma could be mitigated by building trauma-conscious workflows, the development of OSINT tools or even social media has not been done with trauma mitigation, or indeed human impact in mind, due to the nature of the capitalist economy placing profit over people or the commercialisation of a media forced to manufacture a competition of newsworthiness between world events.

In fact, it is an established fact that a sense of greater control mitigates PTSD and depression – in a study with torture victims, loss of control was among the strongest predictors of PTSD and depression (Başoğlu et al. 1997). The UK Psychological Trauma Society suggests: "Trauma-exposed organizations should ensure that staff who are recruited, or move, into [potentially stressful] roles have the opportunity to reflect on their suitability and preparedness for this work before they start the role"

and that “trauma exposed organisations should incorporate trauma awareness into management, leadership and team training” (UK Psychological Trauma Society 2014, 5). However, working with graphic content did not guarantee PTSD or mean all investigators would be traumatised, in fact, “people do not develop a mental disorder after exposure to trauma” (Bisson et al. 2015, n.p.) and research found a majority of people generally recover after exposure; but it was the lack of understanding of (secondary) trauma, its trivialisation, and lack of space to process it that caused PTSD.

This combination of suppressing the natural emotions during the course of work and the lack of control as a result of the current media economy coalesced to erase the humanness, where two processes simultaneously took place: the commodity produced is bestowed this “phantom objectivity” mentioned earlier, and the fragmentation of the investigator where the human qualities were regarded as “mere sources of error when contrasted with these abstract special laws functioning according to rational predictions” (Lukács 1972, 6).

In *Grundrisse*, Marx placed emphasis on the state of being alienated, dispossessed, sold where the “monstrous objective power which social labour itself erected opposite itself as one of its moments belongs not to the worker, but to the personified conditions of production, i.e. to capital” (Marx 1973 [1939], 832). In the *Economic and Philosophic Manuscripts of Capital*, Marx further added that workers faced the compulsion to allow their own exploitation by capitalists in order to subsist within this system, which meant they were not in control of their own lives. In the section titled “Estranged Labour”, Marx identified four forms of alienation stemming from the micro: the alienation of humans from the product, here the detachment of journalists from the investigation; and catapulting into the macro: the alienation from humans and society, here the deep depression, isolation and suicidal ideation described by investigative journalists. In *Capital*, he further developed his idea by describing the violence of the capitalist market and the “silent compulsion of economic relations” that “sets the seal on the domination of the capitalist over the worker” (Marx 1992, 899).

If alienation is described as the product of unequal power dynamics, then it is no surprise that structural inequalities existing in “imperialist, capitalist, white supremacist patriarchy” (hooks 1990, 104) found itself replicated within the newsroom and affecting women journalists, especially immigrant women of colour the most through microaggressions or aggressions of racism, sexism, ableism, xenophobia, and other patterns of abusive behaviour causing mental distress, placing them at greater risk of trauma.

One of the main tenets of the open-source community is a tendency towards horizontal hierarchies, which in many ways can fall into the trap of ‘tyranny of structurelessness’, described by Jo Freeman as the rejection of formal organisation leading to the creation of an informal vanguard formed of elites (1972) and those with social capital to play “an influential but largely invisible role in the direction of collective action” (Gerbaudo 2016, 191).

It was further aggravated not just by the domination of the industry and discourse by white men but also by the culture of work created within OSINT by them through gamification. Gamification of OSINT is described as the concept of OSINT as a game with incremental steps to be followed to win the grand prize, which rewards the objectification and abstraction of victims and their trauma, omits the impact it might have on investigators of colour, and as such excludes the ability of these investigators to work on such projects, and through it amplifies the historic colonial gap often found in investigations of conflict. While gamification has been variously described as a process of invoking gameful experiences towards a certain outcome, it is essential to highlight that it also inevitably invokes the same psychological experience as a game does (Huotari and Hamari 2012). Gamification structurally relied upon “extrinsic motivators” (Zheng, Li and Hou 2011), which focused on the consequences of the activity or recognition/prestige or points rather than the intrinsic motivation of the activity itself, its processes and reasons, or indeed the issue at hand which were grave human rights issues and a far cry from the reward mechanism. As a technique, gamification trivialised the violations of human rights

that were being researched or the work of those who may have undergone huge risks to produce the content being used.

By favouring a “gamified” model over a trauma-informed inclusive one, the investigation was not only severed from the goals of true accountability and empowerment, but in terms of labour also culminated in a distribution of work where freelancers of colour shouldered the heavy burden of filtering through “soul-scarring” graphic imagery that made them more susceptible to being traumatised, while paradoxically being seen by their white counterparts as being “less resilient” or “not objective” for succumbing to this trauma, in the absence of trauma awareness.

For freelancers, already at risk due to the gig-based economy, the isolation of remote work, precarity in the media industry, gamification in hackathons (often a pro bono event) further estranged journalists or investigators from both their own labour and adversely impacted the labour market by even further cheapening labour. Media unions were rarely mentioned, if ever, having any bargaining power to understand this situation, let alone try to improve it, culminating in a general feeling of abandonment felt by most (young) freelancers— “we are all by ourselves”. As a result, an increasing number of freelancers were adopting news-influencer style marketing in a bid to build their own audiences independently and guarantee some semblance of monthly revenue from subscribers, as mentioned earlier. Staff journalists had a disproportionately large following on social media in comparison, due to the prestige of mainstream media outlets, so the competition that was once restricted to getting a news story first was now playing out on social media, through live OSINT-ing for free, and updates.

The atmosphere of competition and social Darwinism was rewarded by media outlets who were keen to capitalise on these new audience bubbles, but the resulting culture is one of overwork and worsening mental health conditions as a result of being online or glued to digital technology. The endless stream of information produced at an impossible relentless speed, where a single refresh polluted the “news feed” on social media with thousands of “new content” or posts, created an estrangement on

two levels: the alienation of the journalist from the content they are producing as they had no time to process and were trapped in a “ceaseless cycle of work” as mentioned earlier, and also alienated audiences who never fully had time to comprehend the significance of a newly released investigation and the connotations of its findings, especially if they dealt with human rights abuses, due to the speed at which things gained or lost relevance – where the labour behind an investigation and the project itself was quickly forgotten or diminished in light of the next “thing”.

9.3.3 Experience of Work

OSINT investigators and investigative journalists described a culture of overwork that was normalised, even rewarded, where being online for long stretches at the risk of destroying work-life balance was seen as a mark of dedication rather than of poor working practices. Managers and editors rewarded investigative journalists who worked long hours, took on stressful roles, and rightly so: journalism as a profession has no fixed hours and is a stressful job; but there was, in addition, an implicit expectation to sacrifice free time to do unpaid work, which newsrooms, unions and the industry have repeatedly failed to address despite it increasing burnout and causing already marginalised groups like women and people of colour to quit their jobs and careers due to the costs of doing so.

Then there is the larger ethical issue posed by the augmentation of the workflow with these tools: are these tools going to free up time previously allocated to repetitive menial tasks? And if so, is this going to result in the disappearance of jobs? Instead of creating more free time to pursue more complex problems that required human creativity, the respondents in this study noted an increase in two areas: one, the number of OSINT roles/demand for OSINT style stories increasing in journalism, which is good news; two, the OSINT tools have actually created more work through the many complex lines of inquiry now possible.

It must be noted, however, that the question of jobs in journalism was not a distributional one but a political one. Within the current political economy, which places profit as the final and only metric of progress, editors expect investigative journalists to fit the multiplying lines of inquiry within the same workday, which in turn has expanded due to the ability to be constantly online to monitor the latest and break stories beating the best. Tracking down sources has never been easier, so an OSINT investigation becomes a test of speed, accuracy, and efficiency, and within a breaking-news capacity that means creating news lines from investigations developing into a race for information without any kind of break for the investigator, adversely impacting work-life balance to the point where journalists were no longer working from home, but living at work.

The free time promised by the prophets of automation could not exist within capitalism because to do so would mean media organisations would have to make a conscious decision to prioritise the health and safety of their journalists over the race to get the next scoop. The quality of investigative journalism was also impacted by the lack of time available for learning the newest complex tools to use in cutting-edge journalism. Instead of allowing for this time to train, newsrooms instead simply hired external freelancers with a specific OSINT skill in a narrow area as a cost-cutting measure.

Lukács argued that there exists “a continuous trend towards greater rationalisation, the progressive elimination of the qualitative, human and individual attributes of the worker”. To put this into context, if one follows the path taken by labour in its development via cooperation and manufacturer to a machine-led industry:

“On the one hand, the process of labour is progressively broken down into abstract, rational, specialised operations so that the worker loses contact with the finished product and his work is reduced to the mechanical repetition of a specialised set of actions. On the other hand, the period of time necessary for work to be accomplished (which forms the basis of rational calculation) is converted, as mechanisation and rationalisation are intensified, from a merely empirical average figure to an objectively calculable work-stint that confronts

the worker as a fixed and established reality. With the modern ‘psychological’ analysis of the work-process (in Taylorism), this rational mechanisation extends right into the worker’s ‘soul’: even his psychological attributes are separated from his total personality and placed in opposition to it so as to facilitate their integration into specialised rational systems and their reduction to statistically viable concepts” (Lukács 1972, 5).

The impact of this fragmentation of the object of production was felt in the fragmentation of its subject, to a point where the human qualities and idiosyncrasies of the investigator that made him capable of doing the task which no machine alone could, were divorced from his self, cast away as “sources of error” in order to subsist as a successful cog within the larger media apparatus. Marx called it “the subordination of man to the machine” (Marx 1963 [1847], 58), where quantity determined success and quality no longer mattered. More importantly, time no longer had a qualitative nature but was a “quantifiable continuum filled with quantifiable ‘things’ (the reified, mechanically objectified ‘performance’ of the worker, wholly separated from his total human personality: in short, it becomes space” (Lukács 1972, 6-7).

A key factor identified as the cause was mismanagement. Editors or managers often did not understand the risk of trauma or were unwilling to support employees dealing with, and also encouraged or turned a blind eye to overwork, due to a gap in understanding of the rigour OSINT demanded, the time it took, and the risks it carried. In addition, a management style focussed on limiting the autonomy of creative knowledge workers had a significant impact on the quality of work. This was partly due to an institutional and systemic issue of the power imbalance between journalists and editors— where journalists were at the frontline of OSINT, and editors and executives who made decisions were slowly adapting their priorities to suit the demands of the media market. However, the power flowed in a top-down manner, so the input of the journalists and even editors were not solicited and often ignored by executives at the top, who had their own objectives that were far removed from the

well-being of these journalists or the public service ideals that they often shared (having come into direct contact with victims and survivors).

Economically, an organisation like BBC was not for profit, while Bellingcat followed a collaborative model and described itself as a “collective”. However, respondents in this study described top-down management hierarchies, limiting control and decision-making power to a handful. In the *Economic and Philosophic Manuscripts to Capital*, Marx developed the notion of economic alienation, where workers were not in control, did not own the means of production or the products of their labour, which was bequeathed to the corporation or media organisation journalists worked for either in a staff of freelance capacity in this case.

Alienation, in other words, refers to the objective conditions or process of exploitation of labour, where the products created by workers become private property and are sold as commodities for the profit of the capitalist, rather than the worker.

Respondents from Bellingcat described having the most autonomy at work compared to other outlets and described the most flexible working conditions, and overall were the least alienated, indicating a state of being that was opposite of what Marx noted on estranged labour:

“First, the fact that labor is external to the worker, i.e., it does not belong to his intrinsic nature; that in his work, therefore, he does not affirm himself but denies himself, does not feel content but unhappy, does not develop freely his physical and mental energy but mortifies his body and ruins his mind. The worker therefore only feels himself outside his work, and in his work feels outside himself. He feels at home when he is not working, and when he is working he does not feel at home. His labor is therefore not voluntary, but coerced; it is forced labor” (Marx and Engels 1988, 110).

However, it is worth noting that while Bellingcat had a number of investigators on a staff payroll with job security, it also accepted and published investigations by volunteers/freelance investigators/hobbyists who were not recompensed for their labour due to the limited funding for Bellingcat from grants going towards maintaining

its relatively small offices and team. In the realm of alternative media, volunteer/hobbyist investigators/journalists of this nature were also alienated, insofar as they had to supply their labour for free (a kind of self-exploitation).

The following section focuses on the relations of production.

9.4 Relations of Production

The relations of production within a capitalist economy are governed by work contracts, wages, and labour struggle. Capitalists buy labour as a commodity in exchange for wages, which are a central tenet of labour-power relations, and determines working conditions. More specifically, the labour contracts determine the conditions of this exchange, such as the hours of work, role, responsibilities. This section will look at two areas: first, the type of contracts investigators and investigative journalists had; second, what the wages and material benefits of the job as an OSINT investigator were like.

At the beginning of this study, an effort was made to ensure an almost equal staff-freelance breakdown in respondents in order to ensure the maximum diversity of views among 30 interviewees. The empirical results of change in work first established that staff and freelance journalists had different workdays. Investigative journalists who were staff at media organisations operated in two structured modes: prospecting (or hunting for the next investigation) and investigating. When the prospecting stage yielded results, it moved to the pitching stage for commissioning and from there to the production stage, where the full analysis took place. In contrast, freelancers had unstructured workdays, with several working on investigations in their free time, often as a second job, and on weekends. On average, these patterns matched our understanding of staff and freelance jobs, with the latter operating alongside precarity within a gig economy and the former having

more job security but often forced into the rigid hierarchical mechanisms of being a small cog in a rather large media machine.

Guy Standing (2014), when developing his definition of the “precariat”, wrote of a new class order that resulted in its creation. In this new order, the simple divides of the capitalist class, the bourgeoisie, and the proletariat were further segmented: at the top were the oligarchy or the 0.001% with their billions; below were the millionaires; then the salaried class was splintered into two groups comprised of the “salariat”, and the small business owners who were multi-skilled and often victims of burnout; followed by the new proletariat, who were unlinked by a common situation, and characterised by flexible labour contracts, casualised or intermittent labour, no occupational identity, no labour rights, yet a higher level of education than needed to perform the labour, no paid holidays or pensions or benefits of any kind, and psychologically being in a state of relative deprivation defined by “a combination of anxiety, anomie (despair of escape from their precarious status), alienation (having to do what they do not wish to do while being unable to do what they would like to do and are capable of doing), and anger” (Standing 2014, 11).

It is not surprising that these class inequalities were replicated within the media industry, where unions had no bargaining power or were almost non-existent. In the case of the freelance investigative journalists and OSINT specialists interviewed in this study, there was an overwhelming lack of job security and benefits, with a disproportionate amount of specialists being overqualified and underpaid for their knowledge labour and expertise when compared to the executives of organisations like BBC who were politically appointed (Guardian Staff 2021) and often had no background in journalism (Thorpe 2012).

In addition, the mental health impacts, i.e. anxiety, resentment and alienation, were apparent, more so in the throes of a global pandemic where the inequalities between the salariat and precariat had never been more pronounced. The salariat too described signs of anxiety and alienation arising from the media industry’s trend of large-scale layoffs, which had become an expected norm over the past decade, as

evidenced in the earlier chapters. In order to counteract the anxiety of precarity and in an attempt to secure job security, OSINT freelancers described facing/putting themselves under overwhelming stress as a result of gig-based employment, poor pay, lack of union support, constant competition within the industry, resulting in overwork which often goes unnoticed. In essence, the systemic issues of the business model of journalism trickled down the chain to adversely affect the most dispossessed – freelance journalists at the bottom of the food chain who had no job security and who had to compete with “media trends” such as “pivot to video” and find alternate models of stability through influencer-style journalism, which was not only time consuming, but also often catered to the whims of the masses in the function of entertainment, while moving away from the public service goals of holding power to account.

Despite the new hires and job creation resulting from OSINT, the number of staff jobs available was shockingly low compared to the number of highly skilled freelancers being precariously employed without benefits by major newsrooms in the UK/US. One of the key issues responsible for this was the lack of funding for good investigative journalism and the tyranny of the news cycle most journalists were beholden to, which in turn was caused by the pressures of operating a news business within capitalism that forced organisations to compete against each other as well as with other news headlines within the 24-hour news cycle. The news industry as a whole was stressful due to the nature of international news in an era of connectivity, where events were reported more frequently and required journalists to have unstable working hours. Yet it was also the tabloidisation of news that created this competition to produce the most number of sensational stories, for the biggest eyeballs, most clicks, etc.

Tabloidisation is directly linked to a deterioration of journalistic standards, whether real or perceived (Wahl-Jorgensen and Hanitzsch 2019), and while a hallmark of British outfits like the Daily Mail or the Sun, had become an accepted part of broadcast journalism due to the advent of social media and rise of ‘clickbait’ style of ‘content’. However, tabloidisation is a symptom of a larger social issue of authenticity

being replaced by representation, leading to the historical moment when the commodity totally colonised social life (Debord 1994).

In addition to the tyranny of the news cycle, caused by tabloidisation, is the recent Digital Age oppression of being forced to be constantly online in a bid to both: get ahead of the news cycle and out-“scoop” competitors, as well as cater to their select audiences to maintain their social media standing as a news-influencer.

In Debord’s critique of consumer culture and commodity fetishism, he stressed that the spectacle:

“is both the result and the goal of the dominant mode of production. It is not a mere decoration added to the real world. It is the very heart of this real society’s unreality. In all of its particular manifestations — news, propaganda, advertising, entertainment — the spectacle represents the dominant model of life. In both form and content, the spectacle serves as a total justification of the conditions and goals of the existing system. The spectacle also represents the constant presence of this justification since it monopolises the majority of the time spent outside the production process.” (Debord 1994, 3).

He also stressed that the spectacle itself was the social relations between people or, in this case, the new class hierarchies emerged from social media followings that were mediated by images. The constant churning of content to feed the news machine, whether professional or for the branding on their personal social media, monopolised all of the time, leading to complete commodification of the self manifested online.

What the OSINT tools with multiple modes of inquiry had made possible was not just alternate ways of verifying information, but also created more work that blurred the line between personal and public, work and home, such that work was now being incorporated as a part of one’s lifestyle and identity:

“We invest so much of our identity and worth and organisational value on how we interact online, so we’re constantly consuming it. And I don’t think that there’s enough mitigation because we keep pushing it, datafying everything.

And it's one of the only ways that we understand ourselves now,” added one respondent (L).

The lack of job security in the industry meant that OSINT practitioners, taking note of the new rise of “influencer” journalists in the gig economy, tried to create a standalone profile with an audience or following on Twitter and LinkedIn by OSINT-ing for free in a bid to demonstrate their skills. Due to the increasing popularity of OSINT, what this created was a competitive sport of OSINT-ing on social media in a bid to get gigs at mainstream investigative units.

If the labour was being done for free without compensation, overwhelmingly by white male journalists or hobbyists who had an abundance of time or resources to be able to afford and manage this, then it effectively cheapened labour while at the same time eclipsing journalists of colour struggling with multiple jobs on the go and a lack of time or social media presence, who might have otherwise been equally qualified for the same roles. In fact, journalists who said they don't feel this pressure to invest in a constant online presence said so because they didn't work in news and were not constantly trying to find the next scoop, or they were gainfully employed by a private entity such that their work did not directly link to the competitive sport of OSINT-ing on social media.

The following section focuses on the production process itself.

9.5 Production Process

This section focuses on the actual production process through several factors: first, the site of work, i.e. remote/non-remote; second, the common working hours and how they impact work-life balance; and third, the type of activity being performed.

Due to the nature of OSINT, most if not all of the investigation was conducted online and then bolstered with on-ground evidence. This allowed for the possibility of remote work, and most respondents, especially in the wake of the global pandemic, reported working from home, while also describing the unhealthy dynamics of ‘living at work’ instead of ‘working from home’ as a result of blurred boundaries caused by undefined work hours, poor management, and in a few cases, poor self-regulation.

Most respondents reported working more than 40 hours a week with negative work-life impact due to OSINT-based investigations making the ability to work too accessible.

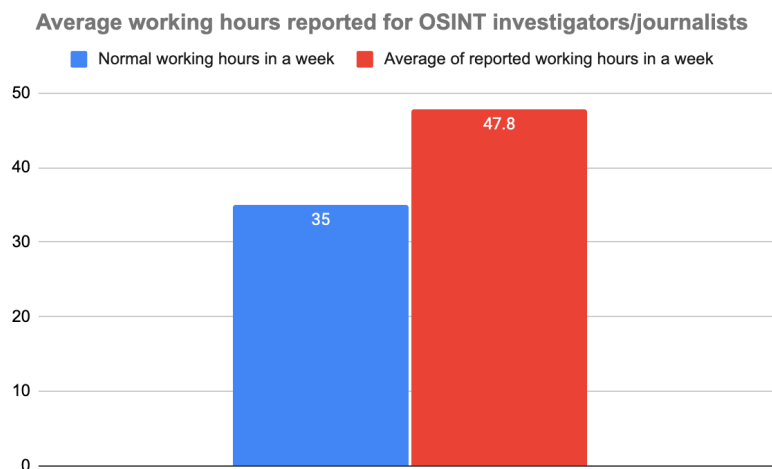


FIG 9.5.1 AVERAGE WORKING HOURS IN A WEEK FOR OSINT SPECIALISTS

Barring one respondent, all reported being overworked, while 80% said they experienced an inordinate amount of negative stress.

IS THERE OVERWORK IN JOURNALISM?

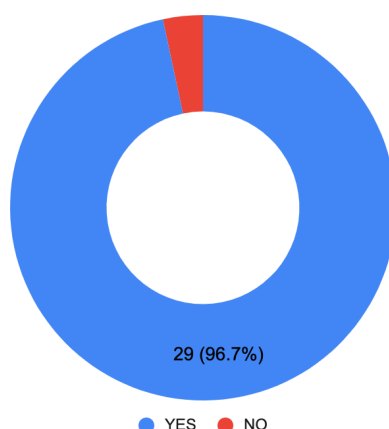


FIG 9.5.2 BREAKDOWN OF RESPONDENTS REPORTING OVERWORK

Of them, more than 60% of respondents reported a negative impact on their work-life balance as a result of OSINT investigations/reporting.

CHANGES IN WORK-LIFE BALANCE AS A RESULT OF OSINT

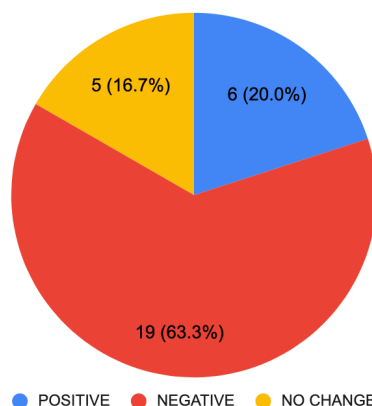


FIG 9.5.3 IMPACT OF OSINT ON WORK-LIFE BALANCE OF JOURNALISTS & INVESTIGATORS

However, it must be noted that this is a qualitative study of 30 OSINT investigative journalists and specialists contributing to journalism and is not a large enough dataset for a quantitative evaluation. The findings therefore must be contextualised with the qualitative analysis.

In terms of the activity being performed, which was primarily knowledge labour, the output was determined by the type of organisation the worker was tied to. For digital outfits like Bellingcat, the investigation and publication were both conducted online. For broadcast media like the BBC, the conclusion of the digital investigation led to the commencement of on-site filming, etc. (if it was not being done simultaneously), to produce the finished product, which could be a TV package or a documentary. In that respect, and by the very nature of OSINT investigations, they combined a mix of skills that defined the work rhythm, which for example if archiving, could be monotonous or, if actively investigating, required multiple lines of inquiry.

The following section focuses on the results of production or the investigations being produced with OSINT.

9.6 Results of Production

This section focuses specifically on the actual product of the labour or the kind of investigations being produced as a result of OSINT-inspired augmentation of investigative workflows.

OSINT allowed for a dramatic increase in the number of investigations into conflict supported by hard evidence and a remarkable number of accountability programs stemming from it. Respondents described investigating and gathering evidence of war crimes from thousands of miles away using satellite imagery, User-Generated Content (UGC) from social media website mining, leaked and open data sets, and the ability to track international flights and shipping vessels.

Investigations reported ranged from the downing of Malaysian Airlines, documenting the creation and growth of the Uyghur camps in China, violations of the Libya UN arms embargo and war crimes, disinformation campaigns targeting first responders

and medics in warzones, the murder of black civilians by white cops in the US, chemical weapons attacks in Syria, mass shootings on students in Nicaragua, the massacre of protesters in Sudan – the sheer range and scale of investigations was staggering, and comprised a workflow that would be both incomprehensible and impossible a decade ago. OSINT allowed for the remote monitoring of conflicts that reporters could not reach, allowed for the quantification of crises through mapping of refugee movements and settlements through satellite imagery, gave a voice to the voiceless and allowed for non-traditional forms of testimony gathering. Its impact – from the evidence being used for international prosecutions, the embarrassment of rogue superpowers and dictatorships, sanctions, starting justice and accountability processes that could cause systemic change through legislation – was immeasurable.

Then there was the issue of the OSINT tools helping to cause a shift in power within the knowledge production process itself, creating a type of knowledge controversy: through the new revelation brought about by these OSINT tools, it had allowed for the creation of a secondary narrative to challenge the dominant one pushed forth by the powers that be, and it had disrupted the production flow by both, enabling a new type of worker/investigator to challenge power using automated tools to expose or document what was once hidden, and by enabling a new class of technologists to create these automated tools. This has not gone unnoticed by the mainstream publications – in 2021, the headline article of *The Economist* stated, “Open-source intelligence challenges state monopolies on information– Academics, activists and amateurs are making imaginative use of powerful tools”, going on to add that “in undermining state monopolies on intelligence, OSINT is increasingly capable of challenging the narratives states promulgate” (*The Economist* 2021).

It must also be noted that the investigations described by interviewees varied in their length and complexity, but there was no direct correlation between a high volume of investigations and higher experiential knowledge. This was because the media industry, overrun by the news cycle, rewarded quantity over quality, so shorter investigations with quicker turnaround times were in high demand, whereas

longer-term projects with higher complexity were uncommon, also because of the higher costs of operating enterprise investigations. Marx put it thus:

"Through the subordination of man to the machine the situation arises in which men are effaced by their labour; in which the pendulum of the clock has become as accurate a measure of the relative activity of two workers as it is of the speed of two locomotives. Therefore, we should not say that one man's hour is worth another man's hour, but rather that one man during an hour is worth just as much as another man during an hour. Time is everything, man is nothing; he is at the most the incarnation of time. Quality no longer matters. Quantity alone decides everything: hour for hour, day for day" (Marx 1963 [1847], 58–59).

The ultimate casualty of capitalism, aside from the dehumanisation of the worker, was quality – an ironic conclusion because of the promises made by the capitalistic free market of providing quality through variety, propelled by greater competition and social Darwinistic principles, creating a dehumanising regime and alienation of workers from the commodities they create.

Within this very specific context, where the investigators and journalists were trying to uphold the values of human rights and create structural change by exposing systemic inequalities, we find them subject to a dehumanisation which in turn alienated them from the very goal of equity they were trying to achieve, and was adversely affecting their life and mental health, as previously detailed. But it is safe to conclude that here too, "the ceaselessly revolutionary techniques of modern production turn a rigid and immobile face towards the individual producer. Whereas the objectively relatively stable, traditional craft production preserves in the minds of its individual practitioners the appearance of something flexible, something constantly renewing itself, something produced by the producers" (Lukács 1972, 13).

Beyond the labour discourse, it must be noted that in terms of automating investigative journalism or radically changing how it was conducted, OSINT tools had no impact simply because it (according to my interviewees) was impossible to automate the task of an OSINT investigator: "There is no tool that will allow you to

uncover abuses of power” (Interview C). Radical is defined here in the Marxist sense, to address issues at the root, and in that sense, investigative journalism at its root can be described as a radical act of emancipatory politics, aided by technology, tradecraft, and storytelling, in a bid to “not just to shake people out of their complacent inertia, but to change the very coordinates of social reality” (Žižek 2017, n.p.).

The following section focuses on the impact of the state on the production process.

9.7 Relation to The State

This final section looks at the impact of the state on OSINT-based investigative journalism, here the impact of the state on press freedom rather than labour regulations.

It is not just managers or corporations defining the control, but the nation-states these investigators or investigative journalists operated in or investigated. Respondents detailed state crackdowns and aggressions on investigative journalists, gaslighting by state narratives when presented with hard evidence, coordinated state-sponsored online attacks using bots, online trolling and disinformation campaigns to discredit and attack the credibility of journalists – all of which took a toll on their mental health. Among the respondents interviewed, staff journalists faced the brunt of it the most due to their association with a mainstream media outlet, whether it be the BBC or Bellingcat, due to their visibility, which was caused by the impact of their investigations.

Despite freedom of the press within their countries of US/UK, these attacks were also a symptom of the general disdain for the press that sometimes trickled down from the highest offices in the land, with Trump tweeting content that could only be

described as an incitement of violence against journalists (*The Daily Beast* 2017), while his British counterpart Boris Johnson had a history of conspiracy to commit harm upon journalists (Murphy 2019) while publicly claiming journalists indulged in unwarranted abuse (Heffer 2021). These comments normalised a culture of anti-press hate, laying the foundation for these kinds of attacks faced by investigative journalists from foreign powers. They also created the groundwork for weak labour laws, which, when compounded with toothless media unions, leave investigative journalists with almost no allies or bargaining power when doing their demanding jobs.

These changes fall within the remit of what David Harvey described as “universal alienation”, and noted its three key aspects as:

- “1. Alienation in the economy not only entails capital’s exploitation of labour, but also the realms of realisation, distribution, and consumption, which means it extends to phenomena such as unemployment, consumerism, land seizure, deindustrialisation, debt peonage, financial scams, unaffordable housing, and high food prices, etc.
2. Alienation entails processes beyond the economy, such as frustration with politics, unaffordable public services, nationalist ideology, racism, police violence, militarism, warfare, alcoholism, suicide, depression, bureaucracy, pollution, gentrification, or climate change.
3. Alienation entails the geographic and social expansion of capital accumulation so that capital relations dominate pretty much everywhere” (Fuchs 2018, 456).

This universalisation of alienation was caused by the asymmetry of power relations and conditions that extended beyond the unit of the company or media organisation, and into the political and cultural system, “so that aspects of their subjectivity are damaged (concerning human activities, well-being, consciousness, mind/ psyche, body, worldviews, social relations)”, as Harvey saw alienation as “neither purely objective nor purely subjective, but a negative relationship between social structures and humans in heteronomous societies” (Fuchs 2018, 456). Harvey explicitly added

that “the most obvious manifestation of this is the rise of right-wing nationalist parties and authoritarian populism as represented by Erdogan, Modi, Sisi, Orban, Trump and Putin” (Harvey 2018, 424) – it is no secret that most of these dictators have been associated with heightened attacks on the press, curbing of freedom of speech and press freedom, internet blackouts, as well as an increase in murders or imprisonment of journalists, creating a hostile regime for the fourth estate.

The final section provides a visual summary of the theoretical findings.

9.8 Conclusion

In conclusion, this chapter provided the theoretical interpretation of the research findings of this study, modelled after the six areas that affected working conditions within a capitalist economy.

FIG 9.8.1: OVERVIEW OF THEORETICAL INTERPRETATION OF FINDINGS

Productive forces—Means of production	<i>Machines and resources</i>	OSINT tools, human brain /specialised knowledge resources for collecting online evidence/data and distilling it into actionable intelligence.
Productive forces—Labour	<i>Workforce characteristics</i>	Predominantly young, white, male, privileged/in first world countries with good access to technology and economic means. Systemic discrimination based on race, gender, nationality (immigration) marginalising investigators, especially freelancers and women of colour.

	<i>Mental and physical health</i>	High rate of burnout, depression, trauma, PTSD due to a variety of factors, chiefly due to mismanagement and lack of trauma-focused workflows.
	<i>Work experiences</i>	Overwork and constant stress, with few reported cases of empowerment.
Relations of production	<i>Labour contracts</i>	Overwhelmingly freelance fixed-term contracts with no job security; some staff contracts from new job roles at mainstream outlets. Media unions were mostly ineffective, with no bargaining power to address the needs of freelancers and no specific focus on OSINT-based investigative contracts.
Production process	<i>Labour spaces</i>	Primarily remote with some fieldwork.
	<i>Labour times</i>	47.8 hours of work on average (in the sample of conducted interviews), unpaid overtime with blurred boundaries between work and home; negative impact on work-life balance exacerbated by pandemic conditions.
Results of production	<i>Labour product</i>	OSINT-based investigations into previously inaccessible conflicts were now possible, leading to a remarkable number and range of accountability programs.
The state	<i>Press law</i>	Backlash: Curbing press freedom, crackdowns, gaslighting by state narratives when presented with hard evidence, coordinated state-sponsored online attacks using bots, online trolling and disinformation campaigns.

The next chapter provides reflections and recommendations based on the results of this study, as well as final conclusions.

CHAPTER 10: CONCLUSION

10.1 Introduction

This chapter concludes the study. It is structured into four subsections: the first, a summary of the results and theoretical model used visualised in one table; second, a reflection on the knowledge contribution to the field detailing the state of the art in the working conditions and analysis of OSINT technologies, the potential of these findings to change the field of study and recommendations based on that; third, a discussion of limitations of this study and the emerging issues which have potential for future research based on this study; and finally, a brief conclusion.

Overall, this study looked at the impact of automated tools in investigative journalism. The definitions for these core concepts used in this study have been reiterated below.

Automated tools are defined as digital technologies that replace any previous manual, repetitive human task – they range from utility tools like Google Docs that allow for collaborative working to specialised tools for digital open-source investigations, referred to in this study as OSINT tools.

OSINT tools are a specialised form of automation that helps augment the process of discovery, analysis and visualisation in investigative journalism conducted online, which would otherwise be done manually and take up a lot of time. This is not to mean that these OSINT tools have overall replaced the manual task– the scope for human intervention and judgement has actually been broadened by the introduction of these tools within the investigative workflow as they require specialised knowledge of implementation through OSINT training, and also requires human checking of the

results due to the scope of machine error. When multiple OSINT tools are used to form the basis of or the entirety of an investigation in journalism, the result can be categorised as open-source investigative journalism.

Investigative journalism refers to any kind of journalism that seeks to hold power to account, expose hidden wrongdoing or challenges systemic injustices, foregrounds human rights and revolutionary humanist politics, and seeks to empower victims while clearly delineating who the oppressor is.

This study placed an equal emphasis on the physical work conditions of investigative journalists working with OSINT, and their mental health, which was often the first casualty in this line of work. It also sought to highlight the experiences of marginalised groups such as people of colour, women and immigrants, who are often left in the background of journalism or newsroom work and overshadowed by their white male peers. The study found that OSINT-based journalism had empowered members of this community to reclaim their own narratives. At the same time, due to the institutional nature of the oppression suffered on the basis of gender, race, class, nationality, these oppressions were also replicated within the OSINT community at large.

The main research question in this study has been interrogated through three sub-questions.

RESEARCH QUESTION: What are the consequences of automation on investigative journalism?

RQ1.	How are automated tools changing the work of investigative journalists?
RQ2.	What are the risks and advantages of conducting investigations using automated tools?

RQ3.	What are the risks for the mental health of investigative journalists in the context of digital work?
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The following section provides a summary of the results of this study alongside the theoretical model used to interpret it.

10.2 Summary of Results & Theoretical Model

This section summarises the findings of this study and the theoretical model used to interpret the results, in the table below.

FIG 10.2.1 TABLE OF RESULTS AND THEORY ANALYSIS

N o.	Research Question	Findings
1.	How are automated tools changing the work of investigative journalists?	<p><u>Change in Work: Findings</u></p> <p>OSINT tools have augmented the work of investigative journalists. In their typical workday, investigative journalists were either prospecting or actively investigating using these tools, unless there was urgent breaking news. The OSINT tools used depended on the type of investigations, and most investigators found out about new tools from Twitter, colleagues, OSINT web blogs/podcasts or active research. A majority of investigators felt there wasn't enough time in their workday to experiment with new tools, which was crucial to investigations, and were forced to do this in their free time. Most if not all of the investigations conducted with OSINT had a strong human rights focus by exposing abuses. Multiple respondents credited OSINT with getting them their first job in journalism or said they were digital natives even before moving into OSINT, so registered no marked change to their workdays. Freelancers had</p>

	<p>more unstructured workdays and reported working more in their free time or on weekends.</p> <p>Positive changes: OSINT allowed investigators to get more done in a day. Verification of online content was easier, and OSINT reduced overreliance on human sources, and made discovery of wrongdoing documented online easier. It also allowed for remote work and online collaborations.</p> <p>Negative changes: Too many OSINT tools often became overwhelming for investigators causing too many lines of inquiry, which then had an adverse impact on work-life balance such that respondents described “no longer working from home, but living at work”.</p> <p><u>Change in Work: Analysis</u></p> <p>OSINT tools have opened up new lines of inquiry, but instead of creating more free time to pursue more complex problems that require human creativity, they have actually created more work through these many complex lines of inquiry. The introduction of OSINT had had no impact on the disappearance of jobs in journalism because the question of jobs in journalism was not a distributional one, but a political one. Within the capitalist political economy, which placed profit as the final and only metric of progress, editors now expected investigative journalists to fit the multiplying lines of inquiry within the same workday. Investigative journalists reported being “extremely online” to monitor the latest and break stories beating the best. The impact of this fragmentation of the object of production was felt in the fragmentation of its subject, to a point where the human qualities and idiosyncrasies of the investigator that made him capable of doing the task which no machine alone can, were divorced from his self, cast away as “sources of error” (Lukács 1972, 6) to subsist as a successful cog within the larger media apparatus. The ultimate casualty of capitalism, aside from the dehumanisation of the worker, is quality.</p>
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Impact of Change in Work: Findings

OSINT had compounded negative stress (distress) already existing in journalism and led to overwork among investigative journalists in some cases. 80% of respondents in this study felt distress which was caused due to OSINT-related reasons (graphic content, lack of OSINT literacy in management, lack of support, the uncertainty of OSINT projects, deadline stress, lack of defined hours, etc.), journalism-related reasons (state backlash, online attacks, discrimination) and gig economy-related ones (precarity, overwork). Those investigators who did not feel stress had financial security or worked for good management.

Overwork was embedded within the culture of investigative journalism, stemming from OSINT causes (competition, personal attachment, bad management, lack of resources, OSINT tools creating more work, the rabbit hole, social media), journalism ones (lack of funding, time) and the structural issues of the gig economy (poor pay, no security). The impact of overwork on work-life balance was negative, according to the majority of respondents.

However, the incidence of automation anxiety was almost non-existent among respondents due to human judgment being indispensable to OSINT investigations, with the biggest threat being seen as broken business models. Awareness of automation implementation was moderate, with most crediting automation and OSINT with having created more jobs, rather than leading to cuts. Respondents were positive about augmenting workflows to remove repetitive or time-consuming tasks. In terms of automating investigative journalism, OSINT tools had had no impact simply because it was simply impossible to automate the complete task of an OSINT investigator.

Impact of Change in Work: Analysis

A management style focussed on limiting the autonomy of creative knowledge workers had a significant impact on the quality of work due to an institutional and systemic issue of power imbalance between journalists and

		<p>editors/executives – where journalists are at the frontline of OSINT in contrast to those with authority, who had no understanding of knowledge worker performance and instead adapted their priorities to suit the demands of the media market and fulfil their own objectives that were far removed from the well-being of these journalists or the public service ideals that journalists often shared, having come into direct contact with victims and survivors. This resulted in alienation, an economic concept by Marx used to describe a situation where workers were not in control, did not own the means of production or the products of their labour which was bequeathed to the media organisation journalists worked for, for the profit of the capitalist, rather than the worker. The alienation described by respondents in this study were broader than this, what David Harvey described as “universal alienation” (Fuchs 2018, 456), caused by the asymmetry of power relations and conditions that extended beyond the unit of the company or media organisation and extended into the political and cultural system, such as systemic class, gender and race-based discrimination within the journalism industry as a whole. Alongside structural issues, state backlash against OSINT investigations, coordinated state-sponsored online attacks and trolling all fell within the remit of universal alienation. The suggested antithesis to this is “revolutionary humanism” (Harvey 2014, 212), discussed in detail in the next subsection of this chapter.</p>
2.	<p>What are the risks and advantages of conducting investigations using automated tools?</p>	<p>OSINT tools had been implemented for discovery, analysis and visualisation, with human judgement critical to all stages. There was no universal OSINT toolkit that had all solutions. There was no direct correlation between a high volume of investigations and higher experiential knowledge due to the inverse proportionality observed between a number of investigations and complexity.</p> <p>Risks: OSINT investigators reported a range of issues with OSINT tools such as – false positives, a false sense of exhaustiveness, affordability of proprietary tools, information asymmetry, etc. Human judgment was still indispensable to OSINT, and these tools were no silver bullet to automate the process fully. Data</p>

		<p>monopoly by Big Tech was another critical issue, with social media giants operating like a “walled data garden”. Expert knowledge of OSINT was always required to assess the efficacy of tools. The OSINT tools could also fall victim to state censorship. Finally, there was the ethical dilemma on the creation and funders of these tools, their data collection practices and motives.</p> <p>Advantages: OSINT investigators reported using tools to conduct media forensics, to locate people, for online collaboration, and for remote monitoring of conflict zones, etc. The tools in OSINT were overall quite accessible, and made data scraping from social media easier. They also boosted human creativity, automated digital archiving, improved digital security, and allowed for the development of specialised tools to manoeuvre state censorship.</p> <p><u>Analysis</u></p> <p>OSINT tools fit within the commodity structure: themselves a product of the labour of investigators and developers, acquiring a “phantom objectivity” (Lukács 1972, 83), an autonomy that was almost removed from the investigator themselves. Objectively the investigator could use this specialised knowledge to their own advantage but was unable to modify the process by their own activity. Subjectively, in an economy as developed and saturated as the market for digital tools broadly speaking is, the investigator’s activity is estranged from himself and becomes a commodity that participates within the economy as any consumer product does.</p>
3.	What are the risks for mental health of investigative journalists in	<p>Almost all respondents (86.7%) reported adverse mental health impacts while working on OSINT investigations, which included – nightmares, insomnia, hallucinations (from graphic imagery), depression, social withdrawal, suicidal ideation, vicarious trauma, PTSD, fatigue, burnout, anxiety. Freelancers, women, people of colour, immigrants were most at risk from adverse mental health impact due to being the most marginalised, and having the least power in newsroom or investigative setups.</p> <p>The causes for these negative mental health impacts ranged from professional</p>

<p>the context of digital work?</p>	<p>issues to issues of identity such as racism, uninformed attitudes to trauma, personal background, mismanagement/institutional betrayal, the state of being a freelancer, power imbalances, social media, gamification and replication of colonial dynamics.</p> <p>The cocktail of work pressure, overwork, and long hours spent online, which was the norm for OSINT investigators, placed them at risk of burnout, poor health, PTSD, and alienation. However, most respondents working in this area were extraordinarily resilient, and so with the right support, can mitigate these risks.</p> <p><u>Analysis</u></p> <p>Briefly, the insistence within capitalism of treating mental health as something incumbent on individuals rather than as part of a more significant structural issue of universal alienation was part of the reason for the negative mental health impact on OSINT investigative journalists. Characterised as a lack of control, alienation was produced when journalists suppressed human emotions that arose from contact with people or images of conflict zones in a desperate bid for “objectivity”, a term often misused interchangeably with neutrality. When documenting or investigating a state of war, to profess to be neutral is to be unable to perform the function of an investigative journalist– clearly delineate the crimes committed, who the victims are, and who the abusers are who must be brought to account.</p> <p>The risks of trauma could be mitigated by building trauma-conscious workflows, but the development of OSINT tools have not been done with trauma mitigation, or indeed human impact in mind, due to the nature of the capitalist economy placing profit over people. Studies have shown that a sense of greater control and more institutional support mitigated PTSD and depression. With videos of graphic imagery, it was not the content but the feeling of impotence, combined with estrangement from accountability and universal alienation, that caused mental health issues, especially PTSD. This</p>
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		<p>estrangement was obviously more significant for the precariat/freelancers, due to marginalisation and lack of power. The same holds for journalists of colour from the regions of conflict who were at greater risk due to the alienation expected of them, but were paradoxically more resilient.</p> <p>This combination of suppressing the natural emotions during the course of work, and the lack of control as a result of the current media economy coalesced to erase humanness. In addition, the advent of a “gamified” model getting popular preference within OSINT communities, over a trauma-informed inclusive one, not only severed the investigation from the goals of true accountability and empowerment but in terms of labour also culminated in the distribution of work where freelancers of colour shouldered the heavy burden of filtering through “soul-scarring” graphic imagery that made them more susceptible to being traumatised, while paradoxically being seen by their white counterparts as being “weak” for succumbing to this trauma, in the absence of trauma awareness.</p>
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10.3 Reflections on Knowledge Contribution to the Field & Recommendations

This section reflects on the knowledge contribution to the field and makes recommendations based on that. It includes some final analysis on state of the art in the working conditions and analysis of OSINT technologies, and the potential of this research to change the field of study.

This section is divided into five sections, focussing on the reflections and recommendations that arise from: the crisis in journalism; OSINT tools; the change in work; the impact of this change; and the mental health impact of this change.

10.3.1 Reflections & Recommendations on the Crisis in Journalism

Based on the literature review, the central crisis of journalism could be reduced to capitalist modes of production, but there exists no way of making the entire production process ethical and equitable within capitalism due to the inherent inconsistencies and violence rooted in the structure of capitalism by design. Practically speaking then, any reform, short of overhauling the entire apparatus of capitalism, would have to be in the form of tangible alterations and actionable changes to how journalism works.

One way of addressing the funding crisis would be via taxation of large multinational corporations, especially Big Tech, by the state; and then reinvesting that into public service journalism in the public interest, that informs and educates the public and conducts investigations that are in the public interest. However, any investigative journalist worth their salt would approach any state media or state funds with a healthy mistrust.

A model in practice quite close to this already exists: the model of the public service broadcaster, like the BBC, where each subscriber/consumer pays a license fee, and the organisation is publicly funded as a result. But this does not make such an organisation immune to state pressure, as recent headlines on the appointment of BBC's new executive editor have shown us. Sir Robbie Gibb, who served as former Conservative Prime Minister Theresa May's director of communications, tried to block the appointment of prominent female journalist Jess Brammer as an executive editor of the BBC, for criticising Conservative policies on Brexit– this was done despite the BBC's rules on alleged impartiality (Brown 2021). Conservative MP and Leader of the Commons, Jacob Rees-Mogg, also accused the BBC of overlooking right-wing candidates, despite the appointment of former Tory councillor Tim Davie as the new Director-General of the BBC (Brown 2021). And while the BBC or any

public broadcaster exists to provide a shared common ground and healthy talking points to the public, it is not immune either from misinformation campaigns from the right or left to disband it for not sharing their exact ideology. One alternative to the BBC model devolving due to factionalism is the New York Times paywall model – but that requires strong editorial communication of its pursuit of liberal Western values, which the BBC is hesitant to do for fear of alienating those licence fee payers who align to the right of the centre. In addition, the paywall model could potentially fuel echo chambers, which in the minefield of social media, polarises the public within a democracy to a point where they cannot discern between fact or fiction, or worse, cannot even recognise a pandemic raging across the world as a common threat.

Public service broadcasters like the BBC are also prone to bureaucratic pitfalls of management that get in the way of journalists' autonomy, as detailed in this study. They can also replicate the harmful structures of reality, such as the gender and racial wage gap, as detailed here and in public discussions. Internally within the organisation, the journalism will be only as good as its journalists. Therefore, despite its public service ideals, if an organisation consistently hires homogeneously, for example, only Oxbridge white males, then these journalists, no matter how qualified, will only inevitably replicate their privileged realities and disenfranchise the masses.

> Recommendation one: One suggestion to equalise racial and gender wage gaps would be to make the pay structure more equitable: the most recent pay disclosures show that the BBC's top 10 highest paid presenters were all white and earned between 3-5 million. A pay cap on how much presenters earn and then re-routing that surplus money to fixers, overworked freelancers, underpaid assistant producers working on researcher's salaries, and reinvesting in young talent is a feasible suggestion.

> Recommendation two: Another is to preserve institutions that are supposed to be "objective" by automatically disqualifying anyone who has publicly served on a political ballot of any political party from serving in an executive role at the BBC, especially in posts such as the Director-General. In other words, a uniform

application of the “objectivity” approach meted out to journalists and presenters at the BBC, so that it extends to the executives who are held to the same standard, and also protects the institution against political infiltration, attacks, and from existing as the propaganda arm of the state.

The issue of investigative journalism within programming is also contentious, trapped within a Catch-22 situation. It is no secret that investigative journalism is expensive and time-intensive (expensive again), as detailed several times earlier. So for the BBC, whose charter also instructs it to entertain the public alongside informing it, “Strictly Come Dancing” may have no news value, but it is wildly popular and attracts licence fee-paying audiences. This fee then allows programmes like Newsnight to produce hard-hitting public service investigations, such as child abuse in care homes scandal (Bowen et al. n.d.). In other words, while “Strictly” contributes to the trivialisation and degradation of the values of the BBC (only to entertain but not inform), without it, its award-winning investigative journalism would not exist.

> Recommendation three: A balanced approach would be to build a hybrid model that combines tabloid entertainment, which brings in both audiences and advertising revenue, with serious investigative journalism made with reinvested revenue. The problem only arises when entertainment displaces serious programmes, or profits from entertainment lead to fat bonuses for executives or salary raises for executives.

In 2021, Tim Davie, the director-general of the BBC, received a pay rise of £75,000 after a year on the job, while salaries for all BBC staff remain frozen (Simpson 2021). At the same time, the BBC underwent massive cuts to serious programming, leading to a brain drain from the public service broadcaster (Kanter 2021).

In contrast, Bellingcat appears to provide the most unalienated model where workers have autonomy and flexibility compared to their peers in the industry. A portion of its money comes from running workshops training people in OSINT, and the rest comes from independent funding that is not beholden to large multinational corporations. It does not earn any money from advertising or subscription fees (Afanasieva 2021),

which perhaps only works when an organisation is in its early years, as Bellingcat is. Bellingcat's income in 2018-2019 amounted to just 920,250 euros, with more than half of it coming from workshops. Alternative media models, while enabling independence and critical content, are often based on a lack of resources and exploitative, precarious labour. Bellingcat also relies heavily on the goodwill of a network of volunteer contributors who use its platform to launch their careers but don't necessarily get paid in currency rather than social capital, which could also be seen as a form of alienation nonetheless.

> Recommendation four: While this voluntary work for Bellingcat sustains precarious labour, one solution would be to combine it with other organisational models such as of mainstream publications like BBC and New York Times, to sustain their investigations with part of the larger publications' revenue. This brings up issues around editorial policy, as the BBC style is very different from the Bellingcat style, but a middle ground could be reached to enable collaborations.

The following few sections detail the reflections/recommendations by chapter in this study.

10.3.2 Reflections & Recommendations on Open-Source Intelligence Tools (OSINT Tools)

While the main area here has been on OSINT tools due to automation focus, the results showed that the implementation of these tools was secondary to methodology, which was a product of human judgement and creativity. While the tools have automated some routine tasks, the results still need to be checked by a human, and human intervention is indispensable if not the bedrock of OSINT investigations. The tools have improved the ability to perform certain checks, but it is by no means exhaustive or a silver bullet. In some cases, the tools have inspired creativity, and have augmented social engineering.

> **Recommendation one:** It is critical to not treat OSINT tools as a silver bullet, because they aren't, and to invest instead in OSINT journalism talent which bring human judgment and OSINT experience to investigations to be able to spot errors in results and tools.

There is a growing marketplace of tools, but there is a lack of critical understanding of the production process or who controls the means of production, and a lack of opposition to the data monopoly by Big Tech, the absence of which severely limits the control investigators have over these tools. In essence, it is this lack of control at various levels of production that causes alienation, but more tangibly, it restricts the ability to hold power to account, which in a functioning democracy, is a cause of alarm (and isn't the first case of social media giants compromising democratic processes). As a result of a lack of understanding of how OSINT functions, there is also a misconception that OSINT has made work easier, when in fact, it has created more complex lines of enquiry, which require more time to do. In the absence of this understanding, investigators are prone to overwork and burnout.

> **Recommendation two:** An awareness of who designed the tools and where the data is collected from is important for the ethical dimension of any OSINT investigation.

> **Recommendation three:** OSINT is not a magic solution, it requires hours of intensive work due to the multiplied lines of enquiry. Managers must allow OSINT investigators the time to work at their own speed rather than expect quick fixes. At the same time, the intensity and non-stop nature of OSINT must be acknowledged by managers who must regulate burnout, if not avoid directly contributing to it.

> **Recommendation four:** Due to the inverse proportionality observed between size/complexity and number of OSINT investigations, editors must be made aware that while simple OSINT implementations in news, in areas like misinformation, are easy to perform and push out as "content" to the public, more complex ones by

investigations units despite being time and cost-sensitive, have much greater impact potential and are therefore worth the investment.

The following sections detail the reflections/recommendations on change in work due to OSINT tools.

10.3.3 Reflections & Recommendations on Change in Work as a Result of Implementation of OSINT Tools

The change in work observed in this study was not drastic because it was primarily digital natives who were drawn to OSINT and felt most comfortable with their new workday. The typical workday in terms of story cycles was not too different except that it was all happening digitally and online, even for freelancers, who had to juggle the additional pressures of precarity along with working.

OSINT tools have been implemented in investigative journalism with a strong human rights focus and a resurgence of the public service ideals of journalism – holding power to account, afflicting the comfortable and comforting the afflicted, exposing what was hidden to right the wrongs, creating tangible impact in the lives of those oppressed.

OSINT communities work on the basis of trust when it comes to the implementation of tools. There is a sense of community, collaboration overall in contrast to the hyper-competitive style of breaking news, journalism – most open-source channels share their tips and tools, and Twitter has a vibrant community that is willing to train and help those new to OSINT. Most OSINT investigators working in or adjacent to journalism, however, wished they had more time to experiment with tools.

> Recommendation one: There is a need for the work week for OSINT investigators to be structured with time for learning and workshops, which are core to OSINT and allow investigators to keep up with rapid changes.

> Recommendation two: The loss of work-life balance was another issue flagged by OSINT investigators. It is critical for managers to understand that OSINT is a 24/7 job rather than a 9 to 5 when allocating tasks, or overburdening them or assigning breaks. As a result, there is a strong need to both compensate OSINT investigators for overtime and increase vacation time to make up for the rules of the new age.

The next sections detail the reflections/recommendations on the impact of this change in work due to OSINT tools.

10.3.4 Reflections & Recommendations on Increase in Stress & Overwork

Stress is a permanent feature of investigative journalism, but it is exacerbated into distress from eustress (positive stress) with the influx of graphic content, lack of support from management, undefined work hours and underpayment, and bad attitudes towards trauma. Mismanagement and lack of institutional support was a recurring theme for both stress and overwork, compounding the existing stress and creating new forms of it through lack of OSINT literacy, leading to unreasonable demands that placed journalists at serious risk of burnout or PTSD.

> Recommendation one: Trauma training for management needs to progress beyond a tick-box exercise to an active mitigation that exists in commissioning, assignments, and in OSINT workflows. The burden of mental health of the worker must be included in worker safety and risk assessments.

The structural issues related to the way OSINT investigations exist and the associated uncertainty were a significant cause of anxiety and stress, which is often overlooked or normalised within the profession.

> **Recommendation two:** More discussion about OSINT failures is needed to overcome this anxiety, and should be highlighted as much as the OSINT successes to understand the success rate.

> **Recommendation three:** In terms of external factors contributing to stress, attacks from trolls and bot networks, whether conducted by the state or the far-right, is a serious issue that needs to be incorporated into the risk assessment of all investigative units, and there needs to be a shift in the culture of how it is addressed, from seeing it as ‘something that’s happening online’ to understanding that online attacks on one’s credibility or character assassinations can have a debilitating impact on mental health.

> **Recommendation four:** Microaggressions, and workplace racism, sexism, nationalism need to be addressed beyond anti-bias training and “diversity” schemes. There needs to be a top-down, no-tolerance approach for racism or sexism in the workplace, which must be implemented independently of union pressure or fear of public shaming.

Most workplaces have good policies against sexual harassment, sexist hiring practices, and bullying, but sexist micro-aggressions within newsroom practices themselves are often difficult to report and are rarely dealt with as they are seen as less severe than the other abuses, when in fact they can equate to “death by a thousand cuts” (Vassell 2020), making women especially women of colour feel excluded, unwelcome, alienated, depressed, and make them more likely to quit journalism.

> **Recommendation five:** At the same time, identity politics for the sake of it must be avoided. Rehabilitation processes for offenders in the above categories are needed, beyond firing, to ensure they understand the consequences of their actions and are not forced into being anti-racist or anti-sexist or non-homophobic for fear of being terminated or public shame. In other words, newsrooms need to strive for real change in attitudes and behaviours to make it truly inclusive, instead of treating it as

a tick-box exercise tied up in policy jargon – which necessitates having more open discussions, hosting safe spaces to discuss these issues, and most importantly a change in management or management practices so journalists feel empowered to speak up.

> Recommendation six: Regarding freelancers, there needs to be a better understanding of the conditions under which they work, and a drastic improvement is urgent, with the end goal being to abolish precarious labour in journalism. Media unions need to understand and acknowledge that freelancers are part of the precariat and are primarily millennials who are entitled to help, support, fair pay and better working conditions as much as older staff journalists. Unions must try to introduce a suitable minimum wage of £20/hour, and strengthen worker solidarity, without which freelancers are left open to exploitation and abuse. In addition, most national unions do not have any specialised support for immigrants; this needs rectification. Management too needs to rectify these conditions, but without pressure from unions most newsrooms are unlikely to. While freelance practices internally within a team can improve through collective effort, without collective bargaining with senior management, it is unlikely to yield lasting results and offer the security the precariat so desperately needs.

Overall, managers must realise (from the results of this study) that an average OSINT journalist works harder and longer hours and must be compensated as much, especially in an investigative capacity, and more so in broadcast journalism with its many moving parts.

> Recommendation seven: Managers must also make a conscious effort to educate themselves about OSINT methodologies and not just be enamoured by tools or treat them as a silver bullet. When it comes to work-life balance, managers must be expected to set examples on not being overworked, avoiding burnout, good trauma management, and more importantly, taking breaks from the stressful work to recharge and ensuring these breaks are paid leave for both staff and freelancers. Management must, crucially, do away with the idea of complete automation and hire

talent who are knowledgeable about methodologies and tools to augment the workflow instead and invest in people more than tools when building an OSINT team, so as to set aside the fads of technology in favour of the ethics of investigative journalism and holding power to account.

The following sections detail the reflections/recommendations on the mental health impact of work with OSINT tools.

10.3.5 Reflections & Recommendations on Mental Health Impact of OSINT-Based Investigations

A culture of neglect and mismanagement coupled with a lack of trauma awareness has been identified as pervasive, needing urgent addressing. Stress, as explained in earlier chapters, is a subjective experience, varying from eustress to distress.

> *Recommendation one:* It is the responsibility of management to be aware of when investigators veer into distress and to regulate mental safety the same way physical high risk is regulated when covering conflict. Unions must also understand the risks of vicarious trauma and burnout among OSINT staff and ask for safeguarding practices to be instituted within newsrooms, and especially for freelancers. In other words, the definition of high risk as it is currently being used in newsrooms needs to change to incorporate vicarious trauma.

> *Recommendation two:* The current culture within social media-driven media does not value a healthy work-life balance. But most journalists and investigators are aware of its necessity in order to function and thrive in high-stress environments—this need must be made visible, especially at the top, and respected.

> *Recommendation three:* At the same time, the root causes identified for mental health issues need to be addressed— the privatisation of mental health as a personal

problem rather than a product of the workplace and pressures of capitalism. Mental health must be treated as an institutional problem rather than a personal one.

Risk and stress are entwined within the nature of investigative journalism, they cannot be avoided, but they can be minimised and mitigated: this is an executive problem.

> **Recommendation four:** The current setup of the teams by design should have mitigation strategies built-in, and journalists themselves must be given tools to minimise harm. At the same time, there needs to be a trauma-aware culture of work in an inclusive environment where trauma is not just seen as a personal problem but a professional hazard – especially for OSINT teams reporting on disasters, wars and human rights abuses.

Structural racism and colonial inequalities seem to account for a good section of mental health issues reported by respondents of colour, especially women and immigrants.

> **Recommendation five:** This can only be addressed by overhauling hiring practices in newsrooms and addressing the inequalities perpetuated by old management styles and priorities – going beyond diversity for diversity's sake to understand the historical problem. This means hiring people of colour at the top to be able to make these executive decisions, and also investing in black and brown journalists not just as off-camera talent, but visibly on screen too.

In addition, current social media guidelines are focused on corporate reputation protection and not protecting journalists who are often left at the mercy of trolls.

> **Recommendation six:** There needs to be an understanding of the challenges of online reporting – such as troll attacks and their impact on the mind, and such special support needs to be made available, especially to women. In addition, media institutions must lobby social media networks to create an open channel of

communication at all times to shut down online harassment and trolling when their reporters are being attacked.

The cocktail of overwork, long hours online and high-stress investigations are a significant contributor to burnout which needs to be managed. Moreover, alienation needs to be addressed at the root: by equalising power imbalances that make journalists feel powerless or at the mercy of executives with the help of media unions.

Overall, there needs to be an understanding that trauma is caused not just by distressing content, and journalists or investigators who work with graphic imagery have a high threshold of tolerance, but that must not be abused, ignored or gaslighted, but supported. It is essential to note the decrease in physical trauma made possible by remote monitoring via OSINT while also being cognizant of the new ways PTSD can develop.

The following section discusses limitations and future research stemming from this study.

10.3 Discussion of Limitations & Future Research

Any discussion of the limitations of this study would be remiss without mentioning the pitfalls of doing social science research during a pandemic and its lockdowns. The obvious limitation due to these conditions was that this study did not involve any real face to face interaction, as it was conducted entirely over video conference. In addition, no visits to actual newsrooms, as planned, to collect data and observational notes was possible, which would have certainly improved if not added a new dimension to this study.

The scope for future research arising from the results of this study is broad and varied. In no particular order, they are:

- This study involved qualitative interviews with 30 respondents who are experts in or pioneering OSINT investigations. A more extensive study based on a survey of 100 or more OSINT investigators would be interesting to confirm the patterns observed in this study.
- Further studies looking at the funding of OSINT investigations would be very pertinent.
- Studies into hiring practices within the new OSINT roles being created will shed light on whether the new roles actually empower the communities being researched or if they replicate the old hiring practices criticised in this study.
- The commercialisation of OSINT tools and its impact has been broadly covered in this study, but its interaction with trust and transparency within OSINT communities would be an interesting area of research.
- The response of media unions to OSINT journalists, especially the OSINT precariat, would be helpful to note, especially considering their conspicuous lack of support to respondents interviewed in this study.
- Studies into racial oppression within investigative journalism as a whole is much needed to look into:
 - a) policing of women of colour's opinions online
 - b) contracts and immigrant hiring practices on investigative desks
 - c) breakdown of all foreign desks to understand percentage of people of colour within positions of power
 - d) breakdown of people of colour within OSINT units, especially those in management positions.
- This study prominently highlighted the various failings in trauma training. A following exercise that explicitly studies the structural reasons for these failings within the newsroom context would be crucial.

The next section adds some final thoughts on revolutionary humanism and the future of investigative journalism.

10.4 Final Recommendations on the Future of Investigative Journalism

In the previous chapter, while detailing the impact of universal alienation, the alternative posited was “revolutionary humanism” (Harvey 2014, 212). Harvey argues that “[w]e can through conscious thought and action change both the world we live in and ourselves for the better” (Harvey 2014, 282) while pointing out that humanism has been perverted and turned into a particularism that disguises itself as universalism but advances “imperialist and colonial cultural domination”. “Secular revolutionary humanism” counters “alienation in its many forms and to radically change the world” (Harvey 2014, 287).

So what does revolutionary humanism in investigative journalism look like? In journalism, revolutionary humanism means going beyond the current superficiality of commercial enterprise and interrogating the power dynamics inherent in the processes of how we create journalism, who is empowered/given a voice/historiography, and how it actually impacts those on the active mitigation of the power dynamics and privileges to create and contribute to emancipatory politics that speaks truth to power to actually transfer some of that power to those without.

Paulo Freire, in his sequel to *Pedagogy of the Oppressed*, writes:

“The idea that hope alone will transform the world, and action undertaken in that kind of naivete, is an excellent route to hopelessness, pessimism, and fatalism. But the attempt to do without hope, in the struggle to improve the world, as if that struggle could be reduced to calculated acts alone, or a purely scientific approach, is a frivolous illusion. To attempt to do without hope, which is based on the need for truth as an ethical quality of the struggle, is tantamount to denying that struggle one of its mainstays. The essential thing, as I maintain later on, is this: hope, as an ontological need, demands an anchoring in practice. As an ontological need, hope needs practice in order to become historical concreteness. That is why there is no hope in sheer

hopefulness. The hoped-for is not attained by dint of raw hoping. Just to hope is to hope in vain” (Freire 2014, 2–3).

This section details some of the ways revolutionary humanism and the hope for it can be “anchored in practice”. Some obvious ways are:

- Organisations and unions acknowledging and supporting the precariat.
- Hiring local journalists to do on-ground work rather than commit to parachute journalism.
- Equal pay for equal work.
- Education focused on an understanding of critical race theory, colonial history, capitalism and feminism.
- Open dialogue.
- Trauma-focussed workflow.
- Flexibility and autonomy within workdays.
- Compensation for overtime (especially for OSINT) and stricter working hours regulation.
- Flexible deadlines, focused on the quality of work.
- Minimum wage of £20/hour.
- Sustainable funding mechanisms of investigative journalism.
- Immigration support to hire external talent.
- A greater understanding of human motivation underpinning Maslow’s hierarchy of needs (Maslow 1943), such that journalists ideally have safety and physiological needs are taken care of at all times, leaving them with the focussed headspace to tackle the pursuit of the truth and its many incarnations in conflict.

As mentioned elsewhere, what is hopelessly lacking in journalism education or in the education and practice of a journalist now is a critical understanding of capitalism, patriarchy, colonialism, imperialism, racism, etc., i.e. the systems within which they unwittingly participate and willingly or unwillingly perpetuate despite their best intentions, and to unlearn, understand the crimes of the past, and be aware of the current privileges and omnipresent power dynamics enjoyed today as a result of the

legacy of oppression, genocide, colonial disinformation and theft on brown and black continents, and the subjugation of the other: women, queers, the non-white, the working class.

This will be tackled through two dimensions – investigative journalism and open-source intelligence.

In terms of investigative journalism within newsrooms, it means:

- Overhauling standard hiring practices.
- Interrogating the commissioning hierarchy in investigative units.
- Threat-modelling impacts of stories on both journalists and victims.
- Empowering victims to foreground their own stories.
- Moving away from presenter-led documentaries (specifically white presenters fronting international stories in the Middle East, Africa and South Asia).
- Valuing talent over star power.
- Investing in the development of OSINT tools.
- Investing in trauma-conscious workflows and training for management.
- Reserving training and career development times for staff.
- Mentoring women of colour and immigrants, and especially focusing on their career progression.
- Hiring local reporters and giving them equal credits in international stories.
- Reforming the terms of fixed-term freelance contracts to include adequate sick pay, holiday pay and mental health support.
- Allowing women of colour and immigrants to front their own stories where applicable, and get an equal opportunity to present where not.
- Allow journalists to influence executive decisions about the future of news organisations that are too often run by political appointees or “suits”.
- Minimum wage regulation and paid overtime.

In terms of OSINT and OSINT tools, it means autonomy:

- Creation of communities of OSINT developers who make the tools, funded independently through grants and news organisations.

- Thinking about the impact of the work and what it means to the people on the ground— greater and deeper involvement of local journalists with OSINT journalists.
- Moving away from gamification and OSINT hackathons that do not claim to connect the human side.
- Lesser reliance on white male Europeans, however highly skilled they may be, when the story is set outside Europe, especially to tell the stories of those who have been burdened by intergenerational trauma.
- Foregrounding the people less heard, giving power back to those without, correcting the wrongs of the past instead of replicating them, and as always – accountability through power, not authority.

Journalism, it is often argued, is more of a craft than an art. But it can be elevated to an artform using cinematic filmmaking. At its essence, it is a duty – to bear witness, to seek uncomfortable truths, to report it as is. These truths do not exist in a vacuum; often they inhabit the same reality as the journalist investigating it. “An artist never works under ideal conditions. If they existed, his work wouldn’t exist, for the artist doesn’t live in a vacuum. Some sort of pressure must exist. The artist exists because the world is not perfect. Art would be useless if the world were perfect, as man wouldn’t look for harmony but simply live in it. Art is born out of an ill-designed world,” says Andrei Tarkovsky (Baglivo and Tarkovsky 1984), the greatest of Russian filmmakers who sought with his films to comfort the afflicted and afflict the comfortable, describing what has previously been referred to as eustress. But an ill-designed world, or capitalism in its myriad internal contradictions, has slipped over from eustress to distress, making the world inhospitable to impactful investigative journalism, and through it, put democracy at risk.

10.5 Conclusion

In conclusion, this chapter provides some of the meta reflection, final thoughts and recommendations based on the findings in this study, which answer the main research question: What are the consequences of automation on investigative journalism?

The table in the first subsection provided a summary of results and the theoretical model of analysis, corresponding to the three main research questions: how automated tools are changing the work of investigative journalists; the risks and advantages of conducting investigations using automated tools; the risks for the mental health of investigative journalists in the context of digital work.

The section following that provided reflections on various aspects of the study. On the funding crisis, the pros and cons of a public service model used by the BBC were discussed when contracted with the paywall model used by the New York Times, and Bellingcat's unique model of earning revenue from workshops and independent grants. With OSINT tools, an overreliance on tools over methodology was warned against while recommending investment in OSINT specialists and human talent. Recommendations on change in work and its impact both centred around good management practices, which ranged from trauma conscious workflows, better social media protection to addressing workplace discrimination effectively, supporting freelancers, and compensating OSINT investigators for overtime and overwork. The final section on mental health highlighted the risk of PTSD, the resilience of journalists who work in these high-stress environments, and the importance of giving journalists tools to minimise harm while overhauling old patterns of work.

The next section discussed limitations of this study, such as lack of face to face interaction, lack of access to actual newsrooms due to lockdowns when this study was conducted, and highlighted areas for further research such as large scale surveys on OSINT practitioners, OSINT funding, hiring practices within the new OSINT roles being created, the response of media unions to OSINT journalists, studies into racial oppression within investigative journalism, and trauma training.

The final section outlined what implementations of revolutionary humanism look like when incorporated into the future of investigative journalism, presented in the table below.

General recommendations	Newsroom recommendations	OSINT recommendations
<ul style="list-style-type: none"> • Institutional and Union support for the precariat. • Hiring local journalists instead of parachute journalism. • Equal pay for equal work. • Education focused on an understanding of critical race theory, colonial history, capitalism and feminism. • Open dialogue. • Trauma focussed workflow. • Flexibility and autonomy within workdays. • Compensation for overtime (especially for OSINT) and stricter working hours regulation. • Flexible deadlines, focussed on the quality of work. • Minimum wage of £20/hour. • Sustainable funding mechanisms of investigative journalism. • A greater understanding of human motivation underpinning Maslow's hierarchy of needs (Maslow 1943). 	<ul style="list-style-type: none"> • Overhauling standard hiring practices. • Interrogating the commissioning hierarchy in investigative units. • Threat-modelling impacts of stories on both journalists and victims. • Empowering victims to present their own stories. • Moving away from presenter-led documentaries (specifically white presenters fronting international stories in the Middle East, Africa and South Asia). • Valuing talent over stardom. • Investing in the development of OSINT tools. • Investing in trauma-conscious workflows and training for management. • Setting aside training and career development times for staff. • Mentoring women of colour and immigrants and especially focusing on their career progression. • Hiring local reporters and giving them equal credits in international stories. • Reforming the terms of fixed term freelance contracts to include adequate sick pay, holiday pay and mental health support. • Allowing women of colour and immigrants to front their own stories where applicable and get an equal opportunity to present where not. • Allow journalists to influence executive decisions. • Minimum wage regulation and paid overtime. 	<ul style="list-style-type: none"> • Creation of communities of OSINT developers who make the tools, funded independently through grants, and news organisations. • Thinking about the impact of the work and what it means to the people on ground. • Moving away from gamification. • Lesser reliance on white male Europeans, however highly skilled they may be, to tell the stories of those who have been burdened by intergenerational trauma. • Foregrounding the people less heard, giving power back to those without.

FIG 10.6.1 RECOMMENDATIONS ON THE FUTURE OF INVESTIGATIVE JOURNALISM

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