The Power of Algorithms

The Use of Algorithmic Logic and Human Curation at *The Guardian*

Figure 1 Photo: Markus Spiske/raumrot.com/CC-BY

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Abstract

Algorithms are part of most online activities but act largely in the background and remain hidden to the general public. They are programmed pieces of software that are designed to consume massive amounts of data and progress it into easy consumable pieces of information. Furthermore, that software is able to draw connections between pieces of information and filter it based on relevance or other criteria. What these criteria are and what they are based on often remains a well-kept secret. Companies such as Facebook, Google, Twitter and Netflix all use algorithms to make sense of the ever-increasing amount of Data and suggest posts, movies or search results. With more and more people getting their news stories trough social media platforms and search engines, algorithms play an important role in the way we receive news. That lead to the questions of what power algorithms have over the news we see and what power they have over news organisations and journalism. To answer these broad questions, it was decided to focus on one large news organisations and examine what role algorithms play. The news organisation chosen for this research was *The Guardian*. In order to investigate these how and if algorithms are used, interviews with eight experts working at *The Guardian* were conducted. The informants were developers, engineers, product managers, editors and journalists in order to get a broader spectrum of possible frames in place. So as to analyse the interviews, tables were created to understand the way algorithms in relation to the institution of *The Guardian* and the power of editors were framed by the interviewees. One of the results that could be observed through the interviews and analysis was that algorithms will play an increasingly large role in *The Guardian* and possibly share their influence with editors. It can also be found that technology and news organisations will become more and more intertwined and data from users will be collected and analysed. The last part of the thesis discusses the impact of the results in a broader context and what further research can be done.

Keywords: Algorithms, autonomous decision-making, public relevance algorithms, institutionalism, news organisation, The Guardian, digital journalism

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1. Introduction

In a world where information is as omnipresent as never before, filtering the right one out can become a tricky challenge. While searching for rice pudding recipes takes 0.31 seconds, Google displays a staggering 3.63 million search results. Over are the times when a trusted and tested family recipe was the go-to choice. Now, new horizons and tastes emerge, suggesting new and different ingredients for the traditional recipe. Based on the number of results, finding the right recipe seems impossible. Luckily, Google recognized that challenge, displaying some promising looking recipes on its first page, which all seem to have received good reviews.

This leads to one big question: How is that done? The answer is simple and highly complicated at the same time: through the use of algorithms. According to Tarleton Gillespie (2013), Algorithms "are encoded procedures for transforming input data into a desired output, based on specific calculations. The procedures name both a problem and the steps by which it should be solved". [1] When moving away from rather simple search tasks such as recipes, the challenges become even bigger. While finding information through Google is as fast and easy as never before, knowing what is truthful or relevant to the searcher can be overwhelming. This might be one of the reasons why people look elsewhere to find trustworthy information, already filtered for them. According to pewresearch.org[2] over 30% of the American population uses Facebook to get news first. That generally means the filter applied in that case is a certain circle based on friends, co-workers, family and acquaintances mixed with Facebook's own parameters. Again, the code and software Facebook bases its news feed and display of information on are algorithms.

The advantages of algorithms, which can be summarized by processing unimaginably large amounts of data into easy digestible information and news stories, do not exist without drawbacks or consequences. Using a large amount of data and personal information, algorithms are a powerful tool to control the news received by millions of users.

[1] http://www.tarletongillespie.org/essays/Gillespie%20-%20The%20Relevance%20of%20Algorithms.pdf
[2] http://www.pewresearch.org/fact-tank/2014/09/24/how-social-media-is-reshaping-news/

"If it isn't on Google, it doesn't exist."- Jimmy Wales[3]

With Google and Facebook, two of the arguably biggest and most influential companies on earth, who use algorithms as one of their main tools (simultaneously being their most well-kept and guarded secret) the question of how actual newspapers respond to that new emerging power of algorithmic code arises. Surprisingly, comparably little research has been conducted on how algorithms influence the news media and media landscape. This is largely due to the above-mentioned difficulties of accessing information. In most cases either the technical aspect of algorithmic logic or their influences on the social sciences were approached without truly combining these two fields. One of the questions that emerge is: "what happens when software controls the order of our news feed and information, be it on Facebook, Instagram, Twitter or *The Guardian*? In order to find answers to a broad subject, it was decided to focus on one of the most opinion-leading and respected newspapers in the world: *The Guardian*. Specifically, this study focuses primarily on the app version of *The Guardian*, because it allows users to personalise their homepage and appears to function as a platform where developers, editors and journalists are working closely together. (This was later confirmed during the interviews.)

There is an increasing amount of research that emerges around the subject of algorithms and how they influence the production of knowledge. Keywords such as "Big Data" , "computational journalism" (C.W Anderson, 2012) and "algorithms" are no longer reserved for technical engineers but are more and more of concern to scholars of the humanities. According to C.W Anderson, rephrasing Lev Manovich (2011), "understanding the interaction between large-scale data collection, algorithmic analysis, computational practices, and the production of public knowledge is one of the central methodological and philosophical challenges of our time" (2012:2).

1.1. Aim

This thesis aims to find out how the power of algorithms compared to editors are perceived and framed by a small group of experts working at *The Guardian* and what role they will play in the future of *The Guardian*. It therefore is investigated, through interviews, how algorithms are put to use in one of the largest and most important newspapers in the world and these mechanisms influence the work of

[3] http://www.brainyquote.com/quotes/keywords/google.html#HulEklrUfVYKAJbu.99

particularly editors and developers. This thesis offers a case study, a closer look, into how a small number of knowledgeable experts perceive the role, function and integration of algorithms in *The Guardian* and the possible influence on the content. It serves as a starting point for further discussion and research about how the media landscape is changed through technology on a broader level as well as for specific organisations such as *The Guardian*.

Hence, the research question and its sub-questions proposed are as followed:

1.2. Research Questions:

Research Question: How is the influence of algorithmic logic framed and perceived as opposed to the power of the editorial voice at *The Guardian*?

Sub-questions:

1. What is the perceived relationship between algorithms and editors at *The Guardian*?
2. What is the perceived influence of algorithms in an institution such as *The Guardian*?
3. What perceived impact do algorithms have on journalism and the news industry?

In order to answer the research question and its sub-questions and to fulfil the aim of this study, interviews with eight experts, working at The Guardian were conducted. These experts are either involved in the creation of the app as developers, product managers or editors as well as content contributors.

1.3. Expected Outcomes

The thesis will shed light on if and how the Guardian uses an algorithmic approach in its app and to what extent it influences the outcome of the news. It will also investigate the relationship between technology and editors and where The Guardian is heading to in the foreseeable future. An expected outcome is that algorithms will play a key role in the news organization and that journalism and the role and responsibility of editors will change remarkably. A previous pilot study conducted with three different participants showed that when signed into the app, homepages could be modified. Consequently, different headlines displayed while some key headlines remained the same; this demonstrates possible end-user impact on news received.

1.4. Limitations

Algorithms and the way they work are complex which is why this thesis will only focus on a small part of their possibilities. Also, the interviews were conducted with eight individuals working at The Guardian which is by no means a representation of the entire network of employees working with The Guardian. Additionally, no one from offices overseas (USA or Australia) were interviewed for this thesis. Furthermore, only one content creator was interviewed and it is acknowledged throughout the thesis that is does not represent all content creators at The Guardian.

1.5. Background

1.5.1. The Apps and how they work

An app is an abbreviation of the word 'application' and in this case describes a software program developed for smartphones and tablets. It often comes as an extension of an already existing website and business, which allows its users to access the business through a mobile device. It is also often modified from the web version with features that are adapted to a smaller screen size as well as different design components such as buttons made for touch screens with fingers rather than mouse clicks. Often, the app versions also display content horizontally, rather than vertically which is more common on the desktop version.

The Guardian app in its existing form was launched in May 2014, allowing the team behind it to send out breaking news alerts, accessible from a variety of different platforms (e.g. tablets and smartphones). It also allows users to create a personalised homepage. The user can create a free account once the app is downloaded for either an Android or iOS version, save articles, comment on them, share them and read them offline. Furthermore, the app allows the user to choose favourite contributors, articles and categories and to create an individual front page with news from chosen categories. However, breaking news stories are decided by the editorial team at The Guardian and will always be visible at the top; personalisation has been disabled for the individual user. Once the user is registered, he or she will also receive a daily (except for the weekend) newsletter from The Guardian in which they present an overview of different articles, stored under different categories. These categories include "Editor's picks" and "Most viewed in last 24 hours", each with several news articles to choose from. The app offers the choice between the US, UK and Australian version of the newspaper, which has offices in all three

countries. One of the Android developers interviewed for this study, David Simkin, elaborated the differences between the iOS and Android version of the apps:

> *"Internally, they are coded completely differently, they are different programming languages and stuff but they are structured in a sense that makes sense to both of the platforms. They remain logically quite similar though so that change has a similar impact on both platforms, also time wise".*

The major difference between these two versions is that Android is built and controlled by Google Inc. while iOS is built and controlled by Apple Inc.. However, in this thesis, the developers interviewed (Rupert Bates and David Simkin) are Android developers, which is why the iOS version of the app is less mentioned throughout.

1.5.2. The Guardian-Model

The Guardian is a one of the biggest newspapers in the world, topping 100 million visitors in a month for the first time in March 2014[4] and is a winner of the Pulitzer Prize. However, the strong focus on The Guardian and their perceived use of algorithms was largely due to their economic situation. The Guardian is a media agency which uses a different funding system compared to many of its competitors (except public service such as the BBC) because it is financed and backed by the so-called Scott Trust. [5] It is managed by the Guardian Media Group and became a limited company in 2008. Its purpose is to ensure the "financial and editorial independence of The Guardian".[6] The Scott Trust is managed by a board of which one of the most important functions is to appoint the editor of The Guardian and the Observer. [7] It does not rely on a private investor who seeks profit over all, an important influence on the working culture within The Guardian (also apparent throughout the interviews). It allows independent news stories as well as technological experiments to enhance the experience of the users instead of making profit. Presumably, the fact of a stable source of income leads to more creative freedom and experiments. The importance and influence of that situation can be found in the results part of this thesis.

[4] http://www.theguardian.com/media/2014/apr/17/guardian-website-100-million-users-abc
[5] http://www.economist.com/node/21563334
[6] http://www.theguardian.com/the-scott-trust/2015/jul/26/the-scott-trust
[7] http://www.theguardian.com/the-scott-trust/2015/jul/26/the-scott-trust-board

1.5.2.1. The institution of The Guardian and an approach to the way its structured

According to Odhrán McConnell, the development manager of The Guardian apps, The Guardian has generally a flat hierarchical structure "without many levels of reporting". According to him, too many levels can cause information to get lost. It is also possible to have open conversations with just anybody in case the working process isn't satisfying (See appendix, Screenshot from e-mail correspondence with McConnell). The overall structure was explained as followed:

Editorial ⟺ Digital Development ⟺ Commercial

These three main divisions are, however, interfering with one another because most teams at The Guardian are comprised of people with different expertise in order to operate somewhat independently. The model shown above demonstrates the constant interaction between members of the editorial comprised of editors and content creators, and members of digital development. Digital development includes product managers, developers, and designers who are working very closely with the editors to create the physical products such as the app, website or the new features like the Apple Watch. The commercial department is responsible for placing advertisement and sponsored content which is funded by outside parties [8] as well as the marketing and PR section of The Guardian.

The Digital Development department serves as a communicator between the editorial and commercial departments to ensure common ground. As Odhrán McConnell, the engineering monitor of the app's team, mentions, while the editorial department understands the need of the commercial department, it is less fond of the idea of "advertising ruining our content" (see appendix). Moreover, each section within editorial has a sub-editor and can publish stories independently without approval from Alan Rusbridger, the editor-in-chief recently succeeded by Katherine Viner in the summer of 2015. Both Rusbridger and Viner are known for their enthusiasm for new technologies and the spread of free information online. This also becomes apparent in the interviews.

The following pages will explore the existing theories and background knowledge important to know for this thesis. It will explain why algorithms are now part of modern journalism and how they are referred to in the literature. In the end, the different theories will be linked together and their relevance explained.

[8] http://www.theguardian.com/sponsored-content

2. Theoretical Framework

In order to understand how algorithms are perceived to influence the way news is received or generated in a modern newsroom, three main concepts need to be taken into consideration: Theories about Journalism, Algorithms and Institutionalism. Since the main focus of this study lies on how technology - namely algorithms- is influencing the way news is perceived, research about online news rooms and journalism seems particularly relevant, as opposed to print journalism. Even though *The Guardian* and most other newspapers produce on- and offline journalism, online journalism bears challenges and possibilities that are very different to print versions of the newspapers.

The following pages explore the shift from print to online journalism and the challenges the internet causes, as well as how algorithms are commonly used and studied by academics and connected with institutions and knowledge generating processes. Afterwards, existing theories about the connection between algorithms and institutions will be introduced which is relevant as this study highlights the perceived use of algorithms in *The Guardian* and its apps. They serve as the framework for the methodology and in-depth interviews which are then conducted with employees of *The Guardian*.

So as to understand the use of algorithms in *The Guardian* app, a broader picture outside of just technical terms is needed. Algorithms are, however, constructed and programmed by humans, which means that decisions had to be made and discussed before they were implemented.

The first step to gaining a better understanding of the issues previously mentioned is to understand why exactly algorithms are suddenly part of news agencies and journalists' vocabulary and how news is produced. Further on, the organizational structures of a modern day newsroom will be discussed based on existing research and literature. That includes organizational structures and hierarchies within journalism. The last part will discuss algorithms and their function and role in news production.

2.1. Previous studies

2.1.1. The production of news

"In journalism, there has always been a tension between getting it first and getting it right."- Ellen Goodman[9]

2.1.1.1. From print to digital

Journalism has seen big changes over the past decades resulting in a serious crisis. The following pages will identify the main factors of the on-going crisis and explain how they are linked to algorithms.

A large problem for journalism has been financial. 2008 was one of the worst years for newspapers and news agencies around the globe since 1929 and following years (C.W. Anderson, 2013: 18). While overall readership seems to be increasing (taking internet visitors into account), the willingness to pay for information is declining, according to a report published by the *Project of Excellence in Journalism* (PEJ) in 2008 (C.W. Anderson, 2013). C.W. Anderson has done extensive research about the transition of Philadelphian newspapers going online, merging the *Daily News* and the *Philadelphian Inquirer* among others to *philly.com*. The first web page went online in 1995 under the name *phillylife.com* (C.W. Anderson, 2013:21). Comparatively, the *BBC* launched its website in 1997 and was "widely perceived to be late on to the scene" (Allen, 2006:34-35). Conversely, in the example of philly.com, one project, Blackhawk Down, demonstrated the possible powers of the still young internet in 1998 and 1999. The website was changed so that it could feature video material, audio files, maps, illustration and an early web chat version between the journalists and the readers, making it inherently superior to the print version.

Simultaneously, *The Guardian's* first official website was launched in 1999[10], with SMS alerts installed in 2002, which may be considered an early version of the push alerts the app currently sends out. In 2007, *The Guardian News and Media* published its first-web strategy, making the web a priority over print when it came to published news and content (English, 2012: pp.133-148). In 2011, *The Guardian* launched its Android and iOS app. These dates are important when considering the launch of Facebook

[9] http://www.searchquotes.com/search/Online_Journalism/2/
[10] http://www.theguardian.com/gnm-archive/guardian-website-timeline

in 2004 and the launch of Twitter in 2006. This leads to the second and even more important reason on to why journalism is in a crisis.

2.1.1.2. Brave new world

The internet did not only shape the appearance of newspapers but also their structure. The biggest challenge of journalism seemed to be hailing from a place far away from the journalism world: Silicon Valley , "a patch of former apricot and prune orchards stretching 50 miles south from San Francisco" (Shepard, 2013:160). As Shepard, former editor-in-chief at *Business Week* writes, Silicon Valley had by, as early as, 1997 around 7,000 electronics and software companies accumulated and "the market value of publicly held tech companies in the Valley approximated the entire valuation of the stock market in France" (Shepard, 2012:160). Companies emerging from Silicon Valley are, among others, Facebook, Google, Netflix and Apple Incorporation. Silicon Valley remains one of the leading high-tech manufacturing centres in the world and its area contains the highest amount of millionaires and billionaires per capita in the United States. It might seem odd to include details about Silicon Valley when writing about the production of news and even more odd to name Silicon Valley as one of the biggest problems modern journalism and news agents face nowadays. However, Emily Bell made a very valid and crucial point when she gave a speech at the Reuters Institute in November 2014. In her speech she pointed out that while the "two cultures" of engineering and journalism are very different, when it comes to their motivations, skills, sought outcomes and revenue models, they now "occupy the same space in terms of conveying news and discussion to a broad public" (Bell, 2014).[11] That means that platforms created by engineers in Silicon Valley are used by journalists. That is not a problem per se but it means that journalists rely on platforms which are created neither *by* them nor specifically *for* them. Journalists have very little control over the news "flow" of, for example Twitter, where they do not decide which stories are worth sharing and are even influenced by social media phenomena such as "The Great Dress Debate"[12]. These platforms rely heavily on the use of algorithms, functioning as a filter for all the input information. The use of algorithms in Facebook, Twitter and Google are two-sided, largely because the motivations and intentions behind their usage are created by profit-oriented engineers

[11] http://reutersinstitute.politics.ox.ac.uk/sites/default/files/Speech%20-%20Silicon%20Valley%20%26%20Journalism%20-%20Make%20up%20or%20Break%20up_Emily%20Bell_Reuters%20Memorial%20Lecture%202014.pdf
[12] http://www.theguardian.com/science/head-quarters/2015/feb/27/the-dress-blue-black-white-gold-vision-psychology-colour-constancy

rather than journalists. As Emily Bell argues "their culture is as alien to reporting and editing as ours is to designing social software" (www.reuters.com) which underlines the gap between journalism and technology, that exists today. On the other hand, algorithms are able to process quantities of content in a time that no human could, making them faster and more efficient than editors (a statement even supported by the informants interviewed for this thesis, such as Rupert Bates.)

According to the American Press Institute in a survey conducted in 2014, four out of ten Americans reportedly get their news from social platforms such as Twitter or Facebook. In 2015, Twitter had evolved as a tool which became crucial for journalists and has proven particularly valid when it comes to breaking news.[13] Twitter only allows 140 characters per post, forcing its users (many of them journalists) into "headline thinking", which means short and relevant posts about a breaking news event. (The expression "headline thinking" does not actually exist but was created by the researcher.) Facebook evolved as a platform from which 88% of Millennials (people aged from 18-34) in America regularly get news, based on another study conducted by the American Press Institute.[14]

This evolution of news took newspapers' editors and executives very long to understand and classify these platforms as main competitors, because changes are a slow process and "journalists are conservative and resistant toward technological innovation" according to Paulussen et al. (2011:8). Nevertheless, media organisations are now starting to invest more in technology and new structures to remain competitive.

2.1.2. The internet as a tool

"I just love when the Internet is wrong. It's the only thing that will save journalism". -Rick Moranis[15]

"In order to have quality journalism you need to have a good income stream, and no Internet model has produced a way of generating income that would pay for good-quality investigative journalism". - Bill Bryson[16]

[13] http://www.digitaltrends.com/opinion/in-defense-of-140-characters-why-twitter-remains-relevant/
[14] http://www.americanpressinstitute.org/publications/reports/survey-research/millennials-news/
[15] http://www.brainyquote.com/search_results.html#XT1WIL2ORGb4Ieb4.99

[16] http://www.brainyquote.com/search_results.html#XT1WIL2ORGb4Ieb4.99

The invention of the smartphone allowed for mobile internet usage, changing the way news is received and the circumstances in which they are read and consumed.
The next paragraph will explain what this new technical evolution has done to the modern day newsroom.

As Broersma and Peters argue, one problem for newspapers is that audiences are becoming increasingly fragmented (2013) while information is becoming increasingly specified and overall free of charge. Consequently, a lot of smaller newspapers and institutions with less funds and financial resources are disappearing, while new hybrids such as the *Huffington Post* or *BuzzFeed* are appearing. The word hybrid is used because these platforms combine news reportage with entertainment and lines between journalism and other professions such as cameramen, video editors etc. become blurred and merged. But how does a news room look like in a new era of online journalism? As Steve Paulussen et al. argue in "Making Online News" (2011), *innovation* is one of the key factors in a modern news room. Furthermore, "organizational changes" and "teamwork" appear to be other keywords in a modern news room (Paulussen et al, 2011:7-8) especially when it comes to the creation and construction of new departments. Editorial and commercial departments as well as print and digital departments are merged in order to adapt to the new requirements of online news (Paulussen et al, 2011). The internet took away the "three Ps of magazine publishing" (Shepard, 2013: 174) which are comprised of printing, paper and postage, resulting in an early revelation of the new opportunities and possibilities it would bring. However, the down sides became very much apparent when the lack of a business model and consequently the ability to generate income resulted in rapid profit loss (Shepard, 2013:175). In a lot of news rooms, the reorganization led to a loss of staff, in some U.S newspapers the number reached 25% (Shepard, 2013:261). Advertising, which used to be one of the biggest revenue factors of newspapers, did not follow the digital move of the media. Instead, companies such as Google and Facebook are the winners of the game, with Google making as much money from advertising in eight hours as the *Huffington Post* does in one year (Shepard, 2013:166-167).

2.2. Relevant Theories

2.2.1. Media organizations

Theory and practice can vary in every organisation. As McQuail states, there are several theoretical hypotheses about how a media organisation works and how content is influenced. While the focus of this study does not revolve around the actual content, instead on the process of how content is created and by what or whom, making these hypotheses relevant to mention (Shoemaker and Reese, 1991 as mentioned by McQuail, 6th edition, 2010: 277)

- Content is reflecting the social reality
- Content is influenced by the media worker's attitudes and socialization
- Content is influenced by media-organisational routines
- Content is influenced by forces and institutions outside the media
- Content is a function of ideological positions

Obviously, a lot has changed since 1991, with media organisations and their roles becoming increasingly vague. These hypotheses, however, were taken into consideration when asking questions about the power of algorithms in terms of news production in the interviews and how they might influence the role and power of the editors.

Traditionally, there are two opposing media models when discussing media power: the model of a dominant media and the model of a pluralist media (McQuail, 2010:87). The dominant media uses dominant elites or a ruling class as societal source (McQuail, 2010). The pluralist media cites competing political or social interest groups (McQuail, 2010). However, with the introduction of digital media platforms, much has changed. People are now able to hand-pick the sources of information and can chose between many varieties. Before entering the world of algorithms, the actor-network theory is important to discuss because it serves as transition between social sciences and technology and focuses on the different social dimensions that can be found in technology.

2.2.2. The Actor-Network Theory

The actor-network theory (ANT) is a broad subject, as discussed for instance by Bruno Latour in his book *Reassembling the Social - An Introduction to Actor-Network-Theory* published in 2005. The focus point of

this study will lie in the impact of technology on social behaviour and the point that not all actors need to be human within the network. Latour argues that "*any thing* that does modify a state of affairs by making a difference is an actor" (Latour, 2005: 71) The ANT aims at introducing objects as possible factors that influence power structures, reinforce gender inequalities and symbolise hierarchal structures among others (Latour, 2005). This introduction is important as it establishes a theoretical viewpoint connecting algorithms with institutionalism and the production of news. One of the key questions is how to refer to algorithms. The ANT offers the stand point that algorithmic logic can function as an actor and therefore "make" decisions independently and influence an organisation.

2.2.3. Algorithms

After having highlighted the changes that modern journalism faces, algorithms and their place in academia will be explored. Furthermore, their relevance and power in journalism will be demonstrated.

The study focuses on algorithms, their power, their usage in both in The Guardian web version and specifically its app. When algorithms are mentioned in this thesis, it always relates to the definition of algorithms in computer science which is defined as following, according to www.businessdirectionary.com:

Step by step procedure designed to perform an operation, and which (like a map or flowchart) will lead to the sought result if followed correctly. Algorithms have a definite beginning and a definite end, and a finite number of steps. An algorithm produces the same output information given the same input information, and several short algorithms can be combined to perform complex tasks such as writing a computer program. A cookbook recipe, a diagnosis, a problem solving routine, are some common examples of simple algorithms. Suitable for solving structured problems (amenable to sequential analysis) algorithms are, however, unsuitable for problems where value judgments are required.[17]

2.2.3.1. The notion of algorithms in academia

Algorithms are hard to come by and result in multiple debates in academic circles. One re-occurring problem is the way in which algorithms are perceived. According to Barocas et al., as highlighted in a conference paper named "Governing Algorithms- A Provocation Piece" algorithms are often referred to

[17] http://www.businessdictionary.com/definition/algorithm.html

as a subject resulting in them being treated almost human like and able to "do things". (Barocas et al., 2013) The paper offers a broad overview of recent studies about algorithms and the problems most scholar face when doing so, such as referring to an algorithm as a "Black Box", a concept that is often used metaphorically to describe the fact that while something might be visible from the outside, its inner life, functions and type of work remain hidden. Interestingly, this term has also been used by some of the experts interviewed for this study. Yet, as highlighted by Barocas et al., the metaphor of a black box might be insufficient because of the possibility that algorithms are not tangible phenomena to study (2013). It is important to mention that algorithms are by no means easy to discuss and divide academics; some hail it as a great addition and tool for modern society and news organisations (e.g. Pasquale, 2013) while others strongly criticise and question their power over the information we receive and the cloaked way in which they operate. Gillespie is perhaps one of the most prominent academics who criticises that algorithmic "procedures are unavoidably selective, emphasising some information and discarding others, and the choices may be consequential" (Gillespie, 2013:26). His blog "Culture Digitally" (www.culturedigitally.org) offers a platform for contributing scholars to release their (often critical) thoughts about algorithms and the internet and has served as a crucial starting point for this research. However, as the provocation piece by Barocas et al. (2013) highlights, algorithm research and the explanation of their status in academics is only in the beginning and a field where most is yet to be researched.

2.2.3.2. The power of algorithms

Algorithms are used in various ways and everyone who uses the internet will probably be in touch with algorithms at least once a day, likely over popular websites such as Google, Facebook, Twitter, Instagram, YouTube or Netflix.[18] The impact they have on the information the user receives is tremendous. As media scholar Ian Bogost (2015) describes it,

> *"Algorithms are everywhere, supposedly. We are living in an "algorithmic culture," to use the author and communication scholar Ted Striphas's name for it. Google's search algorithms determine how we access information. Facebook's News Feed*

[18] https://thedigiterati.com/social-media-platforms-use-algorithm-mean-marketing/

> *algorithms determine how we socialize. Netflix's and Amazon's collaborative filtering algorithms choose products and media for us."* [19]

There are different types of algorithms which work in various ways. Search engines filter information based on a large database while recommendation algorithms "map our preferences against others, suggesting new or forgotten bits for us to encounter" (Gillespie, 2013). Other algorithms are programmed to highlight "trending" or "hot" news (Gillespie, 2013) or show one friend's post while neglecting another's. Algorithms are extremely selective when it comes to displaying information yet have no editorial guidelines on what is relevant or not. This causes problems, especially when companies rely on certain types of algorithms, particularly the ones Google created, in order to attract visitors to their site. In 2014, this led to a still on-going outcry and legal battle of Axel Springer, Europe's biggest newspaper publisher by circulation against the unlimited power of Google, pushing their own advertisements ahead of algorithmic search results. [20] Furthermore, Springer demanded that Google should pay for access to some of its published content instead of releasing it for free. As a consequence, Google limited the access to some of Springer's websites, causing them a loss of tens of thousands of euros in revenue every year, as the Wall Street journal reported in November 2014. [21] Springer then "bowed" down to Google and granted free and unlimited access to its websites. According to *Time* magazine in April 2015, the European Union filed charges against Google in because it feared the company "abused its dominance in online search to stifle competitors". [22] Google's entire empire started with creating a search engine which is based on really powerful algorithms. Moreover, it accounts for over 90% of the search engine market in Europe (Time magazine, 2015), while pushing its own products and services higher on the website than those of competitors. It is clear that algorithms can be highly influential. The question then remains how do algorithms influence the news and the information the users receive?

2.2.3.3. What is Big Data?

Another important angle of the study of algorithms is the possibilities of **big data**. Big data stands for various data gathered through e.g. mobile phones (such as locations, call activities, etc.), Google

[19] http://www.theatlantic.com/technology/archive/2015/01/the-cathedral-of-computation/384300/
[20] http://www.ft.com/cms/s/0/41507d26-c575-11e3-89a9-00144feabdc0.html
[21] http://blogs.wsj.com/digits/2014/11/05/axel-springer-losing-web-traffic-bows-to-google-on-content/
[22] http://time.com/3822956/google-eu-antitrust-case-shopping/

searches, membership cards at the supermarket, social media "likes", transactions and more. IBM predicts that by 2020, the world's population will produce 35 billion terabytes of data every year, an unimaginably large number. [23] Many companies are very interested but unable to analyse these huge amounts of data gathered from potential customers. Big Data can give insights into habits, preferences, political orientations, financial situations and so on. One of the most prominent scholars in the field of Big Data and what powers, potentials, and possible threats it bears is Viktor Mayer-Schönberger, currently the professor of Internet Governance and Regulation at the Oxford Internet Institute and Oxford University[24]. In journalism, access to Big Data could possibly mean more information on researched individuals or a greater understanding of knowledge traditionally accessible only to experts, such as the field of psychology. It could also give more concrete information about who their users and readers are, what they like, and what times they preferably read news stories. (Partly of that is already implemented, see interviews)

2.2.3.4. Algorithms: modern archivists

There are different types of algorithms which are programmed for different purposes and tasks. The ones most relevant to this study are algorithms which display information based on internet browsing history. It is also the type of algorithm which suggests articles readers might find interesting, or- similar posts and related articles, when using a news app or visiting a website. They are what Tarleton Gillespie calls *public relevance algorithms* (Gillespie: 2013) and which he divided into six dimensions:

1. **Patterns of inclusion** (choices of what makes it into an index, what is excluded, how data is made *algorithm ready*)
2. **Cycles of anticipation** (the conclusions and predictions algorithm providers draw about their users)
3. **The Evaluation of relevance** (the factors by which algorithms decide what is relevant or not, how these factors are unknown and even hidden for most people, and how they influence political knowledge)
4. **The promise of algorithmic objectivity** (how algorithms are treated by some as objective and neutral based on their technical nature and the controversy resulting from that claim)

[23] http://www.theguardian.com/media-network/2015/may/01/digital-marketers-big-data-problem-growing
[24] http://www.big-data-book.com/meet-the-authors

5. **Entanglement with practice** (how users change their habits because of the algorithms they are dependent from and how it can be used in a political way)
6. **The production of calculated publics** (how algorithms can influence the public's view and itself and whom it benefits)

While Tarleton Gillespie focuses on the impacts algorithms can have on politics, most points are valid when looking at the production of news, which is often heavily intertwined with politics. Every algorithm is connected to some sort of database, from which it filters information. The collection of data is crucial to a well-functioning and meaningful Algorithm (Gillespie, 2013). Each media user leaves traces on the internet that are stored in the form of "cookies" and sent to web browsers. Cookies can store names, interests, email addresses or recently visited items on amazon.com, which will then appear on other websites as personalized advertisements.[25] These traces are overwhelmingly complex and come in quantities too big for humans to analyse. This is where algorithms come into play (Napoli, 2014: 340). They collect the Big Data and create connections and meaning between them. When using The Guardian app, the user leaves these traces and allows the software to store which articles he or she has read that is if certain categories (for example "most read") are searched for more often than others or if authors are favoured. That information is stored by the app while the algorithms connect the data with the user, creating a "recommended articles" section. Algorithms have the ability to make content related decisions and are arguably seen as the cause and effect of the ever-growing amount of available data (Napoli, 2014).

The reason why these six points are mentioned in this study is because they are part of the qualitative research part of this study, in order to find out how people working with algorithms experience and perceive their functioning and purpose.

2.2.3.5. The relevance of algorithms in modern journalism

Some of the most prominent and relevant scholars that discuss the impact of algorithms in journalism are C.W. Anderson, Tarleton Gillespie and Nicholas Diakopoulos. One of the most used keywords in that context is *computational journalism* (C.W. Anderson, 2012:2). The term describes the collection of data, use of algorithms and knowledge from social sciences to support the work of modern journalism. One of

[25] http://www.webopedia.com/DidYouKnow/Internet/all_about_cookies.asp

the reasons why algorithms are important for modern journalism is because it allows journalists to "adapt their traditional watchdogging and accountability functions to this new wellspring of power in society" (Diakopoulos, 2015: 398). The term *computational journalism* offers various theoretical starting points and lenses of research and was first described as a practice for journalists to gather large amounts of data and information (Diakopoulos, 2010) as well as a tool applied in social media areas (Diakopoulos, De Choudhury, and Naaman, 2012; Diakopoulos, Naaman, and Kivran-Swaine, 2010 as referred by Diakopoulos, 2015). Algorithms, as mentioned before, are seen as opportunities and threats at the same time because while they are able to process large amounts of data in a short time, which would not be possible if done by humans, they also are programmed to perform what Diakopoulos calls *autonomous decision-making* (2015: 400). He classifies the power of algorithms and the decision-making process in four categories: *prioritization, classification, association*, and *filtering*. These categories describe how algorithms are programmed to e.g. *prioritize* some information allotting ranks from relevance and eventually influencing the flow of information received by the user. (These algorithms are for example used by Google and their search engine.) Since most of the ranking criteria are not publicly displayed, understanding their value and potential bias can be difficult (2015: 400-401). The *classification* of algorithms can assess possible infringements of copyrights but bear the danger of classifying content as infringing when in fact it is not breaching any rights and vice versa (2015: 401). The risk here is that this classification can benefit stakeholder groups if done wrong. The *association* category allows algorithms to connect different data with each other and link it to numbers or individuals. The *filtering* algorithms enable exclusion of data and information based on certain criteria. The notion of "filter bubble" is often used in this context to highlight the process of presenting information to people they already agree with which can lead to narrow minded views and limited knowledge (2015: 401-402).

These four categories of algorithms as discussed by Diakopoulos (2015) are important to understand, especially in regards to the challenges algorithms face. These challenges are important to any organisation but even more so in news organisations and journalism. This is because of a major problem in serious and investigative journalism: transparency (McBride and Rosenstiel, 2013). The problems regarding the study of algorithms will be discussed further in the following paragraphs.

2.2.3.6. The challenges faced when studying algorithms

There are various challenges that researchers face when studying algorithms. One of them is that often algorithms are "framed in terms of disciplines and expertise" (Barocas et al. 2013:3) setting potential

boundaries to media scholars without any computer engineering, mathematical, etc. background to study algorithms. Another challenge appears to be the sheer amount of available and potential data that can be obtained when studying algorithms. The complexity of algorithms offers a vast amount of possible research topics, from many different disciplines. Yet, it appears most disciplines are researching within their field of knowledge rather than create more inter-disciplinary research about algorithms (Barocas et al. 2013). So far, algorithms have been met both with enthusiasm about e.g. "the increasing availability of quasi-public analytical tools" (C.W. Anderson, 2012:2) and scepticism about what it does to knowledge and journalism (Bell, 2014).

Another challenge faced when studying how algorithms influence knowledge and information in large news organisations such as *The Guardian* is the lack of transparency. Journalists rely on tools of information seeking and gathering that they cannot necessarily predict or understand which criteria they are based on, which leads to tensions in modern journalism (Diakopoulos, 2015). While large media organisations such as *The Guardian* might be able to rely on personal sources outside of the world of algorithms, it might be difficult for smaller and less funded news organisations to get unbiased and neutral information by primarily digging through the internet for potential news stories.

The reason why these theories are mentioned is because they describe how algorithms are relevant in news organisations and journalism. Gillespie, Napoli, Anderson and Diakopoulos offer a comprehensive starting point for the research of algorithms and their impact on journalism and institutions.

2.2.4. Institutionalism

The way newsrooms are re-structured in a new era of journalism and media have a large impact on the outcome and the way news are produced and spread. The theory of institutionalism is therefore extremely relevant in terms of understanding how specific organizations, in particular news organizations, work. Additionally, it provides a theoretical framework for the later conducted discourse analysis of the interviews with *The Guardian* employees in which common myths and practices as well as perception will be looked at closely. The two concepts of meaning and power in organizations were chosen as particularly relevant to explain.

2.2.4.1. Meaning in Institutionalisation

According to Zilber, (2010: 151) the role of "meaning" has been clear while a universal definition of the meaning of "meaning" has yet to be found. She further argues that most scholars defined meaning as something taken-for-granted inside an institution, a cultural conduct code which everyone within follows (2010:154-pp). Creating meaning comes with gaining power, particularly when meaning is transformed and/or changed within an organization. Taking news media as an example, the change of meaning can come from various ends but the editorial role appears to be central. In a new approach towards the definition of meaning, it is something constructed by humans, hence flexible and exposed to change. A meaning does not exist *per se* but is always embedded in a specific context (Zilber, 2010).

2.2.4.2. Power in Institutions

Power is a very vital component when studying institutions and institutionalism. It defines opinions, believes, climate within an organization among others. As Thomas B. Lawrence argues, the relationship between power and institutions consists of three dimensions: institutional control, institutional agency and institutional resistance. Institutional control suggests that institutions have a certain control over the beliefs and behaviour of its actors, institutional agency describes how actors and their work can change, disrupt or create institutions and institutional resistance is directed towards the fact that actors might oppose ideas from the agency or control factors (Lawrence, 2010:171). It shows that actors within an organisation might have different agendas and reasons to act the way they do, related to the power they have. Later on, when analysing the results of the interviews, it is important to keep each position of interviewee in mind because their professional background is important to understand their rank and position within *The Guardian*.

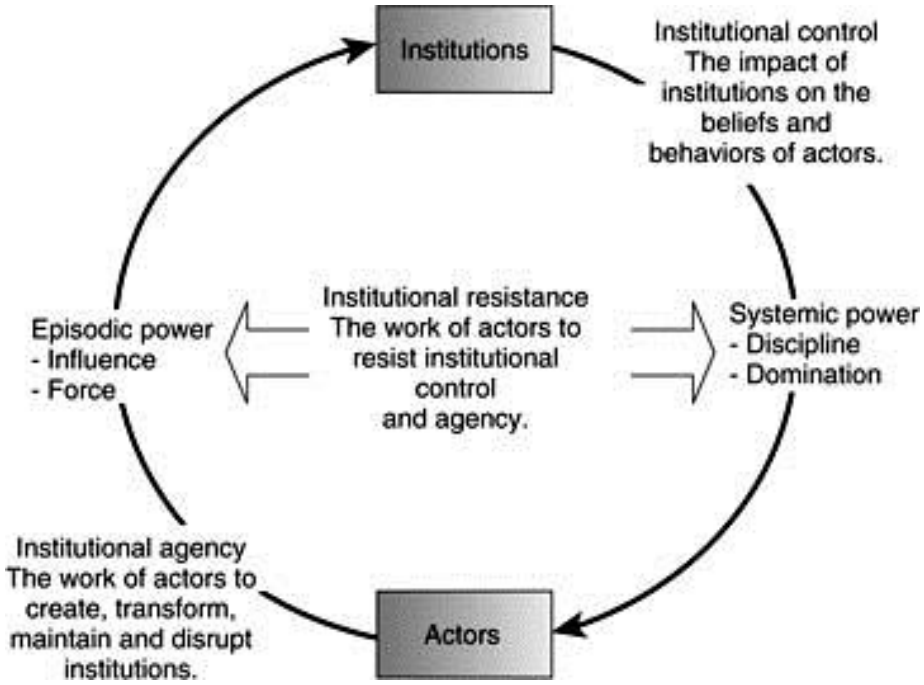

Figure 2: Power relations in institutions (taken from: The SAGE Handbook of Organizational Institutionalism, 2010, p.174: Power relations in institutions (taken from: The SAGE Handbook of Organizational Institutionalism, 2010, p.174)

As Lawrence highlights, power works in two different modes; an episodic and a systemic mode (see figure 1). The episodic mode sees power as a tool of authority and mobilises strategic acts of self-interested actors. It also focuses on the power of ownership and financial authority (2010:174). The systemic mode, on the other hand, focuses on power that has been achieved through routine and discipline. It is less obvious as a form of power because actors might not actively participate in the routine yet be affected by it. This is especially relevant when thinking of gender, race, class and sexuality, giving certain groups of individuals power over other groups, based on factors they have little influence over.

The institutional control is powerful and seems particularly relevant in an organisation such as *The Guardian*. It includes disciplinary power as well as the power of domination and has influence over the way people within the institution think and act and what they believe in. The disciplinary power is be especially relevant in non-transparent organisations, in which a breach of trust or loyalty can have severe consequences. A recent case is that of UN senior Anders Kompass who had leaked information to the French government about alleged child abuse by French UN-soldiers in Africa. As a consequence, he was

suspended from his activities by the UN.[26] According to the article published by *The Guardian*, other members of the UN now hesitate to pass information out of fear of suspension. This example highlights the power of discipline within an organisation. The power of domination includes also the infrastructure of an office, taking into consideration that differently ranked employees often sit on different floors or areas within an organisation, as well as how employees are grouped together. According to Lawrence, both modes of power work in similar ways and are based on routine decisions, they bear a major difference between them, while the disciplinary power intends to "know" the individual actor, the power of domination clusters large groups of the population into statistics and aims to "know" the behaviour these groups (2010:178).

The second dimension of power, the so-called institutional agency, takes into consideration how individual actors can "create, transform or disrupt institutions" (Lawrence, 2010:182). A lot of research in this field is based on politics but can be applied to news media as well. It is not uncommon for political actors to intervene and interfere in news media, as happened in 2013, when the British Government threatened to close down *The Guardian* and jail its editor Alan Rusbridger over the publishing of Edward Snowden's information.[27] This leads to another form of power: influence (Lawrence, 2010:183). The power of influence is crucial, when analysing how algorithms work in *The Guardian* app because it connects the technology with humans, depending on who has influence over the app.

Institutional resistance, the third dimension of power, is interesting to understand when looking at power structures within *The Guardian*. One can observe if people within the institution seem generally content with their impact and work or if they seem to disagree with certain decisions. These power concepts in an institutional framework were explained in detail due to the fact they will be used later on in the content analysis of the interviews conducted with employees of *The Guardian*.

Something remarkable is that none of these scholars who researched power structures and the creation of meaning take the technology itself into consideration when talking about the different aspects and factors that play a role in institutionalism. It highlights again the need for more studies which consider non-human activities as part of a component in terms of generating and displaying knowledge.

[26] http://www.theguardian.com/world/2015/may/06/un-suspension-of-sexual-abuse-report-whistleblower-is-unlawful-tribunal-rules
[27] https://www.wsws.org/en/articles/2014/02/04/guar-f04.html

2.3. Journalism, Institutionalism and Algorithms: where is the link?

2.3.1. Algorithms as Institutions?

Institutional theory is a broad subject but closely connected to algorithms and journalism. AS Philip M. Napoli argues, the way algorithms are structured and what effects as well as functions they have are very similar to those of institutions (Napoli, 2014:343). One of the main reasons for that is that algorithms are capable of "constraining and facilitating communicative behaviours and preferences" (Napoli, 2014:343), which is a crucial factor of any institution. Media technologies in general are able to both limit and facilitate communicative tasks and therefore influence the way content is produced, distributed and consumed, similar to what institutions do (Napoli, 2014). Algorithms, as mentioned before, structure user information and are able to influence the behaviour and preferences as well as have an impact on how content is produced and distributed (Napoli, 2014). The algorithms are constantly improved and altered by humans based on organizational environments and settings yet function without human influence once implemented. They are symbolic for the intertwined lives between humans and technology which can hardly be separated, a central factor of previously mentioned actor-network theory (ANT), a perspective which can be taken on when analysing relations between actors in institutions, while technology is included in the actor's definition. Algorithms are constantly changing, making them fluid and dynamic, a key perspective in the ANT (Napoli, 2014; Latour, 2005) as opposed to other institutional approaches which focus on routine. Yet, as Napoli (2014) points out, algorithms are very stable when it comes to their overall function and purpose but are altered frequently on the "programming level".

To draw another main connection between institutions and algorithms, Napoli names *opacity* (2014:345). Algorithms are complex constructions which remain a mystery to everyone not involved in their creation as well as are kept intentionally secret to keep the competitive advantage. The same can be said for institutions, (see UN or NSA examples) which often lack transparency yet their functionality remains often intact and untouched. Algorithms engage with users based on their history and search entries on the specific platform used, demonstrating mutual influence where one actor cannot function without the other: they are both constructed and constraint by it, just like institutions interact with its actors. The key issue of opacity or the lack of transparency is also one of the main connections between journalism, algorithms and institutionalism. Algorithms are programmed bits of software that are so

advanced nowadays that they are programmed to perform *autonomous decision-making* (Diakopoulos, 2015) based on previous data. Additionally, they are able to "learn" and filter data and information to make it more relevant. The potential problem thereby lies in who or what decides what is relevant and what criteria that decision is based on. The term "black box" (Barocas et al., 2013) appears in connection to algorithms often and causes tensions between journalists, editors and developers.

2.3.2. Algorithms in media institutions: searching for audiences

The media environment became increasingly complex and grew at a rapid paste. The data collected is immense, getting larger by the minute. Audiences have the choice between thousands of news sources (at least in the "Western World") and stories, tailor-made for their interests. Nevertheless, audiences seem to be increasingly overwhelmed with the sheer amount of available information that they turn to sources they trust: friends and family, celebrities or well-known newspapers. Media organisations, on the other hand, have as much data and information about their users and their preferences, hobbies, interests at hand that they turned to algorithms to filter and analyse the data. The theory suggests that algorithms not only "serve […] as a demand predictor" but also "serve […] as a content creator" (Napoli, 2014: 348) which means they make some work of journalists oblivion. One of the principle issues of this thesis is the relationship between algorithms and editors as well as programmers and editors. To be specific, The Guardian is chosen as primary source for the qualitative analysis, providing answers to the implications of algorithms in that particular news media institutions. The framework provided will be used to make sense of the answers gained through interviews with informants of *The Guardian*, which will then be analysed with the aid of the theories mentioned. These theories mentioned discuss the possible effect of algorithms in journalism and institutions but remain mostly theoretical (C.W. Anderson, 2012; Gillespie, 2013) or use reverse engineering (Diakopoulos, 2015). This research paper interviews not only editors but to a large part also developers and product managers about how algorithms work and are perceived. The critical standpoint of these theories presented here is therefore essential for making sense of the results.

However, before the actual analysis, a methodological guide on the design used to conduct the interviews, a presentation of the material collected as well as an overview of the prospects chosen will be presented in the following pages. Additionally, the methods used to conduct an analysis of the material will be explained and clarified.

3. Methodology

3.1. Interviews

3.1.1. The purpose of the Interviews

This research focuses on how people working at *The Guardian* perceive the influence of algorithms in the newspaper and the news room and therefore, interviews were the most relevant and obvious choice of gathering data. The purpose of these interviews was to get a deeper understanding of how a small group of experts working at *The Guardian* frame the influence of algorithms as opposed to the influence of editors at the organisation.

Firstly, the questions of operalisation and implementation of algorithms in *The Guardian* were in focus. The purpose was to find out how this particularly technology is used in *The Guardian* and why. Yet, a news room is filled with a variety of people all working closely together which leads to the second part of what the interviews were intended to shed light on: the questions of editorial hence human decision making. Who decides what makes a headline and how do these decisions interfere with algorithms? Furthermore, the institution of *The Guardian* was taken into account, how teams are build, how the informants reflect on it compared to other media organisations and where they see it to be heading into the future.

3.1.2. Conducting qualitative interviews

One of the key features of qualitative interviews as a data gathering tool is the fact that each interview is unique and each question considers the knowledge of the interviewee (Rubin and Rubin, 2005:4). The way the interviews were designed was a mix between several types of qualitative interviews. They vary between concept clarification, investigative interviews and elaborated case studies as well as organizational culture interviews (Rubin and Rubin, 2005). Each interview aimed to find out how algorithms affect the interviewee in their work life and the decisions they make. For that, a *concept clarifying interview* was conducted with the head android developer of *The Guardian*, Rupert Bates, because he is an expert on that matter and able to explain what sort of algorithms are used in *The Guardian,* what concept is behind them and how they are referred to. All interviews can be considered

elaborated case studies because they aim to gain insights on how algorithms are used in *The Guardian*, a very specific case, but allow for some broader conclusions on how the news room works and how the media landscape has changed through technology. Furthermore, the interviews give insights on how *The Guardian* as an organisation works, what working culture they have and which thoughts are behind their decisions, which are features of an organizational clarification, as explained by Rubin and Rubin (2005).

3.1.2.1. Challenges and limitations

One of the reasons why interviews can be challenging is the question of truth. As the interviewer, I am aware that each interviewee occupies a position at *The Guardian* and therefore answer questions a certain way. Also personal values and believes are reflected in the interviews, possibly affecting the outcome. Ideally, another researcher, asking the same questions to the same prospects, will receive the same outcome but since everyone is human, the personal "luggage" each one brings will naturally affect nuances of the interviews conducted. The approach which takes into consideration that there is no universal truth and knowledge is a *postmodernist* one, which remains the main approach used in the interviews.

As Jody Miller and Barry Glassner argue, every interview "fractures the stories [that are] being told" (2004:127). Additionally, it must be acknowledged that certain social differences between the researcher and the prospects exist. All interviewees are professionals with a long-time work experience as opposed to the researcher who is still a student. They are in different age groups and have different cultural backgrounds, meaning the interviewer is not part of their social group (Miller and Glassner, 2004:132). This again will influence the way of questioning and the outcome of the interviews but it is intended to be from an "outside" perspective to begin with. Another point mentioned by Miller and Glassner is the one of trust. In order to convince the interview prospects, each one was contacted over e-mail first, explaining the situation of the interviewer, aims and goals of the research and why it was thought of them being interesting people to interview.

The interviews conducted were exploratory interviews, (Oppenheim, 1992:65) since they are in-depth interviews and adapted to the different prospects. Furthermore, the purpose of these interviews is to understand the perception and how the prospects feel about the research topic rather than gaining statistical facts (Oppenheim, 1992:67).

3.1.3. The design of the study

Having a clear design, concept and aim of the study is crucial to maximise the output of the interviews. According to Oppenheim, there are 14 steps that need to be followed and considered for a successful study (Oppenheim, 1992:7). These steps include transforming *general* aims of the study into *operationalized* aims, meaning that they should be converted into hypotheses which need to be tested. In the case of this study, these general aims were to find out the perceived power of algorithms by chosen experts, how much human involvement takes place, which power structures can be found within the newsroom and how they interfere with each other because of technology. To be more specific, the news room was limited to the one of *The Guardian* with a particular focus lying on their app. The reason for that is that the app appears as a sort of melting and meeting point between developers, editors and journalists. The hypotheses are that the app is technically more advanced than the website, with more algorithms deciding over the order of news based on date, social media attention and so on as well as that power structures and institutionalism can be found within *The Guardian*. Another hypothesis is that the role of the developer becomes increasingly more important while the role of the journalists possibly decline. The second step in Oppenheim's guide is to get familiar with relevant literature, followed by a conceptualization of the entire study.

The next step was then to test the feasibility of the study, in terms of time, goal and accessibility of the prospects. Since this study relies heavily on human interaction and response, a plan B was created, in which articles from *The Guardian* newspaper would have been analysed in order to find out how the power of algorithms is discussed in the articles and more, by opinion-forming newspaper elite. Another important step of the study design as mentioned by Oppenheim is the conduction of a pilot study. The pilot study conducted prior to this thesis was to investigate through an experiment with three participants if *The Guardian* app adapts content to different users and how. It was functioning as the starting point looking at the outcome, while the thesis then looked at the input of the app, interviewing its producers and developers. The app is so to say looked at from two different sides; the input and the outcome. The last steps mentioned by Oppenheim then include the choice of data or samples, an analysis of the results and finally, the research report (Oppenheim, 1992).

As mentioned previously, the method used to gather data is of qualitative nature and was done in interview forms. The interviews were first recorded, then transcribed and finally analysed with help of a framing analysis and the creation of tables.

3.2. The analysis of the transcribed interviews

The main purpose of the interviews was to understand how employees of *The Guardian perceive* how algorithms are implemented in the app. Thus, the conducted interviews needed to be analysed thoroughly to gain insights on which discourse and frames are used when describing the use of algorithms. The method used to do so was therefore a framing analysis, which is in broader terms part of a discourse analysis as described by Norman Fairclough in his book "Analysing Discourse" (2003). Since discourse analysis is a large term for an analysis and includes many different aspects, it needs to be clarified that it functions as an umbrella under which a framing analysis as interpreted by Jim A. Kuypers and Paul D'Angelo (2010) is conducted.

The reason why a framing analysis seems particularly useful in the context of this study is because all members interviewed belong to the same organization, *The Guardian*. It indicates they all are part of the same organisational culture. Each interviewee is asked for a brief introduction and background, in order to understand their position within *The Guardian*.

3.2.1. What is a discourse?

The field of discourse analysis is broad which leads to the fact that interpretations of what discourse analyse includes can vary. According to Fairclough, discourse "constitutes the social. Three dimensions of the social are distinguished – knowledge, social relations and social identity – and these correspond respectively to three major functions of language […] Discourse is shaped by relations of power, and invested with ideologies " (1992:8).

Discourse is created by the knowledge and generalization of language that people make, according to the discourse, they themselves are in. It is also the result of that knowledge because new discourse is created through existing understanding which is applied in a new context (Johnstone, 2008). The role of a discourse analyst is to e.g. understand the mechanisms of change in language from a grammatical usage over a more complex use in different social settings. The analysts have been studying how power

relations, economic and social background as well as educational background influence the way people talk and interact (Johnstone, 2008).

3.2.2. The chosen interviewees: who are they and why are they relevant?

When choosing interview prospects, the ideal is to be as diverse as possible, not only in terms of occupations but also in terms of hierarchal positions. In total, eight experts were questioned which are as followed:

1. Rupert Bates, Lead Android Developer
2. Subhajit Banerjee, Mobile Editor
3. Aron Pilhofer, Executive Editor of Digital
4. Tom Grindsted, Group Product Manager of mobile and digital devices
5. Odrhán McConnell, Engineering Monitor of the Apps-Team
6. Charles Arthur, Contributor, Journalist
7. David Simkin, Android Developer
8. Sam Spencer, Product Manager

Note: The fact that all interviewed experts were male was not intended but all of the team members who contributed to the android app were male.

All interviewees are experts within their field and with the exception of Charles Arthur and Arthur Pilhofer, all were directly involved with the development of the apps (Android and iOS). Furthermore, all participants (except Charles Arthur) are full time employees at *The Guardian*. They come from various professional backgrounds such as Science Teacher (Tom Grindsted), editor at the *New York Times* (Aron Pilhofer), journalist at *The Daily Telegraph* (Subhajit Banerjee), a web developer at the *BBC* (David Simkin) and tesco.com (Sam Spencer) among others.

Sample size: The number of interviews conducted is 8, while 5 are members of the team which build *The Guardian* app. The team consists of 13 people in total, making 5 a relevant sample size. A framing analysis does not necessarily focus on a large sample size since it is a method to understand the *how* and *why* rather than the *how often* (Johnstone, 2008:22).

The transcripts: The transcripts are based on the recorded interviews conducted over Skype and are including the most relevant information for the discourse analysis. That means that not all words might be included as well as distracting details, irrelevant for the actual analysis. This is a key feature of a fruitful analysis (Johnstone, 2008:23). All interviews were conducted in English.

3.2.3. The power of knowledge

Interviews, by the nature of their setting, have power structures. A researcher or interviewer wants to find something out from the interviewee, thus seems in a less powerful position due to the lack of knowledge. As Cameron et al. point out, there is a large amount of research done on "powerless people" (2006:13). Two reasons for that can be arguably found; first of all, there is a need to understand "social problems" (2006:132) and which dangers and challenges come with it, while secondly, there is the lack of powerful elites to reply and answer inquiries (Cameron et al., 2006). It is important to know that while the interviews function as primary data-gathering tool, the first contact was made via e-mail. It is not a focus point of this study but nevertheless important and the only "chance" to convince members who are part of a media elite to answer questions asked by a master student. When approaching the possible interview prospects via e-mail, it seemed important to include the fact that this is done for a master thesis at JMK a faculty of the University of Stockholm, in order to add academic credibility and relevance to the inquiry, leading to more responses.

3.2.3.1. Ethics

Being respectful and understanding is important, as well as understanding that the findings of the interviews might have an impact on the live of the individuals (Cameron et al., 2006). This became apparent when interviewees were for example asked for why they left a certain position or job and their answer appeared carefully chosen.

3.3. The Framing Analysis

A frame is a "structure of perception" (Ensink and Sauer, 2003: 14) and can be used to "select some aspects of a perceived reality and make them more salient in a communication text" (Entman, 1993:52). Framing can be used to analyse how people make sense of something and talk about a particular issue (Pan and Kosicki, 2001:39) and allows for an analysis of how people *talk* (Pan and Kosicki, 2001:35). The framing analysis can be seen as part of a discourse analysis, focusing less on the linguistic level and more on how "frames" are constructed by parties who/which *use* other parties to spread their intentions and

positions. As Kuypers and D'Angelo argue, most framing analysis has been conducted in the field of communication to understand how e.g. politicians "use journalists and other news professionals to communicate their preferred meanings of events and issues" (2010:1). In the case of this study, it appears reasonable to classify the interviewed journalists and technicians as "stakeholders or politicians" who want to convey a certain meaning through the "journalist" in this case, the researching interviewer. Frames are often created through journalists, making it a relevant approach to analyse the interviews (Reese, 2010). As mentioned earlier, all participants have a certain agenda and role as well as set of beliefs which influence the way they frame things, "embedded in a web of culture" (Reese, 2010:18) drawing "attention to the cultural surroundings" (Reese, 2010: 18). That means that all frames are rooted in a larger cultural context, such as being part of *The Guardian* news organisation, which influences the outcome. While the research uses primarily a postmodernist approach in the way of how results and questions need to be seen, framing analysis benefits from using various approaches simultaneously (D'Angelo, 2002). This is why parts of a constructionists approach, meaning that individuals and groups make sense of their reality based on information received from various sources (Van Gorp, 2010) were used when analysing how the use of algorithms were framed. Afterwards, they were separated into differences and similarities based on the knowledge each individual had access to.

The analysis consists of what Reese calls the "what" and the "how" (Reese, 2010: 18-ff). The "what" analysis the organisational policies and structure while the "how" focuses on "how things are done" (Reese, 2010: Understanding and highlighting the "what" creates frames that allow for deeper understanding of "how" frames (Reese, 2010:20). The "what" frames look at the "network of concepts" and the "unique narrative and myths that make it work" (Reese, 2010: 19) as well as provide a better understanding of the "cultural environment" in which the "how" frames exist (Reese, 2010; 18). In order to understand both the "what" and the "how" frames as defined above, the institution of *The Guardian* and how it works was an important part of the interviews. Furthermore, all interviews were then organised in tables with seven frames or categories allowing for multiple sub questions.

Below is an example of how the tables were constructed. The reason for having "Yes", "No" and "Other" as first classification of answers is to limit subjectivity of the frames, as proposed by Van Gorp (2010:100). It also aids to organize the large amount of data and material gathered and further on draw first conclusions over possible commonality and disjuncture among the interviewed experts. It also

allowed for the vast amount of data gathered to be sorted and classified in a meaningful way, answering the research and sub-questions of this thesis.

3.3.1. Example of a Table used for Framing Analysis

The role of the editors and their curated content

Questions	Yes	No	Other
Do editors decide over content rather than algorithms?	**Yes** "For me, the most interesting thing is that it's combining a number of different signals to choose what that is. So one of them, and it's the most overriding is authorial intent."		"But the really nice thing is taking authorial intents, active user actions and passive browsing history and putting all these three elements together. It means that you are skewing in content the user is interested in but also broaden their horizon with editorial suggestions."
Will editors always remain important?	**Yes** "The editorial voice is still the main focus and always will be. It is about writing great journalism not about clip bate." "We do our best to structure teams where editorial opinion and ideas are embedded in the middle of a team which also has tech people."		
Can editors and algorithms co-exist?	**Yes** "What's interesting for me about the Apple watch and the swipe on Android is it's being quite careful about distinguishing the editor's intent which is represented in the top stories on the		

	home page and the other section which is much more about you as a person." "What we need to do is to side post them and be respectful both ways." *(Note from researcher: posts curated by editors and posts curated by algorithms)*		

The seven different frames or categories under which the tables were organised are:

1. The use of algorithms at *The Guardian*
2. The role of the editors and their curated content
3. The users and their role
4. The importance and role of the apps
5. The institution of *The Guardian*
6. The possible competitors such as Facebook, Twitter, Google or other news organisations
7. The future of *The Guardian* and in general

These frames then had sub-questions within them which were aimed at being similar for every interview in order to understand the "what" and "how" and their relationship to each other. Each interview question was categorised under one of these seven main frames. Apart from the "what" and "how", the tables were also analysed based on similarities and differences or challenges that can be found among the informants and their way of framing for example the use of algorithms at *The Guardian*.

This will be further discussed and elaborated in the results and analysis part of the thesis.

4. Results and analysis of the interviews

Tarleton Gillespie defines algorithms that produce and certify knowledge as "public relevance algorithms" containing a specific "knowledge logic" which is constructed on presumptions of what knowledge is and what makes it relevant to the receiver (2013:2). These were primarily the type of algorithms in focus in the interviews and how they are currently understood, used and thought of at The Guardian. Also, an important focus point was how the future use of algorithms will look like as well as how a possible change of authority between editors and more algorithmic driven knowledge is perceived.

To answer the research questions which were stated as followed, the gathered material will be analysed and presented in the following pages:

Research Question: How is the influence of algorithmic logic framed and perceived as opposed to the power of the editorial voice at *The Guardian*?

Sub-questions:

1. *What is the perceived relationship between algorithms and editors at The Guardian*
2. *What is the perceived influence of algorithms in an institution such as The Guardian?*
3. *What perceived impact do algorithms have on journalism and the news industry?*

The way these frames were organised was to group them in categories (see p.39) and find out patterns of similarities or differences among the interviewees. While the similarities are clear, the differences are more nuanced and largely based on the occupation the experts occupy and were therefore framed as *challenges* rather than *differences*. After identifying these broad patterns, the previously mentioned "what" and "how" frames were identified as the frame of how *The Guardian* works and what problems the news industry faces. Therefore, the framing of *The Guardian* and its structure as well as financial situation are not included in the patterns of similarities or challenges. Before going in-depth with the results of the created tables, it is important to mention why the apps (and mainly the android app) were a relevant choice of medium. The apps allow *The Guardian* to store large amounts of data and understand their users' behaviour and preferences. Further on, the users are much more active and engaged with the content published on the app compared to the website. Furthermore, it is where most tests of new technology and algorithmic logic are conducted. As the informants described:

"The reason why I mention the app is because it has such an active and engaged user base so it feels quite natural as a platform to experiment with." (Tom Grindsted)

"The traffic we got to the app was so incredible it basically changed the way we thought about delivering news" (Rupert Bates)

"We noticed that suddenly, at times more than a quarter of the traffic of the entire Guardian network would be coming from the android app" (Rupert Bates)

4.1. The similarities

After having conducted the interviews, there was a clear distinction between similarities and differences between the viewpoints and perceptions of the respondents. To begin with, the similarities about how the interviewees perceive the current as well as the future use of algorithms in The Guardian apps will be presented. It serves as a good point of departure to understand how similar the question of algorithmic use were answered and where the similarities lie.

4.1.1. The position, importance, relevance and future use of algorithms in The Guardian, as seen by a group of experts

When asked about the current usage of algorithms, most interviewees agreed upon the fact that they are using a small amount of algorithms such as in the personalised homepage on the app. They stated the following:

"You are talking about the way we take the user's personalized content and mixing it with the editorial content using some algorithm to edit the user's personalized homepage, right? […] That is actually the biggest algorithm we use in the app and also the source of the headaches." (David Simkin)

"So we have a bunch of, I wouldn't call it one algorithm but we have lots of logic, a combination of logic and things like that." (David Simkin)

"We track your read history locally on a device, it goes into a database and from that we can get really quickly a whole load of suggested heuristics. So by default the app is also about what kinds of content and tags you are most likely reading at this time of the day and this time of the week. So it weights into that to recommend you what you as a user would have tended to do." (Tom Grindsted)

"At the moment, we don't make extensive use of algorithmic logic for the content specifically." (Odhrán McConnell)

However, while they are currently not used as much, algorithms will play an increasingly important role in the future at *The Guardian*, something that everybody agreed upon.

"[…] We as a business and within my portfolio, we are not using them in a vast amount at the moment but we are just on the brink of using them a lot more." (Tom Grindsted)

"We will also start to introduce more of an algorithmic type in the app but keep it very separated from the editorial." (Rupert Bates)

"One thing we are looking at the Android app are algorithmic recommendations." (Tom Grindsted)

"We have got some stuff coming up which will be a lot heavier on "true" algorithms in terms of a Facebook, Google approach; there is a desire of having a more personalized stream of content." (David Simkin)

"We are testing out, what I would call, algorithmically generated relevant content." (Odhrán McConnell)

When asking about if there will be more algorithms used at *The Guardian* in the future, interestingly, the main goal appeared to be doing something similar to what other companies are already doing: algorithmic recommendations. The companies named were Google, Facebook, Spotify and BuzzFeed.

"I mean, BuzzFeed are a very algorithmically driven news organisation. They have their own metrics that help them decide when something is trending, what it means, if they should give it an extra boost or not and it's very clever. I think that a lot of that kind of technology or that approach could be valuable for news organisations." (Aron Pilhofer)

(Speaking about Spotify) "So there is the discovery function that basically looks at the history what you have been listening to and bases it on that. So that is something we are trialling right now." (Odhrán McConnell)

"I think there is an aspiration of being a bit more clever about the app. We will be […] looking at what users do, looking at that side of Facebook, to gather core information to create a personalised homepage without having the user to interact with us directly." (David Simkin)

The general consent of how algorithms are used and framed is that they are definitely important and currently tested in order to be part of soon-to-be released features. When most of these interviews were conducted, *The Guardian* had not yet announced their cooperation with Facebook releasing short snippets of news on the platform, called Instant Articles.[28] Only Sam Spencer hinted at something "secret Tom and other members of the team are currently working on". Another interesting result was that when asking about the general advantages of algorithms, answers were rather conforming:

> *"I see some advantage of an algorithmic approach there but there is a huge amount of human involvement needed in getting stories to stand out." (Subhajit Banerjee)*

> *"The way I see algorithms, they are there to extend and enhance your experience of our product." (Tom Grindsted)*

> *"I think what Facebook does, is to take that massive, billions of stories, densening it down to make it always look fresh and easily consumable, bite-sized bits of information, the way they do that is brilliant. […] If you would have editors trying to do that you would almost need an infinite amount of them. So algorithms certainly do have their place, I just think in our organization it's perhaps slightly less than in others." (Rupert Bates)*

> *"One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better sections of content […] to use data to provide tools that journalists can use that would effectively enhance their ability to understand this." (Aron Pilhofer)*

What these quotes demonstrate is that algorithms are perceived as a useful tool that can help the work of journalists and editors and make them more effective. Potentially the most interesting finding is that the type of algorithms mentioned earlier in the thesis, such as the *filtering*, *association* and *prioritisation* as explained by Diakopoulos (2015) are forms which were also pointed out by the informants during the interviews. The notion of algorithms serving as modern archivists is for example brought up by Grindsted who explains the storage of data from users of the apps. Bates also acknowledges their power of compressing vast amounts of data into small bits as "brilliant", a point highlighted by Napoli (2014) about the increasingly large amount of traces every user makes and the difficulty to organise that data without algorithms. Also, and this can be observed further on again, the use of algorithms is at least

[28] http://www.theguardian.com/media/2015/may/13/bbc-news-guardian-facebook-instant-articles

partially framed in the same way of what Gillespie identified as *public relevance algorithms* (2013). One of his points is the so-called *cycle of anticipation* in which algorithms store and collect data from users and in order to draw conclusions from that data. It is for example mentioned by McConnell, Grindsted and Simkin that there is a desire to create algorithms that recommend potentially interesting context to the user based on previous information. While it is seen by the informants as something positive and "product enhancing", Gillespie (2013) suggests a more critical viewpoint on that matter, which is a notable difference between academics and professionals.

4.1.2. The role of editors and journalists in regards to algorithms

4.1.2.1. The importance of the editorial voice

Even though algorithms were framed as a tool to help primarily journalists and editors to became better and more efficient at their job, when speaking about the current and especially future desire to use more algorithms in *The Guardian* apps, examples of companies were named which have much less editorial curation and intent than *The Guardian*, such as Facebook, Google Now, Spotify or Twitter. That led to questions about the role and power of editors at *The Guardian* and how valid and relevant they will remain in the future. Everyone interviewed strongly agreed upon that the editorial voice or intent, an expression most commonly used by the informants along with curation, is the most important part and the very heart of their business. This can be observed in the following statements:

> *"That is a really important thing for us because the editorial voice of The Guardian is such an important part of what we do, it is one of the key differentiators for us over the million other news sources that are out there on the web." (Rupert Bates)*

> *"Absolutely, it [the curation] is the heart of everything and at the forefront of what we do. We will be very careful to preserve that and our journalistic independence." (Subhajit Banerjee)*

> *"[…] I personally don't have any fear that this is the end of editorial and AI will take over." (Subhajit Banerjee)*

> *"Very much, for us at the moment it is human beings and it will be for the foreseeable future, I think it always will be. Editors who really know their subject, great journalists and great editorial people can do that stuff much better than an algorithm can, in my opinion." (Rupert Bates)*

> *"The editorial voice is still the main focus and always will be. It is about writing great journalism not about clip bate." (Tom Grindsted)*

> *"[…] This is why we want humans in London, New York and Sydney instead of algorithms." (Tom Grindsted)*

> *"[…] The content is business, what the journalists produce is what the users come to us to read, so it will always be the most important thing."(Odhrán McConnell)*

What is remarkable here is that editors as well as programmers and engineers agree upon the fact that humans will always remain better at curating stories compared to algorithms. It shows that the informants have the same point of view and set of values about the future of editors and the importance of human curation at *The Guardian*, a fact that will become more blurry later on.

However, that uniform thinking is challenged by scholars mentioned earlier such as Emily Bell (2014)and C.W. Anderson (2012) who argue that journalists and news organisations as a whole need to become more technology savvy. When the journalist Charles Arthur was approached about the importance of algorithms and the medium his story appears on and the role of a journalist and content creator in regards to being aware of technology, his answers were as followed:

> *"As to algorithms, I don't know exactly how they work, but I imagine it's a combination of the tags used and the textual content of the stories. It's completely automated. One case where the "extra" stories are chosen by humans is at the end of the text, where you may get a headline in bold linking to another story. That's just the choice of whoever edited the story. Those links work quite well, if well-chosen, to get people to click on."*

> *"Your question though seems to me like asking someone who brews beer what they think of the glasses people drink out of. I don't really care, as long as they enjoy the drink." (Charles Arthur)*

This reasearch paper only questioned one content creator which is by no means a representative sample size. However, it was a rather surorising answer given the fact that Arthur worked as *The Guardian's* technology editor for nine years yet his work does not include the aftermath of his story. In order to understand how common that viewpoint stated above is, other informants were asked about the role of content creators and journalists. After asking for example Pilhofer, executive editor of digital, about the

role of journalists in a new era, where technology becomes a more present part of the life of any news organisation, he gave an insightful answer as to how algorithms and technology are still perceived:

> *"[…] that's what a journalist's job has been so far traditionally and what happens to the text is someone else's problem. And that's just a very traditional way of thinking about it. The BuzzFeed's and even the Huffpost's of the world will tell you that the life of a story starts when it's published. And that's the right way to think about it and that is changing, believe me, and really fast." (About the role of a journalist as purely a content contributor)*

Tom Grindsted added:

> *"I'd be careful to distinguish between journalists and editors because I think Charles is very much a journalist in the sense that he produces content and that's it, whereas if you'd spoke to editors such as Subhajit Banerjee, they are editors, so their job is to arrange the content the journalist gives them, so I suspect that would be the distinction you would see when you talk to Charles. It's exactly that between the content creator and the content curator."*

What shines through these quotes is that algorithms and editors do not necessarily need to remain as separated as they currently are and can work in order to enhance and simplify the work of journalists as well as making content more visible and easy to find for readers. For example:

> *"What is interesting for us now is to move the conversation beyond that **either** it's chosen by the editorial or **either** it's chosen by an algorithm. We can do both in the same application, technically speaking." (Tom Grindsted)*

> *"I think the power is actually in thinking about a sort of cyborg journalist. You are providing a tool that journalists can use to make decisions that is based on some very complicated technical foundation but at the end of the day it is still the journalists making the decision. "(Aron Pilhofer)*

> *"[…] It helps the journalists to do better work. To me that's where the goal is." (Aron Pilhofer about the power of technology)*

What can be seen from these results is that everyone agrees on the fact that algorithms are useful and an important addition to life, generally speaking. It is worth mentioning that algorithms are often referred to as a tool (except for Simkin who refers to it as "algorithmic logic") by the interviewees, a term also used by scholars when referring to computational journalism (Anderson, 2012; Lewis and Usher,

2013). It suggests a framing of algorithms as more of a supporting software than an autonomous one that is at times hard to control and comprehend, a frame used by some scholars (Diakopoulos, 2015). The choice of words here is interesting because as seen in the following paragraphs, not everyone within *The Guardian* seems to agree on that frame of a useful tool to enhance the work of editors and journalists, used for algorithms especially in regards to the power of editors. The common mission of keeping the editorial voice as the most substantial part of their business is very clear throughout the interviews with all participants. Conversely, these answers were given in direct comparison to the power of algorithms versus editors. Later on, the discussion about the type of algorithms that will be soon used at *The Guardian* contrasted the here shown uniformity about the power of the editors.

These results, furthermore, hint at existing problems within the news organisation industry which will be explored in the following pages. The question about these potential problems that algorithms pose within the news industry, however, appeared to be where the some of the biggest discrepancies lie between the individual respondents. It became especially apparent when asking the informants where they see the future of the newspaper industry and *The Guardian* as well the future use of algorithms. Additionally, when speaking about algorithms and the future of news organisations, the companies named most were the ones without an official editorial voice such as Facebook, Google or Twitter. This is a finding which wasn't highlighted much before the interviews but is a crucial one because it shows who *The Guardian* sees as a competitor or media organisation that are "doing things right" in terms of using technology and algorithmic logic.

4.2. The challenges

4.2.1. Algorithms versus editorial voice

The results shown so far highlight the uniformity and common mission of the experts at *The Guardian* who all agree that algorithms will be used more extensively and in a more data gathering fashion very soon. Furthermore, everyone interviewed strongly agreed with the fact that the editorial voice or intend is the most powerful and outstanding feature of *The Guardian* compared to their competitors as well as the reason why users are so active on the app and visiting the website as often as they do. While the informants do not directly disagree on the importance of editors versus algorithms, the framing of that

balance varies. Further on, combining the algorithmic logic with the editorial voice seems to be one of the biggest internal challenges The Guardian is facing at the moment as described by Tom Grindsted:

> *"Internally, the tension is between algorithmic recommendation that gives people content they really value into their hands and in doing so increase loyalty, engagement and retention. Unless you are quite careful of how you are describing it, the assumption of what it's doing is putting editors out of their drop."*
>
> *"That is the conversation we are having at the moment both internally and with business relationships. It's the biggest challenge we are facing at the moment." (Tom Grindsted)*

Also, while everybody agreed on a heavier use of algorithmic logic in the very near future, knowledge about the current use of algorithms differed. This, however, might be due to the different positions every one occupies, as pointed out by McConnell during the interview:

> *"All the judgements we make are really editorial driven. I struggle to think of even a single example of where we could use algorithms. If anything of that is happening here, it's done in very small quantities and it's happening in places I have never seen it, let's put it that way." (Aron Pilhofer)*
>
> *"I am not sure if Aron even knows that that exist because it's deep in the system." (Odhrán McConnell)*
>
> *"You are talking about the way we take the user's personalized content and mixing it with the editorial content using some algorithm to edit the user's personalized homepage, right? […] That is actually the biggest algorithm we use in the app and also the source of the biggest headaches." (David Simkin)*

What became visible and also potentially a bit problematic and confusing was that during the interviews, the definition of algorithms and algorithmic logic was very different depending on who was asked. The first definition of algorithms for this study was the one stated in the beginning of this part, the so called "public relevance algorithms" as defined by Gillespie (2013) (p.33). However, that definition was expended when talking to the experts, simply because the knowledge of what aspects of the app and *The Guardian* have and have not algorithmic logic to it in the apps was gained through the interviews. Nonetheless, while some referred to algorithms as procedures that led users personalise their homepage, others named a layout engine as the only algorithms in place. It was called algorithmic logic

by some and soon-to-be used algorithms were defined as "true" algorithms, which were then explained as the software Facebook and Google use for example.

4.2.2. The problems of the news industry

4.2.2.1. Editors and journalists

The financial situation leads to an interesting frame often used during these interviews and one of the most interesting findings of the research. The main question of the thesis was to understand how algorithms are used and perceived at *The Guardian* and how it influences and perhaps changes the work of editors. Yet, during the interviews, it became evident that the answers to that are rooted in a variety of causes and problems. One of the most surprising findings was that while *The Guardian* was always forward thinking, also in terms of technology, and still is, it has not used or invested in available technology in order to enhance the work of their journalists and editors. Banerjee, the mobile editor, admits that even while "we at *The Guardian*, we love technology anyways" it appears to be still somewhat frightening for some of his co-workers:

> *"All technology can be overwhelming which is why a lot of people say: "Oh my god, I hate a smartphone, it's so confusing, why don't you just do three things?" But that's the whole nature of it; a smartphone offers to do so much more and automatically adds confusion and noise to the whole thing. It's a bit tricky to separate the noise from the actual signal that you are trying to get. […] We can either say no we stick to these three things or we can be more open and see where it takes us, with the right checks of course. I personally don't think it's something to be afraid of but you have to understand the new platforms."*

He adds that the shift from print to digital is still challenging for a lot of editors and journalists:

> *"[…] we are still a big newspaper but we are doing much more in digital than before but a lot of journalists and editors are still print focused. First, they had to make this jump from print to web were things are instant, there is Google News and Facebook, etc. Then mobile came along and the same editor who was only thinking in paper then started thinking about web, now has to think about this other new thing as well where you have to send out the alert almost immediately when a big piece of news happened."*

This result was a surprising fact along the research given the fact that the BlackBerry was introduced to the US-American market first in 2003 and the iPhone in 2007. Yet, as Pilhofer explains, after I expressed astonishment when learning about the low amount of technology used at *The Guardian*:

> *"So when you are talking to news about algorithmic approaches and what it could do to news production, we are really in the early days of this. So we are way behind the Facebook's of the world and way behind the BuzzFeed's of the world. And that shouldn't be surprising because two years ago, news organisations weren't really investing in news technology."*
>
> *"So the reason why I am surprised that you are surprised is that news organisations are really, really, really only just now taking this stuff seriously and, more importantly, are starting to invest in technology."*
>
> *"[…] We are collecting this incredible amount of data and we have only been doing that for a year. As forward thinking and looking as The Guardian is, we have only been doing this for one year."*

He also goes on saying that: "[…] in just about every other way, we are actually struggling when it comes to these new technologies."

Evidently, the lack of available tools to e.g. measure the performance of articles, tools to help journalists and editors create and find interesting stories for their readers and users (the term used by all interviewees rather than readers) is one of the reasons news organisations such as *The Guardian* or the *New York Times* are less profitable than *BuzzFeed* or Facebook. When asking Pilhofer and Banerjee about what criteria they use to define a "good" news story, Pilhofer responded: "Years of experience. Seriously, that's how it's done, that's how the *New York Times* does it, that's how we do it. There is no magic to it." He further on described the work of an editor as followed:

> *"[…] Most of the things we do is based on the gut. Editors will put something up and they will put it down, they will move it over and they'll take it down. They will remove it once it has been there too long and that's not a very data driven solution. And I don't think it should be a 100% data driven but I also don't think it should be 0%."*

This quote is also supported by Banerjee who has a similar answer to the question of how they decide what makes a good and important news story and what determines a relevant push alert, sent out to all app users:

> *"[…] you had to do lots of laying down the rules and best practices as well; what makes a great alert or what makes something that is not spamming. So you should not use alerts to drive traffic to our content but it should be a real big thing, an OMG thing, where you go WOW. Again, while doing this we've discovered, my OMG is different from your OMG […]. So it's still a learning process. There are certain things, as you said, Charlie Hebdo or a big personality who's died, these things are obvious, Or HSBC […] we have information that no one else has because it's our story. In terms of what goes on top, what is the ordering, we get signals from a lot of places. First, it's experience of the editors […]. And then are a lot of signals from other places such as Twitter, where you see a level of interest. If these are issues that The Guardian cares about deeply, than we will make them prominent as well."*

That describes one of the biggest problems, also agreed upon by most experts questioned for this thesis. (The only person that did not seem to agree with it was the Journalist, Charles Arthur.) The fact that journalists see themselves purely as content contributors and editors base their judgement mainly on their gut and experience of what makes a good story, has been best practice for very long and is only now changing. It is in line with the points of criticism coming from Bell (2014) or even Shepard (2013) who describes the difficulties to adapt to the digital age and the problems making money from it. The new channels such as Twitter and other social media platforms play an important role for editors because they present stories faster and give hints of what could be a possible big news story but also offer challenges in determining what is true or false, noise or a good and interesting story. Yet, these platforms are displaying news mainly through the use of algorithms with little to no editorial judgement.

4.2.2.2. The Problems with Algorithms

As Pilhofer described, most news organisations are behind when it comes to the use of new technology. It is currently still difficult to understand, for instance, which piece of news is doing well given the time, place and subject because there is no data to compare it to. Other organisations such as *BuzzFeed* or Facebook have a better understanding of their "trending" posts which allows them to for example push content that is underperforming. However, this approach based on a more algorithmic logic and judgement than a human one does not come without downsides. One of the main problems with algorithms is, as Tom Grindsted explains, that a lot of posts are "just "black box" recommendations like Facebook, where you get information and don't know based on what" and also the previously mentioned problem of the "the icky fact of "someone always watching you"" in the mind of users. The

Guardian has done a lot of experiments and research with its users in order to find out what they like and the results were rather clear:

> *"People are generally quite sceptical about it. […] There is also a big fear of missing out. People seem to have a much bigger fear of missing out on stuff than they are excited about the possibility of finding stuff. There is a real worry that you are ending up in an "interest bubble"." (Rupert Bates)*

> *"So we have done experiments with users and they are quite edgy with and uncomfortable about it, getting caught in the "filter bubble"." (Tom Grindsted)*

What appears to be resulting from the statements and problems highlighted here is that there has to be a change in perception of technology and its potential. It has been made clear by most experts that technology is still framed as something "scary" and "icky" both in the heads of the employees at *The Guardian* as well as their users and readers. They are, nonetheless, very much aware of these issues and currently working on a more technically driven solution that works as a support for users, journalists and editors rather than a threat.

> *"We publish so much stuff I think for the user to find stuff that they find interesting can be quite challenging and hopefully through the use of algorithms, we can help them with that" (Rupert Bates)*

> *"What we are trying to separate is what's personally relevant to the user and what the editorial voice is and how that is presented."(Odhrán McConnell)*

Everyone expresses a clear desire for a sharp distinction between the editorial voice such as headlines and top news stories and algorithmic logic such as recommendations based on previously read articles or history. Yet, the model for algorithmic logic appears to be oriented on Facebook and Twitter which are companies that openly do not have any editorial voice (the debate resulting of that would make for an entire new research project). Furthermore, not everyone seems to be equally excited about the use of more algorithms as well as equally concerned of what their drawbacks are.

4.3. The institution of *The Guardian*

4.3.1. Inside structures

4.3.1.1. Teams and hierarchies

As described by Richard Daft, every organisation has a strategic direction designed to be as effective and goal-achieving as possible (2012:54). That also includes that all employees share the same mission, vision and values (2012:57). As previously demonstrated, all interviewees agreed on great journalism and a carefully curated editorial voice being their most valued and important feature. Yet, with the introduction of new platforms and technology, the question arose of how team structures and hierarchies look like at *The Guardian* and everyone agreed on it being a rather flat hierarchy. Also, most teams are working autonomously and often consist of people with different skills as well as positions within *The Guardian*.

> *"We are quite a flat team, Rupert is the senior developer, Mohamed and me are just normal developers and Rupert gets the final call but he hasn't had to do that so far. We all come to a consensus and he's very reasonable. We just pick things up as they come from Tom, the product manager who plans out stories." (David Simkin)*

> *"If you look at the apps team as a whole, you could almost lift them out of The Guardian and say, there is a product team that is independent and makes their own decision. But saying that, we obviously closely work with editorial and commercial to create the best possible outcome of the app." (Odhrán McConnell)*

> *"We have three desks that more or less have their kind of direct news. One is the live desk[…] which is most responsible for our homepage and making decisions […] then there is the news desk which is covering stories on more topical bases […] and then we have a planning desk, which is more focused on what I call enterprise." (Aron Pilhofer)*

> *"We are doing our best to structure teams where editorial opinion and ideas are embedded in the middle of a team and also involve tech people." (Tom Grindsted)*

That was also supported by the fact that everyone referred to other employees by the first name instead of their title or last name. A fact that showed the relevance of the prospects chosen was that they often referred to people already interviewed or about to be interviewed as people they are most in

touch with. It added a sense of validity and trust to the entire process and showed how closely the apps team and mobile editors worked together.

4.3.1.2. Financial Situation

As previously mentioned, *The Guardian* is financed by a trust fund which allows for a greater freedom and a focus on user satisfaction valued higher than making money, also reflected by the experts interviewed.

> *"The Guardian puts more a priority on user satisfaction, kind of reach and engagement slightly ahead of actually making money. They rather keep users engaged, have a positive impression of The Guardian-brand and keep coming back for its content than lose a lot of that and make a bit more money. For example, the decision of not having a subscription-only app, which The Guardian used to do, since they removed that subscription The Guardian makes a lot more money because more users are reading the content." (David Simkin)*

> *"Does profit matter when you have a trust behind you?" (Odhrán McConnell)*

> *"The trust is well invested and as long as we don't overtake that increasing investment in terms of our loss in the year-by-year basis, we are going to be ok. We made lots of structural changes that will last five years that really cemented that position. I am not worried about the financial future of The Guardian." (Odhrán McConnell)*

Nonetheless, profit does matter since the app is financed by advertisement and needs to generate money in order to be justifiable, according to David Simkin. It also leads to the diverse visions and thought of the experts concerning the near and far future of news industry and *The Guardian* as well as the possibilities and limitations of algorithmic logic, where the biggest disagreements can be found.

4.3.2. Competitors

While the overall voice of the experts was that the editorial voice is the most important asset and valued much higher than any algorithm, it was also clear that in order to stay competitive and generate some sort of profit, using more algorithms and technology is inevitable.

> *"We have got some stuff coming up which will be a lot heavier on "true" algorithms in terms of a Facebook, Google approach; there is a desire of having a more personalized stream of content." (David Simkin)*

> *"I think there is an aspiration of being a bit more clever about the app. We will be […] looking at what users do, looking at that side of Facebook, to gather core information to create a personalised homepage without having the user to interact with us directly." (David Simkin)*

A very interesting frame was used to describe algorithms, namely with words such as "personalized", "clever", "brilliant", "extend and enhance the experience" and so on.

> *"I think what Facebook does, is to take that massive, billions of stories, denseing it down to make it always look fresh and easily consumable, bite-sized bits of information, the way they do that is brilliant. […]." (Rupert Bates)*

Additionally, even though the idea of a news stream without any or little editorial curation was collectively rejected, almost everyone mentioned companies such as Twitter, Facebook, Google Now, BuzzFeed and even Spotify as companies and competitors when referring to what they consider a good and successful algorithm and aspire to do more in the future. The algorithmic logic behind functions such as the Facebook recommendations as well as Spotify's Discover was mentioned various amounts of time which is mainly an algorithm collecting data based on previous browsing history. However, as Tom Grindsted, explains one of the most important things to consider is: "It's trying to get over the icky fact of "someone always watching you". It is trying to be like "it's not us at *The Guardian* or Google deciding for you but it's you and your browsing habits"."

As suggested by many scholars and business insiders previously mentioned, the news industry is in a crisis with one of the main problems being the difficulty of getting advertisers to pay advertisement on their apps and websites. While the financial situation is a bit different at *The Guardian* compared to most other newspapers, they still face the same challenges when it comes to the use of technology.

4.4. The future of news organisation and *The Guardian*

This part became one of the most revealing and personal parts of the interviews. It demonstrated how everyone thought of the future in general and the future of The Guardian and answers were as diverse as insightful.

4.4.1. The Future of news organisations

This section of questions was where interviewees could express their personal opinion about how they think news organisations will develop in the future. It is a very broad and open question so that everyone can interpret it the way they want to. It also made space for the various different lenses and thoughts the informants had:

> *"The world is moving really quickly towards a situation where the devices that people own are part of the person as well. You keep it in your pocket, it's with you all day and if we can be a part of that device, we can be a part of the user's life. I know it sounds really scary when I say it like that but it's kind of the trajectory of the industry and where devices are going." (Odhrán McConnell)*

> *"So in a few years, I think you will have a very large number of content publishers whose essentially only route to users is mediated via social networks." (Tom Grindsted)*

> *"You will have niche people who will exist on their own but I don't think there is really a place for having medium-sized organisations anymore." (Tom Grindsted)*

> *"[…] you will have a small number of extremely large players, so I am talking about hundreds of millions of users each month. […] And they will obviously use social media platforms to a huge degree as their widest possible funnel but they will also have their own properties in the form of app-like experiences." (Tom Grindsted)*

> *"This is just going to happen, there will be more technology and different ways of people consuming news." (Subhajit Banerjee)*

These quotes highlight the fact that even more news will be experience via various social media platforms and that it will, according to Grindsted, move towards a more mainstream mass media which extinguishes medium sized organisations. What is interesting here and also can be seen further on is that technology is the key, something news organisations have neglected to take into account for very long.

4.4.2. The future of editors and algorithms

The question of if and how editors and algorithms will co-exist in the future was partly answered through the question of the future relevance of editors. Everyone agreed that algorithms won't replace editors in any way and that a human curation is key and the most important part of their business. However, there is a tangible feeling of pushing the use of algorithms and encouraging editors and journalists to become

more technology savvy by the developers and product managers and even the digital editors. (See also quotes from Tom Grindsted, Subhajit Banerje, David Simkin and Aron Pilhofer p.46-ff) The way algorithms were most often framed during the interviews was as a very useful tool to support and facilitate the work of editors and journalists.

> *"Getting back at the algorithm question, here are a few things why this is interesting for us. One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better selections of content. Another way of using algorithms is in news gathering and news detection […]. "(Aron Pilhofer)*

> *"You should be using technology to make journalists smarter and to help journalists to find things, to narrow/filter down information."(Aron Pilhofer)*

> *"So when you talk about algorithms, I think the power is actually in thinking about a sort of cyborg journalist. You are providing a tool that journalists can use to make decisions that is based on some very complicated technical foundation but at the end of the day, it is still the journalist making the decision. You are providing more actionable data to the journalist and I think that is what's important."(Aron Pilhofer)*

4.4.3. The future of The Guardian

Interestingly, the future of *The Guardian* is perceived as a save one thanks to the trust and a new structure. Additionally, there is a strong desire to be among the big power players in the news media organisations (see p. 51).

> *"Certainly, where The Guardian is positioning itself so far and given the large numbers we have, we are planning on being one of these few very large players." (Tom Grindsted)*

However, in order to remain competitive new forms and strategies need to be introduced and pursued, according to the experts. These new features appear to be more integrated into the instant nature of social media platforms as well as more adapted to an increasing demand for "in-real time"-stories.

> *"What companies like us should be doing is to get that real-time Wikipedia, enter that one hour to four days-window and analyse, review, verify and report the news." So what we are looking at doing in the next year is to create something that isn't actually an article so something that is living and evolving […] as the story happens." (Tom Grindsted)*

> *"I think there will be a big push to get users coming back more regularly. Currently, we see some kind of morning spikes but it's quite flat during the day. I think pushing for these more personalised feeds, so that when they come back to the app, they won't always have the same four headlines but they get more personalised content. (David Simkin)*

> *"There have been various thoughts around that to introduce some sort of ticker or breaking news type where you get a live stream of what's going on, on the website and the app, so that people get a sense of what new stuff is happening." (Rupert Bates)*

The question of the physical newspaper was divided amongst the experts; some argued that the paper version will remain while others argued for the opposite:

> *"I definitely believe there will be a newspaper version of The Guardian remaining. I don't think something as traditional as the Sunday edition will go extinct." (Sam Spencer)*

4.4.4. The future of technology, algorithms, journalists and editors at *The Guardian* and how it influences the user

During the interview, Grindsted described how they want to market and promote for example the Apple Watch, a hybrid between smartphone and watch. He said that the app and the watch should be seen as "a constant companion or close friend" who knows what you already know as well as what you could be interested in without repeating information more than five times. What I find so interesting about this example is that it seems extremely clever and terrifying at the same time because it eliminates or at least blurs the original source or creator of the content and transforms it into a recommendation based on myself and my assumed interests. While the experts, after I expressed concern, were very careful to highlight that the editorial voice will always remain present clearly separated from algorithmically suggested content, the given example sounded less like it. Also, often the interviewees highlighted how it sounded "scary" or "icky" if they say it in the way they just said it and went on explaining how collecting data through the app is not connected to an individual but rather an anonymous account (see p. 51).

> *"The Google Glass thing and all that it's telling us something. It shows us how close the user wants to get to the technology and the answer to that: very very close indeed, certainly at the moment it seems so. So if we can take a small portion of that in terms of how the user lives their life and what*

> *they want to know and how we can serve them better, then that's exactly what we want to do." (Odhrán McConnell)*

> *"[…] when the user uses the app, there is also information that the app can store on their behalf like for example their viewing history, what links they click on, various things that are indicators to us, I mean when I say "to us" I don't mean they are actually sending these information back to us, because that would be slightly wrong, but on the device itself and within the app, there are ways we can look at different data and that shows us different signals that allows to make decisions about what we can recommend […]."(Odhrán McConnell)*

These quotes highlight the other side of algorithms and new technology, namely the storage of private data. So far, the way it is framed was that they will not connect it to individuals but it appears to be a definite possibility in the future, to create more content the users want. It is also apparent here that everyone was very well aware of their position and which institution and values they represent, at least officially:

> *"[…] Taking authorial intents, active user actions and passive browsing history and putting these three elements together. Means that you are skewing in content the user is interested but also broaden their horizon with editorial suggestions. That's a first time The Guardian has it in a concentrated way, so we will be experiencing with it over the next year, especially in the app." (Tom Grindsted)*

It is hard to say or estimate how far the analysis and evaluation of active user actions and passive browser history will go but it is definitely something *The Guardian* plans on doing according to the experts. That means that the app will be comprised of the three elements of editorial voice, user actions as well as their browsing history and algorithmically chosen recommendations based on that history. Even though everyone highlights the omnipresent authorial intent, it appears to be less influential when it comes to a display on the app, a very insightful and interesting finding of this thesis.

4.5. The results and the theory: where is the link?

The reason why concepts such as institutionalism and the crisis of journalism were explored in the first part of this research in relation to algorithms and the storage of data is because they are all inter-connected. The respondents give themselves an opinion about why most newspapers and media

organisations struggle to survive in the wake of the internet and new technologies. One of the reasons, as mentioned by Pilhofer as well as scholars such as Bell (2014), Anderson (2012), Gillespie (2013), Barocas et al. (2013) is that newspapers did not understand until very recently that they need to invest in technology as well as use it in order to stay competitive. Furthermore, all experts interviewed agreed that companies such as Facebook, BuzzFeed, Twitter or Google are actually their biggest competitors and not operating in a different professional field, an apparently traditional yet widespread viewpoint of the business these companies are in. The framing analysis method also helps to understand that while algorithms are always framed as less relevant than editors, they are perceived in another context as a technology that will contribute to the displayed content, next to the one chosen by editors. Indirectly, they will replace some work of the editors then.

Additionally, the term black box is used by scholars as well as experts when they refer to the concept of algorithms. In the case of *The Guardian*, it was a term used to describe the type of algorithmic recommendations used by Facebook because they are hard to understand and not very transparent in what these recommendations are based on. In the literature, Napoli for example criticises algorithms because of their opacity and the lack of comprehension in terms of functionality.

4.5.1. Algorithms and institutionalism

The reason why the previous connection between algorithms and intuitional theory was made is because, as Napoli argues, they share similarities in the way they are organised and function. That link can be proven in the interviews conducted. Algorithmic logic is deeply embedded into the system of *The Guardian*, something also highlighted by McConnell who said:

> *"That's really quite important, that it isn't specifically algorithmic although, being engineers, we have produced a layout engine that allows editors to input literally just figures on how they perceive the importance of particular stories, like small, medium, large, huge. And then we interpret that and lay out the content on the app.[…] But as I said we do for the layout engine, there is an engine in the background that decides how the front, or any front, is actually laid out."*

Algorithms operate in the background, much like basic organisational structures. The incorporation of more use is a change that will affect everyone within the organisation even without everyone being fully aware of it. That also relates to the storage of the previously explained "Big Data", something that appears to be common practice *at The Guardian*:

> *"So obviously, when the user uses the app, there is also information that the app can store on their behalf like for example their viewing history, what links they click on, various things that are indicators to us […] I don't mean they are actually sending these information back to us […] but on the device itself and within the app, there are ways that we can look at that different data and that shows us different signals that allow us to make decisions about what we can recommend that the user then reads next." (Odhrán McConnell)*

It brings back the question if algorithms can function as modern archivists, storing our lives and habits online and reacting to them as well as reinforcing them. The answer in terms of *The Guardian* and the way they frame and perceive algorithms and their functions, the answer would be yes. The experts interviewed were very careful in their use of language in order to make sure it does not sound "wrong", "scary" or "icky", the fact that they store, collect and analyse data of app users.

4.5.1.1. The power of algorithms in The Guardian as an institution

As explained earlier, power is crucial in institutional theory and one of the main components of this research. The question of algorithmic power in relation to editorial power was raised constantly and deemed as one of the most important concepts to investigate in this thesis. The rise of algorithmic logic and power explains partially why journalism and most news organisations are facing financial crises and in some organisations such as Facebook, it makes editors and their work obsolete. The same is true, to some extent, at *The Guardian*. The results show how editors soon will share content curated by them with content displayed through algorithms. The distinction between content generated and content displayed is important because no content at *The Guardian* is created by algorithms, but algorithmic logic is able to retrieve data from the users and their browsing history in order to "recommend" and "choose" potentially interesting articles based on their personal preferences. It became also clear that there are internal power struggles or challenges between editors and engineers about the future use of algorithms, namely because editors fear their influence will be diminished. (See Tom Grindsted interview in appendices). It furthermore highlights the power of algorithms within an institution as relevant and influential as *The Guardian*. The ways they function are understood by few members of the institution but affecting all of them in a crucial way which causes friction and challenges.

That leads to some of the questions raised by Barocas and his colleagues, about an almost human like description of algorithms through the use of expressions such as "algorithms do this and that" as well as the questions of "good" or "bad" algorithms and if they are able to "think" or have "their own morality"

(Barocas et al., 2013). It appears that the experts of the interviews perceive these nuances as well, using Twitter or Facebook as examples for "bad algorithms" (they nevertheless seem to admire) and algorithms developed at *The Guardian*, *The New York Times* or even *BuzzFeed* as "good" algorithms, mainly because they allow for an editorial voice and curation to happen.

In addition, the previously mentioned public relevance algorithms of Gillespie (2013) determine also much of the used algorithms at *The Guardian* such as the *cycles of anticipation*, which draw conclusions on behaviour and pattern based on user's browsing history. In the case of this research, the informants described them as algorithms used by Spotify, Twitter, Facebook or Google which allow for recommendations, something they are currently trailing. Most informants seem very much aware of the challenges *the promise of algorithmic objectivity* pose and frame algorithms therefore as a supporting tool for editors and journalists rather a replacing one. The same can be said by what Diakopoulos refers to as *prioritization, classification* and *filtering* (2015) and Gillespie as the *evaluation of relevance* which is an internal problem between editors and engineers at *The Guardian*. The resulting fear of ending in a "filter bubble" is recognized by scholars as well as the informants and pointed out by users as undesirable effect of algorithms.

The used literature about which algorithms are in place in news organisations is extremely accurate and relevant which shows how important this field of study is. The fear of researchers to manipulate the public's viewpoint for the benefit of a small group of stakeholders is reflected by the users of The Guardian as well as their editors. Nevertheless, they are in a competitive market where algorithms can be used to increase the competitive advantage and *The Guardian* is ready to invest more to enhance their use of algorithms.

4.5.2. The existing discourse

Earlier on in the thesis, the conducted framing analysis was described as part of a broader discourse analysis. Each interview was different in tone and power structure based on the positions each individual occupied. There was not necessarily a difference between ranks but more between occupations. Fairclough (1992) classified the three dimensions of discourse as knowledge, social relations and social identity which were apparent through the interviews. The editors were not part of the developers discourse and vice versa. However, they all shared the same missions and visions of what *The Guardian* is about, which shows that they all exist within the same larger discourse and culture.

Evidently, every respondent was aware of the interview being about their workplace so while the answers seem genuine and honest, they remain professional. This could be mainly observed through the question of how the future at *The Guardian* (hence their own workplace) looks like, where some answered more concrete while others remained vague. All in all, a common discourse is at place at *The Guardian* and effective within each department.

The main research questions and the sub-questions as well as a summary and further research will be provided in the following pages.

5. Conclusion of the research/Critical Discussion

The following paragraphs will summarize the main findings and discuss the results. It will also be elaborated what these results mean in a broader context. The critical discussion describes the challenges and potential dangers that come with algorithms and the way they work. Finally, the further research part will demonstrate the relevance of this research and its findings and what can be investigated further.

5.1. Summary

The aim of this thesis was to investigate how algorithmic logic and their potential influence are perceived by a small group of experts who work at a large news organisation and what power they have in comparison to editors. The news organisation chosen was *The Guardian* because it attracts millions of users every month, has its own app and a financial funding system that differentiates it from its competitors. The financial situation is important because it allows for more creative freedom and experiments when a stable economy is able to support it. In order to reach the aim, I conducted interviews with eight individuals that work at *The Guardian* in various positions to find out what their knowledge, perception and position about algorithms in relations to editors and in relations to *The Guardian* is. After the interviews, the results were analysed through tables and frames which were put in relation to each other. The main findings of this thesis are that the use of algorithms will increase in *The Guardian* while at the same time the editorial voice remains the most important part of their business. However, as is the case with algorithms, they are ambiguous thus the way they were framed by the informants varied from a *useful tool to journalists and editors* over *software that enables the storage of information* about the app user in order to use it for recommending future articles to the fact that the user will not be able to be identified because it would be morally and ethically wrong. The same is true when it comes to the framing of the editorial voice and algorithms. On the one hand, all informants agreed that the editorial voice is the most important part of the business and will continue to do so, the use of algorithms is modelled based on the ones employed by Facebook and Google, companies that have no editorial voice. It shows how difficult even for experts it is to frame algorithms and their purpose and power without at the same time questioning the role of editors and their curation.

5.2. Conclusion of the results

The research questions (including sub-questions) were stated as followed:

How is the influence of algorithmic logic framed and perceived as opposed to the power of the editorial voice at *The Guardian*?

1. What is the perceived relationship between algorithms and editors at *The Guardian*?
2. What is the perceived influence of algorithms in an institution such as *The Guardian*?
3. What perceived impact do algorithms have on journalism and the news industry?

They provide multiple answers. While the perceived influence of algorithms is growing rapidly, all informants agreed upon the utter importance of editorial curation and the creation of content through humans. The relationship between editors and algorithms appears to be complex and even at times strained, especially when editors fear that algorithmic logic might replace their work. Generally speaking, algorithms have a large impact on journalism and the entire news industry since they are dominating large parts of the industry through social media. *The Guardian* definitely recognises that impact and power of algorithmic logic and uses it to expand their business.

To sum up the results, it is evident that the experts interviewed for this research project are mostly following the same line when it comes to the goals, missions and visions of *The Guardian*. It is key to preserve the editorial voice and curation and at the same time become more focused on the use of new technologies and algorithmic logic as well as an increased focus on producing new formats and features of articles. There is a strong desire to use more data from users and their browsing habits to create recommendations and keep a loyal, steady and especially satisfied base of users that engage with the content and products that *The Guardian* offers. That is particularly important it seems to generate money and become more profitable. As mentioned earlier on, one of the problems why modern journalism is in crisis is the challenge to make money on the internet and *The Guardian* is no exception to that. However, through the introduction of their apps, they attract a large number of engaged and active users which advertisers are willing to invest in.

I think it is important that *The Guardian* invests more in new technology and generates more actionable data as well as follows and adapts to new user habits. Nevertheless, what I found surprising and a bit troublesome is the fact that companies such as Google, Twitter and Facebook were the ones they want to base their model on. These companies are incredibly smart and found a way to gather information

about users without raising too many concerns. Obviously, this fear is shared by many of their users, a fact that became clear through the interviews in which the term "interest bubble" was mentioned several times by the experts. I don't think the problem lies in the fact that users receive suggested articles based on their browsing history but in the fact that this data and browsing history is stored somewhere and most probably accessible for *The Guardian* and maybe even third parties. Additionally, there is a desire at *The Guardian* to become a stable part of the user's life through the smartphone apps. Hand in hand with that desire comes that the app should be seen and marketed more as a good friend who knows what the user wants to read as well as injecting new bits of information.

Overall, the team structure appears to be well organized and structured with teams comprised of differently skilled individuals and an open policy. However, as David Simkin made clear as well as Sam Spencer and Odhrán McConnell, editors have the final call and if something is not as they imagine it to be, it has to be changed which shows there are different power statuses and hierarchies in place.

The way algorithms are framed in regards to the work of editors, competitors and the institution of *The Guardian* as a whole, they are useful and important in a controlled manner and can facilitate the work of editors and journalists tremendously. While some negative aspects of algorithms were named, most of the experts perceived algorithms as something exciting and a way of using technology more efficient and cleverer.

Another one of the key results was also that the editorial voice will remain present but will have to share the space of the app with content based on algorithmically chosen recommendations as well as personalized content chosen by the user based on their own interests.

5.3. Critical Discussion

Some of the main findings mentioned above show that algorithms can be very hard to grasp and comprehend in a broader sense. Often they are explained as "good" or "bad" algorithms and their complexity is simplified. *The Guardian* is on the verge of using a lot more "true" algorithms that will collect and storage data as well as connect it with specific users and their reading habits and preferences. But not only users will rely on algorithms to suggest them partly what they probably like and what is important, also editors and journalist will. Not only will algorithms help them on Twitter but

they might help them scanning data for key words or irregularities in a congress member's finances, an example used by Pilhofer in this thesis. The power of algorithms of compressing and simplifying massive amounts of data is incredible and not comparable to the human speed of work. What is problematic in my opinion is when algorithms are programmed to "learn" from the gathered data and information and decide independently and hardly visible what is relevant or not. It raises the question of where to stop and what new systems we need to keep an overview and control over the information displayed. From the beginning of humanity, knowledge is power and increased knowledge is responsible for the age of enlightening, the renaissance and many revolutions for better living conditions of the masses. Hence, when the power of knowledge is controlled by software, only a small part of individuals will have the power to influence and access the unfiltered information. I also think that algorithms can be problematic in news organisations that do not have the same stable economy as *The Guardian* behind them and need to compete on the market. That can lead to a lack of resources to verify potential stories buzzing e.g. on Twitter. As I learned through the interviews, every potential Twitter or social media story is verified with scrutiny and agents or agencies in place before it gets published. Smaller news organisations, however, might not have these possibilities and funding's which can lead to a large amount of false information. I mentioned the example of how Germany's biggest publishing house *Axel Springer* sued Google for a fear of monopoly earlier on because it shows yet another side of algorithms: the one news organisations and journalists can't really control. Everyone with a mobile device or computer will have contact with algorithms that are able to make autonomous decisions about what information to display. It thus raises the question of what will happen when that power is abused by parties of interest. Obviously, this has happened before in the history of this world and using propaganda is nothing new but the way data is collected about the public is more subtle and discreet than before. Moreover, we all voluntarily give away personal information on countless occasions, be it the "like" of a newspaper article, the "wish list" on Amazon or the sharing of holiday snaps on Instagram. I think, the use of algorithms is neither good nor bad per se but it needs more attention and general thought from the public.

It is in some way reassuring to know that *The Guardian* puts as much careful effort into the trialling of new software and algorithmic logic as they do without wanting to change their core values of carefully curated and edited journalism. Yet, this research shows how big the need is for a new kind of journalism in which journalists occupy more than one role and understand technology as part of their field. The

same is true for the need of new academic disciplines which do not focus on one primary discipline but include several disciplines at once to grasp the complexity of algorithms and their impact on our society.

5.4. Further research

This study is designed as a starting point for further research of the use and relevance of algorithms in news organisations and how that influences the way we receive information. It is supposed to highlight that no one needs be an engineer in order to be able to study algorithms and their functions and purpose. One direction after this thesis would be for example to understand what this information does to the user and how online identities are shaped and influenced by algorithms.

Another interesting starting point would be to start from where other researchers paved the way and investigate how these new types of algorithmic logic should be referred to. How far does algorithmic logic go? Is there an individually acting mechanism in place and able to act on its own for example?

Moreover, some of the experts mentioned for example the use of algorithms in alerts. That means that they can be programmed to skim massive amounts of data and react to certain key words or irregularities. How would a more extensive use of these alerts influence politics, tax frauds and much more and what impact would it have on our society? Also, what happens when algorithms or other programmed logic are able to fully connect all available data with individuals and maybe manipulate data?

I believe also this study highlights the fact that even though companies collect massive amounts of data, the internet is a space full of grey zones. Not only the news industry tried to adapt an offline model to a new online space but so did the justice system and political questions. The online and offline world can no longer be completely separated and the lines between are blurred. Nevertheless, there is a need for stronger regulations and laws so that user don't have to fear that their browsing history can be obtained by third parties and that they don't end up in an "interest bubble" which only shows them content they already like or are interested in. The dangers of that could be that large amounts of people are only receiving subjective and carefully chosen content instead of neutral and fact based information which then allows them to form their own opinion.

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Appendices

Transcript and framing analysis of two interviews

The reason why these two interviews were chosen for display in the appendices is because they reflect the editorial and engineering side of the interviews conducted.

Interview with Tom Grindsted

Me: Hej, great to talk to you. I don't know how much you know about my thesis or my goal?

TG: Only what you have sent in the email so it's probably worth going over it a bit.

Me: Yes, exactly. So on a broader level want to find out how much technology is used in the way we receive news and how much it influences the way we receive news and how much is edited still by humans. I thought about the newsfeed of Facebook and how it would give me not necessarily the most recent or liked post but just anything, having a logic behind that I don't understand. The same goes for Google. Obviously those companies are hard to reach and they are very secretive in the way they use algorithms so I asked myself what organisation is relevant and still might use algorithms? I decided it should be a news organisation and felt, The Guardian is important as a source at my university and just went with it.

I felt there is a strong need for more studies about the technology which enables us to get content rather than the content it creates. I know Emily Bell's work and also wrote to Charles Arthur, a tech journalist, who seemed to be very much against my idea of journalists knowing their medium and caring about it. He felt he has nothing at all to do with the text, once he produced it and doesn't care about where it ends up.

TG: Yes, I'd be careful to distinguish between journalists and editors because I think Charles is very much a journalist in the sense that he produces content and that's it whereas if you'd spoked to editors such as Subhajit Banerjee, they are editors, so their job is to arrange the content the journalist gives them, so I suspect that would be the distinction you would see when you talk to Charles. It's exactly that between the content creator and the content curator.

Me: But getting back to you, could you tell me a bit about your background and where you are professionally coming from?

TG: I have been in my current role for The Guardian for about three years, so that's the group product manager for mobile and devices so I am responsible for a whole portfolio of products that run on things that you put in your pocket or in your bag, that doesn't include the mobile version of the webpage though because our website is pretty responsive now so there is now distinction between the mobile and the web version. Before that, I was in charge of in gallery and mobile technologies for one of the large national museums in Britain called IWM, they have 5 museums, I worked with them to both realised very large scale installations in museums, I also worked with them to push their mobile agenda, to start making their knowledge more accessible, created 2 or 3 of their very first apps. I did that for about two years. Before that I was head of the design for an additional department for the guardian which was called the digital agency. So we used to work for third party clients. So we essentially used the expertise and large the guardian build and set on to make cash. We worked for example on the London Olympics very first website,[…] did lots of work for the department of education, so lots of governmental contracts. We also did international work, consulted quite a bit. And way before I actually taught science. This is how I got into this entire thing; I used to teach science in science centre. I used to do shows and workshops and stuff, around the year 2000. I got really angry at the state of interactive development, especially kind of computer based interactives. So every workshop or classroom you had had brand new interactive white boards but there was nothing good on them. So I taught myself how to code, specifically so we could create really lovely interactive things on the whiteboard to enhance what the speaker presented in front of the room. That's how I got involved in the technology part of creating content. So it's quite mixed, from science through heritage to journalism.

Me: So you don't have a journalistic background at all?

TG: No not really, I have a long term content background. [how about yourself, me explaining my background]

So you are interested in the algorithmic curation right?

Me: Yes, exactly, and also I actually don't really know what your job entitles and means, because product manager of mobile devices doesn't really tell me much. Are you at all influenced by algorithms?

TG: It's actually interesting, yes, we, as a business and within my portfolio we are not using them in a vast amount at the moment but we are just on the brink of using them a lot more. So to give an example, on Thursday (23rd of April) the Apple Watch launches and we are one of the first media organisations on board, the Apple Watch integration we have directly ties to The Guardian app on your iPhone and that's all the way through the day, selecting a single piece of content pushed to your watch which we think is more interesting for you. For me, the most interesting thing is that it's combining a number of different signals to choose what that is. So one of them, and it's the most overriding one is authorial intent. We write content for specific times of the day for specific days of the week and there is a lot of human intelligence behind that we are trying to capture. We have this recipe section which is publish on a Wednesday of Thursday because what we felt is that people, and that's human intelligence that said that, have a big shop of the beginning of the weekend but by the time when it gets to mid-week they are kind of getting bored of what they planned to cook. So publishing a recipe in the middle of the week actually makes a lot of sense because of two things, people getting bore of what they should cook and also there is people who start to plan what to buy for next weekend. And there is a lot of stuff like that (film, reviews, music reviews). We also have briefings of news of the day and so on. So one of the things that the app and Apple Watch do is to capture that human intelligence and to capture it programmatically. So we build an override to say when this kind of thing gets published, override your default settings because we know that that is sth of high quality which is specifically targeted. So although not programmatic in the sense of looking at all things the users have done and then automatically selecting, it is programmatic and algorithmic in the sense of we're using code to capture of what editors intend when they commission content and then we reflect that.

The second part of it is active signals that come from the user. In the guardian app you can personalise your homepage so you can chose to never see sports again, or I'm really interested in photography. So the apple watch app takes these signals as strong intents so we are definitely more likely to show you new things on photography and almost never sports if that is the way you constructed your homepage. That is intruding within the code, a recognition of your intents as a user.

The third one, which is the one you seem most interested in, is, we track your read history locally on a device, it goes into a database and from that we can get really quickly a whole load of suggested heuristics. So by default the app is also about, what kind of content and tags are you most likely reading at this time of the day and this time of the week. So it weights into that to recommend you what you as

a user would have tended to do. So we have done experiments with users and they are quite edgy and uncomfortable about it, getting caught in the "filter bubble". But the really nice thing is, taking authorial intents, active user actions and passive browsing history and putting these three elements together. Means that you are skewing in content the user is interested in but also broaden their horizon with editorial suggestions. That's a first time The Guardian has done it in a concentrated way, so we will be experimenting with it over the next year, especially in the app.

The reason why I mention the app is because it has such an active and engaged user base so it feels quite natural as a platform to experiment with. Whereas the web has gigantic reach but has users that only come three times a month versus three times a day in the app. That's why I focus on the app in this conversation.

One thing we are looking at the Android app are algorithmic recommendations. On the homepage of the app we are just releasing some experiments, where if you swipe you get a completely different list of content and that list of content has a very strong algorithmic impact on things you follow and are interested in. it will again take that heuristic history approach to stress things you might be interested in. We are looking quite hard at how we want to attribute these recommendations, so it could look like this, four articles from journalists you regularly read, and we'll select those articles based on the journalists you read but haven't read before, that group of content will be totalled from contributors you read. If you follow the MH317 plane crash and there are new articles about it that you haven't read, maybe they'd appear on the homepage of your app then. What's interesting there is that it's not just "black box" recommendation, like Facebook, where you get information and don't know based on what and it's also not like Amazon which gives you recommendations based on people like you did this. It's just based on you and your personal activity. The people who are really pushing it at the moment are Google via Google Now. So if you look at the stream of Google Now and their recommendation, there is a lot of attribution there. They will say "we pushed you this information" and above it will say "because you recently searched for that" or it will push you the latest blog entry on a blog you follow regularly in Chrome but it will be attributed on the Google Now stream as "because you regularly read that blog" thing. So Google appears really passive but they are really trying to attribute it so it doesn't feel "freaky". It's trying to go over the icky fact of "someone always watching you", it is trying to be like it's not us as the guardian or Google deciding for you but it's you and your browsing habits.

For the apps themselves we are looking at how do we describe them. We kind of want them to be like a constant companion or close friend. I mean you'd expect a close friend to know what you're interested in and tell you sth that you haven't heard before. You'd also expect them to not tell you the same story for more than 5 times. Unless they are drunk. You expect a close friend also to realise that you're not that much into tennis but rather rugby. I think describing it in that sense makes it much more interesting and human than describing it as "we know everything you have done and have an algorithm". That's just wrong and not really the feeling or the intent we are going for.

Internally, the tension is between algorithmic recommendation that gives people content they really value into their hands and in doing so increase loyalty, engagement and retention. Unless you are quite careful of how you are describing it, the assumption of what it's doing is putting editors out of their drop. Which is really what Emily Bell talks about. What's interesting for me about the apple watch and the swipe on Android is, it's being quite careful about distinguishing the editor's intent which is represented in the top stories on the home page and the other section which is much more about you as a person. What is interesting for us now, is to move the conversation beyond that **either** it's chosen by the editorial or **either** it's chosen by an algorithm. We can actually do both in the same application, technically speaking. What we need to do is to side post them and be respectful both ways. That is the conversation we have at the moment both internally and with business relationships. It is the biggest challenge we are facing atm, well, the technology is quite challenging as well. But that type of agreement that this is sth we should do, even though everyone agrees to the principle, it's working out how we do it without challenging the fundamentals of our business.

Me: Do journalists have any say in that process or do they just produce the content? I would fear for my content to get lost?

TG: The editorial voice is still the main focus and always will be. It is about writing great journalism not about writing clip bate. We need to distinguish between journalists as a specific contributor and journalists being part of the editorial department. So the the editorial department consists of journalists, editors, sub-editors, specialists and strategists. We create teams that are made up of cross-functional people, so my boss is head of product and his boss is Wolfgang who is the head of digital strategy. So he is really representing a very very high level of editorial voice within the digital development department. Similarly for my group, my direct contact, we talk every day, is Subhajit, a mobile editor. We are doing

our best to structure teams where editorial opinion and ideas are embedded in the middle of a team also have tech people.

Me: But what about the content of less popular contributors?

TG: Well if you are into for example, if you like to write obscure opinions of children's book, you're unlikely to get on the homepage of the guardian anyway. So people who read your stuff will seek you out. In a world where there is a greater algorithmic approach based on recommendations, those users are likely to see your content more, precisely because it's easier for them to get you. So I don't think it leads to a rarefying process of your content, rather the opposite.

Me: Yes my issue is more that I am a reader who rarely seeks specific information when going to the guardian website or app, I rather want to see "what's out there" because for specific information I would first go to Google. So I actually want the recommendations to work in a way that they show me content that I like but wouldn't necessarily have thought about myself.

TG: I agree, this is why we want humans in London, New York and Sydney instead of algorithms. The way I see algorithms, they are there to extend and enhance your experience of our product.

Me: Where do you think this is going in the future? […]

TG: I suspect and this is a large existential threat to the entire industry. So in a few years I think you will have a very large number of content publishers whose essentially only route to users is mediated via social networks. You will have niche people who will exist on their own but I don't think there isn't really a place for have medium sized organisations anymore. They might still exist but I think their homepages will draw very little traffic towards them. And the way that people will discover content and the way it they will monetised that content will be via Facebook. And I think the real challenge there is that really gets rid of the editorial voice because the curation there is completely outside of your control. And then you will have a small number of extremely large players. So I am talking about hundreds of millions of users each month. Certainly, where the guardian is positioning itself so far and given the large numbers we have, we are planning on being one of those few very large players. And they will obviously use social media platforms as to a huge degree as their widest possible funnel but they will also have their own properties in the form of app like experiences. They will have them for their most engaged and highly valued users but I think the middle is going to be completely squeezed by Facebook. I think we see a

continued rise of socially mediated products as becoming go-to places for content. It's not exactly that simple but it will definitely go into that direction. Sorry.

Me: Twitter also seems to be an important tool and a main news source

Twitter will be interesting: if they wanted to they could probably become the world's breaking news service. If they really really wanted to enter the content business properly, they could create Twitter news and just hammer breaking news services. I mean I always talk about this internally, Twitter does the first 20 minutes to an hour really really well, Wikipedia does probably from about three to four days on very well. What companies like us should be doing is to get that real-time Wikipedia, enter that one hour to four days window which nobody apart from news organisations can do very well. Because the amount of effort it takes to collect and analyse, review, verify and report the news that is not sth you can do very quickly. And people actually want after the first crap of sth big happened in London, they actually want reliable news and nobody can provide that except organisations like ours. So what we are looking at doing in the next year is to create sth that isn't actually an article. So sth that is living and evolving and representing as the story happens. I don't think anyone has really done that before. This is a where we are going.

Me: Thank you so much, I think that is all, you have been such an incredible help. Thanks you so much.

Framing analysis of Tom Grindsted's Interview

Within the framing analysis, some quotes will be found under several frames which is intended. It highlights the overlapping nature of how certain aspects are framed and perceived by the interviewee.

Algorithms and their role at The Guardian

Question	Yes	No	Other
Are algorithms used at the moment at The Guardian?	**Yes** "We track your read history locally on a device, it goes into a		"[…] We as a business and within my portfolio, we are not using them in a vast amount at the moment but we are just on the

	database and from that we can get really quickly a whole load of suggested heuristics. So by default the app is also about what kinds of content and tags you are most likely reading at this time of the day and this time of the week. So it weights into that to recommend you what you as a user would have tended to do."		brink of using them a lot more."
Are there experiments with algorithms?	Yes "One thing we are looking at the android app are algorithmic recommendations." "On the homepage of the app we are just releasing some experiments where, if you swipe, you get a completely different list of content and that list of content has a very strong algorithmic impact on things you		

	follow and are interested in. It will again take that heuristic history approach to stress things you might be interested in." "What's interesting for me about the Apple watch and the swipe on Android is, it's being quite careful about distinguishing the editor's intent which is represented in the top stories on the home page and the other section which is much more about you as a person."		
Will there be more algorithms in the future?	Yes "We are looking quite hard at how we want to attribute these recommendations […]. What's interesting there is that it's not just "black box" recommendations like Facebook where you get information and		

	don't know based on what […]." *(more see table about potential competitors)* "What is interesting for us now is to move the conversation beyond that **either** it's chosen by the editorial or **either** it's chosen by an algorithm. We can do both in the same application, technically speaking."		
Do algorithms replace editors?		No "The editorial voice is still the main focus and always will be." "[…] This is why we want humans in London,	

		New York and Sydney instead of algorithms."	
What type of algorithms are you thinking of using more?			"We are […] selecting a single piece of content pushed to your watch which we think is most interesting for you. For me, the most interesting thing is that it's combining a number of different signals to choose what it is." We write content for specific times of the day for specific days of the week and there is a lot of human intelligence behind that that we are trying to capture." "So one of the things that the app and the Apple watch do is to capture that human intelligence and to capture it programmatically." "One thing we are looking at at the Android app are algorithmic recommendations."
Do algorithms have advantages?	Yes "The way I see algorithms, they are		

	there to extend and enhance your experience of our product." "In a world where there is a greater algorithmic approach based on recommendations, those users are likely to see your content more, precisely because it's easier for them to get to you. So I don't think it leads to a rarefying process of your content, rather the opposite."		
Do algorithms have drawbacks?	Yes "[…] We want human beings in New York, London and Sydney instead of algorithms."		

The role of the editors and their curated content

Questions	Yes	No	Other
Do editors decide over content rather than algorithms?	**Yes** "For me, the most interesting thing is that it's combining a number		"But the really nice thing is taking authorial intents, active user actions and passive

	of different signals to choose what that is. So one of them, and it's the most overriding is authorial intent."		browsing history and putting all these three elements together. It means that you are skewing in content the user is interested in but also broaden their horizon with editorial suggestions."
Will editors always remain important?	**Yes** "The editorial voice is still the main focus and always will be. It is about writing great journalism not about clip bate." "We do our best to structure teams where editorial opinion and ideas are embedded in the middle of a team which also has tech people."		
Can editors and algorithms co-exist?	**Yes** "What's interesting for me about the Apple watch and the swipe on Android is it's being quite careful about		

	distinguishing the editor's intent which is represented in the top stories on the home page and the other section which is much more about you as a person." "What we need to do is to side post them and be respectful both ways." *(Note from researcher: posts curated by editors and posts curated by algorithms)*		

The users and their role

Question	Yes	No	Other
Is there a difference between a web user and a mobile user?	**Yes** "The reason why I mention the app is because it has such an active and engaged user base […]. Whereas the web has a gigantic reach but has users that only come three times a		

	month versus three times a day in the app."		
Is the user taken into consideration when it comes to the app?	**Yes** "The second part is active signals that come from the user. In The Guardian app, you can personalise your homepage so you can choose to never see sports again, or I'm really interested in photography." "That is intruding within the code, a recognition of your intents as a user." "So by default the app is also about what kinds of content and tags you are most likely reading at this time of the day and this time of the week. So it weights into that to recommend you what you as a user would have tended to do."		

	"So we have done experiments with users and they are quite edgy with and uncomfortable about it, getting caught in the "filter bubble"."		
Do you monitor the user's reading patterns on the app?	**Kind of** "We track your reading history locally on a device, it goes into a database and from that we can get really quickly a whole load of suggested heuristics." "So by default the app is also about what kinds of content and tags you are most likely reading at this time of the day and this time of the week. So it weights into that to recommend you what you as a user would have tended to do."		**In the future/ current experiments and tests** "What's interesting there is that it's not just "black box" recommendations like Facebook, where you get information and don't know based on what and it's also not like Amazon which gives you recommendations based on people like you did this. It's just based on you and your personal activity. "
Do you think algorithms can be useful for the user?	**Yes** "In a world where there is a greater algorithmic approach based on		

	recommendations, those users are likely to see your content more, precisely because it's easier for them to get to you. So I don't think it leads to a rarefying process of your content, rather the opposite."		

The importance and role of the apps

Questions	Yes	No	Other
Do the apps have advantages?	"The reason why I mention the app is because it has such an active and engaged user base so it feels quite natural as a platform to experiment with."		
What is the purpose of the apps?			"So by default the app is also about what kind of content and tags you are most likely reading […]." "We kind of want them to be like a constant companion or close friend. […] You'd expect a close friend to know what you are interested in and tell you

			something you haven't heard before. You'd also expect them to not tell you the same story for more than five times." "[…] Describing it in that sense makes it so much more interesting and human than describing it as "we know everything you have done and have an algorithm". That's just wrong and not really the feeling or intent we are going for."
Is the content of the app the same as on the website?			*This question was not discussed.*

The Institution of The Guardian

Questions	Yes	No	Other
Do you face internal challenges?	**Yes** "Internally, the tension is between algorithmic recommendation that gives people content they really value into their hands and in doing so increase loyalty, engagement and retention. Unless you are quite careful of how you are describing it,		

	the assumption of what it's doing is putting editors out of their drop." "That is the conversation we are having at the moment both internally and with business relationships. It's the biggest challenge we are facing at the moment."		
How does the team structure look like?			"We create teams that are made of cross-functional people […]." "We are doing our best to structure teams where editorial opinion and ideas are embedded in the middle of a team and also involve tech people."
Do you monitor trends, performance or other of published content?			*This question was not discussed.*

The possible competitors such as Facebook, Twitter, Google, etc.

Questions	Yes	No	Other
Is Facebook mentioned when talking about	**Yes** "[…] It's not just "black box" recommendations like Facebook,		

algorithms?	where you get information and don't know based on what […]." *(when talking about how the future of newspapers look like in his opinion)* "And the way that people will discover content and the way they will monetise that content will be via Facebook." "[…] I think the middle will be completely squeezed by Facebook." (*Middle refers to medium-sized newspapers)*		
Is Google mentioned?	**Yes** "The people who are really pushing it at the moment are Google via Google now. So if you look at the stream of Google Now and their recommendation there is a lot of attribution there." "[…] it will push the latest blog entry on a blog you follow regularly in Chrome but it will be attributed on the Google Now stream as "because you regularly read that		

	blog" thing. So Google appears really passive […]." "It's trying to get over the icky fact of "someone always watching you" it is trying to be like it's not us at The Guardian or Google deciding for you but it's you and your browsing habits."		
Is Twitter mentioned?	**Yes** "Twitter will be interesting; if they wanted to they could probably become the world's breaking news service. If The really really wanted to enter the content business properly they could create Twitter news and just hammer breaking news stories." "[…] Twitter does the 20 minutes to an hour really really well […]."		
Is BuzzFeed mentioned?		**No**	
Is Spotify mentioned?		**No**	
Are other platforms/news organizations mentioned?	**Yes** "[…] Wikipedia does probably from about three to four days on very well." "[…] It's also not like Amazon which		

	gives you recommendations based on people like you did this."		

The Future at/of The Guardian and in general

Questions	Yes	No	Other
What is the future of algorithms at The Guardian?			"[…] Taking authorial intents, active user actions and passive browsing history and putting these three elements together. Means that you are skewing in content the user is interested but also broaden their horizon with editorial suggestions. That's a first time The Guardian has it in a concentrated way, so we will be experiencing with it over the next year, especially in the app." "We are looking quite hard at how we want to attribute these recommendations […]."
What is the future of the news industry?			"So in a few years, I think you will have a very large number of content publishers whose essentially only route to users is mediated via social networks." "You will have niche people who will exist on their own but I don't think there is really a place for having medium-sized organisations anymore." "[…] You will have a small number of extremely large players, so I am talking about hundreds of millions of users each month."

			"And they will obviously use social media platforms to a huge degree as their widest possible funnel but they will also have their own properties in the form of app-like experiences." "I think we'll see a continued rise of socially mediated products as becoming go-to places for content."
What is the future of editors?			"And the way people will discover content and the way they will monetise that content will be via Facebook. I think the real challenge there is that really gets rid of the editorial voice because the curation is completely outside your control."
What is the future of The Guardian?			"Certainly, where The Guardian is positioning itself so far and given the large numbers we have, we are planning on being one of these few very large players." "what companies like us should be doing is to get that real-time Wikipedia, enter that one hour to four days-window and analyse, review, verify and report the news." "So what we are looking at doing in the next year is to create something that isn't actually an article so something that is living and evolving […] as the story happens."

Notes

- Authorial intent rather than editorial voice
- User instead of reader
- Mentioning the "black box": a term frequently used by scholars who study algorithms and their impacts
- The notion of "database": the database also often occurs in the scholarly discussion about algorithms, big data and the storage of personal information. He uses it in terms of how The Guardian processes the information and apparently stores it
- Human intelligence: the theme of human intelligence being stored programmatically is interesting, as opposed to AI.
- Use of personal pronouns and possessive pronouns such as: you, us, our, we etc., to connect the researcher with the interviewee and make it seem more relevant and personal
- Reference to other co-workers: Tom Grindsted mentions Wolfgang as the high-level editorial boss, refereeing to Wolfgang Blau who has been contacted for this study but not replied. He is the executive director of Digital Strategy at The Guardian and applied for the editor-in-chief position which he did not receive.[29] Furthermore, he mentions Subhajit Banerjee as one of his closest co-workers, who is also participating in this study as an interviewee.

Interview with Aron Pilhofer

Me: Hej, how are you, thank you so much for your time and wanting to talk to me. I don't know how much you know about my thesis

AP: Well, let me see what you sent me, you sent me a note, let me just refresh my recollection.

Me: I can just briefly talk about it again.

AP: let me just pulled it out, Algorithms, technology, how it's changing how we perceive news. Ok, yes.

Me: I usually start with the question of the background, but since your background is very much in the open, I don't know if we need or if you want to talk about how you started?

[29] http://gonuj.org/public/ballot/candidates/wolfgang_blau.html

AP: I have gotten a half an hour for you, whatever you wanna talk about.

Me: So let's start with your recent transition, you moved from the New York Times to The Guardian, which work on a different financial level, what would you say are the differences that come with that in your job?

AP: well it's a different job for once, so it's hard to compare. I don't have as big a team in some ways and I have a much larger in others so I am in charge of more things, it's a much broader mandate here, but on a team to team basis it's actually smaller except for the social media team which is actually bigger here at The Guardian than at The Times. It involves visual journalism, which is pictures, interactives and graphics, interactive documentary, and motion graphics. And then social media community, moderation, analytics, data reporting and audience. At the Times it was pretty much, a little bit of strategy, a little bit of product and interactives but not the whole interactive team just the interactive news team and social media.

Me: What exactly is then your responsibility at The Guardian at the moment? What comes with the job?

AP: *paraphrased* Basically the above mentioned.

Me: When I talked to people working at the Guardian app, I understood much was done in a team effort, the developers working closely together with the editors and so on. Looking at a higher hierarchy level, how much is your job influenced by the algorithmic approach versus the editorial approach?

AP: Algorithmic approach…nothing we do here fits the model of algorithmic news judgement. Not like Facebook or Google News make algorithmic judgement. All the judgement we make are really editorial driven. I struggle to think of even a single example of where we could use algorithms. Maybe a slight example might be the "most read" but that's the most basic thing. We don't even have a "recommended for you"- section along the lines of what the New York Times had for example. So there is very very little going on at The Guardian that is algorithmic.

Me: Ok, interesting, because when I talked to for example Rupert Bates, the lead android developer, he told me that there has been recently a shift from a more algorithmic approach on the app towards a more editorial voice approach so to speak.

AP: I am not sure what he means by that. I mean the choice of what you see in the app is and has been, to my memory, as long as I can remember at least the current inauguration has been entirely driven by editors not by an algorithm. What's on the headlines of the app is what's on the headlines on the web. What is on the headlines on the web is chosen by an editor. So I am not sure what he means with that exactly.

Me: I think what he meant more was talking about the personalised news feed you can create, once logged in in the app.

AP: that's personalised, not algorithmic. There is no algorithm.

Me: Well, once you are logged in and read articles or personalise things, they can see that information and suggest articles based on your history. And that is algorithmically done, according to the developers I've talked to.

AP: Well, there may be that feature but I have never seen it, so I just take their word for it. I mean we don't have a recommendation section, the same way the New York Times has. There may be a desire no doubt about it, but everything is more or less published chronologically or based on some very simplified version of popularity. I think you may want to dig into that a little deeper because I don't want to conflate, I think when people talk about algorithmically driven news sites or algorithmic judgement, it's a very different thing. If anything of that is happening here, it's done in very small quantities and it's happening in places I have never seen it, let's put it that way. I can tell you this, when you enter the web site or the app, the order of the stories is entirely driven by human beings and it's all editor chosen. And that's the case for all major sections. When you go to sub-sections, like politics, then there is some blend. There may be some lightweight calculations happening behind the scenes, sth like" if a piece was read this much, it should maybe stay here". Once you get into sections that are below the homepage and stuff like that. Those sections, I am pretty sure, are not human chosen, the selections is all done by, there may be some lightweight algorithmic choices there, but I wouldn't go so far with that.

Me: Yes, compared to other news rooms, The Guardian definitely uses fewer algorithms and has a more editorial based approach.

AP: Yes, many news organisations are using more algorithms than The Guardian.

Me: From an editorial perspective, how do you decide what is breaking news and what goes into these push notifications you have on the app?

AP: It's all editor driven.

Me: And what do you base that on?

AP: You use the judgement of an editor.

Me: How?

AP: Years of experience. Seriously, that is how it is done, that's how the New York Times does it, that's how we do it. There is no magic to it.

Me: So it's just based on the guts?

AP: Yes, we have three desks that more or less have their kind of direct news. One is the live desk, that's the desk that does all the "in the moment" kinds of things. This is also the desk which is most responsible for our homepage and making decisions about what is big and what's happening now. They're the ones who are directing and covering initially when a big breaking news story happens, deciding whether to do a news alert or not, if our social media teams needs to get engaged, etc. Then there is the news desk which is covering stories on more topical bases, so if it is a big international story, that where the international editor, the business editor and the national editor sits. They sort of direct coverage topically. And then we have a planning desk which is more focused on what I called enterprise. Not investigations necessarily but bigger step back theses that could be a longer term-piece that might be a 3 day, weeks, months project. But it's all human based; none of this is managed algorithmically.

Me: Yes, I was just more curious about what they base their judgement on.

AP: Yes its editorial experience.

Me: I also talked to some other editors which mentioned Twitter as a news source, when something creates buzz and seems like a potentially big story, they check with their agencies and reporters if it's true or not.

AP: We have a social media team, a piece of which is based on the news and live desk. So they are constantly monitoring social media channels for newsworthy things, and whether it's big breaking things. They will be closely working with the editors on that desk, to feed important, relevant things to them. So that does happen.

Me: When you look at the technology you have right now, do you think it makes your job easier? When you think of things like Twitter, do you feel it makes it easier to decide what is important or do you think it makes it harder?

AP: Which technology are you specifically talking about?

Me: Let's stick to the social media platforms like Twitter and Facebook. If you take the white and gold/blue or black dress, I mean it started off on Twitter but in the end, even The Guardian covered it, which might seem like an atypical story to cover, because it was so big. Do stories like these and social media make your job as an editor harder or easier?

AP: I think both. It is harder because it is another thing. Back in the good old days, the wire service would be the equivalent of Twitter and now it's less about that and there are more channels, so it really goes both directions. It obviously provides a view directly into potential stories, where you wouldn't be able to have that view before. So that is an obvious benefit. It also is another thing so yeah, I think it's both.

Me: It just seems to me that the filtering aspect of what is true or not and which sources are reliable is so much more complex now. Before, it seems, you had these reliable news agents and knew if a story comes from there, it must be true.

AP: That's obviously one of the few advantage that established news brands have. It's that trust of authority. Because in just about every other way, we are actually struggling when it comes to these new technologies, as compared to, let's say the BuzzFeeds of the world. And BuzzFeed is actually interesting, especially when it comes to algorithms. I mean, BuzzFeed are a very algorithmically driven news organisation. They have their own metrics that help them decide when sth is trending, what that means, if they should give it an extra boost or not and it's very clever. I think that a lot of that kind of technology, or that approach could be valuable for news organisations. We are just now talking about, we have a relatively sophisticated technology based analytics platforms here, which we are now finally collecting that type of data in real time that would allow us to do that sort of thing for ourselves. We could look at

e.g. on a page that is not being hand curated or even if it is and say: “this story, for this placement, at this time, is over performing or underperforming compared to a base line for that particular spot on that particular page at this particular time, given this profile of traffic. You could build a pretty sophisticated statistical model which I think is kind if what Facebook has done, that could help you kind of say, “wow this piece is doing well and has this number of page views”. What we just have right now is data based on descending page views. And that’s not super useful, it’s not really actionable. If sth at the bottom of the page got 20.000 page views, we don’t know if that’s good or not. It could be that it is, but you have to look at that in a different context.

We started doing sth like this in the New York Times that hopefully, we can bring over here as well. just very speculatively, can you create a model that would effectively predict traffic based on placement and topic, time of day, type of audience, whatever the variables are. I mean you obviously can create a pretty robust model that does predict traffic. One you’ve got that, you can actually look at whether a piece is over-or underperforming. The next step is to help the editors out by flagging that out and be able to judge the number of page views. It get 20.000 views but at the same time it’s about chess because it’s at that part, maybe there is sth going on there that might be interesting. It might make it a candidate to move on top of the page, while sth that is on top of the page actually has good numbers but underperforms based on its expected numbers, based on the position, time of day, topic audience, etc. so it can go down on the page. Neither of these decisions are really hard to make based on available tools. But Chartbeat doesn’t help you with that, Google analytics doesn’t help you with that. There are very little tools out there to help you with that. So when you talk about algorithms, I think the power is actually in thinking about a sort of cyborg journalist. You are providing a tool that journalists can to use to make decisions that is based on some very complicated technical foundation but at the end of the day it is still the journalists making the decision. You are providing more actionable data to the journalist and I think that is what is important. Because most of the things we do is based on the gut. Editors will put sth up and they will put it down, they will move it over and they’ll take it down. They will remove once it has been there too long and that is not a very data driven solution. And I don’t think it should be a 100 % data driven but I also don’t think it should be 0%.

Me: I mean I read for example Emily Bell’s work and she mentions exactly that problem of having no proper tool for journalists. Most platforms are created by engineers and have rules that might not be of “journalistic ethics” but they don’ have to care. Instagram takes down pictures if it doesn’t fit their policy

so I am so surprised to hear that an institution as big as the Guardian hasn't developed any more fancy tools to fight that problem.

AP: I would be shocked if, outside of BuzzFeed, anyone has anything close to that. I think it would be easier to the name the organisations that have it than not. So you shouldn't be surprised at all.

Me: I guess I am surprised that it takes so long.

AP: Here is the problem with news organisations. In order to do sth like that you have to have a web site and apps that actually allow you to gather hat kind of data. Most websites are not structured enough to give you that kind of data. You can't say predictably, the problem we had at the NYT was that the homepage has so many different variations of it, -are you pretty technical? Well I'm going to say it anyway, and if you don't understand it let me know, I mean this isn't really complicated. On the homepage, the page is laid out that every story is on some (containers/divisions to structure code-Rebecca), and has a class and id (again, basic html elements to structure content-Rebecca). When they re-lay out the page, some of these 's go away, some stay, some of the <class> names change, there is no predictable way to know, that if this item is in this spot with this <class id>, then this class and this <id> that we know absolutely where that piece sat. Geographically, we couldn't identify exactly where it lives. Fortunately, they were so smart when they did it at The Guardian-site, that's much easier, you can actually know where sth was, you can know the container, you can know where that container sat on the page and you can know where in that container the item was sitting. You can actually gather that data and create a base line on that. So Chartbeat has tried to do sth like that but the problem is it is so dependent on the site, the thing we built cannot be just wholesale adapted by the NYT because it would have to be tailor-made. The same is true for the Telegraph, the BBC, etc. So there isn't one easy solution to that. You pretty much have to do sth custom to your site. The data we gather from our site, we have this platform called orphan, where we are doing click-tracking, event-tracking, we are collecting this incredible amount of data and we have only been doing that for about a year. As forward thinking and looking as The Guardian is, we have only been doing this for one year. The NYT has only been doing that for 2 years, maybe not even that. So the reason why I am surprised that you're surprised is that news organisations are really, really, really only just now taking this stuff seriously and, more importantly, are starting to invest in technology.

So when you are talking to news about algorithmic approaches and what that could do to news production, we are really in the early days of this. So we are way behind the Facebook's of the world and way behind the BuzzFeed's of the world. And that shouldn't be surprising because two years ago, news organisations, weren't really investing in news technology.

Me: I think that is what is really surprising me, that for so long news people seemed to think "oh it's not part of our business, it doesn't concern or influence us".

Me: One last question, where do you see the Guardian heading into the future?

AP: Haha, just a short, simple last question? Getting back again at the algorithm question, here are a few things why this is interesting for us. One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better selections of content. Not to take journalists out of the equation because I think that is an enormous mistake. But to use data to provide tools that journalists can use that would effectively enhance their ability to understand this.

Me: Yes, it seems some journalists at least, would just see themselves as content creators and not care about anything else like the medium or the effect their text has.

AP: Yes, that's what a journalist's job has been so far, traditionally and what happens to the text is someone else's problem. And that's just a very traditional way of thinking about it. The BuzzFeeds and even the HuffPosts' of the world they will tell you that the life of a story starts when it's published. And that's the right way to think about it. And that is changing, believe me, and really fast.

Another way of using algorithms is in news gathering and news detection, for the lack of a better word, so you have seen some interesting experiments like "Pourover" which is based off of document cloud. Which takes a document repository and uses algorithms to do so, basic topic clustering, don't ask me about the math, I don't (fucking) understand it and I never will. You should be using technology to make journalists smarter and to help journalists to find things, to narrow/filter down information. Another way, and a really simple one, is alerts. US campaign finance is an example I use all the time. You get this incredible amount of data from the House of Representatives, every filing they put in goes into this big database and it poses the question how am I going to even begin to attack sth like that. And one of the things I always wanted to do is to look for certain keywords. You know a candidate campaign will always

be spending a certain amount of money on legal expenses. So what you could do is, you can calculate some sort of a median and see "oh this candidate is one or two standard deviations above the mean" and then that should give you an alert. It may not be a story but its interesting and could become and outlier. It may not mean anything at all but it can mean that that candidate is in some sort of legal trouble and is spending all of a sudden a lot more on legal expenses than he/she was before.

The L.A. times, you must know the earthquake story, generating stories based on earthquake data? Ken Schwenke, who did that, who is now at the Times, they are doing, I think, even more interesting things with less structured data. They are pulling the feed from the LAPD (L.A. Police) every night and looking for keywords on it. There is not a lot of algorithm going on there per se, but it is looking for keywords and again it is kind of a smart way of seeing if "oh there is an actor or a producer that might be newsworthy". If it finds these keywords it will generate an email and pop that in an email and by the morning, the relevant reporters will get it in their inbox saying: here are some people that were arrested last night who describe themselves as actor, director or producer and that could generate a story. It doesn't have to be one but it helps the journalists to do better work. To me, that's where the goal is.

Me: So you want to function as this middle man between journalists and technology.

AP: Yes I want to provide tools.

Me: Thank you so much for your time […] have a great day, bye.

Framing Analysis of Aron Pilhofer

Worked for the New York Times prior to The Guardian, now executive editor of digital

Link: http://www.theguardian.com/media/2014/may/19/new-york-times-chief-executive-editor-digital-guardian-aron-pilhofer

Algorithms and their role at The Guardian

Questions	Yes	No	Other
Are algorithms used at the moment at The	**Yes** "There may be some	**No** "Algorithmic	"So there is very little going on at The

Guardian?	lightweight calculations happening behind the scenes, something like "if a piece was read this much, it should maybe stay here"."	approach…, nothing we do here fits the model of news judgement. Not like Facebook or Goggle News make algorithmic judgement." "That's personalised, not algorithmic. There is no algorithm." "If anything of that is happening here, it's done in very small quantities and it's happening in places I have never seen it, let's put it that way."	Guardian which is algorithmic." "There may be a desire, no doubt about it." *(for using more algorithms and recommendations)* "[…] Many news organisations are using more algorithms than The Guardian." "So when you are talking to news about algorithmic approaches and what that could do to news production, we are really in the early days of this. […] And that shouldn't be surprising because two years ago, news organisations weren't really investing in news technology."
Are there experiments with algorithms?	**Yes** "We are just now talking about, we have a relatively sophisticated technology based		

	analytics platform here, with which we are now finally collecting that type of data in real time, given this profile of traffic." *(When talking about how BuzzFeed has metrics to understand what is trending, what it means etc. also see frame of competitor)*		
Will there be more algorithms in the future?	**Yes** "I think the power is actually in thinking about a sort of cyborg journalist. You are providing a tool that journalists can use to make decisions that is based on some very complicated technical foundation but at the end of the day it is still the journalists making the decision. "		
Do algorithms replace editors?		**No** "I think the power is actually in thinking about a sort of cyborg	

		journalist. You are providing a tool that journalists can use to make decisions that is based on some very complicated technical foundation but at the end of the day it is still the journalists making the decision. " "You are providing more actionable data to the journalist and I think that is what's important because most of the things we do, is based on the gut." "[…] The choice of what you see in the app is and has been […] as long as I can remember […] has been entirely driven by editors not by an algorithm."	
Do algorithms have advantages?	**Yes** "I mean, BuzzFeed are a very algorithmically		

	driven news organisation. They have their own metrics that help them decide when something is trending, what it means, if they should give it an extra boost or not and it's very clever. I think that a lot of that kind of technology or that approach could be valuable for news organisations." "One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better sections of content […] to use data to provide tools that journalists can use that would effectively enhance their ability to understand this.[2]		

Do algorithms have drawbacks?			*Pilhofer does not explicitly mentions drawbacks but highlights that everything is editor-driven at The Guardian.*

The role of the editors and their curated content

Questions	Yes	No	Other
Do editors decide over content rather than algorithms?	**Yes** "All the judgements we make are really editorial driven. I struggle to think of even a single example of where we could use algorithms." "[…] At least the current inauguration has been entirely driven by editors, not by an algorithm." "What is on the headlines […] is chosen by an editor." "[…] When you enter the website or the app,		

	the order of the stories is entirely driven by human beings and it's all editor chosen."		
Will editors always remain important?	**Yes** "Not to take journalists out of the equation because I think that is an enormous mistake."		
Can editors and algorithms co-exist?	**Yes** "[…] It helps the journalists to do better work. To me that's where the goal is."		
How do you decide what makes a good headline/story?			"You use the judgement of an editor." "Years of experience. Seriously, that's how it's done, that's how the New York Times does it, that's how we do it. There is no magic to it." "It's editorial experience."
Do you have different teams who decide headlines?	**Yes** "[…] We have three desks that […] have their kind of direct		

	news. One is the live desk, the desk that does all the "in the moment" kind of things. This is also the desk which is most responsible for our homepage and making decisions about what is big […]" "[…] There is the news desk […] where the international editor, the business editor and the national editor sits." "And then we have a planning desk which is more focused on what I call enterprise."		
Do social media platforms play a role in deciding what is important or not?	**Yes** "We have a social media team, a piece of which is based on the news and live desk. [..] They are constantly monitoring social media channels for newsworthy things, and whether it's big,		

	breaking things."		
Do social media platforms make your job harder?	"I think both. It is harder because it is another thing"	"I think both. […] there are more channels, so it really goes both directions. It obviously provides a view directly into potential stories, where you wouldn't be able to have that view before, so that's an obvious benefit."	
What challenges do editors face at the moment?			"[…] Most of the things we do is based on the gut. Editors will put something up and they will put it down, they will move it over and they'll take it down. They will remove it once it has been there too long and that's not a very data driven solution. And I don't think it should be a 100% data driven but I also don't think it should be 0%." "Neither of these decisions are very hard

			to make based on available tools. But Chartbeart doesn't help you with that; Google analytics doesn't help you with that. There are very little tools out there to help you with that." *(When talking about where certain articles and contents should be placed on a website based on their performance.)*

The users and their role

Questions	Yes	No	Other
Is there a difference between a web user and a mobile user?			*This question was not discussed.*
Is the user taken into consideration when it comes to the app?			*This question was not discussed*
Do you monitor the user's reading patterns on the app?			*This question was not discussed*
Do you think algorithms can be			*This question was not discussed*

useful for the user?			

Albeit referring to the users maybe indirectly when saying that "one of the few advantages that established news brands have" is the "trust of authority" or similar thing, Pilhofer does not speak about the user or reader directly and only once mentions them as "audience".

The importance and role of the apps

Questions	Yes	No	Other
Do the apps have advantages?			*This question has not been discussed*
What is the purpose of the apps?			*This question has not been discussed*
Is the content of the app the same as on the website?	Yes "What's on the headlines of the app is what's on the headlines on the web."		

The Institution of The Guardian

Questions	Yes	No	Other
Do you face internal challenges?	**Yes** "[…] In just about every other way, we are actually struggling when it comes to these new technologies." "You could build a		

	pretty sophisticated statistical model, which I think is kind of what Facebook has done, that could help you say "wow this piece is doing well and has this number of page views". What we just have now is data based on descending page views. And that's not super useful, it's not really actionable. If something at the bottom of the page got 20.000 page views, we don't know if that is good or not."		
How does the team structure look like?			"We have three desks that more or less have their kind of direct news. One is the live desk[…] which is most responsible for our homepage and making decisions […] then there is the news desk which is covering stories on more topical bases […] and then we have a

			planning desk, which is more focused on what I call enterprise." "We have a social media team, a piece of which is based on the news and live desk."
Do you monitor trends, performance or other of published content?	**Yes** "The data we gather from our site, we have this platform called orphan, where we are doing click-tracking, event-tracking, we are collecting this incredible amount of data and we have only been doing that for a year."	**No** "We are just now talking about, we have a relatively sophisticated technology based analytics platform here, which we are now finally collecting that type of data in real time that would allow us to do that sort of thing for ourselves." "What we just have right now is data based on descending page views. And that's not super useful, it's not really actionable."	
How far advanced is The Guardian when it			"[…] we are collecting this incredible amount

comes to technology?			of data and we have only been doing that for a year. As forward thinking and looking as The Guardian is, we have only been doing this for one year." "So the reason why I am surprised that you are surprised is that news organisations are really, really, really only just now taking this stuff seriously and, more importantly, are starting to invest in technology." "So when you are talking to news about algorithmic approaches and what it could do to news production, we are really in the early days of this. So we are way behind the Facebook's of the world and way behind the BuzzFeed's of the

			world. And that shouldn't be surprising because two years ago, news organisations weren't really investing in news technology."

The possible competitors such as Facebook, Twitter, Google, etc. or other news organisations

Questions	Yes	No	Other
Is Facebook mentioned when talking about algorithms?	**Yes** "Not like Facebook or Google make algorithmic judgement." "You could build a pretty sophisticated model which I think is kind of what Facebook has done that could help you kind of say: "Wow, this piece is doing well and has this number of page views."." "So we are way behind the Facebook's of the world […]."		
I Google mentioned?	**Yes** "But Chartbeat doesn't help you with that, Google Analytics doesn't help you with that, There are very little tools out there to help you with that."		

	"Not like Facebook or Google make algorithmic judgement."		
Is Twitter mentioned?	**Yes** *(After being asked about if Twitter makes the editorial decision-making harder or easier)* "Back in the good old days, the wire service would be the equivalent of Twitter and now it's less about that and there are more channels, so it really goes both directions."		
Is BuzzFeed mentioned?	**Yes** "Because in just about every other way, we are actually struggling when it comes to these new technologies, as compared to, let's say the **BuzzFeed's** of the world. And **BuzzFeed** is actually really interesting, especially when it comes to algorithms. I mean, **BuzzFeed** are a very algorithmic driven news organisation. They have their own metrics that help them decide when something is trending, what it means and if they should give it an extra boost or not and it's very clever." "[…] so we are way behind **the BuzzFeed's** of the world."		

	"The **BuzzFeed's** and even the **Huffpost's** of the world, they will tell you that the life of a story starts when it's published. And that's the right way to think about that."		
Is Spotify mentioned?		**No**	
Are other news/platforms/organisations mentioned?	**Yes** "We don't even have a "recommended for you"-section along the lines of what the **New York Times** had for example." "I don't have as big a team in some ways and I have a much larger in others so I am in charge of more things. It's a much broader mandate here, but on a team to team basis, its actually smaller except for the social media team which is actually bigger here at **The Guardian** than the **New York Times**." "At the **New York Times**, it was pretty much a little bit of strategy, a little bit of product and interactives but not the whole interactive team, just the interactive news team and social media."		

	"That's how the **New York Times** does it, that's how we do it." "We started doing something like this in the **New York Times** that hopefully, we can bring over here as well." "You can't say predictably, the problem we had at the **New York Times** was that the homepage has so many different variations of it […]." "So **Chartbeat** has tried to do something like that but the problem is, it is so dependent on the site, the thing we built cannot be just wholesale adapted by the **New York Times** because it would have to be tailor-made. The same is true for the **Telegraph,** the **BBC** , etc. " "**The New York Times** has only been doing that for two years, maybe not even that." "Another way of using algorithms is in news gathering and news detection, for the lack of a better word, so you have seen some interesting experiments like **"Pourover"** which is		

	based off a document cloud." "**US campaign finance** is an example I use all the time. You get this incredible amount of Data from the **House of Representatives**, every filing they put goes into this big database and it poses the question of how am I going to even begin to attack something like this." "The **L.A. Times** […] they are doing, I think, even more interesting things with less structured data. They are pulling the feed from the **LAPD** every night and looking for keywords on it." "The **BuzzFeed's** and even the **Huffpost's** of the world, they will tell you that the life of a story starts when it's published."		

The Future at/of The Guardian and in general

Questions	Yes	No	Other
What is the future of algorithms at The Guardian?			"Getting back at the algorithm question, here are a few things why this is interesting for us. One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better selections of content."

			"Another way of using algorithms is in news gathering and news detection […]. " "You should be using technology to make journalists smarter and to help journalists to find things, to narrow/filter down information." "Another way, and a really simple one is alerts. […] you can calculate some sort of median and see "oh this candidate is on one or two standard deviations above the mean" and then it should give you an alert. It may not be a story but it's interesting and could become an outlier." "So when you talk about algorithms, I think the power is actually in thinking about a sort of cyborg journalist. You are providing a tool that journalists can use to make decisions that is based on some very complicated technical foundation but at the end of the day, it is still the journalist making the decision. You are providing more actionable data to the journalist and I think that is what's important."
What is the future of the news industry?			"[…] that's what a journalist's job has been so far traditionally and what happens to the text is someone else's problem. And that's just a very traditional way of thinking about it. The BuzzFeed's and even the Huffpost's of the world will tell you that the life of a story starts when it's published. And that's the right way

			to think about it and that is changing, believe me, and really fast." "I mean, BuzzFeed are a very algorithmic driven news organisation. They have their own metrics that help them decide when something is trending, what it means and if they should give it an extra boost or not and it's very clever. I think a lot of that kind of technology, or that approach could be valuable for news organisations."
What is the future of editors?			"Getting back at the algorithm question, here are a few things why this is interesting for us. One thing is to find ways to better select content and help journalists to do a better job to select content that we think might have an audience and to find better selections of content. Not to take out journalists out of the equation because I think that is an enormous mistake. " "Just very speculatively, you can create a model that would effectively predict traffic based on placement and topic, time of day, type of audience, whatever the variables are. I mean you can create a pretty robust model that does predict traffic. Once you've got that, you can actually look at whether a piece is over-or underperforming. The next step is to help the editors out by flagging that out and be able to judge the number of page views."
What is the future of The Guardian?			*This question has not been directly discussed but shines through most answers here presented, when Pilhofer*

			mentions the future of news and technology should become and is more intertwined and combined.

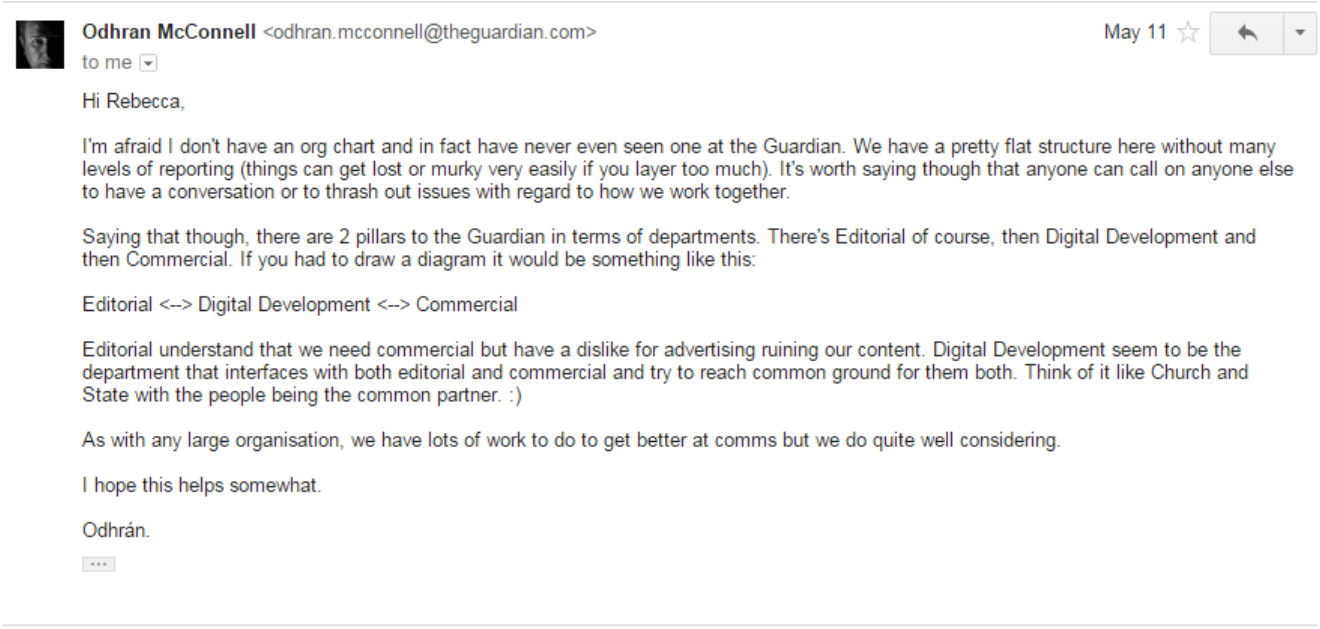
Overall remarks

Pilhofer has been an editor for the New York Times before switching to The Guardian which explains his numerous comparisons and insights into the New York Times. Interestingly, he mentions code terms from html codes such as , class=id, etc. which are sue to structure content on a website. No technician went so in-depth with it, highlighting the cross-functional people and teams The Guardian consist of, as highlighted by Tom Grindsted. Pilhofer never mentions co-workers by names and just refers to them as "teams". As shown in the framing analysis, he does not talk about the user or reader except once when mentioning the audience. His goal is to provide tools for journalists and editors to become better and more efficient at their job, rather than highlighting a better user-experience as mentioned by other interviewees, which might give a hint of position or power. It is apparent he is a figure of authority and power yet fully aware and critical of the position newspapers in general and The Guardian in particular are in when it comes to technological advancements. The beginning of the interview started off with Pilhofer saying he had just enjoyed good Indian lunch, which, in his mind, was actually unnecessary information for me. Also, when asking him if he wants to present his background, despite it being rather publicly displayed on the internet his response was: "I've gotten half an hour for you, whatever you wanna talk about.", while all other participants responded without question.

The editorial voice: While editors are talked about rather frequently in this interview, he never mentions the "editorial voice" but instead uses phrases like "driven by editors", "chosen by an editor" or "editor chosen", making it seem much more based on individuals than an overall editorial voice, almost spirit-like as portrayed by others.

He definitely highlights the need of news organisations becoming better at managing technology and the problems they are all facing through for instance websites which weren't set up in a way that makes the collection of data easy.

Email from Odhrán McConnell about the internal structure



Odhran McConnell <odhran.mcconnell@theguardian.com> May 11

to me

Hi Rebecca,

I'm afraid I don't have an org chart and in fact have never even seen one at the Guardian. We have a pretty flat structure here without many levels of reporting (things can get lost or murky very easily if you layer too much). It's worth saying though that anyone can call on anyone else to have a conversation or to thrash out issues with regard to how we work together.

Saying that though, there are 2 pillars to the Guardian in terms of departments. There's Editorial of course, then Digital Development and then Commercial. If you had to draw a diagram it would be something like this:

Editorial <--> Digital Development <--> Commercial

Editorial understand that we need commercial but have a dislike for advertising ruining our content. Digital Development seem to be the department that interfaces with both editorial and commercial and try to reach common ground for them both. Think of it like Church and State with the people being the common partner. :)

As with any large organisation, we have lots of work to do to get better at comms but we do quite well considering.

I hope this helps somewhat.

Odhrán.

First contact with Rupert Bates

Dear Ruper Bates,

My name is Rebecca Schmidt, I am 25 years old, originally from Berlin and currently writing my master thesis at JMK, (Faculty for Journalism, Media and Communication) Stockholm University in the field of Media and Communication.

I am interested in the power relations between the developers of a news app, more precisely the one of the guardian, and its content. I am also interested in the actual power of algorithms over the content the reader receives and the role of the journalist producing it. Since you are the lead android programmer of "The Guardian"-App, I was wondering if you and some of your colleges might be interested in answering some questions for me in an interview?

The reason why I conduct this study is because there seems to be a lack of academic work and research in this field particularly when it comes to combining both technology and media studies, since usually researches focus on the one or the other, disregarding how intertwined technology and media are in real life. This is why I strongly believe a study like mine can start breaking the ice between these two different disciplines. I am also the only one at my faculty whose work focuses on combining these two disciplines with each other, showing that it is still rather unpopular to do in the media science department.

I decided to focus on The Guardian because of its opinion-leading role in the media landscape, its courage to publish unpopular opinions and interviews as well as the fact it is not funded by one person (such as the Washington Post these days) and follows an open policy to get access to its contributors.

I hope you can help me and if you can think of other people who I might want to contact, I would be more than grateful.

Have a nice weekend,

Kind regards,

Rebecca

P.S. Please let me know if you need some sort of official statement from my University that I am truly doing research on that fact and am enrolled in the Master's Program

Rupert Bates
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