

**Who's choosing the news: algorithms, artificial intelligence
and their implications for public media discourse.**

By Sina Summers

Where is the life we have lost in living?

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?

T.S. Eliot, *The Rock* (1934)

School of Communication and Creative Industries

Faculty of Arts and Education

Charles Sturt University

Australia

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**This thesis is comprised of two components – a written exegesis (this
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[Changed by Technology](#)

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ABSTRACT

Forms of artificial intelligence - including automated content curation and algorithms that act upon audience analytics - are increasingly determining what information and other media material are being delivered to individual media audience members. The operation and impact of these forms of artificial intelligence are understood in varying degrees by media professionals, editors and other content producers but, literature suggests, are much less understood by - or conscious to - the general public.

This thesis inquiry investigates how algorithms operate generally to affect the dissemination of news information to audiences. This research aims to find what the implications of AI used in these ways are for traditional roles played by media news in public life – such as informing the public in the public's interests and enabling informed public discourse. This research asks also to what extent the use and effect of AI algorithms are transparent to audiences and how this level of understanding by audiences (or lack of understanding) affects the informing role of media. The thesis produced is comprised of this written exegesis in conjunction with a digitally produced documentary [Changed by Technology](#), which explores the same questions in a format designed for scholarly audiences.

Most of the data and content for both the exegetical-critical component and the creative work-documentary were gathered via qualitative interviews with eight individuals: each interviewee had particular knowledge around different parts of this research question due to endeavors in their professional roles working with the public. These include different kinds of publishers, journalism content editors, technical research scientists, media & technology lawyers and media ethics scholars. Each interview had to serve several functions: as research data for this exegesis, as information for the documentary as it was being produced and as raw audio-visual content for

the final digital documentary product. In this way the exegetical and creative research produced new knowledge about the intersection between video-journalism interview methods and the qualitative interview inquiry methods used for academic scholarly research. This was not the *focus* of my research question; however, because documentary making was my central inquiry method and framed my interview approaches, this intersection of methods and purpose was explored.

The overarching research exegesis discussion at the end of my inquiry identifies ethical and public discourse problems created by a lack of transparency around AI's operation in news information dissemination – and suggests where further research (and public education) on the topic is needed.

INTRODUCTION

“Algorithms” driving decision-making by artificial intelligence (AI) are increasingly being used for the collection and storage of data, as well as for their ability to decipher topics of interest followed by media users and to match those individuals’ interests to businesses and products for sale. Using this data driven technology to reach a targeted audience as opposed to assuming users’ might happen to find it on Facebook, Agrawal (2016), is why many print media organizations are transitioning towards online publications whereby the use of algorithms can inform editorial teams about what their readers want to be informed about.

While media organizations use algorithms to make predictions and drive commercial optimism, (Newman 2018), society may not be aware of how this can impact on our democracy, or how algorithms can affect our worldview through the ways in which they filter out information. This has implications on the type of news content that is derived from these systems. This inquiry seeks to make clear what algorithms and other AI curation systems are doing to the information sent to audiences via new media and social media platforms. The consequences for informed debate are then considered –

given that audiences are increasingly using these platforms and the information provided on them for understanding their world, (Newman 2016, Wallis, 2015).

“Algorithms” and “artificial Intelligence” when discussed for this research refer to mechanisms that operate to make such editorial decisions as what material is published and to whom it is disseminated. The use refers particularly to their operation on traditional and new media news platforms. From a journalistic perspective algorithms can affect how stories are crafted by what journalists learn from these data gathering systems, distorting their ability to clarify and prioritise newsworthy stories over popular interest, Brake (2017).

This research focuses on new media, such as Google and Facebook, and traditional print media practices. Recent surveys indicate that these social media sites are currently the most used compared to others, Elder (2017), although Facebook in particular is the one that is most affecting news organisations.

My own experience of using social media sites alerted me to how algorithms and automation are affecting content on these platforms. For example, I found that every time I clicked a like button on Facebook or searched for information on Google, the algorithms would collect my data and before long I would be receiving numerous marketing posts for products that linked to my interests (as indicated by my “likes”). These powerful platform features were outside of my control as they dictated what information was being sent to me, and what I could access, share and engage in, Bruns (2017).

Many traditional newsrooms are embracing artificial Intelligence, such as the New York Times, the Bloomberg News, the Los Angeles Times, and the Associated Press (AP), so that they can channel content to audiences and to learn how these new technologies can be benefit their businesses, Newman (2018). With both new and old platforms adopting algorithmic and AI methods for making editorial, publication and dissemination decisions there are serious implications for how news is communicated now and into the future.

There are two key issues in these implications – and which are considered by this research: if sources of news now being accessed by audiences seeking such information are reliable – and furthermore, whether the current use of AI and/or algorithms for joining particular content to particular audience members raises ethical and other issues. These issues include transparency of the curation process, whether the process enables individual's access to multiple viewpoints on topics of value to them and society, and, therefore, if such automated curation affects the operation of informed public discourse needed for democratic decision making. Other scholars have also raised related concerns about legal and ethical issues, such as, the implications for human journalistic employment, concerns around news quality, transparency, and accountability (Thurman, 2017).

At the heart of debate about AI mechanisms in media curation are concerns about *how* what is considered valuable news for public knowledge is determined: an algorithm that gathers information from audiences based on AI-operated content analysis identifying potential customers for advertisers' products versus a human who is conscious of news values and the role of media in public discourse.

These questions are considered in this research through the process of producing a digital documentary for scholarly audiences entitled [Changed by Technology](#). This documentary program explores and explains how current methods of AI/algorithm-driven curation of news information affect media consumers. Much of the information and content for this documentary-creative work comes from interviews by this researcher with people engaged in producing media content or in critiquing it. The exegetical discussion, which follows here, outlines the case for conducting this research, how it was undertaken and what knowledge it has created around journalistic and editorial practice in the current digital media environment.

As my journalistic practice and my identity, as both an academic researcher and digital journalist are keys to this inquiry – I will need to refer to myself in the first person frequently throughout this discussion. As Iorio (2004),

mentions, both journalists and qualitative researchers share a common concern with the actions of individuals in relation to current phenomena. This is an important feature of my exegetical methodology – even though my presence as reporter-interviewer in the documentary-creative work is minimal (in line with the reporting genre of that program). The case for this two-pronged research project begins with my search for literature around the impact of algorithmic-AI curation on public discourse and audience agency in our democratic society.

LITERATURE REVIEW

In my initial search of academic databases for research on the effects of AI and algorithms on media content, media practice and media audiences I used the question “What are the implications of using algorithms in media”. This and related questions and keywords around algorithms, AI and news media yielded very little academic writing on this topic. I found that most of the reading in this search was written by journalists discussing their views of curation algorithms on their changing work practices and processes, Abu-Fadil (2017), although there were but a small number of academic writers who were found via this literature search method such as, Newman (2016, 2018) and who provided some valuable knowledge on what the implications of using AI in media are through investigative research.

A number of scholars did emerge from my literature searches with expertise that could inform my analysis of the ethical and social problems posed by AI curation of media – along with possible solutions for them. Among these scholars was Kuipers (2016), a lecturer in computer science and engineering at the University of Michigan. He explores the architecture of morality and ethics in robots inspired by recent research on the cognitive science of human morality. When you consider the powerful effects that algorithms can have on information pertaining to news content, this utilitarian approach holds merit. Kuipers (2016) suggests that algorithms can shift understanding of society as a whole, creating new social norms. He anticipates the potential for AI to become harmful to humans and considers the responsibility of human-

designed decision criteria. Although he is not necessarily referring to Algorithms, I include this into his philosophy of caution.

Kuipers (2016), who compares the human need for moral and ethical principles to the importance of artificial intelligence constructs, suggests that there should be similar standards to enable all members of society to work alongside each other. And McCalman (2017) identifies the need for AI designers to embed ethics into algorithmic design; a year after Kuipers iterates the same point. According to McCalman, an AI engineer with Data61, Australia, algorithms do not understand their behavior, nor are there any ethical consequences for decisions made by these powerful robotic systems, which consequently leaves the responsibility of checking news content to media organizations instead.

The issue of data privacy is increasing as more and more Facebook users may not realise their information can be used and shared without their knowledge or consent leaving important moral controversies hidden due to complexities of technological practices, (Brey 2012). Aligned to this view on the right to be informed, it could be argued that because algorithms are designed to winnow out specific information, people can then immerse themselves in a particular worldview, which potentially has an adverse affect on the quality of our democracy, Wallis (2015), an information studies academic, looks at how political engagement on social media can drive people to extremes. Wallis (2015), alludes to the millions of Facebook users when he suggests that social media has changed the way important news is understood as publics receive populist news content, rather than a balanced range of perspectives.

Given these effects on the functioning of media discourse within democratic societies and that media companies are already working with AI its hoped that my research will unpack these impacts but also offer insight on how we can guide our relationship with artificial intelligence in a way that meets the needs of a human society.

To understand the science behind AI systems, I attended two international conferences held in Melbourne in 2017 – each of which showcased some innovative new technologies.

Expert presenters provided a variety of perspectives that furthered my understanding of existing issues as well as their potential benefits. I was able to speak with scientists, AI engineers and many other experts in the field. This approach offers great potential to attend to the complexity of a topic in need of contextualization, (Galletta 2013).

Ben Mashford, an AI Research Scientist who attended the International Joint Conference on Artificial Intelligence (IJCAI), discussed the function of algorithms and their capacity to gather information about people. He described the Deep Learning method; an algorithmic machine learning system more commonly used over the last five years, which is used for sentiment analysis. As he explains it, this is where the algorithm understands the sentiment in a body of text as to whether it is negative or positive.

There are many new technologies and AI inventions already being used in a variety of fields, and yet, there were no representatives at either conference from the media Industry. I wondered why, when traditional media companies' role responsibility is to provide important news to society, and society relies on such news for information on current affairs. The media Industry is undergoing extreme changes and the main disrupter is the use of new technologies. This lack of representation by media at these two forums suggested further to me that a dialogue between media users, media makers and AI/algorithm experts was needed and could be enabled by my research into the topic area. How I chose to set about this and why, is discussed further in the methods section of this exegesis.

AI affects what information people receive – and the implication of these effects for democratic society. As I explain next, the methods of inquiry I have used to address this lack reflect the need to inform media *users* as well as scholars and practitioners.

METHODOLOGY

The integral component of data gathering for my research involved the conduct of individual interviews in a qualitative study. A reflexive framework around these interviews came from my decision to film the interviews for a documentary: I situated myself as journalist at the centre of the research process. At the same time, by creating a digital online documentary as a medium for publishing my research at the completion of the project, audiences could both access information about what the usage of AI in media means to news organizations and also gain insights into what it means to everyday people (including themselves). As a way to build an understanding based on what I noticed and heard, (Creswell 2014), this method of interviewing for a documentary drew on my experience as a radio journalist and offered the same opportunity my journalistic practice has always enabled – to learn from human knowledge and understanding.

My approach to an unscripted interview process was to unearth what people are currently aware of, both factually and conceptually. Speaking to people individually meant that I could ask specific open-ended questions in a semi-structured interview that could address the main question. Individual interviews allow one person telling a story without being interrupted, (Leavy 1975), and this methodology is well suited for a complex topic whereby people need the time to consider their responses without interference from other participants.

Some qualitative methods scholars have suggested that substantial aspects of media practice, including journalists' interviewing methods, have positive uses in social studies and communication research and conversely qualitative inquiry methods used by social scientists could enhance media reporting practice, (Iorio, 2004). By situating my data gathering process within a familiar information-gathering environment – a documentary interview – I was able to apply my solid journalistic experience to the interactions with my interviewees. At the same time I was able to make new knowledge about the effects of academic research frameworks on my journalistic practice.

Because I had researched some of the scientific aspects of this topic before I spoke with participants, I was able to frame the open-ended questions according to my understanding of algorithms and AI systems. Engaging in conversation with each participant as an equally interested member of society built rapport between us, enabling interviewees to elaborate on a point, based on a phenomenon that needs to be explored and understood, (Creswell 2014).

During the filming of the interviews, in which the cameraman and myself were the only other people present with each participant, some indicated that they felt more comfortable when they were not facing the camera. So we adjusted the camera to film them from the side instead. This allowed for a more robust interview where interviewees relaxed into the conversation with ease. As I had spoken to them all at length prior to each interview, we had built a rapport between us and the participants were clear about the topic and the particular questions that they would be asked.

By filming the interviews, using a set of journalistic questions grounded in the social sciences, I was able to observe how people perceive this catastrophic phenomenon driven by AI, based on their individual experiences. As Galletta (2013), suggests, this is the particular strength of qualitative research as it offers a fundamental approach that accentuates an ongoing pursuit of meaning. As a Social Scientist, I wanted to understand how people perceive the current changes in media, both specifically and generally. In this sense the study of Phenomenology, (Gallagher 2012), frames this approach to determining who is conscious of their experience and how they see it. The documentary, iterative of a human perspective on this topic, counterweighs a greater trend towards the specific benefits of artificial intelligence technology.

In a conversational style, As Leavy (1975), suggests, the human world is depicted as a conversational reality in which interviewing takes a central position as a research method. I conducted eight extended interviews covering aspects such as, legal and ethical issues concerning data privacy,

as well as personal and professional perspectives. I chose participants who were from a variety of professions, encouraging them to talk about their particular field of interest so that they could provide different points of view on this topic, although my respondents were unified by either having professions that connected them to making media and other publishing content or critiquing media practice.

Steve Meyers, a media producer and presenter embraces new technologies used in media, although emphasized, (Meyers 2017), “the human element in communication is important”. Andrew Rennie, Editor-in-Chief at News Ltd, spoke openly about how the media Industry has changed and identified some of the current challenges they face. Describing a complex situation, (Rennie 2017), describes the benefits of using algorithms as well as the concerns he has for the future of news media. This paradoxical situation was the basis for an in depth interview that provides a sound understanding, both from a journalistic point of view and a business perspective.

I wondered about some of the legal implications that are emerging with the use of AI, so I sought some information from a lawyer in the area of media and technology. Dan Pearce has for some time worked in this particular area of law and shared many valuable points pertaining to the far reaching rights that media organizations maintain, in relation to data privacy for example, when in comparison members of the public are not covered so well by current privacy laws, (Pearce 2017).

In addition to this, I approached Dr Edward Spence, an ethicist and senior University lecturer, to talk about the ethical implications on this topic. With a focus on media ethics and how they provide a basis for media practice, “algorithms can be a problem when they are used indiscriminately, because they can create misinformation”, (Spence 2017).

Further to this and from a scientific perspective, Mashford (2017) speculates on the future use of algorithms and suggests there is, “a need for an ethical approach to using AI, such as educating people about what algorithms can do and what they are used for”,

I invited Ian Summers, an Auto engineer and avid follower of news, to speculate on what he thought about the use of AI in news content creation. I asked him how he would feel if an algorithm wrote a news story rather than a human? He thought about this before he responded, saying, “Humans give a story ‘life’. I don’t think robots can replicate human emotion”, (Summers 2017). I also invited Cathy Alexander, a book editor and consumer of news. She gave a heart-felt perspective on this topic sharing her concerns about the potential for harmful effects on a vulnerable society, (Alexander 2017), emphasizing; “we need the steersmanship that ethics provide”.

I finally sought a wider perspective to encapsulate any further implications. Paul Higgins, a futurist and business consultant had spoken to a media group prior to my investigations and was referred to me by a colleague. His ability to see the big picture on this topic was a valuable contribution to my research. Identifying the connection between media and politics, (Higgins 2017), explains how algorithms can be used to form public opinion and to manipulate votes in election campaigns, stating, “an algorithm naturally inherits the biases of the people that create them, either as an unintended consequence or deliberately”.

The completed documentary based on these interviews has captured in greater detail and volume what my interviewees shared with me, than has been summarized here in this exegesis document on the impact of AI, on their own work, and their experience of news media or their knowledge of the editorial and ethical issues arising from the deployment of algorithms and AI in news dissemination. The creative work – documentary therefore serves not just as an artistic and accessible mode of sharing knowledge with the wider community – but provides a substantive archive of the knowledge gathered in my interview/led research.

ANALYSIS

Today, the use of social media platforms, although originally intended for social exchange, has become a popular choice for people searching for news content. For example, in the United States, the percentage of people using social media as a source of news has increased to forty six percent – almost doubling since 2013, Newman (2016). While, one-third of young people aged 18-24, acknowledged that they sought information on social media during the general elections in the United Kingdom, and this was influential in how they voted, Wallis (2015), demonstrating that new media is reshaping patterns of news consumption and public discourse.

The popular social media site, Facebook, has shaken up the media industry to the point where news organizations are forced to change and adapt by using new technologies. As Rennie (2017) says, “technology is a double-edged sword for us (traditional media) as Facebook is incredibly important for us as a company, but it’s also our biggest competitor”.

The fact is, algorithms can generate information faster than humans and for less cost to media organizations, (Higgins 2017a, 2017b), than if they were to employ people to achieve the same outcomes. What this means is that algorithms allow media companies’ to access specific data. As Rennie (2017), explains, “ I can tell you exactly how many people have been looking at it, (their Facebook page) how long its been there, what their demographic is, whether they are male or female, young or old, and where they live”. These key indicators inform media companies who their targeted audiences are, in considerably less time than it would take for media staff to accumulate such information.

In a survey conducted by Reuters Institute for the study of Journalism, Newman (2016), states that, “young people are more comfortable with algorithms than with editors”, although there is a risk of being manipulated by the influence of algorithms that have biases. Whereas, a recent investigation uncovered a massive data breach by a global organization whereby their

algorithmic systems literally harvested information from millions of Facebook users' accessing their profiles, without their knowledge or consent. The organization named, Cambridge Analytica, designed software for the specific purpose of predicting and influencing voters' decisions during the 2016 presidential election campaign in the United States, Munro (2018). By using this information to build 'Fake news' this effected public discourse and as a consequence impacted on people's decision-making process when voting.

In circumstances where the public is unknowingly influenced by algorithms, democracy ceases to function, as does journalism, Iorio, (2004). If the information that these powerful robotic systems retrieve is heavily weighted by a populist slant, then this can shape the type of news content that audiences are exposed to, and if journalists are unable to publish specific news stories that offer alternative information to common interests, how will the public receive a balanced perspective of current affairs? This challenges the legitimacy of public debate if people do not have all the relevant information to base their opinions on.

In addition to this, millions of Internet users are vulnerable to exploitation of their personal data. It can be argued that if news organizations do not inform the public that they are collecting their data, and for what purpose, this is a violation of moral responsibility, (Pearce 2018). Although perhaps when the focus for media companies is on commercial gain, the potential effects on society can be hidden 'behind the veil of ignorance', (Rawls 2018), and ethical decision-making can be minimal at best.

Algorithms and automation determine a large part of the media process and new situations constantly demand critical decision-making. As Rennie (2018), explains, "These peaks and troughs now are so quick. It used to be, you try something and you might find it could take you two years to understand how it's working", (Rennie 2017a; 2017b). He thus highlights how fast the media Industry is changing and the implications this has on business practice.

Uncertainty

All stakeholders in this research project reflected on an uncertain future and the unknown aspects, which are often synonymous at a time of significant change. Speaking from different perspectives, (Summers 2017a; 2017b), wondered if one day, we wouldn't know if the information in news is coming from a robot or a human? While (Higgins 2017a; 2017b), expressed some concerns as to whether human capacity is being pushed too far. While there appears to be an acceptance that artificial intelligence is an integral component to media communications, there is also uncertainty of how these new information systems are affecting people. This kind of introspection reveals a lack of knowledge as to how humans will cope in an uncertain future, a phenomenology, (Gallagher 2012), that relies on our perceptual experiences to provide us with some understanding.

As the search for factual information is sought, confusion builds in a fractured society as some embrace new technologies, while others are unsure of their capabilities. We, the public, as (Spence 2017), says, "are not always in a position to tell whether news stories are truthful", advocating a cautionary response when deciding who can be trusted in media sources.

As (Rennie 2017), reflects on his own long-term career in the print media Industry of over twenty years, he speaks candidly about the current situation, "I have concerns for the future of the Industry, because it's changed so much". As he thought about the state of flux that is causing major disruption to media business practice, he makes a statement that implies a long road ahead in the ever challenging task of continuous development, "we'll always be in a perpetual transition stage", (Rennie 2017a; 2017b). I noted that Rennie attempted to maintain a positive approach towards a relatively unknown future, although I suspect this masked an underlying concern for a never-ending situation that requires constant restructuring of business models. By drawing out these points throughout the interview, the direction and depth of this research topic was enhanced, (Galletta 2013).

The pressures of working in a competitive environment were evident in the way Rennie (2017a; 2017b), oscillates between the positive and negative influences that Facebook has on traditional media organizations. On the one hand, he embraces the situation saying, “it allows us to create digital letterboxes to deliver content into, and this is great because our news reaches more people, but on the other hand, we’re battling with them because they have a lot of things that we want”, (Rennie 2017).

Being in juxtaposition with AI is not a smooth road for news providers and yet there was never a moment when he questioned whether algorithms should not be implemented into media practice. It is an irreversible truth that AI is now an established part of media practice. However, as powerful as these new technologies are, describing the constant state of adversity that is challenging news organizations today paints a picture that is filled with paradoxical scenarios.

Contradictions

The use of AI in media is creating many contradictions, for example, media is essentially an advocate for people who don’t have a voice, giving people the opportunity to be heard and to contribute to public debate. Social media platforms have certainly given this opportunity to people all over the world. However, as Rennie (2017), identifies, “if algorithms continually gather information pertaining to the interests of their readers, they risk limiting news content to a populist viewpoint”.

This was re-iterated by Spence (2017), who mentioned the implications of people confirming what they already believe, and Higgins (2017), who said that using that information, to harden the views that people already have, could be used to convince people for political gain. These examples are in direct contrast to the original experience of liberation when discovering the possibilities of communicating information across multiple sites. Pearce (2017), questions the validity of such information and whether it comes from a reliable source or not? He continues on this point by suggesting that this can

be problematic for the public when reaching decisions about important information.

The human perspective

What stood out in all the interviews was that each participant spoke from a humanistic perspective. As integral members of the public, they all shared their concerns for the human race as well as what they value and require, in order to feel connected in a human society. Many stated that they still want a human element in the communication of news and acknowledged a need for the expression of human emotion in news stories. Others thought that humans are in a particularly vulnerable situation, as artificial intelligence is used more and more in media. As Alexander (2017), says, this is where, “ignorance will let us down”.

In the main, interview participants in this study indicated that they prefer media organizations to maintain moral and ethical practices, and this perhaps reflects a human desire to be acknowledged and respected as valuable citizens. As Spence (2011), explains, ethical conduct pertains to matters concerning morality, both privately and publically. In observing the participants during their interviews, I noted their unwillingness to back down from a basic human instinct to survive in a rising sea of information; I ponder whether we should accept anything less than the equality and dignity of our own humanity.

Trust

For traditional media organizations to gain credibility, trust is critical. Schiffirin et al, (2017). In this regard, news organizations, (particularly in countries where a media Code of Ethics is a foundational charter for media practice), have a responsibility to ensure that, ‘publishers do not allow advertising or other commercial considerations to undermine accuracy, fairness or independence’, Code of Ethics (2017).

In new media, such as, Facebook, where these ethical principles are not enforced in the same vein as traditional media practices, algorithms can often collect information from questionable sources, and this can be detrimental to users. As Pearce (2017), tells us, "... it's much easier now days for people to defame someone", bringing any citizen into disrepute through the publication and sharing of inaccurate information", which is then permanently stored in algorithmic systems.

People around the world maintain a desire for unbiased news and believe that factual news plays an important role in the public sphere, (Santa-Wood 2018). This directly impacts on our understanding of important situations – not just what we see and learn, but also how we feel and act.

The establishment of democracy as a system of Government, Diamond (2004), states that, a political process of voting for a Governing party should be conducted through free and fair elections, and yet the manipulation of algorithmic information during the 2016 American election campaign challenges this public right. Is it fair and just when misleading information is published which confuses people causing confusion amongst voters. As Hern (2018), suggests, this example sets a new standard in the prevention of the unethical use of technology, referring to Cambridge Analytica, a company currently under investigation in relation to this situation.

This perhaps emphasises what Brey (2012), pointed out about the challenges of anticipating ethical issues while new technology is emerging. Often the best approaches become clear after mistakes are made and new learning is acquired, although, this method of learning has the potential for catastrophic effects on society. As Rennie (2018), states, "If we've angered a community for something that we've done, it takes a long time to win that trust back. We are in such a competitive environment; people have got to trust their news sources". Context can make conflicting demands on individuals, making it very hard for decision-makers in media organizations to reach a decision about how best to act, (Spence et al 2011), particularly when maintaining the survival of their business takes precedence. The collateral damage however,

can often reflect a loss of trust in news sources because of unintentional ethical lapses.

Media Employment

Social media platforms, such as Facebook and Google have had a global impact on news organizations, putting them in a situation where they need to adapt to current changes, (Newman 2018), and this is evident by the fact that many news organizations have had major cuts on employment. These changes have introduced the need for new journalistic skills. Rennie (2017), explains, “I don’t necessarily want someone who can write a story; I want somebody who can understand algorithms”. This is a new approach to employment criteria, and in contrast to simply seeking traditional journalistic skills. Rennie speaks about this from a business understanding, accepting the fact that AI has changed the communication of news and in particular, the role of journalism. But as Brake (2017), points out, “it doesn’t mean that it is any less important to be aware of these new forces influencing journalistic practice”.

Information is a kind of knowledge and social media sites, such as Facebook and Google offer immediate and current information, providing what publics want and expect from online sources. As new technology emerges and news organizations adjust to new ways of delivering news to the public, existing work practices are becoming outmoded. As Rennie (2017) says, “Best practice hasn’t even been developed yet”, as the pressure to compete in a changing environment weighs heavily upon news providers.

CONCLUDING DISCUSSION

Observing the participants in a filmed interview was all encompassing as they shared their experiences, thoughts and understanding of this research topic. Many of their comments connected to a humanistic standpoint revealing

concerns for the future, as well as for the protection of human rights in a democratic society, Diamond (2004). From a critical communication perspective, it can be argued that humans are open to exploitation because of a lack of awareness and understanding about the implications that the use of AI has on the provision of important news stories to the public. With this in mind, I hope to contribute to the development of such awareness through the production of a film documentary on this topic, based on the findings of this research project.

I attended a third conference on filmmaking, held at the Australian Centre for Moving Images (ACMI) in Melbourne on March 4-7 2018. The annual Australian International Documentary Conference (AIDC) provides opportunities to talk with decision-makers in the film Industry from Australia various countries around the world, about which topics are currently sought after for documentary screening. There were sixty-seven decision-makers there representing a variety positions within the film Industry, such as, commissioning editors, sales and acquisition executives, program and distribution managers, film festival organisers, producers, CEO's and many more Industry professionals who offered their expertise to a large attendance. This conference offered detailed and diverse perspectives on the process and outcomes of visual storytelling and I was able to gain some additional knowledge about which specific areas are of interest to audiences.

I was invited to three individual meetings to discuss my documentary project and received some valuable feedback from interested Commissioning editors and sales executives from the United Kingdom, Hong Kong and Australia. All of them had watched the trailer which I produced for the documentary, (refer to appendices under documentary), and were keen to discuss the topic further.

Their first response was that documentaries relating to new technologies are very relevant to audiences at this time. This demonstrated their editorial belief

that publics want to be informed about how technology is changing the status quo, and ultimately what it all means to society. I will be producing a further documentary for television broadcast, as an outcome of these meetings with Industry decision-makers, which will be based on the findings of this research project. This provides another measurement of the contribution of this documentary to knowledge, insights and understanding in this area. The commissioning editors' interest also demonstrated the journalistic, production and creative practice value of the documentary program I produced. At the same time a number of key understandings have emerged from the interview conversations recorded for the creative work-documentary. As there is a strong interest in this research topic it would indicate a general inquiry into our relationship with artificial intelligence systems as we advance alongside new and emerging technologies.

It has become apparent in this research that humans could unknowingly end up in a position that becomes secondary to the influences of AI systems as new technology advances faster than human capability. Higgins (2017a; 2017b) shared his concerns on this point, "I think we are starting to push people against the barriers of human capacity". There is a complex interdependence as Spence (2011) suggests, between news creators, audiences and AI engineers, and all stakeholders are coming to terms with a phenomenon that is synonymous to extreme change. This raises the need for such "progress" and effects of artificial intelligence in media discourse to be made transparent and managed.

According to Brey (2017) such management could allow for better awareness of what is occurring now, rather than relying on a situation in which people are ignorant to the possibilities of what might lie ahead. Integral to this need for transparency is the crossed purpose between media businesses striving to stay financially competitive – often through automation – and what society needs from channels of media discourse such as those financially driven media companies. Spence et al (2011), suggests the storyteller or bardic function of the media is an essential part of cultural life. Stories, portrayed

through media can influence how we think, how we identify ourselves and what we do. The conflict between that “bardic function” and the need by media companies to turn profit is evermore significant as artificial intelligence increasingly provides the means to cut editorial costs and raise audience numbers.

Research in the area of consumer awareness and public opinion although limited, reveals that members of the public are often not even aware of the major role that algorithms play in journalism (Graefe, 2016). Evidence of how this will affect society is lacking and inconclusive. This lack of public awareness exists despite the fact that this knowledge is vital for robust public debate on what expectations society has for the provision of important news content.

However, as borne out in discussions with my interviewees in this research, without public knowledge or awareness of how AI in the communication practices is affecting our democracy, society is at risk of being manipulated by these robotic systems, impacting invisibly on the thoughts, beliefs and opinions of people, (Epstein 2016), based on machine learning. Traditional media has – albeit not always perfectly – provided a channel for people’s voices to be heard and “people see the general media as an important pillar of our democracy”, (Higgins 2017a; 2017b).

This research has explored concern by media actors and consumers that news selection is derived from populist rather than fact-based viewpoints. This means that challenges to viewpoints and vital information could be missed altogether, limiting knowledge and alternative perspectives on important topics of information - affecting worldviews of millions of voters globally in the democratic processes of society

From this research and recent events (for instance the recent controversy involving the use of Facebook users’ data) it’s clear that audiences whose activity is measured by algorithms and artificial intelligence rightly expect to have control over their data, (Higgins 2017a; 2017b). People should be able

to expect to have a choice to make informed decisions on whether personal data is included into algorithmic systems. Transparency of practice by news providers in this use is also needed to enable public trust in them. For this and other mechanisms, ethical practice should be accepted as critically necessary for all the new and old media organizations operating today.

Although Kent (2015), has designed an Ethical Checklist for media organizations to work with, Spence (2017), explains that, “Quite often the principles behind the ethics are not always obvious to the users”. It is important therefore to consider how media organizations can incorporate ethical practice into their decision-making and actions to address their use of algorithms and AI. One would hope that as government legislation and public bodies, which oversee media company practice, fully understand the use of AI in channeling information – and that they make recommendations or Code of Practice guidelines around these processes – guidelines that could be enforceable.

It is a critical requirement to know the motivations, practices and consequences of AI usage and habitual news sharing through new media, (Bruns 2017), and subsequent guidelines could and should include rules around transparency of AI practice for consumers – so that audiences know what happens to their data and how information they receive has been manipulated by that data and related AI processes. That responsibility to provide transparency could be legislated to lie with the media providers who use AI systems. Brake (2017), suggests for example, that a partnership between journalists, scholars and policymakers may assist in achieving this objective.

Similarly media codes of ethics developed around the world by journalist organizations and other professional media bodies need to, as a matter of urgency, specifically address the use of AI and algorithms – and their ethical implications (for instance, around independence of information and the public’s right to know). That means to name these practices and specify what the expectations would be for media companies and their staff to use them (in

an ethical manner in relation to their audiences), would support existing and further changes to media practices and furthermore as Brake (2017), states, this would draw on the best ideals of journalism.

Developing codes of practice by both government-level oversight bodies and professional organizations (such as media unions) could then enable a conscious, open discussion of how AI and algorithms are manipulating audience access to information. Such conversations and codes can also enable the implementation of McCalman's (2017) suggestion of *embedding* ethics into algorithmic design. If implemented appropriately and genuinely in media platforms' AI systems, such automated ethics mechanisms could enable a just distribution of information - geared to the public interest of open media discourse.

These developments might need ongoing discussion between publics who use media, media companies, governments, qualified media ethicists and media employees: as Spence (2017), says, "determining what's good for humanity is a complex issue", so listening to different perspectives must be an ongoing process of developing ethical and operational responses to AI in media dissemination.

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APPENDICES

Academic Documentary

Changed By Technology Private Link

<https://vimeo.com/262013052/c00835ed40>

Documentary Trailer

<https://vimeo.com/259279318>

Interview questions

Andrew Rennie

1. What are the potential benefits of using Artificial Intelligence systems?
2. Who is responsible for ensuring the information gathered by algorithms is correct?
3. Do you think that the public should be informed if a robot was writing the news?
4. Is the use of algorithms & automation in media changing the way we communicate?
5. Do you think these new technologies could affect our democracy?
6. Is privacy as important to people as it used to be?
7. How could the use of algorithms & automation effect employment?
8. Do you have any concerns about any of the changes driven by these technologies?

Paul Higgins

1. Do you think that the use of algorithms & automation could change the way we communicate?
2. Do you think these systems are affecting our democracy?
3. Could the use of algorithms affect our worldview?
4. Do you think that people generally are accepting the collection and use of their data without question?

5. What kind of work ethics do you think humans need to sustain our working relationship with robots?
6. What do we need to guide us through these changing times?

Edward Spence

1. Why do we need a code of ethics in business practice?
2. The relationship between media and society is based on the way news is communicated. Do you think this is changing due to new technologies?
3. Could the use of algorithms and automation in media influence people's worldview?
4. Do you think the use of algorithms in media could affect our democracy?
5. Do Media organization's have a moral obligation as to how they inform the public?
6. Who dictates the ethical or moral guidelines, the media or the public?

Ben Mashford

1. How much are algorithms used in robotic innovation?
2. When would you use AI software such as, deep learning?
3. How does this work?
4. What do you think are the key elements necessary for humans to guide our relationship with AI?

Dan Pearce

1. Are there legal implications for publishing incorrect information through an automated system?
2. Who is accountable for ensuring published information is correct? Are there any legal requirements?
3. Who is liable for sharing unauthorized Intellectual property through automation?
4. Does the use of algorithms and automation in media affect privacy laws?
5. Can people protect their data?
6. Are media organization's required to inform their audiences of the use of algorithms in news stories?
7. Are there any new laws that apply to breaching of private data?

8. How have these new technologies, such as algorithms and automation, impacted on our legal system? What has changed?
9. Do you think there should be some changes to the law?

Ian Summers

1. How would you feel if a robot was writing news stories?

Cathy Alexander

1. What sort of guidelines do you think we need as we work with new technologies?
2. Are there any particular values or ethics that you would like to see in business practice?

Steve Meyers

1. What are some of the key standards that you look for in the communication of news?
2. Do you think these new technologies could change the way we communicate?

