Information disorder: Are librarians able to counter the spread and effects of fake-news, misinformation and disinformation in a post-truth world

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Abstract

The purpose of this study was to explore ways in which Library and Information Science might counter the rise of information disorder.

In order to do this, it was necessary to explore the variations of information disorder and how it is disseminated.

While identifying various types of information disorder and their dissemination, it became clear that an information architecture has evolved, which has facilitated the spread of false information and misperception. The rise of the internet and the evolution of social media platforms have contributed to the development of this architecture and the creation of a complex information ecosystem.

Various motivations drive those who propagate false information; some financial, some political, some personal. Understanding the motivations will further inform a LIS response to information disorder. To date the Library and Information Science response has been to do what they have always done, which is to provide quality information and information literacy education programmes. Suggestions have been made that these responses will not be enough.

The psychology behind the manner in which information disorder is disseminated cannot be ignored. Aspects such as how the brain processes information, how individuals respond emotionally, how those who promote false information manipulate responses need to be understood. It is simplistic to consider that information literacy programmes and providing quality information alone will provide an adequate solution.

To be effective, Library and Information Science must adopt a multi-disciplinary approach, an adaptable mindset and remain flexible. They are well placed to contribute toward a solution by working collaboratively with other professionals to discuss, innovate and formulate options.

The internet and evolving information ecosystem is relatively recent and it is becoming apparent that an ethical and regulatory framework will be needed to create controls and codes of behaviour. Library and Information Science has a reputation for trustworthiness and constancy. Leveraging these qualities will assist their contribution and maintain their relevance in a constantly changing information environment.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>2</td>
</tr>
<tr>
<td>Contents</td>
<td>3</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>4</td>
</tr>
<tr>
<td>Introduction - Fake-News and a Post-Truth Era</td>
<td>5</td>
</tr>
<tr>
<td>Aims and Objectives</td>
<td>6</td>
</tr>
<tr>
<td>Scope and Definition</td>
<td>7</td>
</tr>
<tr>
<td>Preliminary Literature Review</td>
<td>7</td>
</tr>
<tr>
<td>Research project design</td>
<td>9</td>
</tr>
<tr>
<td>Methodology</td>
<td>9</td>
</tr>
<tr>
<td>Work Plan</td>
<td>9</td>
</tr>
<tr>
<td>Resources</td>
<td>9</td>
</tr>
<tr>
<td>Ethics and confidentiality</td>
<td>10</td>
</tr>
<tr>
<td>Literature Review</td>
<td>10</td>
</tr>
<tr>
<td>Definitions: the various guises of fake-news</td>
<td>10</td>
</tr>
<tr>
<td>Fake-News</td>
<td>10</td>
</tr>
<tr>
<td>Post-Truth</td>
<td>10</td>
</tr>
<tr>
<td>Information Disorder</td>
<td>11</td>
</tr>
<tr>
<td>Filter bubbles and Confirmation Bias</td>
<td>12</td>
</tr>
<tr>
<td>Echo Chambers</td>
<td>13</td>
</tr>
<tr>
<td>Does Information Disorder Cause Harm?</td>
<td>13</td>
</tr>
<tr>
<td>Should libraries care about Information Disorder?</td>
<td>15</td>
</tr>
<tr>
<td>Information Disorder and the Role of Libraries</td>
<td>16</td>
</tr>
<tr>
<td>Library Association Responses - a Focus on Information Literacy</td>
<td>19</td>
</tr>
<tr>
<td>Information Literacy - is it enough?</td>
<td>23</td>
</tr>
<tr>
<td>Quantifying the value of Information Literacy Skills</td>
<td>24</td>
</tr>
<tr>
<td>Are some forms of Information Literacy better than others?</td>
<td>25</td>
</tr>
<tr>
<td>Broader issues with Information Disorder</td>
<td>26</td>
</tr>
<tr>
<td>Working toward Solutions</td>
<td>32</td>
</tr>
<tr>
<td>Conclusion</td>
<td>40</td>
</tr>
<tr>
<td>References</td>
<td>43</td>
</tr>
<tr>
<td>Appendix A: LIS - Research Proposal</td>
<td>52</td>
</tr>
<tr>
<td>Appendix B: Reflection</td>
<td>59</td>
</tr>
<tr>
<td>Appendix C: IFLA - How to Spot Fake News</td>
<td>60</td>
</tr>
<tr>
<td>Appendix D: SCONUL Seven Pillars of Information Literacy</td>
<td>61</td>
</tr>
<tr>
<td>Appendix E: Social Media Examples</td>
<td>62</td>
</tr>
</tbody>
</table>
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2020 - what a year it has been. Here’s hoping 2021 will be more positive and there will be some light at the end of the tunnel.

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Introduction - Fake-News and a Post-Truth Era

Since the United States presidential elections in 2016 and the United Kingdom Brexit vote of that same year, the term fake-news has become a popular term (Lor, 2017). Named word of the year by the American Dialect Society and the Collins Dictionary in 2017 (Anderson, 2018). Identified by the Oxford English Dictionary as word of the year in 2016, the dictionary noted that the term has been around since the 1890s (The OED, 2019). Taking an example from the Milwaukee Daily Journal dated 7th February 1890, the Oxford English Dictionary references “fake-news” relating to a local mining story. “Yellow journalism” was prevalent in the United States during the late 1800s to early 1900s; emanating from the “golden age” of newspaper journalism (Banks, 1898). Cheap print production meant that Pulitzer and Hearst competed to promote the sales of their newspapers, the New York World and the New York Journal. Techniques employed by yellow journalists were not dissimilar to those linked to today’s fake-news. They utilised sensationalist headlines, employed images to sell their stories, presented fake interviews, deployed pseudoscience to back up claims, invoked emotional responses and took the side of the underdog against the system.

Fake-news is not therefore a new phenomenon. Examples can be found further back than the 1890s. The Social Historian (LSBU, 2020) at London South Bank University, outlines several examples of fake-news going back in time. The University of California, provides an historical summary of fake news and past reiterations, noting that “sensationalism has always sold well” (CITS, 2018). Those in power or those desiring power; institutions, governments and movements have always sought to present “facts” to their best advantage, depending their agenda. A example from the 17th century illustrates this. In 1672, newly established London coffee houses became forums for political discontent. In response, the monarch Charles II, issued a proclamation to “restrain the spreading of false news” which was helping “to nourish an universal jealousy and dissatisfaction” (Malik, 2018). Censorship ensued and those deemed to be loyal to the crown were allowed licences to run coffee houses and were required to inform the government of any sedition.

What has changed is the speed at which fake-news can spread. The internet has altered the way we source and share information (Cooke, 2017). The rise of social media such as Facebook, Twitter and Instagram means that millions of people constantly share information, real or otherwise. Automated programs known as “Bots” and computer algorithms propagate fake-news. Designed to emulate human behaviour on social media, they facilitate the spread of fake-news, pick up on trending topics and share unvalidated news stories in high volume. The motivation is often to facilitate profit or to further spread false information for political gain. Estimates from 2017, suggest there were around 23 million bots on Twitter (around 8.5% of
accounts), 140 million bots on Facebook (5.5% of accounts) and 27 million bots on Instagram (8.2% of accounts) (CITS, 2018).

Techniques such as micro-targeting are used to disseminate information to specific groups of people. Cookies and data analytics identify content accessed or responded to. An individual’s interests are identified with the aim of drawing attention to targeted social media content. Trolls and troll farms, some of which have been planted by external interests (Russia being of note during the United States presidential elections of 2016), are employed on social media. Their aim is to validate fake-news stories, counter arguments against them, foster disbelief against real news stories, encourage distrust and polarise viewpoints (Pomerantsev, 2019).

In the face of such techniques, what can Library and Information Science (LIS) do to counter the spread of fake-news? Traditionally LIS professionals perceive themselves to be guardians of knowledge, keepers of records; providing safe storage for documents and information to be curated and accessed. How with the advent of a post-truth era can they counter the rise of misinformation and disinformation? What measures can be taken and what role can they play? Particularly when the motivation is “a vast amount of money and political capital being made promulgating direct lies” (Adams, 2020).

Aims and Objectives

The aim is to explore possible options and approaches for the future relationship between LIS and the current fight against misinformation, disinformation, and the current fake news phenomenon. The secondary aim is to develop greater understanding of fake-news; where it comes from, who creates it and how it is spread. The premise is, if LIS can more fully understand the extent of fake news, then perhaps they will be better able to counter it.

The focus will be to:

- Identify the various guises of fake-news, how they are propagated, and by whom.
- Understand whether LIS concerns about fake-news are relevant.
- Understand current methods used by LIS to counter fake-news.
- Explore the psychological tools of fake-news - how mind and emotion are manipulated.
- Evaluate possible options and approaches for the future.
Scope and Definition

The scope of fake-news is broad, as is the concept of post-truth. Various sources suggest fake-news consists of deliberate disinformation and misinformation, designed to invoke an emotional response. The goal is to cause disruption, motivated by money and political gain. Dissemination is predominantly via social media channels, but also via traditional media such as television and newspapers. Post-truth is generally considered to refer to a specific point in time. From 2016 onward, facts appear to have become irrelevant. Appealing to an emotional responses appears to have become more important. Confirmation bias has been capitalised on, along with ingrained personal beliefs.

Research will need to be confined to the parameters and context of Library and Information Science, focusing on how institutions within this discipline might approach and develop methods to combat fake-news in its various forms. Ultimately collaborative, multi-disciplinary approaches may be the most effective. It will be beneficial therefore to have an understanding of approaches considered by other disciplines, such as journalism or the digital humanities. Understanding further the potential psychological effects of fake-news and the methods employed to manipulate thinking will also be of value.

Geographically, research will be centred on English speaking nations, although fake news is a global phenomenon, with examples to be found in countries such as the Philippines, Mexico, Russia and China. A United Kingdom focus is likely, including research from Europe, the United States, South Africa, Australia and New Zealand.

Preliminary Literature Review

Connor Sullivan’s article “Why librarians can’t fight fake news” (2019) was a starting point for the preliminary literature review. It became clear that there was a wide range of information on the topic, covering many aspects of fake-news and the consequences. Sullivan suggests that the methods used by LIS to counter thus far have not been successful in combating fake news and that to date the methods employed have been traditional in approach. He hypothesises that LIS (Library and Information Science) requires an understanding of the complexities of fake news, including an awareness of the psychological aspects. Sullivan proposes that a cross-disciplinary approach will be needed to successfully counter the trend toward a “Post-truth” information environment. The term “Post-truth” references the period following the 2016 elections in the United States and the United Kingdom (Cooke, 2017). Sullivan suggests research from other disciplines highlights why methods adopted so far by LIS are unlikely to succeed. His view is that a collaborative approach is likely to produce better results. While offering no solutions, Sullivan
points to possible pathways, which might help to counter the issue of fake-news and address the changing role of information professionals in a “post-truth world” Sullivan (2019).

On the other side of the Atlantic, David Bawden presents a not dissimilar view, suggesting that it is difficult for librarians and information professionals to successfully combat misinformation and disinformation. Bawden recognises that some in-depth reflection is required, before resolution might be found (Bawden, 2017). However, while at an ISKO conference in 2018, Bawden and Robinson, venture that knowledge organisation and curation of the info-sphere might provide potential solutions from a LIS perspective, proposing the idea that “supporting truth and promoting understanding” through knowledge organisation and curation, go some way toward resolving some of the problems associated with a post-truth world (Bawden and Robinson, 2018). While arguing that there are no quick fixes, they suggest that knowledge organisation serves to facilitate understanding and therefore contributes toward fighting misinformation and disinformation.

Floridi (2016) argues that an “ethical info-sphere” may serve to remedy the prevalence of fake-news and the onset of a post-truth society. He believes the shaping of which, information professionals can play a significant role in. Floridi notes that conceptual biases, which are often linked to the acceptance of fake-news are a far from new problem. Thus identifying instances going back at least four hundred years or so. The significant difference between then and now, Floridi emphasises, is the advent of the internet and the speed by which information can now be disseminated. These have combined with the emergence of “echo chambers”, which allow participants to validate their beliefs amongst other similarly minded individuals. Floridi foresees digital, ethical issues to be one of the defining challenges of the 21st century (Floridi, 2016). He suggests that technology companies have a part to play in re-shaping this info-sphere and that thus far, they have taken little responsibility for their actions, and if so mostly retrospectively. Floridi does however, recognise the formation of a collaborative effort in 2016, by Amazon, DeepMind, Facebook, IBM, Microsoft and Google, in an attempt to establish an ethical body. A step, which must be acknowledged as a positive move in the right direction.

Less optimistically, a review of Pomerantsev’s book “This is not Propaganda - Adventures in the War Against Reality” (2019) exposes the insidious nature of the spread of misinformation and disinformation. Outlining how it is disseminated, the emotional responses it is designed to engender and the motivation behind its propagation. As suggested by Connor Sullivan (2019), the resolution will be deeper than simply providing education programmes in critical thinking, content and source analysis. There are psychological perspectives to also consider. The antidote to post-truth society is more than fact checking and presenting truth. The solution needs to be more than refuting and retracting misrepresentations of truths. Pomerantsev (2019) provides examples
from around the globe, where fake news has been deliberately created, co-ordinated and disseminated, to be used either within the country of origin or beyond. The motivation behind these efforts range from the benign to the malignant. Pomerantsev (2019) outlines the many methods used to spread fake-news. He cites technological examples such as the use of cyber bots, algorithms, troll farms and the development of a disinformation architecture, combined with emotional and psychological manipulation.

In the light of such sophistry, the conclusion must be that library and information professionals have the odds stacked against them. Their reliance on traditional methods thus far for fighting fake news, as Connor Sullivan (2018) suggests, is not enough. Perhaps, as he proposes, until LIS professionals better understand the nature and complexities of misinformation and disinformation, they cannot begin to effectively redress the problem. Nor, as he suggests, can they hope to do so on their own - it seems likely that a concerted, collaborative, multi-disciplined effort will be required.

Research project design

Methodology

Literature review was the most appropriate methodology for this particular research topic. Conducting a literature review provided a broad framework from which to investigate further. For the proposal an initial literature review showed a range of information sources to be available on the topics of misinformation, disinformation, fake news and post-truth. One of the challenges therefore was identifying which sources were likely to be the most useful and relevant to the research, along with recognising key themes and areas to explore further.

Work Plan

The work plan was set out in the original proposal and will be followed accordingly. It will be adapted where necessary.

Resources

Resources were sought predominantly via the web or university libraries (physically and virtually), in the form of books, journals, blogs, vlogs, podcasts, newspaper / magazine articles and social media platforms for example, where relevant. Information offered via websites of specific organisations also proved helpful. Desk based research did not require any specialist equipment, other than the ‘standard’ tools of the trade, such as a laptop, iPad and internet access. Additionally, the situation with Covid-19 meant most of my research had to be conducted online.
Ethics and confidentiality

No human participants were required or were involved in my research project, therefore an external ethics committee was not be needed. My chosen research method was literature review. No sensitive, confidential or personal information was accessed. Blog posts and social media feeds, such as Twitter were referenced. There was minimal risk of accessing illegal or subversive material in order to research this topic.

Literature Review

Definitions: the various guises of fake-news

Fake-News

The LIS community has recognised that fake-news is an issue, but what does such an all encompassing term cover? Broad definitions define fake-news as “news articles that are intentionally and verifiably false and could mislead readers” (Hunt and Gentzkow, 2017). While others acknowledge that fake-news encompasses “other information disorders such as misinformation (false or misleading information) and disinformation (false information that is deliberately spread to deceive people)” (Lazer et al, 2018). Fake-news often mis-leads with regard societal issues such as vaccination, climate change and pandemics. Concern is such that Pope Francis has joined the fray, making comparisons between fake news and the snake in the Garden of Eden (Guardian, 2018). The Pope draws an analogy between the disinformation promulgated by the serpent to the rhetorical slogans and sensational headlines prevalent in the press. In his 2018 World Communications' Day message, Pope Francis acknowledges that while a “capacity to twist the truth is symptomatic of our condition”, we have a responsibility to “search for truth”. He then refers to fake-news, defining it as “false information based on non-existent or distorted data meant to deceive and manipulate the reader. Spreading fake-news can serve to advance specific goals, influence political decisions and serve economic interests.” (Pope Francis, 2018).

Post-Truth

In line with this, McIntyre (2018) perceives post-truth to be “not so much a claim that truth does not exist as that facts are subordinate to our political point of view” and must therefore be presented in a way which serves certain interests to their best advantage. Similarly, Cooke (2017) suggests that the post-truth era is one where arguments and information are more likely to be accepted if they appeal to emotion and pre-existing beliefs. Information, she suggests, does not exist within a vacuum. Consumers of information allow emotion and motivation to guide their information behaviour, which makes them susceptible to untruths. She cites Rosen, who notes
that “the production of confusion” has become a method of controlling the opinion of the masses (Cooke, 2017). While d’Ancona writes of a mis-information industry, where the “systematic spread of falsehood” is employed to “suppress accurate information”, so that vested interests may promote their agendas (d’Ancona, 2017).

### Information Disorder

A 2017 report to the Council of Europe, by Wardle and Derakshan, refers to “information disorder”, proposing a new conceptual framework for analysing information pollution and examining information disorder. The report identifies three specific information types: mis-information, dis-information, and mal-information.

They delineate these categories in the following way:

- **Mis-information** - when false information is shared, but no harm is meant
- **Dis-information** - when false information is knowingly shared with harmful intent
- **Mal-information** - when verifiable information is shared to specifically cause harm.

Furthermore they argue, in line with researchers and commentators such as Ethan Zuckerman, Dana Boyd, Caroline Jack and Margaret Sullivan that the term ‘fake news’ is “woefully inadequate to describe the complex phenomena of mis-information and dis-information” (Wardle, Derakshan, 2017). Zuckerman condemns fake-news as a “vague and ambiguous term” spanning everything from ‘false balance’ (actual news that doesn’t deserve our attention), propaganda (weaponised speech designed to support one party over another) and ‘disinformatzya’ (information designed to sow doubt and increase mistrust in institutions) (Zuckerman, 2017).

Wardle (2017) argues that the term “fake-news” should no longer be used, as it is now being appropriated by a range of organisations, who are responsible for utilising “information disorder” for their own ends. She cites, Facebook, who have in a recent paper on information operations (Weedon et al, 2017), sought to define more clearly the complexities of information disorder with terms such as:

- **Information (or Influence) Operations** - actions undertaken by governments or organised actors to distort domestic or foreign political sentiment to achieve a strategic outcome
- **False News** - articles which purport to be factual, but contain intentional mis-statements designed to arouse passion, attract followers or to deceive
- **False Amplifiers** - coordinated activity via inauthentic accounts which have the intent of manipulating political discussion.

Wardle takes this further by identifying in ‘Fake News. It’s Complicated’ (2017), seven types of mis/disinformation. Wardle identifies these categories as:
• satire or parody - where there may be no intention to mislead, but it may be misinterpreted
• misleading content - where the aim is to deliberately mislead
• imposter content - where genuine sources are impersonated
• fabricated content - where the content is 100% false and is designed to deceive
• false connection - where headlines, visuals or captions do not truthfully support the content
• false context - where genuine content is included within a false context
• manipulated content - where genuine information or imagery is manipulated to deceive

Rather than using the term “fake-news”, Wardle (2017) prefers to refer to an “information ecosystem”, in which a vast array of various types of misinformation and disinformation exist. She delineates the motivations for the creation of such content, identifying them as the ‘Ps’: Poor journalism, Parody, Provoke, Passion, Partisanship, Profit, Political Influence, Power, and Propaganda.

D’Ancona (2017) notes that ‘information disorder’ has become a multi-billion dollar industry and acknowledges the rise of a systematic spread of false information, designed to undermine public confidence. D’Ancona suggests that disinformation campaigns have paved the way for a ‘post-truth’ era. Whereas Wardle (2017) refers to the creation of an ‘information eco system’, within which information disorder prevails. Both recognise a systems architecture, which facilitates the spread of false of information and misperception.

A realisation fully embraced by Kellyanne Conway (2017), as a senior White House advisor, where she asserted that there were no facts, but only interpretations of facts or “alternative facts”. Equally, Arron Banks, financier behind the Leave campaign in the United Kingdom Brexit referendum, noted that Leave.EU was successful, because although the Remain campaign “featured fact, fact, fact, fact. It just doesn’t work. You’ve got to connect with people emotionally” (d’Ancona, 2017). As d’Ancona notes “the visceral” triumphs over “the rational” and “emotional narrative” is what wins the day and grabs the public’s attention (d’Ancona, 2017). This combined with social media enabled echo chambers, filter bubbles and humankind’s propensity toward confirmation bias, further facilitates and amplifies information disorder. As Obama noted in his 2017 farewell address: “We become so secure in our bubbles that we start accepting only information, whether it’s true or not, that fits our opinions, instead of basing our opinions on the evidence that is out there” (Obama, 2017).

Filter bubbles and Confirmation Bias

The importance of confirmation bias, where individuals tend to search for and validate information which supports already held views, cannot be ignored. Facts are interpreted to reinforce previously held viewpoints, rather than further informing and shaping opinion (Corbu et al, 2020). Wardle (2017) identifies confirmation bias with the ‘interpreter’. As in the interpreter defines how a
piece of information might be received, understood and then passed on; noting that a social media post can be “reproduced and redistributed endlessly” (Wardle, 2017). Confirmation bias means that individuals tend to interpret information based on their background and past experience. Socio-economic and cultural status, political position and personal experience are examples of aspects which are likely to influence their interpretation of information and influence their confirmation bias. Evidence shows that people tend to associate themselves with ‘tribes’, in the sense of groups which share similar beliefs. Therefore the power of peer group pressure influences how they interpret and respond to information. Accepting information which does not conform to the tribal view is often met with resistance, regardless of how persuasive the facts and rationale might be. Human brains do not always operate rationally, which means that fact-checking and disseminating quality information does not necessarily resolve the issue.

**Echo Chambers**

Social media systems encourage the prevalence of echo chambers, where people encounter ideas which echo their own. Alternative ideas are not considered and people have a tendency to follow, share and validate the views of similarly minded people. The echo chamber mindset exacerbates increasing polarisation amongst social groups (Lazer, Baum et al, 2017). Lazer, Baum et al recognise the reach and influence of orchestrated information campaigns, which capitalise on the psychology and emotional manipulation behind echo chambers and filter bubbles. They note for example, that such campaigns have been proven to originate from sources such as Russia. In which instance, the motivation appears to be an attempt to destabilise democracies. Pomerantsev (2019) references information disorder as a war, in which key players deliberately seek to manipulate opinion. Artificial intelligence and algorithms are employed to facilitate this. Encouraging the formation of echo chambers is one of their strategies.

**Does Information Disorder Cause Harm?**

There is no doubt that information disorder causes harm. One need only look at the prevalence of anti-vaccination propaganda to see this and the effect it has had on herd immunity in terms of occurrences of measles and mumps within the general population. In 1998, Andrew Wakefield and colleagues published an article in the Lancet, suggesting that there was a link between the Measles Mumps and Rubella vaccine and developmental disorders in children (Sathyanarayana Rao & Andrade, 2011). Despite being refuted for a range of significant reasons and then finally retracted in 2010, with Wakefield et al being held to account for ethical violations and scientific misrepresentation and later found to be guilty of deliberate fraud, the debate continued and parents globally did not vaccinate their children for fear of the risk of autism (Sathyanarayana Rao & Andrade, 2011). Consequently multiple measles outbreaks have occurred in countries where previously the measles virus had been considered to be eliminated. Even more importantly continued and increased distrust in immunisation has implications for global communities,
thereby enhancing the increased likelihood of global transmission of pathogens (Hussain et al, 2018).

The implications of which are of significance during a time of pandemic in 2020 and going forward into 2021. The rise of the anti-vaccination movement is viewed by those in public health to be a “dire threat to people’s health and collective herd immunity” putting a strain on “national healthcare systems” and also causing “fatal casualties” (Hussain et al, 2018). The demonisation of vaccines has become pervasive via social media and the implications of such a movement will be significant in view of the current Covid-19 pandemic, the hopes for developing effective vaccines and the administering of them. Even as recently as 2018, despite being discredited as a scientist and struck off the British medical register, Wakefield has emerged as an anti-vaccine crusader in the United States, advocating anti-pharmaceutical company conspiracy theories, advancing his cause via a pseudoscience documentary entitled “Vaxxed” and courting the upper echelons of American society (Boseley, 2018, Deer, 2020).

A range of similar examples proliferate, for example when South African President Thabo Mbeki asserted that anti-retroviral drugs were part of a Western plot and that garlic and lemon juice could be used to treat AIDS, over 300,000 people died in South Africa (McIntyre, 2018) or the anti-vaccine scaremongering which facilitated an outbreak of measles of almost 3,000 people in Samoa, within a population of only 200,000 in 2019 (Agence France-Presse, 2019). Formally announced as a national emergency by the Samoan government on the 18th November 2019, by the 9th December 2019, the number of cases had reached 4357 with 70 recorded deaths (Isaacs, 2020). The outbreak was fuelled in part by falling immunisation rates, due in part to the anti-vaccination movement, but also to the inadvertent use by two nurses of a muscle blocking agent when diluting the MMR vaccine, which resulted in two infant deaths within minutes of receiving the vaccine. The nurses were sentenced to prison for their error, but the authorities failed to effectively communicate the message regarding the true cause of death.

“Science denialism” can be traced back to as early as 1953, when tobacco companies found themselves faced with the findings of a scientific paper linking cigarette tar to cancer found in lab mice. McIntyre views this as being the starting point for understanding the evolution of the post-truth era (McIntyre, 2018). John Hill, a specialist in public relations, joined forces with major tobacco companies to create the Tobacco Industry Research Committee whose primary goal was to convince the public that there was no link between cigarette smoking and cancer. Their strategy worked. It took another four decades, until 1998, before the tobacco companies finally relinquished the latest version of the TIRC and then another decade before the tobacco companies were found guilty of fraud based on their trying to suppress what they knew in the early 1950s (McIntyre, 2018). One can only speculate as to how many people suffered smoking related illnesses due to the denial programme embarked on by the tobacco industry and related interest groups.
The concerted corporate campaign against global warming is a more recent example of science denialism. Funded primarily by the fossil fuel industry and co-ordinated through the Heartland Institute, which in turn was initially established with the help of funding from Philip Morris (a tobacco company) climate change has been consistently denied and the science brought into question. One of The Heartland Institute’s stated aims, as promoted via their website and highlighted by The Economist, is to be “the world’s most prominent think-tank supporting skepticism about man-made climate change” (Heartland Institute, 2016, McIntyre, 2018).

According to a 2012 report in the New York Times, the Heartland Institute’s strategy was also to seek to “undermine the teaching of global warming in public schools” (McIntyre, 2018, Gillis and Kaufman, 2012). Other organisations such as the Edison Electric Group, the National Coal Association, the Western Fuels Association and the George C Marshall Institute have also sought to deny the science behind climate change, seeking to generate skepticism about climate change. Such campaigning has been successful, while literature reviews of scientific papers show an acceptance of anthropogenic climate change as real (McIntyre, 2018, Mooney, 2006, Powell, 2012), the general public consequently continues to believe that the topic is open to debate. An example of this is shown by a survey undertaken in 2013, which surveyed 4,000 peer reviewed papers and found that 97 per cent of scientists agreed with the position that human activity causes global warming, while only 27% of American adults surveyed believed that climate change scientists were in agreement with this premise. (McIntyre, 2018).

Should libraries care about Information Disorder?

As previously stated, an overview of the literature shows agreement that 2016 heralded in the beginning of the “Post-Truth” era. This was signified amongst western democracies by the 2016 presidential election in the United States and the Brexit Referendum in the United Kingdom. In that same year the Oxford Dictionary defined “Post-Truth” as being ‘circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief’ (D’Ancona, 2017). Are these events relevant for LIS and should they care about the use of information disorder to shape public opinion?

The answer possibly depends on the perceived role of libraries within society. Are they simply guardians and stores of information? Or are they more importantly cornerstones of democracy? If libraries are cornerstones of democracy, does that mean they are not relevant in political systems which are not democratic? Should libraries remain impartial in their response to information disorder or should they be proactive in the fight against the rise of a “Post-Truth” era? Regardless of stance, there are arguments which suggest that the prevalence of information disorder is a cause for concern. From an information guardian perspective, one could argue that there is an obligation to ensure the veracity of the information being managed and stored. There is also a case for educating those who wish to access such material through teaching information literacy and critical thinking. While, equally LIS professionals would adhere to the view that libraries have a social role, which links them to the foundations of democracy. In that
democracies rely on the population at large being well informed and being able to access relevant and accurate information. The premise being that responsible voting choices cannot be made without reliable information (Buschman, 2018).

During the 2017 American Library Association (ALA) Annual Conference, ex-presidential nominee Hillary Clinton addressed attendees. She commended LIS professionals on their role within society, which entailed advocating literacy, contributing toward educating and developing well informed citizens and safeguarding the First Amendment. Clinton viewed LIS as integral to fighting for “the right to defend truth and and reason, evidence and facts” (Cooke, 2018). Clinton further suggested that librarians are more important than ever in a post-truth world in which “alternative facts” or “falsehoods” (depending on your viewpoint) are touted. As previously mentioned, “alternative facts” were presented by Kellyanne Conway, in her role as counsellor to the then United States President, during a ‘Meet the Press’ interview on January 22, 2017 (Cooke, 2018; NBC News, 2017; The Independent, 2017). Highlighting that concerns over information disorder go beyond politics, Pope Francis noted in a speech on World Communications Day, “education for truth means teaching people how to discern, evaluate and understand” (Pope Francis, 2018). While the World Economic Forum in 2017, recognised information disorder as one of the key global concerns for the next decade and beyond, citing responses from news channels, research institutions, technology companies and innovation leaders (Anderson and Raine, 2017).

An American Libraries Magazine article, reporting on an ALA 2018 Annual Conference Session, which set out to explore whether “There is a Right to be Misinformed” (Lowe, 2018), expanded further on this question. Outlining topics presented at the conference, Lowe references a number of key speakers. Mary Minow of Harvard University debated the effectiveness of US libel laws in contrast with those protecting free speech and found them woefully inadequate. Damaso Reyes of the The News Literacy Project advocated the importance of media literacy. Nicole Cooke from the University of Illinois emphasised that fake-news is not new and that “critical thinking and evaluation” is crucial in the fight against fake news. While Joyce Valenza from Rutgers University cited a Pew study which showed that the majority of citizens in the United States desired unbiased news, concluding that librarians must show leadership and that their training “in evaluating information resources” provides them with the tools to do so (Lowe, 2018). The general consensus appeared to lean toward libraries pursuing an educational role in teaching critical thinking skills in the fight against information disorder. As Hillary Clinton concluded in her closing speech at the ALA Annual Conference in 2017, “libraries and democracy go hand in hand” and that librarians are on “the front lines of one of the most important fights we have ever faced in the history of our country” (Clinton, 2017).

**Information Disorder and the Role of Libraries**

Given the insidious nature of information disorder, what is it that can libraries do? What have they done so far, and what could they do in the future? Matthew Sullivan (2019) discusses these
issues, noting that since the 2016 Presidential election and the Brexit referendum in the United Kingdom, concern has been documented within the LIS community, which can be found in a number of articles, conferences, webinars, newsletters, blog posts and other official statements. Sullivan however, is critical of the LIS response, noting that although librarians and information professionals are aware of the problem at hand, they are not ‘au fait’ with the realities, nuances and complexities of information disorder. His perception is that many in the LIS world see information disorder as simply a direct threat to the role of librarianship as information gatekeepers, but have failed to see the bigger picture with regard the sources, the ramifications in terms of motivation and the methods of dissemination, along with the psychological aspects in terms of how content is consumed and shared. This lack of understanding, he suggests, means the LIS response has been inadequate. Sullivan notes that many LIS professionals consider the link between libraries and democracy to be fundamental to their profession, believing that the public should have access to accurate information and an informed electorate is critical to a functioning democracy, but that few have in fact researched this premise. Citing Kuklinski et al (2000), who concluded that in “over 40 years of research” voters have proven to be “largely ignorant and uninformed”, Sullivan questions whether the role of libraries as pillars of democracy is actually that critical. He suggests that the more crucial issue may in fact be not being ‘uninformed’, but rather being ‘misinformed’ (Sullivan, 2019).

Furthermore, Sullivan (2019) suggests that contrary to popular opinion amongst LIS, libraries themselves are not immune to information disorder. Rose-Wiles (2018) for example writes that she has “never sat down and evaluated the content provided by Credo Reference, Gale, and the like for accuracy and inclusiveness”. She also acknowledges that not only does she not have the time to do this, but neither does she have the expertise. Libraries, she admits, are reliant on the “vendors and publishers … providing trustworthy information and avoiding … misleading information”. (Rose-Wiles, 2018). Additionally, she suggests an increase in the numbers of predatory journals, where unscrupulous publishers produce articles without rigorous peer review, means libraries must be particularly meticulous in their curation and collection building. While Anderson (2017) acknowledges that inaccuracies exist in libraries and that they are either there “by accident, or because we have failed to detect and exclude them” and that “if we are doing our jobs, they will also be there by design”. He notes that it is easy to over simplify the situation, while in fact the issue is multi-layered and multi-dimensional. Defining truth is one of these dimensions. For sometime now, we have relied on the Enlightenment concepts of reason and objective truth, yet more recently this concept has been challenged. Are reality and objective truth socially constructed? Does truth therefore truly exist? Some schools of academic thought would say not. Social constructivism continues to influence academic thinking, particularly in the humanities and social sciences, where there can be no such thing as objectivity, but rather a plethora of subjectivities, which means that librarians therefore are unable to make judgements about truths or realities.
Anderson explores at length a number of issues regarding truth, reality and objectivity and how these might impact the LIS response. He points out that even if one acknowledges the existence of objective reality, there remains an inevitable selectivity (Anderson, 2017). Libraries might well believe their role is to make objectively true facts available and then to encourage their patrons to engage with these facts critically. However, there remains an inevitable selectivity. Libraries must “collect, curate and present truths selectively” (Anderson, 2017), as they do not possess the resources to do otherwise and the criteria employed will be informed by their values, both from an institutional and individual perspective. LIS can never therefore be entirely neutral, as biases and preferences will always inevitably be reflected. On the other hand there are some who would argue, that libraries should not be neutral, that their role should be one of advocating social change or alternatively preserving certain values, which might go against the political regime at the time.

Another issue arises with regard the nature of documents. Documents themselves are essentially interpretations of truths, how do librarians decide which interpretation is more valid than any other? Or must librarians decide that “all interpretations of truth be treated equally”? Should texts advocating that climate change does not exist, be held alongside those that do, for example? Anderson (2017) argues that libraries must adopt a degree of neutrality when developing collections and commit to offering “a reasonably broad range of views on social and scholarly topics” and that those views should be broad enough to allow critical evaluation and analysis.

However, there will be times when careful decisions will need to be made about what should be included within collections and how broad that range should be. Would it be right to include "Mein Kampf" by Adolf Hitler for example? It would be easy to argue not, for as a treatise one could argue that the ideas promoted are far from palatable and the arguments incoherent. However from a historical viewpoint, when researching and studying 20th century European history, Hitler's treatise is important. It provides insight into the mindset and ideas behind a regime, which ultimately shaped the evolution of Europe in the 20th century (Anderson, 2017). Decision making about what to include in a collection must therefore reflect the purpose of the library and rather than preventing inclusion of falsehood, patrons should be encouraged to engage in balanced, critical analysis. Anderson (2017) is careful to point out that although the alternative facts referred to by Kellyanne Conway (NBC News, 2017) are far from desirable, libraries should be careful to not dismiss the concept of “alternative facts” out of hand. In Conway's case “alternative facts” were presented as “facts” more congenial to the presiding administration's position, where the facts as they stood were not considered to show the administration in a good light. However, it is possible that in certain scenarios a range of additional facts may exist, which may further contribute to a position or expand a viewpoint and libraries should be able to offer these.
While Anderson (2017) concludes that librarians need to consider how they define truth and in line with this reflect on their collection policy, there is also a suggestion that it is time for libraries to take a very clear stance on their attitude toward a ‘post-truth world’. Sullivan (2019) suggests that although LIS professionals have expressed disquiet and concern about the rise of information disorder, there is a need for a clearer strategy for providing solutions. A concern which is evidenced by a range of recent conferences devoted to topics such as; “Libraries in a Post-Truth World”, “Developing a Metadata Community Response in the Post-Truth Information Age”, along with webinars such as; “Post-Truth: Fake News and a New Era of Information Literacy”, “Confronting Misinformation: How Librarians Can Assist Patrons in the Digital Information Age”. Yet LIS has failed to come up with a cohesive and comprehensive strategy to combat the problem. It is Sullivan’s (2019) opinion that the reason is in part a failure to fully understand the issues, but also due to a certain naivety about the complexities of the situation and how these might be countered. As Anderson (2017) recognises, and as does Sullivan, “what is needed now is a reassessment of the core assumptions and values that underline the potential role” (Sullivan, 2019) of LIS. Simply acknowledging the problem and stating opposition is not enough, nor is relying on previously tried and tested concepts of the role of libraries, their interactions with patrons and their position within democracies.

Library Association Responses - a Focus on Information Literacy

The American Library Association adopted a Resolution On Access to Accurate Information, on the 24th January 2017, extending its resolution from 2005, on Disinformation, Media Manipulation and the Destruction of Public Information. The resolution states that “inaccurate information, distortions of truth, deliberate deceptions … are anathema to the ethics of librarianship and to the functioning of a healthy democracy” and acknowledges that the “use of disinformation and media manipulation constitutes a critical problem facing our society”. Referencing confirmation bias; propaganda campaigns; cyber-warfare operations; political partisanship amongst news networks; suppression of scientific studies; the removal of public information from the libraries of government agencies; the denial of Freedom of Information Act requests; and direct attacks on the reputation of certain news agencies and journalists; the resolution recognises the extent of the problem and the complexities. In terms of counter measures, the resolution confirms that the role libraries is to oppose the use of disinformation and media manipulation wherever possible; educate public consciousness as to the extent by which they can be misled; affirms that libraries should seek to provide accurate information as a means of countering disinformation; teach information literacy skills and critical thinking; seek collaborative partnerships with other organisations and institutions united in promoting accurate information and defending the free press in American society. While the 2017 resolution recognises the innate complexities of the nature of the rise of information disorder, critics suggest that the solutions recommended reflect
traditional responses and are therefore unlikely to be particularly successful, rather than being truly reflective and innovative (Sullivan, 2019).

Matt Finch, in his blog “Mechanical Dolphin” (Nov, 2019) refers to a recent Twitter exchange (Oct, 2019) with Nicholas Poole, Head of CILIP (Chartered Institute of Library Information Professionals) about the role of libraries in an age of ‘Fake News’. Poole’s emphasis appears to be one of critical information literacy, where the librarian’s role is to question everything, research widely around a topic and seek to not participate in the spread of misinformation. Finch views Poole’s response as a wise attempt to steer librarians away from a view that they are invincible and above reproach when it comes to the spread of fake news and providing accurate information. As Finch highlights in his blog, he and colleagues have been as guilty as many of sharing inaccurate tweets, without checking background information. Finch notes that CILIP defines ‘information literacy’ as being “the ability to think critically and make balanced judgements about any information we find and use” (Finch, 2019). However, in an attempt to move away from the apparent infallibility of librarians who always “know where to turn for reliable data” and are always “able to distinguish between objective and biased sources” Finch refers instead to a new initiative being put in place by NESTA (National Endowment for Science, Technology and the Arts), an innovation foundation. Begun in November 2019, NESTA has begun a ‘Future News Pilot Fund’, designed to find “new approaches to public interest news, so every community can have access to reliable and accurate news about the issues that matter most to them” (NESTA, 2019). Libraries (particularly public ones), Finch suggests should seek to present their ideas and to engage in the 21st news ecosystem through the fund, by being involved from the outset in new ways of creating, sharing and consuming news.

As CEO of CILIP in the UK, Nick Poole recently commented on the findings of the Culture, Media and Sport Select Committee Inquiry on Fake News and Disinformation. Poole (Feb, 2019) welcomed the findings of the CMS Committee - Online Harms and Disinformation, agreeing that “children and adults need to be equipped with the necessary information and critical analysis to understand content on social media, to work out what is accurate and trustworthy”, equating this with what LIS professionals term “information literacy”. CILIP hopes that the Government will seek to collaborate with LIS professionals to develop programmes focused on information literacy and digital literacy skills. Highlighting a number a key points, CILIP supported proposals by the Select Committee to: establish a stronger regulatory basis for public data transparency and accountability; review legal definitions of online political campaigning, along with transparency of the financing of this; improve public understanding and awareness of the role of digital information in public life. In their press release CILIP hoped that collaboration would continue between information professionals and the government department or CMS team. CILIP has also set up an Information Literacy Group, which is currently working with BBC Bitesize, an educational website aimed at secondary school aged students, on a Fact or Fake campaign - designed to educate teenagers on how to spot fake news or misinformation when using their mobile devices.
The CILIP Information Literacy Group has set up a website, lit.org.uk, run by information professionals from a range of UK organisations involved in promoting information literacy, seeking to support practitioners and researchers globally with an interest in information and digital literacy. Their stated aim is to “provide a practical resource for information professionals to find out about the latest developments in information literacy” (lit.org.uk, 2020). The group defines information literacy as: “The ability to think critically and make balanced judgements about any information we find and use. It empowers us as citizens to reach and express infracted views and to engage fully with society” (lit.org.uk, 2020). In a short YouTube clip Jane Secker, declares that information literacy matters, defining the librarian's role as helping people to find, evaluate, manage and use information in an ethical and discerning way, noting that UNESCO perceives information literacy to be a human right and one of the foundations of democracy. (Secker, 2020). Identifying a range of models and frameworks, the website itemises frameworks and models developed by a number of UK LIS groups. The CILIP model identifies eight competencies required to be information literate: a need for information; the resources available; how to find information; need to evaluate results; how to work with or exploit results; ethics and responsibility of use; communicating or sharing your findings; and how to manage your findings. While SCONUL (The Society of College, National and University Libraries) has established a “7 Pillars of Information Literacy” through a range of lenses model, with the pillars represented as: identify, scope, plan, gather, evaluate, manage, present and the lenses as: research, digital literacy, open educational resources and evidence-based practice healthcare (See Appendix D).

In a research project known as ANCIL (A New Curriculum for Information Literacy) Emma Coonan and Jane Secker (infolit.org, 2020) set out to develop a new approach to information literacy teaching, aimed at the 21st century higher education student. The curriculum comprises of ten strands, designed to provide a holistic view of information literacy learning and to place it within a wider context. In line with CILIP's and UNESCO's vision, Coonan and Secker believe information literacy to be “fundamental to the ongoing development of the individual in both an academic and a social context” (Coonan & Secker, 2011). Following a number of principles, they sought a holistic approach, where the entire process of study and research is taken into account. Rather than simply teaching library skills, they aim to teach in a modular fashion, so that they could accommodate the changing needs of students as they progress through their studies. They also believed information literacy teaching should be embedded within academic teaching, in order to provide context and greater meaning, while also including an element of reflective learning and peer assessment to ascertain learning. Flexibility was critical, so that their curriculum could be implemented across a range of academic and educational institutions.

They also believed that information literacy was a “crucial social and personal element in the digital age” (Coonan & Secker, 2011) and therefore fundamental to discerning scholarship. Their vision was collaborative, in that information literacy teaching should not be undertaken purely by library staff, but should be incorporated into the curriculum and adopted by other staff such as
study skills advisors, learning developers, lecturers and careers advisors for example. Coonan and Secker applied pedagogical principles to their scheme of work and teaching programme, recognising that the delivery of which would require continuing professional development in order to stay abreast with the latest developments in the subject area, but also to maintain best practice in their teaching. It was also their belief that face to face teaching, with active and reflective learning strategies, allowing peer group discussion would be the most effective approach to teaching information literacy, recognising that developing high level thinking skills such as evaluation and analysis were critical to acquiring successful information literacy.

Coonan and Secker refer to UNESCO’s vision, which was established in the Alexandria Proclamation of 2005, asserting that “Information literacy empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals” and that it is a “basic human right in a digital world” which “promotes social inclusion in all nations” (UNESCO, 2005). It is UNESCO’s belief that information literacy enables people to access information relevant to all aspects of life such as health, their environment, education and work, which therefore empowers them to gain better control of their lives and make informed decisions. UNESCO’s view is that an increasingly digital world means that those with information literacy skills are better able to navigate cyberspace and utilise content to their best advantage. Information literacy also enables people to become producers of information in their own right (UNESCO, 2005). Linked to this, UNESCO also references the impact of emerging technologies on people’s lives, recognising that information ethics must be informed by the Universal Declaration of Human Rights, which must include freedom of expression, universal access to information, the right to an education, a right to privacy and a right to take part in cultural life. As part of an overarching “Information for All Programme” (IFAP) set up in 2001, information literacy is seen to be one of six priority areas necessary to delivering the programme, including: information for development, information ethics, information preservation, information accessibility and multilingualism. The programme set up working groups to focus on each priority, with the objectives of providing a platform for international policy discussion, facilitating the development of policy and strategy, acting in an advisory capacity, working collaboratively internationally.

Highlighting how important information literacy is considered to be within the world of LIS, IFLA’s (International Federation of Library Associations and Institutions) stance is such that in December 2018, the IFLA Journal, Library Theory and Research and Information Literacy sections called for papers to be produced for a special issue of the journal focusing on the theory and practice of information literacy. As information literacy is perceived to transform lives, IFLA sought to invite an examination of critical approaches and research models, in order to create new theory and to inform practice. Topics of particular interest were listed as: building new theory in information literacy; applying theory in practice; the technology dimension in theoretical frameworks; using learning theory to inform practice; cultural perspectives associated with learning (IFLA, 2018). The proposal was that the papers would be published in the spring issue of the journal in 2020,
Volume 46 and the papers were eventually published in Issue 2 of that volume. In response to an over subscribed session on “Information literacy: From practice to research and back again” at the 2018 IFLA World Library and Information Congress in Kuala Lumpur, the call for papers sought to further develop knowledge and understanding of information literacy, since the concept was first coined in 1974 (Haddow, Chou, 2020) and highlights how significant the topic is considered to be amongst LIS professionals globally, noting also that the concept has expanded across disciplines.

As Onyancha concludes, in his contribution to the IFLA journal, that the scope of information literacy research has expanded over time, while generally being associated with the social sciences, to be included within disciplines such as the computer science, medicine, engineering, business, management and accountancy (Onyancha, 2020). From its inception the concept has therefore evolved from being a predominantly library and information science discipline, to one which has resulted in a range of new literacies such as: digital literacy, media literacy, health information literacy, business information literacy, occupational information literacy, and science literacy to name a few. The concept is no longer limited primarily to the social sciences, but has been adopted by a further 27 disciplines (Onyancha, 2020), reflecting perhaps the importance of the information literacy in the information age and possibly as an effective tool in the fight against ‘fake-news’ and an antidote to a ‘post-truth world’.

Information Literacy - is it enough?

Sullivan (2019) believes that the current LIS strategy of teaching information literacy, to combat information disorder is not enough. It is his belief that a deeper understanding of the complexities of the issue is needed, along with an awareness of the psychological aspects related to disseminating ‘fake-news’. Sullivan suggests that research in other disciplines challenges the LIS premise that teaching information literacy is the solution. Librarians, he proposes, are adverse to particular forms of inaccurate information: disinformation (deliberately deceptive information) and censorship (where specific information is withheld or redacted), which has motivated them to focus mainly on maintaining the record and providing unfettered access to ‘quality information’. Both responses fall in line with a traditional view of the library and information science professional’s role. However, providing access to ‘quality information’ and teaching ‘information literacy’ is not sufficient (Sullivan, 2019). He critiques information literacy education programmes, finding them to be inadequate and overly simplistic, in response to the sophisticated techniques used by those who spread information disorder. The 2020 research instigated by the INFLA may well address this issue or will at least begin the discussion.

Many contemporary fake news sources mimic reputable ones, which makes it almost impossible to differentiate between the two (Sullivan, 2019). Traditional library models are therefore not particularly effective at identifying false information in this situation. Referencing Berry (2016) and Barclay (2017), Sullivan notes that to date the information professional response has effectively
been little more than trying to fight a “wildfire with a water pistol”. Barclay is particularly concerned with this issue, he notes that due to the volume of information disorder librarians are presented with a number of apparently unsurmountable difficulties. For one, there are not enough librarians to deliver effective information literacy education programmes in sufficient volume. Funding restraints mean that it is rare for funding to allow adequate teaching time. Nuance is an issue, in that formulaic approaches do not address the subtleties, which means that strategies are unlikely to be effective (Barclay, 2017).

Aside from volume, sophisticated technology techniques further complicate the issue in terms of nuance. Barclay notes how easy it is to manipulate images both visually and through audio, citing Adobe software as an example of how easily a person’s speaking voice can now be mimicked. Such technology highlights how ineffectual IFLA’s “How to Spot Fake News” (see Appendix C) info-graph potentially becomes, when up against such sophistry. Although he does acknowledge that the info graph is not without value and continues to serve as a tool for promoting information literacy. The graph outlines a range of strategies which are worth considering when assessing the validity of an information source such as: consider the source; consider supporting sources; ask whether it is meant as a joke; check with experts; read beyond the headlines; consider whether others agree; consider whether your biases are skewing your judgement; reminding check before you share (IFLA, How to Spot Fake News, 2020, Appendix C). Berry also recognises the issue with volume and the “near impossibility’ for librarians to counter the proliferation of fake news and that the “trickle of truth” they can offer will do little to stem the “tides” of misinformation (Berry, 2016). At most, Berry suggests, librarians can only work toward ensuring that patrons are aware of the existence of misinformation and the methods employed by those who disseminate it, along with teaching tools which may help to evaluate veracity. Barclay (2016) notes that a number of sources (although far from foolproof) now exist to aid this evaluation, such as Snopes, PolitiFact (run by the Tampa Bay Times), Blue Feed, Red Feed (run by the Wall Street Journal), Information is a Beautiful Thing, Climate Feedback (promoted by the scientific community and that social media platforms such as Facebook and Twitter have begun to attempt to flag fake news items. Understanding the methods employed by those who propagate fake news and their motivations, at least in part perhaps goes some way toward providing a defence against the tide. Ultimately Barclay (2016) raises more questions than he answers, focusing on a number of key concerns such as: is fake news simply a passing phase; should information professionals feel compelled to “do something” about unreliable or fake information; is the issue of fake news too big for librarians to combat on their own?

Quantifying the value of Information Literacy Skills

A recent study undertaken by a group of behavioural scientists (Jones-Jang et al, 2019) suggests that information literacy skills do in assist in identifying fake news. Comparing a range of information literacy concepts such as; media literacy, information literacy, news literacy and digital literacy the study concluded that information literacy was the most efficient method in identifying
information disorder. Using the Association for College and Research Libraries definition, they identified information literacy as “the intellectual framework for understanding, finding, evaluating and using information” (Jones-Jang et al, 2019). Acknowledging that the current surge in “fake news” has highlighted a need to find ways to identify and combat information disorder, the group sought to ascertain which literacy was the most effective for critically evaluating information sources.

The study sought to evaluate participant’s ability to identify digital fake news stories by presenting them with 10 news stories (six of which were fake and four were true) and then required them to identify which were true. The news stories chosen were from the top 20 list of news items, which had generated the most Facebook engagement during the 2016 US presidential election. The chosen stories were presented in a politically unbiased way, so that the news items chosen covered Republican and Democrat interests. Participants were demographically diverse. The sample size was 1,299, with respondents being predominantly white (83.3%), with a mix of African American, Asian, Hispanic and Other. 51.2% of these were female. Data analysis found the median education level to be a “4 year college degree” (Jones-Jang et al, 2019).

Results showed that although demographic variables contributed toward an ability to identify fake news, of the four literacy methods information literacy was the most effective tool in identifying fake-news. Attempting to pinpoint which aspect of information literacy was most effective, the group noted that although conceptually the literacies were not dissimilar, information literacy skills focused on understanding how to navigate and find verifiable, reliable information online. (Jones-Jang et al, 2019). However, the group were careful to point out that although information literacy proved to be the most effective of the literacies, it was not necessarily the best solution to combating fake news. Their conclusion was that an emphasis on audience education and literacy over simplified the issue. As they had previously noted, more effective solutions might focus on the information provider, through regulation or by pressurising social media platforms to alter the focus of their algorithms. The study also concludes that collective approaches through peer review or fact checking systems are worth pursuing.

**Are some forms of Information Literacy better than others?**

While acknowledging the importance of information literacy programmes in academic libraries, and investigating the philosophical foundations of two information literacy theories in common usage today, Flierl and Maybee (2019) sought to understand which information literacy practices academic librarians should be teaching. Examining the roots of critical information literacy and informed learning they concluded that each was based on and biased toward early 20th century European constructs, as each had beginnings in early 20th century western philosophy, which originated from German schools of thought. Critical information literacy teaching strategies might involve for example demonstrating a webpage, instructing on a basic search process, describing how a researcher might undertake a task, with the goal being the need for the learner to become
dynamic and reflective in their learning. An Informed Learning approach might focus more on the practical outcomes and centre on using information like a philosophy scholar, considering for example how information might be used to argue in a certain text, then determining which information sources might support that argument (Flierl & Maybee, 2019). Recognising that they had explored only two of many information literacy theories, their conclusion was that analysing information literacy theories would benefit teaching practice. Evaluation would have the effect of improving information literacy programmes in academic library environments, serve to refine existing information literacy theories and therefore further inform teaching practice. A conclusion relevant to a world now preoccupied with the volume of ‘fake-news’, how to identify it and how to combat it. Particularly so, from a LIS perspective, when considering approaches librarians and information professionals might take.

**Broader issues with Information Disorder**

Sullivan (2018, 2019) perceives that although LIS work and involvement with information literacy is of value, a multi-pronged, multi-disciplinary approach may be needed. Collaboration amongst allied professionals, he suggests, may provide the best solution, as ultimately the issue goes beyond being able to identify false facts and information. Recognising some of the complexities of information disorder, Baum, Lazer et al (2017) suggest four possible pathways for combatting fake-news:

- provide feedback which identifies fake information (much as Twitter has recently begun to do - ref Appendix E)
- provide alternative sources which confirm that the information is fake (again as Twitter has begun to do - recent responses to Donald Trump’s twitter feed are a good example of this - ref Appendix E)
- identify information which is being promoted by bots and create algorithms which help to do this
- recognise sources of false information so that their information will not be promoted.

Baum, Lazer et al (2017) conclude however, that a collaborative, multi-disciplinary approach will be key, if any kind of success is to be assured.

Neither can the psychology behind information disorder be ignored. Our receptivity to information depends more on “shared group narratives” than rational analysis and thought (Baum, Lazer et al, 2017). Human beings have a tendency to rely on heuristics or mental shortcuts when it comes to decision making processes for accepting or acquiring new information. When adopting information, individuals are likely to trust information sources which are familiar to them. Humans also often show bias when seeking information, giving preference to information which falls in line with existing views. Such tendencies mean that critical evaluation of information or its sources does not take place (Baum, Lazer et al, 2017). Studies have also shown that attempts to correct
false information do not necessarily alter people’s ideas or beliefs (Flynn et al, 2016) and that attempts to challenge their viewpoints may serve only to entrench their beliefs. Refuting misinformation is frequently not successful, as information repetition often becomes counter-intuitive, regardless of whether the aim is to challenge or to reinforce, as the more frequently a story is reiterated then the more likely it is to be believed or accepted as true (Baum, Lazer et al, 2017). Nor can the power of peer and social pressure be underestimated. The need to preserve reputation can be a strong motivator for maintaining a particular position, regardless of the facts presented to an individual, making it very difficult to alter their viewpoints. However, it is also true that pop up warning strategies used by social media platforms such as Facebook and Twitter to counter misinformation can also utilise the desire not to be embarrassed in front of one’s peers and have been found to tend to reduce sharing (Baum, Lazer et al, 2017).

Flynn et al, 2016 investigated misperceptions, rather than misinformation, defining these as “factual beliefs that are false or contradict the best available evidence” and noted that internal belief systems meant different interpretations, providing as an example the manner by which Democrats and Republicans understood the fact that Weapons of Mass Destruction were not found after the invasion of Iraq in 2003. Democrats tended to believe that Iraq did not possess WMD prior to the invasion, while Republicans adhered to the belief that the weapons had existed, but had been removed prior to or during invasion. They noted that misperceptions often continued even after they had been debunked. Misperception also tended to distort useful debate, examples of which might be the continued belief amongst some that the MMR vaccine causes autism, despite all evidence to the contrary or the prevalence of misinformation relating to reasons for Britain leaving the European Union in the 2016 Referendum. In an attempt to explain the longevity of such misperceptions, Flynn et al (2016) noted that providing corrective information rarely succeeded in altering viewpoints and that in some cases they could make misperceptions worse, in that people did not take kindly to being discredited or they liked belonging to a certain group which retained certain values. Emotion therefore can be more powerful than reasoning. Studies show that corrective information may be more persuasive when it comes from an ideologically empathic source and that belief perseverance remains strong, even when the initial information has been strongly debunked. Flynn et al (2016) recognise too that motivation with regard interpretation, originated from either directional goals (using facts to reach a desired conclusion) or accuracy goals (using facts to reach the most rational conclusion), therefore influencing information consumption choices and shaping information processing.

Lewandowsky et al (2017) sought to understand how “post-truth” and “fake news” influenced people from a psychological perspective. They examined ways in which misinformation had an adverse societal impact and affected the way people responded, with the hope of finding efficient ways to counter the rise of “fake-news” and the “post-truth” phenomenon. Exploring whether simply correcting misinformation was effective, they concluded that the approach most likely to succeed would be technical, include psychological principles and allow for multidisciplinary collaboration. Coining the phrase “techno-cognition”, they noted that “misinformation in the
post-truth era can no longer be considered solely an isolated failure of individual cognition that can be corrected with appropriate communication tools.” (Lewandowsky et al, 2017). Sullivan (2018) echoes this sentiment, noting that although librarians have recognised the issue of there being a multitude of misinformation within the info-sphere, for which teaching information literacy offers some success, they have not recognised the societal and psychological effects of persistent and prevalent misinformation. A number of studies have shown that in fact it is “extremely difficult to return the beliefs of people who have been exposed to misinformation to a baseline similar to those people who were never exposed to it (Sulliivan, 2018). Somewhat presciently (given that at the time of writing in 2020, the world is in the midst of a pandemic), Lewandowsky et al (2017) invoke the image of a “world in which it is not expert knowledge but an opinion market on Twitter that determines whether a newly emergent strain of avian flu is really contagious to humans”, noting that the causes of a “post-truth” world can be ascribed to factors such as: declining social capital, increasing social inequalities, increasing polarisation, a reduced trust in science, a disrupted media lacking coherence and cohesion. Trends which highlight the complexities and nuances of the “post-truth” order against which LIS professionals must find solutions. Reflecting the overarching seriousness of the effects of the spread of fake-news on society, the World Economic Forum (2019) cited the spread of misinformation as one of the most significant issues facing the globe, as far back as 2013.

It is the drivers and motivations behind the spread of fake-news which create the greatest dangers. Recognition of these is pertinent to any comprehensive response to the rise of information disorder. There is an indication for example that the amount of misinformation on climate change increases in proportion to the amount of the scientific evidence produced, powered by the motivations of those committed to denying climate change’s existence. Political and economic drivers combine to strongly counter the scientific evidence (Lewandowsky et al, 2017). LIS attempts in teaching information literacy will do little to deflect the power of such motivations, and evidence shows that neither empirical evidence or attempts to correct false perceptions successfully counter these. In terms of societal trends, evidence suggests there has been a marked decline in social capital over several decades, which translates to reduced trust in public institutions and civic engagement. Social capital refers to societal aspects such as good will, empathy, trust amongst citizens, trust in public institutions and civic engagement. A lack of trust is significant, because without trust societies cease to function effectively and on a more personal level individuals become increasingly isolated. This has been highlighted by a number of studies referencing the impact of social capital on wealth and well being within households and the happiness of individuals (Lewandowsky et al, 2017). Growing societal inequalities have also been attributed to an increasing lack of trust. In the United States for example real income growth has stagnated for much of the population for some decades, while those in the top 1% of earners have enjoyed an increase in their disposable income. Similar trends can be identified in the United Kingdom and Europe. Studies show that such inequality has exacerbated political polarisation; as income levels have polarised, so too have political viewpoints. As an example, analysis across 44 countries found a correlation between household income and class

In terms of societal shifts, the shape of the news media has altered significantly over recent decades, with a raft of platforms now presenting news and information predominantly online. Meanwhile more traditional news outlets such as newspaper and television have gone into decline. A recent Pew Research Report, identified that at least 67 per cent of Americans get some of their news on social media (Rose-Wiles, 2018). While further research undertaken by the Pew Institute in the United States highlights that those who rely on social media for political news are generally less knowledgeable about current events and are therefore more susceptible to misinformation and fake-news (Mitchell et al, Pew Research Center, 2020). Another Pew Research study shows that about a quarter of U.S adults now use YouTube for their primary news source (Stocking et al, 2020). Significantly, Michel et al (2020) noted that reliance on social media outlets for news meant the likelihood of being misinformed about major current events such the United States presidential election results and the Coronavirus pandemic, and being more susceptible to conspiracy theory claims. Reliance on social media for news also meant that overall understanding and knowledge of political events tended to be low. Generally this group tends to be younger ie under 30, with few being over 50 and older, with a likelihood of having lower levels of education and household income. The study showed that those who relied on a range of news sources such as network TV, print, radio, news apps were inclined to have a greater awareness and understanding of current events. This could be linked to the concept of information literacy and utilising such skills, in that those who are the most information literate are less likely to succumb to the vagaries of information disorder. Quoting Richard Grallo, Rose-Wiles (2020) notes that critical thinking can be viewed as a “vaccine against … vagueness, falsehood, runaway wishes, untestable propositions and incoherent projects”. Likewise highlighting the relevance of “technocognition”, where information architectures should be designed to incorporate psychological principles, while also seeking to disseminate high quality information (Lewandowsky et al, 2017). Adopting the principles of technocognition thus serves to ensure that alternative news outlets, work toward improving the reliability of the information they provide.

How important is it that the public at large should be well informed on political and current events? Some would argue that within democracies the importance of “political information” can be compared to “what money is to economics; it is the currency of citizenship” (Kuklinski et al, 2000). Democracies rely on citizens having ready access to information, so that they may evaluate their responses to public policies. The premise is that citizens must be able to use facts available to them to inform their viewpoints and political preferences. The received wisdom is that as long as these criteria are met, then democracy remains on a solid footing. Contradicting this viewpoint however, 40 years of research shows that the typical American voter is in fact woefully uninformed, if not misinformed, about politics (Kuklinski et al, 2000). Significant numbers will hold firm beliefs about politics which they perceive to be factual, which are in reality inaccurate and unfounded. How new then, is the phenomenon of “fake-news” and its pervasive influence? One
could argue that the more recent worrying trend is the speed and volume by which misinformation can now be disseminated and the manner by which it can now be targeted toward specific groups or “echo chambers”. For some time the optimistic viewpoint was that citizens used heuristics (decision making short cuts) to make reasonably good judgements, regardless of how well informed they were. Kuklinkski et al (2000), challenged this perception, noting that increased misinformation makes good judgement increasingly unlikely, suggesting that “the utility of heuristics” declines “as the severity of the misinformation problem increases”. They noted too, that once people had formulated a preference for a certain viewpoint, it was almost impossible to get them to alter this, regardless of the realities and facts presented to them. Highlighting the issue, that once misinformation has been processed and absorbed, it is almost impossible to turn opinion around. As noted by Wardle et al (2017), “human brains do not always work rationally, simply disseminating more quality information is not the answer”.

Who is it that produces fake news and what are their motivations? As an example evidence emerged following the 2016 USA election, that over 100 fake news websites originated from a group of teenagers based in Macedonia and a site responsible for a number of popular Facebook fake news stories was run by a 24 year old Romanian (Allcott & Gentzkow, 2017). The predominant motivations appear to be either monetary, in that there is significant profit to be made or ideological, in that motivation is likely to be political or a vested interest. Climate change denial promulgated by oil companies and other interested parties provides a good example of monetary motivation. While politically, studies have shown a trend toward partisanship, where analysis relating to fake-news and the 2016 USA election, conducted by Allcott & Gentzkow (2017), showed that 41 identified fake news items were pro-Clinton and by contrast 115 were pro-Trump, which were then translated into 7.6 million shares for Clinton and 30.3 million shares via Facebook. In terms of volume therefore, the numbers are of some significance. It is not entirely clear why this partisanship appears to gravitate toward Republican leanings, but there are a number of hypotheses, none of which have been proven categorically, but are of some interest.

In his book “Adventures in the War against Reality” Pomerantsev (2019) writes about the emergence of a disinformation architecture, much of it emanating from Russia, but also other parts of the world such as China, Iran, the Philippines, Brazil and Mexico. “Fake account” operation centres exist, with employees working round the clock, where one person operates dozens of social media personas. Russian troll farms churn out “fake-news”, where “every floor” is “full of computers, crammed into thin lines and manned round the clock by changing shifts of employees” (Pomerantsev, 2019). The reach of such fake accounts runs to millions and examples are provided citing “25 fake accounts repeating the same messages … and reaching an audience of three million” (Pomerantsev, 2019). He notes that many who work within these call centres and troll farms simply see themselves as doing a job for renumeration. However further investigation shows that the farms are part of a larger network, where direction can be traced to links with the Kremlin and that instances of “state-sponsored trolling” can be identified. Consequently from 2015 onward, social media platforms such as Facebook and Twitter began to acknowledge the
existence of such campaigns, pushing back against and removing accounts responsible for
propagating fake-news. Referencing cyber manipulation, Pomerantsev recognises the power of
orchestrated campaigns, where “bots, trolls and cyborgs ... create the simulation of a climate of
opinion, of support or hate, which was more insidious ... than the old broadcast
media” (Pomerantsev, 2019). Researchers at Oxford University he notes, have identified this
process as “manufacturing consensus”. Providing detail of the dark side of the Internet,
Pomerantsev further describes closed internet sites such as ‘The Discord Channel’, where groups
such as 'Infokrieg' exist, whose aim is to co-ordinate and inform on tactics for conducting
misinformation campaigns.

Pomerantsev (2019) writes of the notion of information warfare, where information viruses are
planted to deliberately disrupt. He cites Ashmanov, one of the fathers of the Russian Internet,
who champions the concept of ‘internet sovereignty’, whereby the internet is an ideological
battleground for which control must be fought. As Pomerantsev states, if information ideology
combat is the objective, then “out go any dreams of a global information space where ideas flow
freely, bolstering deliberative democracy” (2019). Rather, using the Kremlin as an example, he
proposes that the mindset is focused on using information to “confuse, dismay, divide and delay “
(Pomerantsev, 2019). The Russian campaign to take Crimea can be viewed as a concrete
example of this. Putin televised to the world that there were no Russian soldiers in Crimea, when
there was a raft of evidence to the contrary and then later disingenuously acknowledged that
Russian military staff were in fact present. Trump adopted a similar strategy in the 2016 election,
understanding that if you say a lie often enough, it becomes believable or at the very least sows
doubt. Politifact, the fact checking agency identified at least 76 percent of Trump’s statements as
false, compared to 27 percent of the opposition’s assertions. Objectivity falls by the wayside and
alternative versions of reality can be constructed. Trust in traditional institutions becomes eroded,
examples of which might be the BBC, once viewed by many as a stalwart of impartiality or CBS in
the United States. More alarmingly Pomerantsev references alternative realities which impact life
and death scenarios. Instances such as India where Hindu nationalist social media falsehoods
spurred on acts of violence against Muslims, or Burma and Sri Lanka where fake-news spread via
Facebook incited ethnic cleansing. In these examples, misinformation and disinformation are
utilised to deliberately orchestrate events.

Another potentially challenging issue is the business model on which social media platforms are
based. The manner in which these platforms make money encourages an environment in which
accuracy and impartiality are not priorities. The YouTube algorithm for example is designed to
continue promoting content based on an individual’s searches, thereby contributing to reinforcing
their point of view and further pushing possibly untrue content. YouTube’s primary motivation is
to encourage and prolong viewing time, not to present balanced content. Pomerantsev
postulates therefore, that there is a reason “why the Russian state broadcaster RT had such an
impressive array of YouTube channels” (Pomerantsev, 2019). Social media algorithms are
designed to pick up on key trends or words, in line with an individual’s posts, shares or likes;
building up a data profile designed to be used for marketing purposes and directing content accordingly. It is no coincidence that a google search translates into a related Facebook advertisement. Or a number of likes on certain pages results in content appearing in an individual's newsfeed, which is related to those likes, and which then ultimately reinforces filter bubbles. Pomerantsev considers the 2008 Global Financial Crisis to have further contributed to a rise in a denial of truth, recognising that when faced with a bleak future; escapism, a refusal to accept facts and alternative realities become undeniably increasingly attractive. Nostalgic desire to restore an imagined past of greatness and tradition becomes more attractive than the realities of both the present and past. He suggests that while the 20th century proceeded with hope (particularly after the second world war), the 21st century began with a wishing for some imagined notion of the past (Pomerantsev, 2019).

The Cambridge Analytica scandal highlights just how powerful and dangerous social media has the potential to be. Utilising data gathered from social media, the company claims that it is able to understand an individual's desires and drives, allowing them to strategically target these. The aim being to persuade and manipulate opinion, thereby building a “psychological warfare tool” and becoming the ultimate internet influencer (Lapowsky, 2019). From 2018 it became apparent that Cambridge Analytica had been able to access data created by 87 million Facebook users, without their consent. This data had been utilised to sway public opinion, both in terms of the United States 2016 presidential election and the United Kingdom referendum to leave the European Union. Additionally, there was found to be a connection with Lukoil, a Kremlin associated oil company, which was interested in understanding more about how the data was used to target voters (Confessore, 2018). Subsequently, Cambridge Analytica CEO, Alexander Nix, was suspended after he was caught on film referencing the company’s ability to use data and entrapment to influence politicians and foreign elections. Following this an investigation into Facebook was instigated regarding their safeguarding of user data. Mark Zuckerberg appeared before the United States’ Senate and House committees, testifying on Facebook’s use of user data and the harvesting of such data by third parties. It became apparent that some form of regulation was needed to control companies such as Facebook, but there was no conclusion as to the best way forward with this. The evolution of internet based business models was far outstripping the evolution of regulatory processes, nationally and globally (Confessore, 2018). Facebook has sought to a certain extent to mitigate “attempts to manipulate civic discourse and deceive people” (Weedon et al, 2017), but the issue remains an ongoing problem. Highlighting perhaps that libraries cannot even begin to hope to counter the volumes, the structures, the motivations and the insidious nature of online manipulation. Given the complexities of the situation, perhaps it is not their role to.

Working toward Solutions

A document produced by Facebook in 2017 (Weedon, Nuland & Stamos, 2017) relating to the external threat of information operations (misinformation, disinformation campaigns in various
forms) concludes that ultimately “societies will only be able to resist … if all citizens have the necessary media literacy to distinguish true news from misinformation” and be “able to take into account the motivation of those who would seek to publish fake news, flood online forums with manipulated talking points, or selectively leak and spin stolen data”. As a consequence, Facebook now supports civil society programmes, such as the News Integrity Coalition, which aim to improve the public’s ability to critically analyse and make educated choices about the information they consume. Recognising the existence of malicious players in the information ecosystem, Weedon et al (2017) conclude that a multi-faceted approach will be required in order to mitigate the damage caused by those seeking to manipulate discourse through:

- Monitoring the actions of those who are actively seeking to manipulate civic discourse on Facebook and other social media platforms
- Improving account integrity, identifying fake accounts, expanding security and privacy settings
- Participation in multi-stakeholder programmes to educate the public at large in information literacy and how to keep their information safe
- Supporting civil society programmes focused on media and information literacy programmes.

Recognising too that shared responsibility and collaboration will be required throughout the technology sector, across government, traditional news channels, by other disciplines and organisations in order to “support strong, informed, and civically engaged communities” (Weedon et al, 2017).

Such an approach is not far removed from that commonly advocated by Library and Information Science professionals. Media and information literacy has long been the librarian’s immediate response to combatting the rise of information disorder. The effectiveness of this approach has been open to some criticisms, but it cannot be denied that information literacy education has value and ideally should be integrated into education programmes across all age groups, as a starting point at the very least. Some see the need for information literacy programmes, in its various iterations, as an opportunity for libraries to promote their relevance and importance in contemporary society. Academic libraries particularly have been advocating this approach for sometime (Eva & Shea, 2018) and have been aware that students are not good at differentiating between bona fide and false information. Their conclusion has been that information literacy education is the solution to improving student’s ability to identify quality information. As an example, Harvard University Library has created a research guide entitled “Fake News, Misinformation, and Propaganda” (http://guides.library.harvard.edu.fake), linking a range of references on the subject. While other universities, such as the University of Michigan, now offer accredited courses on the topic, such as “Fake News, Lies and Propaganda: How to Sort Fact from Fiction” and the University of Washington for example offers a course entitled, “Calling Bullshit - Data Reasoning in a Digital World” (Eva & Shea, 2018). Eva & Shea (2018) advocate that this is a public relations opportunity for academic libraries and libraries in general, citing the
American Library Association “Libraries Transform” marketing campaign as an example of this and an opportunity to promote the role of librarians as the “original fact checkers”.

Batchelor (2017) considers that “an informed electorate is essential to democracy” and therefore libraries have a “professional and civic obligation to promote critical thinking skills”. He emphasises, much as Eva & Shea (2018) do, the civic role of libraries to teach critical thinking and information literacy skills. He cites a number of fact checking sites worth accessing such as FactCheck, Politifact, Snopes and The Washington Post Fact Checker, but acknowledges that they are still open accusations of bias. Libraries, he suggests, are more likely to be viewed as impartial. For method, Batchelor also references the CRAAP (Currency, Relevance, Authority, Accuracy, Purpose) Test, as a useful tool for determining whether sources are reliable. Developed in 2010 by the Meriam Library, the CRAAP Test continues to hold some relevance, at the very least as a guide for fact checking. However, although of relevance and an important skill to have in the arsenal against “fake-news”, information literacy is not the full answer.

Bluemle (2018) highlights the example of Uncle Lenny, who strongly believes that President Obama wants to combine Canada, the United States and parts of Mexico into one amalgamated country. Lenny firmly believes that Obama failed to impose border restrictions on migrants from those countries (particularly Mexico) and continues to do so even when presented with hard statistics from the Department of Homeland Security. The statistics show that Obama actually deported 2.5 million people from the United States, more than any other president previously. The example of Uncle Lenny shows that teaching source evaluation or information literacy is not necessarily an effective counter to misperception - emotion and recognition of authority have a part to play. Bluemle (2018) links elements of information disorder to undermining authority; where emotion takes supremacy over hard data and where belief takes precedence over authority, meaning that trust in the authority becomes undermined. While LIS recognises that trustworthy information sources are not infallible, a societal malaise appears to have arisen where many no longer trust “traditional sources of authoritative information” (Bluemle, 2018). The authority of mainstream institutions such as scientific organisations, universities and news channels are being undervalued, giving rise to a rejection of ‘experts’ and the educated ‘elite’. When evaluating a source therefore, librarians must remember that consideration should be given to the notion that authority is “constructed and contextual”, The motivation behind the authority should be taken into account, while at the same time recognising that methods being taught by libraries are themselves linked to academic protocols, which by definition links them to the ‘elite’. When teaching information literacy librarians must therefore be aware of the potential negative effects of being seen to be part of this ‘elite, expert’ group and how this might influence those they are trying to educate.

Cooke (2017) advocates adopting a metaliteracy approach, integrating and unifying a range of literacies. There is a certain logic to this viewpoint, given the complexities of the information landscape. Metaliteracy is defined as “an overarching and self-referential framework that
integrates emerging technologies and unifies multiple literacy types” (Cooke, 2017), effectively expanding the scope of competencies and encouraging a collaborative approach. Recognising that fake news has become a permanent feature of the information environment, Cooke reiterates the importance of teaching metaliteracy skills. Teaching metaliteracy offers a long term solution, arming information consumers with the tools needed to become discerning, critical thinkers. Libraries and classrooms, Cooke (2017) suggests, are good places as starting points for literacy education. In a similar vein, Lewandowsky et al (2017) propose a “technocognitive” approach as key to countering fake news, where a set of collaborative tools combine toward providing resolution, from a societal, political and technological context. Such tools include a blend of technological solutions, which take into account psychological concepts. Technocognition uses findings from cognitive science to shape the design of information architectures. The aim is to encourage the spread of quality information, while discouraging the dissemination of misinformation. The technocognitive approach however is not solely centred on libraries and involves a range of disciplines. Input is needed from social media and technology companies. Government regulation and political will is required. Principles can be taken from behavioural economics. Journalistic practice requires improvement. Technocognition recognises the complexities of information disorder and seeks to remedy them with a blend of strategies and solutions.

Sullivan (2019) sets out to explore the premise held by many librarians that libraries are well placed to teach information literacy and correct false information. He undertook a study, which sought to quantity how much influence libraries might have in combatting fake news, particularly on social media platforms. Recognising that libraries view themselves as leading the way in teaching information literacy and that libraries consider themselves to be centres of trust with regard providing reliable information sources, Sullivan sought to test the truth of these viewpoints. Examining the popular perception amongst LIS that libraries might be able to leverage this trust, Sullivan set out to understand whether misperceptions about the flu vaccine might be effectively countered by libraries via social media. Reflecting librarian’s beliefs, Pew Research had ascertained that “78% of US adults” (Sullivan, 2019) consider libraries remain trustworthy and reliable when providing information. Sullivan’s study showed that this is not necessarily the case, particularly on social media. Using Amazon’s Mechanical Turk to create a participant group to measure effectiveness at correcting misperceptions relating to the flu vaccine, Sullivan concluded that although libraries were considered trustworthy, institutions such as the CDC (Center for Disease Control) in the USA, similar to the NHS or Public Health England here in the UK tended to be more effective in correcting misperceptions about flu vaccine. The public therefore, were more likely to trust a health organisation regarding health data, rather than a library. Additionally, it was shown that correcting misperceptions was more likely to be effective, if the misperception had not had time to become fully entrenched. Therefore, countering misperceptions about the MMR vaccine for example was more difficult than countering those surrounding the Zhika virus, due to there being less time for preconceived notions to take hold. Sullivan’s (2019) study also showed that correcting and reducing misperceptions about the flu vaccine via social media did not
necessarily equate to an increased uptake in the vaccine, as concerns about side effects remained and ideas which had been circulating for sometime remained very difficult to counter.

Going beyond Library and Information Science, Lewandowsky et al (2017) suggest that the solution is significantly more complex than simply teaching information literacy. Expanding on recommendations originally made by Pomerantsev and Weiss (2014), their ideas extend to options such as:

- an international NGO (non governmental organisation) designed to monitor disinformation sources and offer fact checking tools.
- a “Disinformation Charter” outlining ethics, regulation and standards for media providers, which they must sign up to.
- news and media outlets should adopt Counter Fake News desks / editors, with the remit of countering “fake news” stories in circulation.
- think tanks and corporate groups should be expected to disclose details of affiliations and conflicts of interest.
- educating the public on information operations and fake news campaigns and the motivations behind them.
- teaching information literacy, so that students and the public learn how to differentiate between information sources.
- education programmes on orchestrated techniques such as cyber bullying, troll farms, disinformation targeting and nudging campaigns.

Lewandowsky et al (2017) also acknowledge the importance technology has in combating a post-truth world. The suggestion is that if technology is a significant part of the problem, then it is equally well placed to provide solutions. Their study cites examples such as: algorithmic fact checkers and disinformation alerts - examples of which we are now beginning to see on a variety of social media platforms (See Appendix D); monitoring and moderating the tone of discourse within commentary sections; broadening the material presented in filter bubbles; providing indicators or rankings of trustworthiness.

Peter Lor (2017) challenges traditional assumptions made by LIS that they are champions of democracy, noting as Lewandowsky et al (2017) do, that the situation is more complex than simply seeking to correct information or ensuring the dissemination of quality information. The suggestion is that the views of many LIS professionals are often outdated. Lor (2017) notes that despite correcting information, false perceptions frequently persist and that many other factors come into play such as psychosocial processes and the evolving information ecosystem. Simply teaching information literacy and providing quality information, strategies which are advocated by libraries, will not therefore be adequate responses. Lor (2017) notes that the “post-truth” phenomenon is significant in that truthfulness is no longer considered to be a cornerstone of political discourse and therefore democracy, providing examples of statements made by politicians during the Brexit campaign in Britain and President Trump in the United States. Often
truth is disregarded and an appeal is made to a populist stance, while inciting an emotional response. The illusion of truth prevails, as a law of propaganda often attributed to the Nazi Joseph Goebbels, “Repeat a lie often enough and it becomes the truth” (Stafford, 2016). Researchers have found that repetition increases the likelihood of a statement being categorised as true, linking into the recognised use of mental shortcuts (or heuristics) to make value judgements in terms of plausibility and truth, which can be difficult to combat.

Lor (2017) recognises also the prevalence of artificial intelligence techniques on social media, where algorithms are used to influence public perception. He references the “rise of the weaponised AI propaganda machine” (Lor, 2017), a phenomenon further explored by Pomerantsev (2019). Noting a “generalised loss of faith in authorities” (Lor, 2017), he suggests this loss of trust compounds the issue yet further, materialising as disillusionment in politics, politicians, institutions and experts generally. Lor concludes that there are no simple antidotes to fake-news. He suggests that evolving information ecosystems and the psychology regarding the processing of information and fake-news mean that remedies such as correcting misinformation, fake-news detection guidelines, and information literacy programs do not suffice as effective methods in combatting the issue. The implications are that LIS professionals must revise their understanding of the issues. They must undertake partnerships with other disciplines such as educators, journalists, social media providers and psychologists, while emphasising their reputation for trust and constancy. A reputation which libraries have historically held, along with maintaining a non-partisan stance. Lor (2017) concludes, that the complexities mean there are no quick fixes.

From a psychological perspective, David Rapp (2016) explores the consequences of reading inaccurate information and finds that routine cognitive processes are as susceptible to inaccurate information, as they are to factual information. Rapp suggests therefore that understanding cognitive processes can be used to inform the construction of information systems, which will act as antidotes to misrepresentation. Rapp (2016) notes that people tend to not evaluate information when it is first presented to them and that when correct information and misinformation are blended, misrepresentations are more likely to be accepted and then encoded into memory. Equally, when people possess accurate prior knowledge, they are still susceptible to false information and will struggle to ascertain which is correct between the two. With regard mindset, Rapp (2016) notes also that those who over-confidently think they know, are often more likely to fall for falsehoods. Strategies such as attempting to correct misperceptions or presenting material in a way which might help understanding appear to be ineffective against embedded misperceptions.

Routine cognitive processes are partially responsible for these failings (Rapp, 2016), as the mind tends to rely on easily accessed memories, and will use that information regardless of accuracy. Information already encoded into memory becomes difficult to correct or overwrite. Routine cognitive processes are useful for helping us to navigate a complex world and to make everyday decisions, but they present challenges when trying to correct inaccuracies. Information which is
obviously implausible is most likely to be identified as wrong, but falsehoods which share characteristics with accurate information are likely to be believed, as are falsehoods which align with pre-existing beliefs (Rapp, 2016). Additionally, should a credible source deliver inaccurate information, then it is more likely to be believed and encoded into memory. These heuristics or mental shortcuts, mean preventing the adoption of misinformation or countering information, becomes difficult. Problematically, Rapp (2016) concludes that the behaviours which allow for the acquisition of inaccuracies are the same behaviours which facilitate learning and should not therefore be disrupted. However, he does suggest that encouraging evaluative mind-sets is not without value, given the pervasive nature of misrepresentation.

Lazer et al (2018) find themselves advocating the notion that “addressing fake news requires a multidisciplinary effort” and that a “new system of safeguards is needed”. They suggest that potential interventions might fall into two categories:
• those which empower an individual’s ability to evaluate the veracity of information.
• those which are system based, utilise algorithms and artificial intelligence to recognise and prevent inaccuracy.

Recognising that studies show that fact checking is not particularly effective against cognitive processes such as: preconceived ideas, aligning beliefs with community values and pre-existing attitudes or the role of emotion can play (Lazer et al, 2018). Improving an individual’s ability to evaluate information through education programmes may be of value, but they suggest there is no evidence to show that this remains effective over time. A counter productive result may be that scepticism prevails causing trusted information sources and institutions to lose credibility. Lazer et al (2018) propose therefore, that information literacy programmes need to evaluated for effectiveness.

As internet and social platforms have become the predominant purveyors of information disorder, Lazer et al (2018) suggest that they might therefore become part of the solution, by using the same methods which promote content engagement to emphasise quality information. AI and algorithms can be used to signal source quality, counter echo chambers, exclude bot activity from trending content and curb cyborg activity. However, although social media platforms such as Facebook and Twitter have begun to adopt such measures, they have not yet evaluated effectiveness or accepted peer review, meaning that policy makers lack understanding and trust. Lazer et al (2018) consider that social media platforms must accept responsibility, ethically and socially, for understanding and controlling the information eco-system, either through self-regulation, allowing government regulation or a combination of both. Structural regulation does however raise some questions about private enterprise and the freedom to make choices, particularly in the United States, as European general data protection regulation, implemented in 2018, has attempted to address issues regarding data protection and privacy, for both individuals and businesses. Lazer et al (2018) conclude that a co-ordinated, interdisciplinary effort can be the only way forward toward finding solutions.
Recognising future challenges for the 21st century, the European Commission provides good examples of actions governments might take (European Commission, Digital Strategy, 2020). The Commission seeks to shape Europe’s digital future with emphasis on: opening up new business opportunities; encouraging the development of trustworthy technology; fostering open democracy; enabling a sustainable economy; fighting climate change. They have recognised that a digital strategy is necessary, incorporating steps such as: investing in digital skills for Europeans, protecting against cyber threats, monitoring the developments and uses of Artificial Intelligence, accelerating the roll-out of ultra fast broadband, expanding super-computing capacity to develop innovative solutions for medicine, transport and the environment. Adopting a three pillars approach, they have sought to address sectors such as technology by: ensuring it works for people, creating a fair and competitive digital economy, maintaining an open and democratic society. In terms of a digital economy they are working toward: enabling innovation for business; strengthening responsibility for online platforms and services; creating regulation which will fit with a digital economy; seeking to ensure high quality data and keeping personal and sensitive data safe. With regard maintaining an open, democratic society they are seeking to: ensure citizens have more control and protection of their data; create a “European health data space” to enable targeted research, diagnosis and treatment; fight online disinformation and encourage reliable media content. The European Union’s vision is to become a global leader by aiming to become a role model for the new digital economy, supporting developing economies to become digital and developing digital standards within the European Union and internationally (European Commission, Digital Strategy, 2020).

United Kingdom digital strategy, formulated in 2017 and due to be updated in 2020, appears to be more business oriented, focusing on seven strands: connectivity, and digital infrastructure; digital skills access to all; facilitating digital business and growth within the digital sector; enabling digital business in the wider economy; cybersecurity and online safety; digital government and becoming a world leader; the power of the data economy (UK Digital Strategy, 2017). Adopting a 10 pillar approach, the United Kingdom’s digital strategy seeks to: develop science, research and innovation; boost the education of STEM skills; invest in infrastructure; provide finance and management advice to businesses so that they can grow; formulate and co-ordinate procurement policy; boost productivity; invest in affordable and sustainable energy; spread growth across the country; create an institutional framework. The 2020 version is due to be published in the autumn of 2020, as announced by Oliver Dowden the digital secretary and will focus on the role of the tech sector in aiding the United Kingdom’s economic recovery following the coronavirus pandemic. Dowden suggested that the new strategy will ensure a “regulatory regime for digital pro-innovation” avoiding “unnecessary layers of regulations” and aiding the development of a “skilled digital workforce” (Williams, 2020). The focus being to drive economic growth and productivity, whereas the 2017 version of the United Kingdom’s digital strategy placed more emphasis on reducing online harm and risk.
Conclusion

“And if you’re going to stand up successfully and defend a democracy against these kinds of foreign (sic) attacks, we need to bring people together. And we can only bring people together if everyone is in the know about what’s going on. And this is an important moment across political parties, across the political community and with the tech sector, where, with more knowledge, we can start to take broader and more systemic steps to respond to these kinds of problems”. Brad Smith, President and Chief Legal Officer, Microsoft - August 21, 2018, National Public Radio

The above quote from Brad Smith encapsulates the situation regarding the information ecosystem at the beginning of the 21st century. It relates to all sectors and societal institutions, including libraries.

Remaining informed and responding accordingly will be key. Libraries must respond similarly, if they are to remain relevant in the changing and evolving information landscape. Collaborating and contributing toward the discussion with regard the issues and the solutions will ensure that libraries do not become sidelined, in an increasingly complex information environment.

Libraries cannot hope to provide solutions in isolation. Due to the nature and size of the problems with regard information disorder and the constantly changing landscape of the info-sphere, adaptability and collaboration will be critical to finding solutions. International co-operation, government involvement and regulation, participation by big tech companies will ultimately be what is required to bring order to the recently evolving information environment.

Libraries however, can ensure they have a part to play, by capitalising on the levels of trust afforded to them. This trust and their reputation for constancy mean that they remain well placed to contribute toward information literacy education programmes in particular. Studies have shown that teaching critical evaluation and information literacy has value, but libraries must realise that this can only be part of the solution.

It has been suggested that library and information professionals have over simplified the contribution they can make. This is due to a lack of awareness and understanding of the complexities of information disorder. However, recognition of the complexities will ensure that libraries become better informed and will therefore be better able to work toward developing their response.

Solutions will be found by working with other disciplines and the technology sector. Information disorder is one of the big challenges at the beginning of the 21st century. As technologies and digital economies evolve, formulating a framework with which to regulate this will become increasingly important. Libraries can contribute to the conversation.
For a digital economy to thrive, trust in information and the data by which it is transmitted is critical. Trust will also be needed in the platforms which deliver the information. Aligning with libraries and the trust they currently retain will contribute toward demonstrating trustworthiness.

The ramifications for a lack of trust and the propagation of false narratives have already emerged with examples such as misinformation spread by the tobacco industry, climate change deniers, anti vaccination campaigners and conspiracy theorists. The damage to society and democracy cannot be underestimated. Effective methods must be found to counter the undermining of trust and to restrict the dissemination of misperceptions spread by groups such as those mentioned.

Solutions are more likely to be found if the nature of the motivations and methods undertaken by these interests are better understood. The speed with which and the manner by which new technologies have facilitated the ability of such movements to promote their narratives must not be underestimated. Nor should the use of psychology, manipulative methods, emotional effects and political stances employed by those who seek to advance their agendas be ignored.

Libraries, although not able to single handedly counter the methods used by these groups, are able to make a contribution through collaboration with other disciplines.

Innovation is needed. A direct approach to consider might involve using technology in a similar way to those of the antagonists, by fighting fire with fire. One solution could be for libraries to promote themselves as sources of factual information on social media, much as the WHO or NHS have begun to do during the current pandemic.

Creating an online presence offering information relating to critical topics is an option. For example the Wellcome Collection could promote information from their collections about the effectiveness of vaccines throughout history. Or The House of Commons Library could promote information regarding the workings of democracy. Their website states that they “publish politically impartial policy analysis and statistical research, free for all to read” (House of Commons Library, 2020). As an other example, The National Archives holds information about Government Twitter accounts, where they preserve government department twitter feeds for the public record (National Archives, 2020). By promoting their existence on social media, the general public would be more aware of primary sources available to them for fact checking.

An effective strategy might be therefore for libraries to begin promoting information about their collections on social media, so that more people become aware of its availability. Democratising data by making it more accessible to the masses is a strategy worth considering.

It is clear that there will be no quick fixes. Libraries will need to remain open to new ideas and keep abreast of developments. The multi-faceted nature of the problem means that LIS must
form partnerships with other professionals, in order to contribute effectively toward formulating solutions. Maintaining their soft powers of trust, integrity and impartiality will be of value in this. A continually changing environment means that their reputation for longevity and constancy will also add value.
References


An impartial research service for MPs and their staff (no date) The House of Commons Library. Available at: https://commonslibrary.parliament.uk (Accessed: 4 February 3032).


CILIP Information Literacy Group (no date) Information Literacy Group. Available at: https://infolit.org.uk (Accessed: 8 November 2020).


Pomerantsev, P. (2017) Nothing is true and everything is possible: adventures in modern Russia.


Appendix A: LIS - Research Proposal

Working Title:

Living in a Post-Truth World: how might Library and Information Professionals counter Fake News and which methods might they use within the sphere of LIS?

Introduction:

With the election of Donald Trump in the United States and the Brexit vote in the United Kingdom in 2016, much has been spoken of how we are now living in a “Post-Truth” world, particularly in the West. However, manipulating truths and facts is not a new phenomenon, so what is it that defines the concept of “post-truth” from 2016 onward particularly? The Cambridge dictionary states that post-truth relates to a “situation in which people are more likely to accept an argument based on their emotions and beliefs, rather than one based on facts.” This too is not a new phenomenon, people have always tended to have been swayed by their emotional responses and ingrained prejudices and beliefs. As a historical point in time, what therefore makes 2016 so significant? The advent of the internet is generally considered to be a pervasive factor, with the way in which it facilitates the speed of information dissemination. However additionally, it seems that influences other than speed are also at play; information dissemination is being manipulated, targeted and automated via algorithms. Who is responsible for this shift? And why? What are the motivating factors?

As a recent term “post-truth” has in fact been around for some time. Although declaring “post-truth” word of the year in 2016, Oxford Dictionaries also asserted that a Serbian-American playwright, Steve Tesich, first used the term in an essay entitled “The Nation” in 1992 referencing examples such as Watergate, the Iran-Contra scandal and the Persian Gulf War. While in 2004, Ralph Keyes wrote of a “post truth era” in his book “The Post-Truth Era: Dishonesty and Deception in Contemporary Life, where he argued that deception was becoming increasingly prevalent in a media driven world. Conceptually, looking further back in time, writing in The Examiner in 1710, Jonathan Swift with reference to truth noted that “Falsehood flies, and the Truth comes limping after it”. While in a similar vein a quote on truth popularly attributed to Mark Twain, writing in the late 19th century, ironically for which the origin is often debated; “A lie travels around the globe, while the truth is putting on its shoes”. Falsehoods are by no means new to the human condition.

My research proposal is to further explore the meaning of the term “post-truth world” and to seek to better understand what is meant by phrases such as fake news, alternative facts, post-factual society, filter bubbles for example. What comprises “post truth” and the manner in which it is disseminated, so that I might better understand how librarian and information professionals might work toward countering misinformation and disinformation and what methods they might employ to do so. David Bawden (2017) raises a similar question in his blog post - “Why LIS doesn’t have a
quick fix for the post-factual society … and why that’s OK", concluding that there is currently no obviously viable solution, adding the caveat that what is needed at this stage is a reflective response, recognising that in the face of the complex nature of fake news and its various guises, LIS must accept that the way forward is to take a step back and think calmly before acting. Bawden cites Floridi to substantiate this stance, noting that “the more important the problem, the most it needs a long period of reflection to find the best solution” (Bawden, 2018); a solution will be found perhaps with some creativity and possibly with some collaboration with disciplines outside the sphere of Library and Information Services (LIS). Traditionally librarian and information professionals have been perceived to be the guardians and curators of information, and maybe for the time being this is the best they can do.

Aims and Objectives:

My primary aim is to explore, understand and evaluate what methods Information professionals might adopt to effectively combat the fake news phenomenon. To support my primary aim, my secondary aim is to increase my understanding of the concept of a post-truth world, including the creation and adoption of fake news, the use of misinformation and disinformation and what the impact and implications are from a societal viewpoint.

To achieve these aims my objectives will focus on:

- Identify the various guises of fake news, how they are propagated and by whom.
- Explore the psychological effects of fake news, how the mind and emotion is manipulated.
- Understand traditional methods used by LIS to counter fake news, misinformation, disinformation.
- Quantify - is it possible to measure how effective the methods used by LIS professionals to counter fake news are?
- Analyse and evaluate whether methods employed by LIS so far have been effective in fighting fake news.
- Determine why this might be, depending on outcome
- Consider possible approaches for the future

Scope and Definition:

The scope of fake news is broad, as is the concept of post-truth, however there appears to be general consensus that the definition of fake news is a form of news which consists of deliberate disinformation and misinformation, disseminated via traditional news outlets or online social media. While post-truth is generally accepted to relate to circumstances where facts are less important than emotion and ingrained personal beliefs, when seeking to shape public opinion for whatever reason, although often for political gain.
Fascinating though the topic of fake news and post-truth may be, my project will need to stay within the parameters and context of Library and Information Science, focusing on how professionals within this discipline might approach, develop and adapt methods for combating misinformation and disinformation. It is feasible however, that a multi-disciplinary approach may be useful; so an exploration of the psychological effects of misinformation and the methods used by the those who spread such information, is likely to be of value. It also possible that effective solutions to fake news may require a multi-disciplinary approach, therefore an awareness of alternative viewpoints might be helpful.

Geographically, within the discipline of LIS and its potential response my focus will be within the realms of the english speaking, western world, although the propagation of fake news is very much a global phenomenon and some good examples of its implementation may be seen in nations such as the Philipines, Mexico and Russia, from which much can be learnt. Where feasible, I will try to adopt a predominantly United Kingdom led focus, although it may be useful to make comparisons with approaches in Europe and the United States and possibly Australia and New Zealand.

**Research Context / Literature Review:**

Connor Sullivan’s article “Why librarians can’t fight fake news” (2019) suggests that the methods employed by LIS thus far have not been successful in the combating fake news. To date the methods used have been predominantly traditional. Sullivan’s viewpoint is that what is needed is a greater understanding of the ‘nature of the beast’ and that a cross disciplinary approach recognising and understanding “what information does to our mind” or the psychological aspects of fake news and misinformation is crucial to success. Sullivan suggests that research from other fields highlights why methods adopted by information professionals are not likely to succeed and offers the opinion that this is why to date, such methods have not been particularly successful. His focus is on the LIS response to fake news and misinformation within the United States. Sullivan offers no solutions, but points to possible pathways toward successfully combating the issue of fake news and resolving the ramifications for the role of information professionals in a post-truth world.

On the other side of the Atlantic, of a similar mindset, David Bawden subscribes to the view that it is difficult for librarians and information professionals to successfully counter the issues of misinformation in an increasingly post-factual society and recognises that some in-depth reflection is required, before resolution might be found (Bawden, 2017). However Bawden and Robinson, while at a ISKO conference in 2018, later venture that knowledge organisation and curation of the info-sphere might provide potential solutions from a LIS viewpoint. The idea being that the information professional’s role of “supporting truth and promoting understanding” through knowledge organisation and curation of the info-sphere could go some way toward resolving some of the problems associated with a post-truth world (Bawden and Robinson, 2018). While continuing to argue that there are no quick fixes, there is some suggestion that Knowledge Organisation can be used to facilitate understanding, as a means toward fighting fake news.
Floridi (2016) argues that what is needed is an “ethical info-sphere” to successfully counter the rise of fake news and a post-truth society, the shaping of which informational professionals can play an active part. He also notes that conceptual biases often linked to the acceptance of fake news are a far from new problem, identifying instances going back at least four hundred years ago or so. The significant difference from then to now, Floridi emphasises, is the advent of the internet, the speed with which information can now be disseminated and the emergence of “echo chambers”, which allow participants to easily validate their belief systems amongst other like minded individuals. Floridi identifies digital, ethical issues as being defining challenges for the 21st century, noting that technology companies have a part to play in re-shaping this info-sphere and that thus far, they have taken little responsibility for their actions and if so mostly retrospectively. Writing with some optimism, Floridi refers to a UK government recommendation for the establishment of a Council of Data Ethics, believing that such an advisory forum would be beneficial toward encouraging dialogue and collaboration amongst all stakeholders. He notes also the collaborative effort of Amazon, DeepMind, Facebook, IBM, Microsoft and Google to establish an ethical body known as the Partnership on Artificial Intelligence to Benefit People and Society in 2016.

Less optimistically, a review of “This is not Propaganda - Adventures in the War Against Reality” by Peter Pomerantsev (2019) exposes the truly insidious nature of the spread of fake news, the manner by which it is disseminated, the emotional responses it is designed to engender and the motivations behind its propagation. As suggested by Connor Sullivan the issue is deeper than simply educating others in identifying fake news and promoting understanding of knowledge, there is a psychological perspective at play. The anti-dote to post-truth society is not simply about checking facts and presenting truth, the issue is a great deal more complex than simply refuting and retracting. Pomerantsev provides examples from around the globe, where fake news has been quite deliberately created and its dissemination co-ordinated to be used either within the country of origin or beyond, motivated by a range of reasons, some to the good and some significantly less so. Pomerantsev writes at some length of the methods employed to spread fake news: the usage of cyber bots, the creation of algorithms, the existence of troll farms, the development of a disinformation architecture, the psychological mind games.

In light of such sophistry, the conclusion so far can only be that information professionals have the odds stacked against them and their reliance on traditional methods for fighting fake news, as Connor Sullivan (2018) suggests is not enough. As he proposes, perhaps it is indeed true that until LIS professionals begin to understand the true nature and complexities of misinformation and the psychological aspects in the way the human mind responds to it and absorbs information false or otherwise, information professionals cannot begin to hope to redress the problem at hand. Nor, as he suggests, can they hope to do so on their own. It seems to be increasingly likely that a concerted, co-ordinated multidisciplinary approach will be needed.
Methodology:

Desk-based research seems to be most appropriate to this particular research topic. In the first instance conducting an in depth literature review will allow me to further develop my familiarity with the topic and establish a theoretical framework for further research. There is a plethora of information available on the topic of fake news and post-truth; one of the challenges will be making decisions on what is most relevant to my research. It will be important to identify key themes, debates and recognise any pivotal publications relevant to my topic.

Dissemination:

Utilising social media platforms and online tools such as blogs or Twitter feeds may useful for sharing ideas and gaining feedback from peers during the course of my research. Such outlets also serve to advocate and promote, from a broader perspective, ideas and discourse within the discipline of LIS.

Once completed and should my research be successful, it is possible that I may be able to deposit my dissertation on the CityLIS area of the Humanity Commons repository.

Work plan:

The chart below is self explanatory. However, my work plan allows for some flexibility and should provide adequate time to research, assimilate and then evaluate information. There is a danger of becoming overwhelmed by research material, so remaining time bound and setting parameters for this is of value.

<table>
<thead>
<tr>
<th>MAY</th>
<th>MAY / JUNE</th>
<th>JULY</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT - DEC</th>
<th>JAN</th>
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<tbody>
<tr>
<td>Dissertation</td>
<td>Workplan</td>
<td>Stage two: Focus fake news - identify guises, explore, other disciplines viewpoint</td>
<td>Stage three: Focus methods available to LIS; analyse and evaluate how effective these are</td>
<td>Stage four: Evaluate and compile research, plan writing</td>
<td>Stage five: Writing phase</td>
<td>Submission 08.01.2021</td>
</tr>
</tbody>
</table>

11.05.2020 Proposal submission

Stage one: Literature search - the nature of fake new and LIS responses

Resources:

As my research methodology is desk based, resources will be sought predominantly via the web or university libraries (physically and virtually) in the form of books, journals, blogs, vlogs, podcasts, newspaper/magazine articles and social media platforms for example, where relevant. Information provided by the websites of specific organisations may also be useful.
Desk based research will not entail any particular equipment, hardware or software, other than the tools I currently have such as a laptop, iPad and internet access.

Due to the current situation with Covid-19 and travel limitations, it is likely my research will be mostly conducted online.

**Ethics:**

As no human participants are required or will be involved in this research project, an external ethics committee will not be required. As my chosen research method is desk based, it is unlikely that sensitive, confidential or personal information will be accessed. Blog posts and social media feeds, such as Twitter may be referenced, but there is likely to be no risk of illegal or subversive material being accessed for this research topic.

**Confidentiality:**

It is unlikely there will be issues regarding confidentiality. My chosen method of research is desk based and will be centred on literature review from published works available via open access and university libraries for example - all of which reside within the public domain. Research undertaken will be largely conceptual by nature, so disclosures of any kind will not be necessary to the completion of my study. Any examples given will be from a third party perspective, with identification details redacted should the need arise.
References:


Appendix B: Reflection

The dissertation topic has been interesting and informative. There was a wealth of information available. In the future, information disorder will remain relevant and finding solutions will remain critical. The related problems are likely to grow in significance. Specific examples for the future will be information relating to the pandemic and vaccine roll out, where there will be many opportunities for propagating false information. It is apparent that as the online information environment continues to evolve, responses and regulation will need to be developed further.

Working through a pandemic was at times challenging. Continuity was difficult, due to being unable to maintain face to face tuition and supervision. There would have been value in being able to more easily discuss thought processes and ideas with other students and supervisors. The pandemic and social distancing requirements meant this was less easy to do. However, adopting tools such as Teams and Zoom facilitated sharing ideas. Most research could be conducted online, via digital library resources and by accessing open source.

With regard time management, switching focus between work commitments, returning to research and maintaining dissertation themes and strands was not always straightforward. Having not written anything of this length before, a more efficient system for tracking notes and research material would have been helpful. However technology helped with this and over time refinements were made. Should anything similar be undertaken again, careful consideration will be given to note taking methods, organisation and structure, to facilitate referencing at a later date.

A detailed writing structure, would have helped to manage focus. The original work plan set out in the proposal was useful for maintaining research time frames and although not strictly adhered to, provided a working framework. Aside from maintaining the research and writing processes, other skills were honed during the process. Aspects such as: time management, planning and organisation, research and acquiring information, communicating concepts, editing are examples of the skills necessary to completing the project.

Generally, the research objectives were achieved. As outlined in the proposal, these were to understand more clearly: the nature of information disorder; LIS measures to combat various forms of information disorder; the psychological methods of information disorder; and to consider options for the future. As the topic is broad, retaining a purely LIS perspective was difficult. However it was noted from the outset that an inter-disciplinary approach would be useful. Therefore it was helpful to explore other disciplines, rather than to maintain a solely LIS focus.

Arriving at definitive, concrete solutions was difficult. Given the breadth of the topic this was probably unavoidable. Equally, the nature of information disorder continues to evolve. In hindsight it might have been useful to include a survey of academic and research libraries. The objective would have been to gain insight into the views of such institutions on information disorder and to gauge ideas on solutions.
Appendix C: IFLA - How to Spot Fake News
(IFLA - International Federation of Library Associations and Institutions)

**How to Spot Fake News**

1. **Consider the Source**
   - Click away from the story to investigate the site, its mission and its contact info.

2. **Read Beyond**
   - Headlines can be outrageous in an effort to get clicks. What’s the whole story?

3. **Check the Author**
   - Do a quick search on the author. Are they credible? Are they real?

4. **Supporting Sources?**
   - Click on those links. Determine if the info given actually supports the story.

5. **Check the Date**
   - Reposting old news stories doesn’t mean they’re relevant to current events.

6. **Is it a Joke?**
   - If it is too outlandish, it might be satire. Research the site and author to be sure.

7. **Check Your Biases**
   - Consider if your own beliefs could affect your judgement.

8. **Ask the Experts**
   - Ask a librarian, or consult a fact-checking site.

International Federation of Library Associations and Institutions

With thanks to www.FactCheck.org
## Appendix D: SCONUL Seven Pillars of Information Literacy

<table>
<thead>
<tr>
<th>Identify:</th>
<th>Scope:</th>
<th>Plan:</th>
<th>Gather:</th>
<th>Evaluate:</th>
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<tr>
<td>Understands:</td>
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<tr>
<td>- New information &amp; data is constantly being produced &amp; that there is always more to be done.</td>
<td>- Understanding the different types of information sources available to them &amp; how they may be accessed.</td>
<td>- Range of searching techniques available.</td>
<td>- How information &amp; data is organised.</td>
<td>- Understanding of information &amp; data landscape, or how &amp; where to find it.</td>
<td>- Understanding of the role of information in research.</td>
<td>- Understanding of the importance of information &amp; data in society.</td>
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<tr>
<td>- Understanding the characteristics of the different types of information sources available to them &amp; how they may be accessed.</td>
<td>- The article process or how individuals access &amp; use information.</td>
<td>- Differences between search processes.</td>
<td>- The role of libraries in providing access &amp; resources.</td>
<td>- The role of academic information &amp; data sources.</td>
<td>- The role of information &amp; data in shaping society.</td>
<td>- Understanding of the importance of information &amp; data in society.</td>
</tr>
<tr>
<td>- What services are available to help &amp; how to access them.</td>
<td>- Identifying key concepts &amp; arguments.</td>
<td>- Identifying the information need has not been met.</td>
<td>- Use bibliographic software.</td>
<td>- Use information &amp; data found to address original questions.</td>
<td>- Use information &amp; data found to address original questions.</td>
<td>- Use information &amp; data found to address original questions.</td>
</tr>
<tr>
<td>- What services are available to help &amp; how to access them.</td>
<td>- Interpretation, evaluation &amp; use of information.</td>
<td>- Use online &amp; print help &amp; can find personal &amp; expert help.</td>
<td>- Use bibliographic software.</td>
<td>- Use information &amp; data found to address original questions.</td>
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### Is able to:

- Identify a lack of knowledge in a subject area.
- Identify a search topic & question and define it using simple terminology.
- Articulate current knowledge on a topic.
- Define the need for information & data to achieve a specific end & define limits to the information need.
- Use background information to underpin research.
- Take personal responsibility for an information search.
- Manage time effectively to complete a search.

### Is able to:

- Know what you don't know & to identify any information gaps.
- Identify which types of information will best meet the need.
- Identify the available search tools, such as general & subject specific resources at different levels.
- Identify different formats in which information may be provided.
- Demonstrate the ability to use new tools as they become available.

### Is able to:

- Scope their search question clearly & in appropriate language.
- Define a search strategy by using appropriate keywords & concepts, defining & setting limits.
- Select the most appropriate search tools.
- Identify controlled vocabulary & taxonomies to aid in searching if appropriate.
- Identify appropriate search techniques to use as necessary.
- Identify specialist search tools appropriate to each individual information need.

### Is able to:

- Use a range of retrieval tools & resources effectively.
- Construct complex searches appropriate to different digital & print resources.
- Access full text information.
- Use appropriate search techniques to collect new information.
- Keep up to date with new information.
- Engage with their community to share information.
- Identify the information need has not been met.
- Use online & print help & can find personal & expert help.

### Is able to:

- Distinguish between different information resources.
- Choose suitable material on their search topic.
- Assess the quality, accuracy, relevance, bias, reputation & credibility of the information found.
- Assess the credibility of the data gathered.
- Read critically, identifying key concepts & arguments.
- Relate the information found to the original search strategy.
- Critically appraise & evaluate own findings.
- Know when to stop.

### Is able to:

- Use bibliographic software if appropriate to manage information.
- Use printed & electronic resources using suitable referencing styles.
- Create appropriately formatted bibliographies.
- Demonstrate awareness of ethical issues & respect for the rights of others.
- Understand data protection, copyright, plagiarism & other intellectual property issues.
- Meet standards of conduct for academic integrity.
- Use appropriate data management software & techniques to manage data.
- Use the information & data found to address original questions.
- Summarise documents & reports verbally & in writing.
- Incorporate new & relevant information into the existing knowledge base.
- Analyse & present data appropriately.
- Synthesise & appraise new & complex information from different sources.
- Communicate information effectively using appropriate writing styles in a variety of formats.
- Communicate information effectively verbally.
- Select appropriate publications & dissemination outlets in which to publish.
- Develop a personal profile in the community using appropriate personal networks.

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Page 61 of 62
Appendix E: Social Media Examples

Twitter Feed

The shocking events of the last 24 hours clearly demonstrate that President Donald Trump intends to use his remaining time in office to undermine the peaceful and lawful transition of power to his elected successor, Joe Biden.

His decision to use his platform to condone rather than condemn the actions of his supporters at the Capitol building has rightly disturbed people in the US and around the world. We removed these statements yesterday because we judged that their effect -- and likely their intent -- would be to provoke further violence.

Following the certification of the election results by Congress, the priority for the whole country must now be to ensure that the remaining 13 days and the days after inauguration pass peacefully and in accordance with established democratic norms.

Over the last several years, we have allowed President Trump to use our platform consistent with our own rules, at times removing content or labeling his posts when they violate our policies. We did this because we believe that the public has a right to the broadest possible access to political speech, even controversial speech. But the current

Facebook & Instagram Content

The vaccines approved for use in the UK have been developed by Pfizer/BioNTech and Oxford... See more.

For information about COVID-19, visit nhs.uk.