

## Information Literacy in a Fake/False News World: Why Does it Matter and How Does it Spread?<sup>1</sup>

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Now that we have a better understanding of the history and context of fake news, I am going to discuss why fake news and combatting it matters and how the recent rise of fake news correlates with a change in how society views expertise. I will also share the recently released results of a huge research project examining how fake news spreads.

So why do we care about fake news? Do we have a responsibility to talk to our students about fake news? Isn't it just another facet of teaching them to assess the authority and reliability of the sources they rely on?

Carol Watson's article already referenced PizzaGate,<sup>3</sup> a fake news story that resulted in shots fired in a Washington, DC pizza parlor. I'm going to highlight three more cases to demonstrate just how dangerous fake news can be.

### THE ANTI-VACCINATION MOVEMENT

The anti-vaccination movement has been around nearly as long as vaccines.<sup>4</sup> However, the modern movement originated from a research paper published by Andrew Wakefield and his co-authors in 1998 in *The Lancet* linking the MMR vaccine with autism.<sup>5</sup> Studies trying to replicate the results were conducted and failed to find the same results. In 2004, ten of the twelve authors retracted their interpretation of the data saying, "no causal link was established."<sup>6</sup> *The Lancet* fully retracted the article in 2010 citing ethical violations and scientific misrepresentations, among other things.<sup>7</sup> However, the retracted article had already been covered widely in the news and continues to be referenced, despite its debunked status, by the anti-vaccination movement.

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<sup>1</sup> This is the updated text of a presentation delivered on October 25, 2017 at the International Association of Law Libraries, 36th Annual Course on International Law and Legal Information, Civil Rights, Human Rights, and Other Critical Issues in U.S. Law, Emory University, Atlanta, Georgia, October 22–26, 2017.

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<sup>3</sup> Carol A. Watson, *Information Literacy in a Fake/False News World: An Overview of the Characteristics of Fake News and its Historical Development*, <https://doi.org/10.1017/jli.2018.25>.

<sup>4</sup> Robert M. Wolfe & Lisa K. Sharp, Anti-vaccinationists past and present, *British Medical Journal*, pp. 430–2, August 24, 2002. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1123944/>.

<sup>5</sup> Wakefield, A. J., Murch, S. H., Anthony, A., Linnell, J., Casson, D. M., Malik, M., et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet*. 1998; 351: 637–41. <https://www.ncbi.nlm.nih.gov/pubmed/9500320>.

<sup>6</sup> Murch, S. H., Anthony, A., Casson, D. H., Malik, M., Berelowitz, M., Dhillon, A. P. et al. Retraction of an interpretation. *Lancet*. 2004; 363: 750. <https://www.ncbi.nlm.nih.gov/pubmed/15016483>.

<sup>7</sup> Editors. Retraction-Ileal-lymphoid-nodular hyperplasia, nonspecific colitis, and pervasive developmental disorder in children. *Lancet*. 2010; 375: 445. <https://www.ncbi.nlm.nih.gov/pubmed/20137807>; Laura Eggertson, *Lancet* retracts twelve-year-old article linking autism to MMR vaccines. *Canadian Medical Association Journal*. March 9, 2010, 182(4), E199–200. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2831678/>.

An interesting aspect of the anti-vaccination movement is that the majority of those who are opposed to vaccination are well-educated individuals with socio-economic advantages.<sup>8</sup> One might think that this is a population who would be persuaded by showing them the science. However, studies have shown that trying to change the minds of anti-vaccination believers by showing them the science backfires and causes them to hold more firmly to their beliefs.<sup>9</sup>

## CLIMATE CHANGE

Several independent studies of changes in the Earth's surface temperature confirm a rise since 1880.<sup>10</sup> The rate of warming has doubled since the 1950s and nearly every year since 2000 has been the warmest on record.

The 2015 Paris Climate Accord was signed by 197 countries and ratified by 178 countries.<sup>11</sup> In June 2017, President Trump said he would withdraw the United States of America from the Accord.<sup>12</sup> The first possible withdrawal date for the United States will be November 4, 2020, four years after the Accord went into effect in the United States and one day after the 2020 United States of America Presidential election.

President Trump's appointee to head the Environmental Protection Agency, Scott Pruitt, was reported by the *Washington Post* on March 9, 2017 to have said of the impact of human activity on climate change that, "I would not agree that it's a primary contributor to the global warming we see."<sup>13</sup> On October 22, 2017, the *New York Times* reported that several Environmental Protection Agency scientists were told to cancel planned talks they were to give on climate change. CNN reported in February 2018 that Pruitt has since stated that he believes climate change could help humans.<sup>14</sup>

## SOUTH SUDAN

In May 2017, during a three-year civil war, South Sudan's President Kiir removed Army Chief of Staff Malong from office. False, conflicting social media posts claimed that President Kiir had been killed and that armed troops loyal to Army Chief of Staff Malong were ready to attack the government. Interestingly, many of the social media posts were coming from outside South Sudan, from refugees or emigrants who could not have had firsthand knowledge of events in Sudan. The posts incited to ethnic violence and genocide.<sup>15</sup>

## NO EXPERTISE

In my opinion, the rise of fake news correlates with an increasing distrust of experts. We can see this in the examples of vaccines and climate change. Experts are believed to be either just wrong or actively trying to deceive the public. Thomas M. Nichols discusses this distrust in his book, *The Death of Expertise: The Campaign Against Established Knowledge and Why It Matters*.<sup>16</sup> Although Nichols is speaking mainly about the United States of America, it is conceivable that the same effect may be seen in other countries.

<sup>8</sup> Margaret Carrel & Patrick Bitterman, Personal Belief Exemptions to Vaccination in California: A Spatial Analysis. *Pediatrics*. June 2015, 80(1), pp. 80–8. <http://pediatrics.aappublications.org/content/pediatrics/136/1/80.full.pdf>.

<sup>9</sup> Brendan Nyhan et al., Effective Messages in Vaccine Promotion: A Randomized Trial, *Pediatrics*, 133(4), pp. 1–8, <http://pediatrics.aappublications.org/content/pediatrics/early/2014/02/25/peds.2013-2365.full.pdf>.

<sup>10</sup> One example is data from the National Oceanic and Atmospheric Administration, <https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature>.

<sup>11</sup> <https://unfccc.int/process/the-paris-agreement/status-of-ratification>.

<sup>12</sup> <https://www.nytimes.com/2017/06/01/climate/trump-paris-climate-agreement.html>.

<sup>13</sup> [https://www.washingtonpost.com/news/energy-environment/wp/2017/03/09/on-climate-change-scott-pruitt-contradicts-the-epas-own-website/?noredirect=on&utm\\_term=.cd099f08e536](https://www.washingtonpost.com/news/energy-environment/wp/2017/03/09/on-climate-change-scott-pruitt-contradicts-the-epas-own-website/?noredirect=on&utm_term=.cd099f08e536).

<sup>14</sup> <https://www.cnn.com/2018/02/08/politics/scott-pruitt-climate-change>.

<sup>15</sup> Online fake news and hate speech are fueling tribal 'genocide' in South Sudan, <https://www.pri.org/stories/2017-04-25/online-fake-news-and-hate-speech-are-fueling-tribal-genocide-south-sudan>.

<sup>16</sup> Oxford University Press (2017).

But what is an expert? People are experts in discrete areas, but not experts in everything. As Nichols notes, “None of us is a Da Vinci, painting the Mona Lisa in the morning and designing helicopters at night.”<sup>17</sup> Nichols is not saying that experts will go away, but how we talk about subjects that used to be a matter of expertise is changing dramatically. “Experts advise. Elected leaders decide.”<sup>18</sup> It matters who we determine to be experts.

But we’ve reached a point where academia, intellectual pursuits, and knowledge work are viewed with suspicion in some communities. It is a way of asserting individual independence to reject the advice of experts, especially on public policy matters. Indeed, it is viewed by some as democratic that my “opinion” matters just as much as anyone else’s, even if I know nothing about the subject.

There is a belief that anyone can know anything because we can just Google it and find it on the Internet. But Google doesn’t teach people about assessing sources. If I want to build a garden bed, watching videos on the Internet can be very helpful. However, using the Internet to try to diagnose a brain tumor, is probably not very helpful and could, in fact, be very dangerous. But there is a spreading belief that if anyone can “research” it on the Internet, then their opinion can be just as valid as anyone else’s. Social media and technology have made it much easier for all these “opinions” to spread and spread quickly.

Many issues that are a matter of provable fact are being discussed as if they are simply a matter of opinion. About some things we can’t simply agree to disagree. To paraphrase Neil deGrasse Tyson, science doesn’t care about your opinion, scientific truths are true regardless of whether you believe in them.<sup>19</sup> This is why information literacy is so important. Learning how to make a logical argument and how to recognize one when we hear it is critical. We need to empower our students by giving them the tools they need to assess the information they are receiving. They need to be able to assess authority and expertise. They need to understand the difference between correlation and causation.

**“LIES SOUND LIKE FACTS TO THOSE WHO’VE BEEN CONDITIONED TO MISRECOGNIZE THE TRUTH.” – DASHANNE STOKES**

Our interconnectedness and social media have not just allowed us to live in an echo chamber of beliefs but have encouraged us on this path. Facebook and other platforms are designed to show us more of what we “like.” Our Google searches shape the ads we see, and our purchasing history is interwoven with our social media accounts and Internet searching. Instead of challenging what we think we know, this only serves to reinforce our biases. If we are inclined to feel badly about someone/something we are more likely to believe a story showing one more example of why they are bad. The echo chamber is compounded by the fact that we don’t just share things because we think they are true but because we think they are funny, absurd, or to inflame an argument. Regardless of the reason, it increases the spread of fake news just the same.

## THE SCIENCE OF FAKE NEWS

Let’s talk about the science behind how fake news posts spread on social media and why the fake news outpaces the mainstream news.

According to Statista, from August 2016 through the November 2016 election, there were a total of 8.7 million Facebook engagements for fake news stories about the election, in comparison to 7.3 million engagements for mainstream news stories.<sup>20</sup>

On March 9, 2018, *Science* published the results of a study by Soroush Vosoughi, Deb Roy, and Sinan Aral titled “The spread of true and false news online.”<sup>21</sup> The paper was featured on the cover of the magazine and the visualization of the research results provided the fastest way to understand the results. In the same issue,

<sup>17</sup> Ibid., preface.

<sup>18</sup> Ibid.

<sup>19</sup> W. W. Norton & Company (2017). [https://www.salon.com/2014/03/11/neil\\_degrasse\\_tyson\\_science\\_is\\_true\\_whether\\_or\\_not\\_you\\_believe\\_in\\_it/](https://www.salon.com/2014/03/11/neil_degrasse_tyson_science_is_true_whether_or_not_you_believe_in_it/).

<sup>20</sup> <https://www.statista.com/chart/6795/fake-news-is-a-real-problem/>

<sup>21</sup> Soroush Vosoughi, Deb Roy, and Sinan Aral, The spread of true and false news online, 359 *Science* 1146–51, <http://science.sciencemag.org/content/359/6380/1146.full>.

*Science* has an interesting piece on how the visual for the cover of the magazine was developed.<sup>22</sup> It wasn't just drawn, but used mathematical modeling to visualize the research results.

The image of the cover is online.<sup>23</sup> Imagine that the yellow and blue bright spots are two social media posts on a similar topic. The yellow spots represent the spread of a false story on social media while the blue spots represent a true story. You can easily see how the false story gets shared more frequently and spreads further. It is a little harder to see, but you can also see in this illustration that there is very limited overlap in social media networks between the false and true stories – both stories rarely appeared in the same accounts.

The research study analyzed all contested news stories spread on Twitter from 2006–17. The data set included approximately 126,000 stories tweeted over 4.5 million times by 3 million people. The researchers used six reputable fact-checking sites (snopes.com, politifact.com, factcheck.org, truthorfiction.com, hoax-slayer.com, and urbanlegends.about.com) to determine which stories were true. The truth or falsity of the stories was agreed upon 95 to 98 percent of the time by the fact-checking sites.<sup>24</sup>

The study looked at the number of cascades as well as the depth of the cascade. True stories took six times as long to reach 1,500 people as false stories and 20 times as long to reach the same depth. “Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information, and the effects were more pronounced for false political news.”<sup>25</sup> The authors found that false political news traveled deeper, more broadly, reached more people, and was more viral than any other category of false information. False stories were 70 percent more likely to be retweeted than true stories.

The research demonstrated that bots spread false and true stories *equally*. Although there has been a lot of focus on the role of bots in spreading fake news, the research results indicate that fake news spreads at a faster rate than truth because of human behavior, not robots.<sup>26</sup> If so, education focused on human information seeking and social media behavior may have some success in discouraging the spread of fake news.

## CONCLUSION: HOW LIBRARIES CAN HELP

The good news is that, according to a Pew Research Center report based on a survey conducted September to November 2016 that 78 percent of American adults believe libraries help them find information that is trustworthy and reliable. Millennials come in even higher at 87 percent.<sup>27</sup> As we consider issues about authority and evaluating sources, librarians have an important opportunity to help students and other library patrons to see how information literacy can address—and help ameliorate—some of the worst effects of fake news.

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<sup>22</sup> <http://science.sciencemag.org/content/359/6380/eaat4382>

<sup>23</sup> <http://science.sciencemag.org/content/359/6380/eaat4382>.

<sup>24</sup> <http://science.sciencemag.org/content/359/6380/1146.full>

<sup>25</sup> <http://science.sciencemag.org/content/359/6380/1146.full>

<sup>26</sup> <http://science.sciencemag.org/content/359/6380/1146.full>

<sup>27</sup> <http://www.pewresearch.org/fact-tank/2017/08/30/most-americans-especially-millennials-say-libraries-can-help-them-find-reliable-trustworthy-information/>