Text: **Rense Kuipers & Jelle Posthuma**

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WE'RE LIVING IN THE POST-TRUTH ERA

Really, it's true

Until a few years ago, no one had ever heard of the term 'fake news'. These days, however, twisted facts are a threat to our free and democratic society. Now that the truth is often reduced to an opinion, fake news is thriving online. How did it get this far, how should we behave in the post-truth era and what can science do to help?
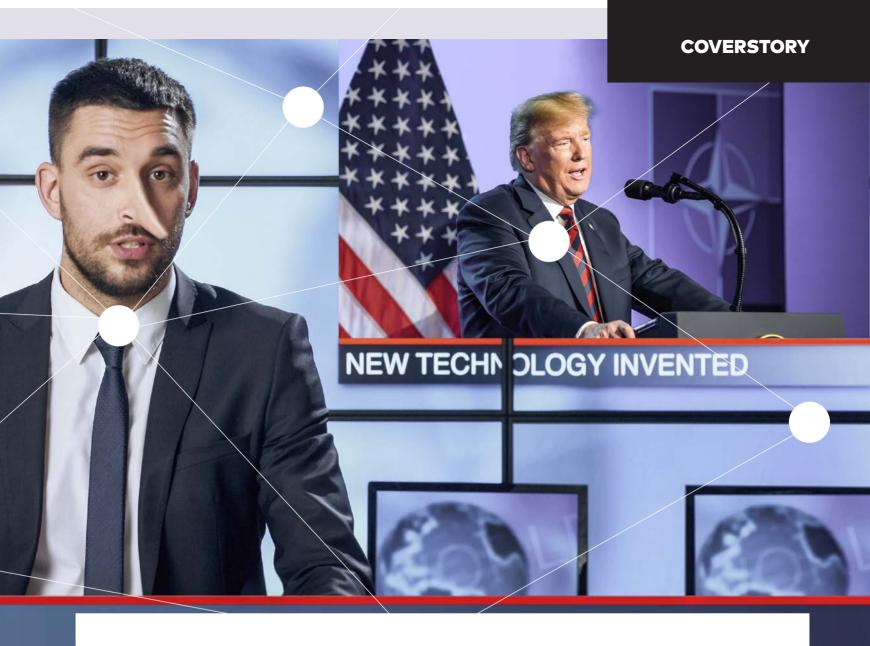
First, let's take a look at the term 'fake news'. These days, it is thrown around haphazardly, says Alexander Pleijter, a lecturer at Leiden University and an expert in the field of online journalism and factchecking. 'It is about information that is delivered in the form of news, but which has actually been made up to serve a predetermined commercial or political purpose. These are also stories that people can talk about around the coffee machine. News has always had this social function – even if the news itself is actually false.'

The hype

Pleijter says the term 'fake news' rose to prominence during the American presidential elections in 2016.

'Before that time, the term was hardly ever used. Trump started using it to dismiss and belittle the established media. He called news organisations like CNN, The New York Times and The Washington Post 'fake news media.' That is how the general public first came into contact with the term.'

Although the current American president made the term tremendously popular, the researcher from Leiden says that fake news is nothing new. 'Historians who study this concept actually date it back to Roman times,' Pleijter explains. 'Technological developments like the internet have made it much easier to spread fake news. In the past, an organisation had to have the financial means to afford a printing press. The internet has completely eliminated this obstacle. Digitisation

NEW TECHNOLOGY INVENTED

has resulted in an exponential increase in the amount of information that is available to us, and some of that information consists of fake news.'
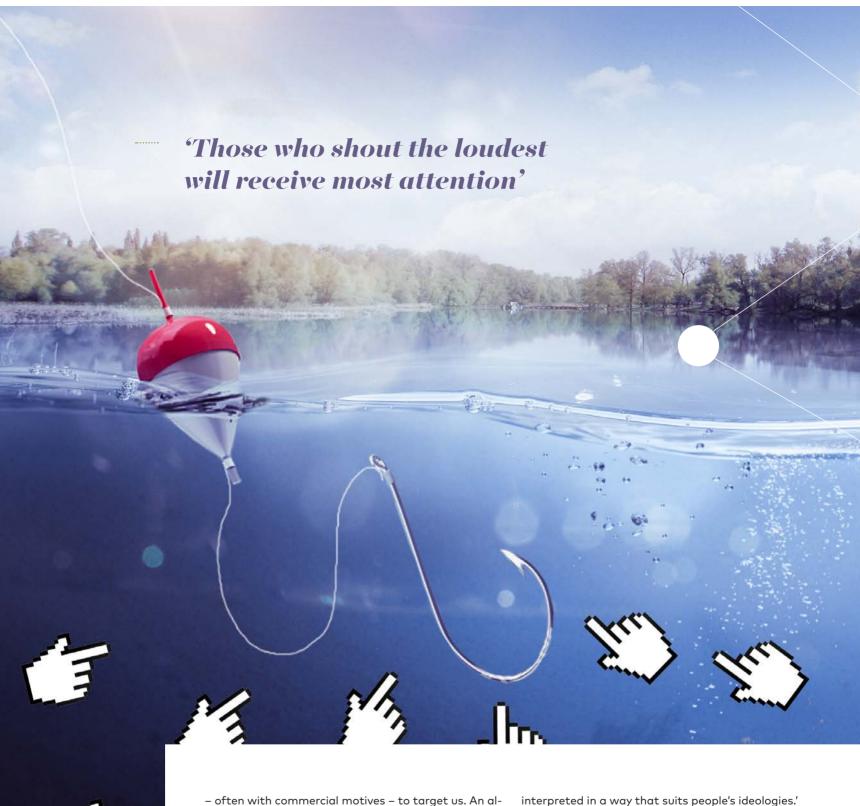
The underlying factors

Iris van Ooijen, UT researcher in the BMS faculty, agrees. She conducts research into the role that information plays in our data-driven society. 'The internet has made the distribution of news a democratic process. In the past, it was clear as day where news came from: the government, newspapers and the church – all traditional institutes. These days, anyone can easily create a news site that looks reliable, while social media give everyone the option to share its content. Fake news is clearly a downside of this development.'

Studies have shown that people have difficulty recognising fake news, Pleijter adds. 'That is because it is almost indistinguishable from real news. People also have a natural tendency to believe what they hear, especially when it comes from familiar channels. News consumers know that a lot of nonsense is being spread around on the internet, but when it comes to messages shared by friends and family, they are less quick to doubt the information. It is not surprising that people are less likely to distrust messages from people they know: after all, our society is built on trust.'

Trust is not the only decisive factor online, Van Ooijen states. Myriad algorithms running in the background determine what you can and cannot see. 'Major players like Facebook and Google allow countless parties

'People have a natural tendency to believe what they hear'

'Those who shout the loudest
will receive most attention'

– often with commercial motives – to target us. An algorithm detects whether you are interested in "right-wing" news, for example. Before long, that is almost all you see. You end up in a so-called filter bubble. I am reasonably confident that if filter bubbles did not exist, people would receive a more balanced stream of information.'

According to the BMS researcher, the next step is for such a filter bubble to cleverly play into our confirmation bias. 'People are more likely to accept information that is in line with their own beliefs. The effect is so strong that ambiguous information – which does not clearly lean in one direction or another – is still

interpreted in a way that suits people's ideologies.' According to Van Ooijen, step three is the echo chamber that people end up in. 'Because people with similar opinions keep finding each other, they resonate and produce an echo of opinions and beliefs that reinforce each other.'

Sensationalism

The media landscape, which has changed drastically since the dawn of the internet, has taken on an entirely new shape. To Van Ooijen and Pleijter, their daily practice offers ample proof that parties make clever use of the trinity of filter bubbles, confirmation bias

and echo chambers. Wherever a system exists with its own mores, people will find ways to exploit that system. 'Fake news reports generally make use of sensational headlines and content. That is a common phenomenon on the internet, even when you are dealing with "real" news.' It is inherent to the internet, Pleijter knows. For example, he states that most large media organisations produce so-called 'pulp news'; sensational messages that generate a ton of clicks via online channels. 'In general, this news is true, as opposed to fake news. Pulp news is also about sensational messages that generate a lot of revenue. The sensational packaging is designed to draw people to the website. One example of such a sensational packaging is the double clickbait headline, which online news organisation Upworthy first started using: 'She believed to have a flat tyre and got out of her car. You won't believe what happened next!' – this is a typical example of a clickbait headline.'

According to Van Ooijen, not only new online players present their news in a sensational manner; even traditional news organisations are out to maximise their clicks. 'You have to do something to stand out amongst the enormous quantity of information that is available online. Reports from quality media outlets are becoming extremer in nature and bear more sensational headlines. Even the NOS uses this tactic and puts controversial quotes in its headlines. We are experiencing an information overload: those who shout the loudest will receive most attention.' This leads the researcher to the following conclusion: 'These days, the underlying social mechanisms that facilitate fake news and clickbait are polarising opinions, division and a lack of unity. The cues that play into this are sensation: the more clicks or pictures that speak to people's emotions, the more effective they are. This leads to a vicious cycle, with polarisation leading to more fake news, which means in turn more polarisation.'

Motives

According to Pleijter and Van Ooijen, there is certainly no one single reason why fake news is distributed. There are as many motives as there are parties, as the American presidential elections in 2016 made perfectly clear. For example, Macedonian youth made clever use of the hype that surrounded the elections. 'They wrote thousands of fake news messages about the race between Clinton and Trump. Not without success, it turned out: they reached millions of Americans and earned a lot of money,' says Pleijter. 'Furthermore, Trump supporters made up news with a political bend to discredit Clinton. The reverse was also true: some Democrats spread fake news about Trump.'
The result of the campaign brought even more attention to fake news. Trump won the elections and brought about a dramatic shift in the American political landscape. According to Pleijter, that was the moment that fake news became an even more prominent issue: 'How could this have happened,' the press wondered. They believed that fake news, which was spread so frequently during the campaign, might be one possible explanation. Added to this were the stories about Russian interference in the election. Note that it was never proven that Trump won the elections because of fake news.'

HOW TO SPOT FAKE NEWS

CONSIDER THE SOURCE
Click away from the story to investigate the site, its mission and its contact info.

READ BEYOND
Headlines can be outrageous in an effort to get clicks. What's the whole story?

Murder

Although fake news has caused quite a stir in America, it has not yet demonstrably led to any catastrophes. According to Pleijter, fake news only become truly dangerous when news consumers start to rely solely on channels like Facebook or WhatsApp for their information. 'In countries like Mexico and India, the disastrous consequences of that development have become clear. When people get all their information from a single WhatsApp group and when that news is fake to boot, it can lead to lynch mobs. In India, a rumour was spread via WhatsApp that paedophiles were active in the area. This inspired concerned parents to take matters into their own hands, resulting in the killing of multiple innocent people.'

Djoerd Hiemstra, data scientist at the UT's EEMCS faculty, places the blame in the hands of the internet giants. 'Organisations such as Facebook, Apple, Amazon and Google do not do enough to prevent fake news. The economic motives still come first for these companies. In the end, it is all about data, because the internet user is the product. Those who collect data have all the power.' As a gruesome example, he mentions the violence in Myanmar, where people ended up on the internet after years of living under a military regime, with censorship and restricted freedom of the press. 'People were riled up against each other via the internet and the fake news was spread via Facebook. In that sense, the social network has blood on its hands. I believe the term 'fake news' is euphemistic in this case; it is propaganda used to manipulate people.' The fake news about the Muslim Rohingya minority in Myanmar ran rampant on Facebook since the opening up of the internet and therefore facilitated the ethnic violence against this group. Facebook openly acknowledged that it did not do enough to prevent what happened in Myanmar. Following the violence there,

the company had its own role in the events examined. In 2018, Facebook concluded in a blog about the research: 'Prior to this year, we weren't doing enough to help prevent our platform from being used to foment division and incite offline violence. We agree that we can and should do more.'

The Dutch landscape

Such an escalation is less likely to occur in the Netherlands, says Pleijter. 'Our media landscape is quite diverse. There are few people who rely only on Facebook or WhatsApp for their news reports. On top of that, we have excellent journalists who correct each other. That is essential for balanced news reporting. Our faith in the journalism sector is also fairly large. In a country like the US, the situation is quite different. The media there are completely polarised between left- and right-wing news organisations. In the Netherlands, there are some who renounce the established media. They call the NOS a state news network and believe all journalists are colluding, but they are relatively few in number. To them, the established journalism sector is the mainstream media, while they get their news from alternative websites.'

Together with his fellow researcher Peter Burger, Pleijter launched the Newscheckers project in 2009. 'We were not out to spot fake news – like I said, that term did not exist yet. We wanted to check facts. Above all, we believed this project would be educational for our journalism students. They were asked to critically follow the media, ask themselves whether stories were correct and then uncover the real truth. A journalist has to check their facts beforehand, of course, but as an educational method, the retrospective assessment of news reports is quite valuable.'

'If filter bubbles did not exist, people would receive a more balanced stream of information'

'It quickly turned out that Dutch articles do indeed contain falsehoods. Our students called the journalist who wrote the article to ask how the piece had been written. Their findings revealed that certainly not everything is checked in the journalism sector. They were told things like: 'We needed a small item,' or 'This is just a fun little piece, it is not a serious journalistic topic.' For our students, it is very educational to experience these processes for themselves. On top of that, we noticed that editors began to change their guidelines after being scrutinised by us.'

After the American presidential elections in 2016, when the commotion surrounding the term fake news reached new heights and the elections for the Dutch House of Representatives were coming up, Pleijter decided to factcheck the elections with his students in 2017. They did not check the media, but rather the politicians themselves. What did the different parties say during their campaigns and what falsehoods did their statements contain?

Not long after the start of this initiative, Pleijter was approached by Facebook. The newscheckers from Leiden collaborated with Facebook for roughly a year. The fact hunters provided false articles with links to a website.

'This website contained a second opinion, an explanation of why the article on Facebook was false. False messages were also made less visible on Facebook, although we did not delete anything. Everyone should be free to publish whatever they want. When we start to control what someone can and cannot publish, that is when things get really dangerous. After a while, Facebook came up with a different contract. We presented it to the university's lawyers, who were unable to come to an agreement with Facebook after lengthy negotiations. In the end, the issue of liability was the biggest pitfall.'

What is real?

Facebook is gradually taking steps to combat fake news. However, what happens when technology makes it increasingly difficult for us to tell what is real and what is fake? A technique that was initially used to paste celebrities' faces onto the bodies of porn actresses is now increasingly known as 'deep fake videos': fake videos that are virtually indistinguishable from the real thing. Bloomberg journalist Jeremy Kahn calls the technology potentially 'fake news on steroids.' UT researcher and facial recognition expert Luuk Spreeuwers recognises the trend of deep fake videos becoming easier to make and

IS IT A JOKE?
If it is too outlandish, it might be satire.
Research the site and author to be sure.

CHECK YOUR BIASES
Consider if your own beliefs could
affect your judgement.

ASK THE EXPERTS
Ask a librarian, or consult a
fact-checking site.

harder to detect. 'However, when you pay close attention to certain parts of a person's face, you can still spot the fakes. Certain areas often do not move along with the rest of the face, details are missing or you see a kind of static in the video.'

Advances in artificial intelligence continue to make the videos more and more convincing, Spreeuwers says. 'The underlying technology of pasting one face over another has been around for thirty years or so, using simple local geometric distortion. Today, it is possible to explicitly train a so-called 'convolutional neural network' to generate faces with realistic expressions. Simply put, it involves inputting a large array of facial expresses into a network and training it. When the neural network recognises and processes the right facial expressions in a video, it is merely about rewarding the network's good behaviour and trying to minimise the number of errors it makes. This training works by reinforcing the behaviour of the network, if it has generated a natural face with the desired expression in a video. In addition, it is important to minimize the errors. With a powerful network and enough training materials, you can create a truly convincing and complex model.'

Fighting back

Characteristic of the rising phenomenon of fake news is that the four researchers interviewed here are each trying to combat the problem in their own way – or have been doing so for some time. Pleijter has been working as a factchecker since 2009, Van Ooijen has serious plans to introduce a master-level course about fake news, while Spreeuwers wants to dedicate his research to the development of new techniques

with which to detect fake images. 'To me, this is a real problem with tremendous social relevance. Since the invention of television, we have relied on the fact that the footage we saw with our own two eyes was trustworthy. I believe we should treat video material in the same critical manner as written text. That is why I want to develop a piece of technology that can detect whether videos are real or fake based on technical characteristics.'

Data scientist Hiemstra is conducting research into federative search engines and networks. He also sees opportunities to fight back against fake news. He says these networks can break through the (commercial) power of major tech companies. 'At the UT, I created our own federative network in the form of Mastodon. The functions of the platform are similar to those of Twitter, but instead of the large commercial networks, Mastodon is set up in a decentralised manner: nobody is the owner of the entire network. Every separate part of the network has its own rules and users who misbehave, for example by spreading fake news, are removed. It can be seen as a small town where everyone knows each other. Like in the real world, there is an element of social control.'

Mark Zuckerberg of Mastodon

Mastodon currently has circa two million users. 'The major advantage is that the network is not out to earn a profit. I am the moderator of the UT network, but I do not have to sell any data. There is no Mark Zuckerberg of Mastodon. I believe the technology behind this network represents the future of social networks. In that sense, the UT is leading the way as the first Dutch university with such a network. Still, it is hard to live your life entirely free from the major tech companies. I have a doctoral degree in computer science, but I cannot imagine life without Google.'

Van Ooijen is also aware of the role played by the tech giants. 'I am researching the data collection efforts of businesses and how they relate with regulations such as the GDPR. One thing I keep seeing is that legislation lags behind technological developments. No, Facebook will not abolish its algorithm. The company

'I believe we should treat video material in the same critical manner as written text'

has gotten so big and it is the core of their business model. Alternatives like Diaspora never attracted enough public attention. Apparently, the social aspect is such a major part of our lives that we value it more than the loss of our privacy.'

Nevertheless, Pleijter wants to put the role of technology in the right perspective. He believes it is problematised. 'During the dawn of the internet, the pioneers said it would renew democracy, because everyone could now take part in the public debate. Today, the focus has shifted to the disastrous effects of digitisation.' Van Ooijen also sees plenty of good in the internet and social media as they exist today. 'We have been granted unrestricted access to a veritable treasure trove of information. There are certainly downsides, however: parties seek to benefit from the current situation and undermine people's autonomous thinking. Most people fail to realise how far this can go; in data collection, it is even about people's individual personality traits. Although our basic knowledge and awareness are growing, much of our online behaviour is irrational and subconscious. We are not confronted with our own online behaviour often enough.'

New professional group
Perhaps the keyword of this whole discussion about fake news is 'responsibility.' Pleijter mostly places it in the hands of journalists and suspects that we might see a new professional group arise: the fact-checkers. Spreeuwers believes that responsibility

can be built into technology, for instance in the form of video encryption and verification methods with which to protect people. Hiemstra mainly thinks that the tech giants have to accept their responsibility to protect people. For Van Ooijen, it is a combination of various issues. Should the major companies change their algorithms? Should legislators do something? Should we take responsibility ourselves to become more aware of the dangers we face when we enter the immense online world? She aptly summarises: 'We have to ask ourselves what world we live in, in this post-truth era.' ●

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