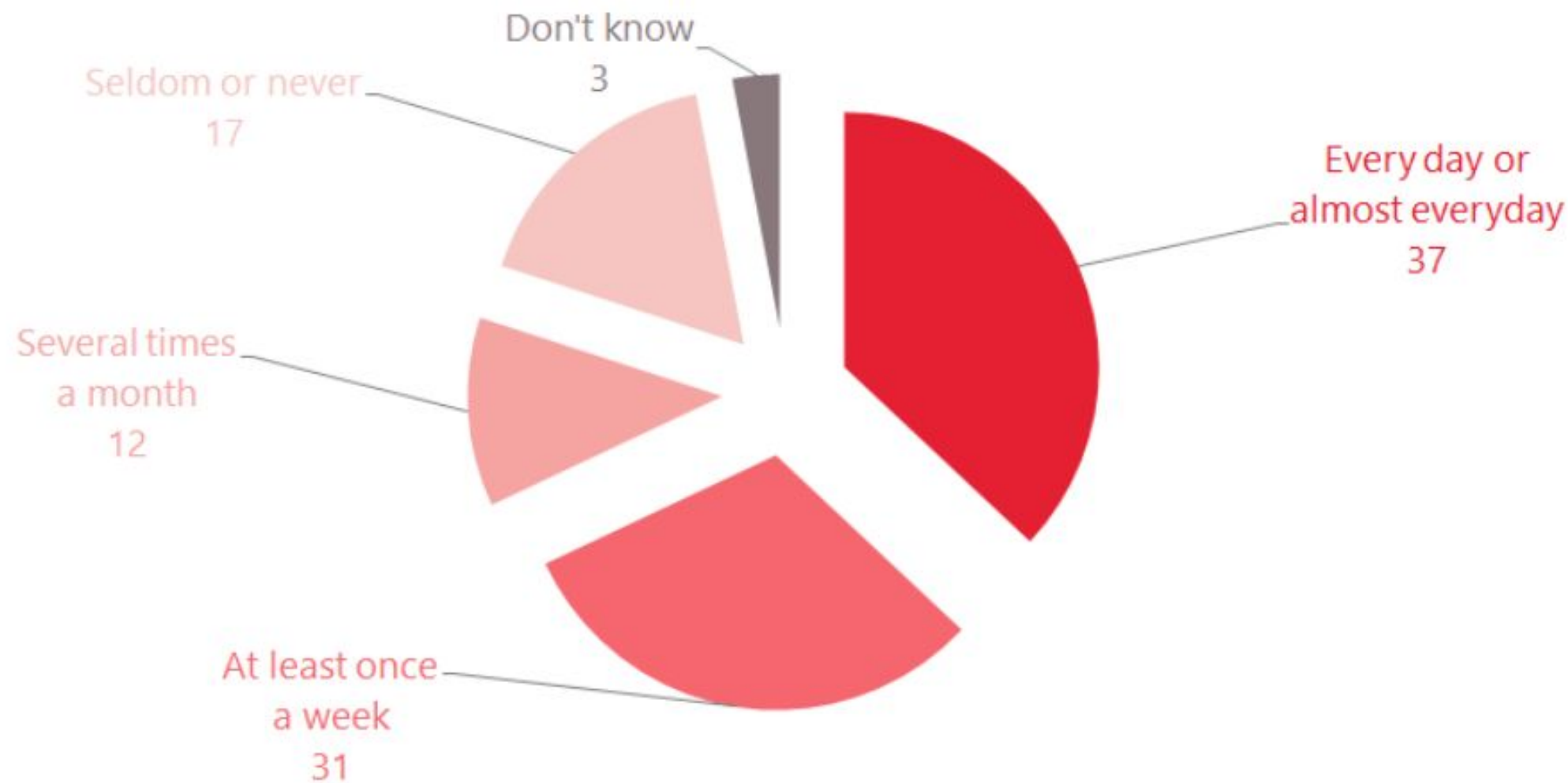


# “Fake” news, disinformation, online abuse, and bots

Kalina Bontcheva  
The University of Sheffield

# Is Online Misinformation a Big Problem for Citizens?

Q2 How often do you come across news or information that you believe misrepresent reality or is even false?  
(% - EU)

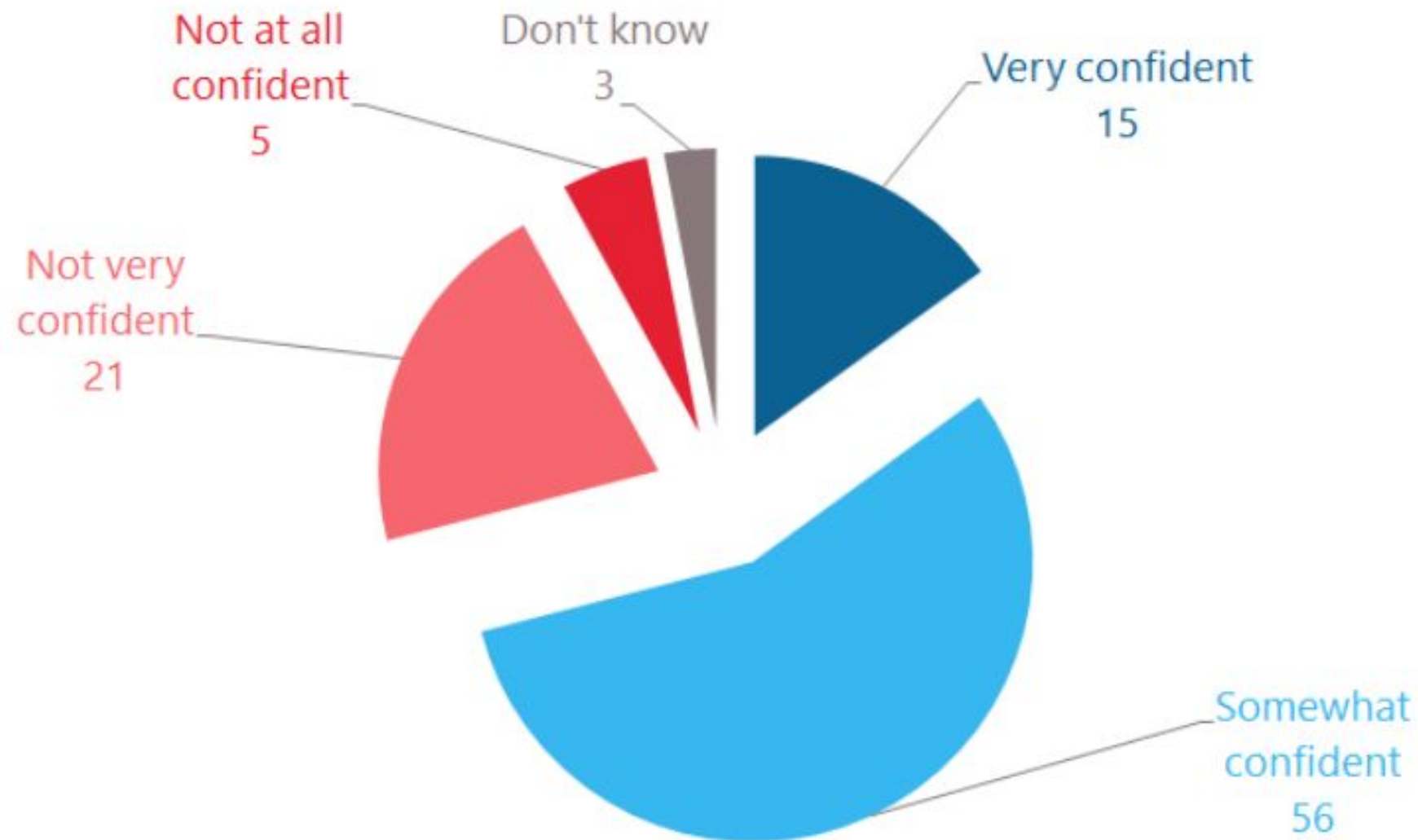


Base: All Respondents (N=26,576)

Source: Eurobarometer 2018

# Do citizens know how to spot it?

**Q3** How confident or not are you that you are able to identify news or information that misrepresent reality or is even false?  
(% - EU)



Base: All Respondents (N=26,576)



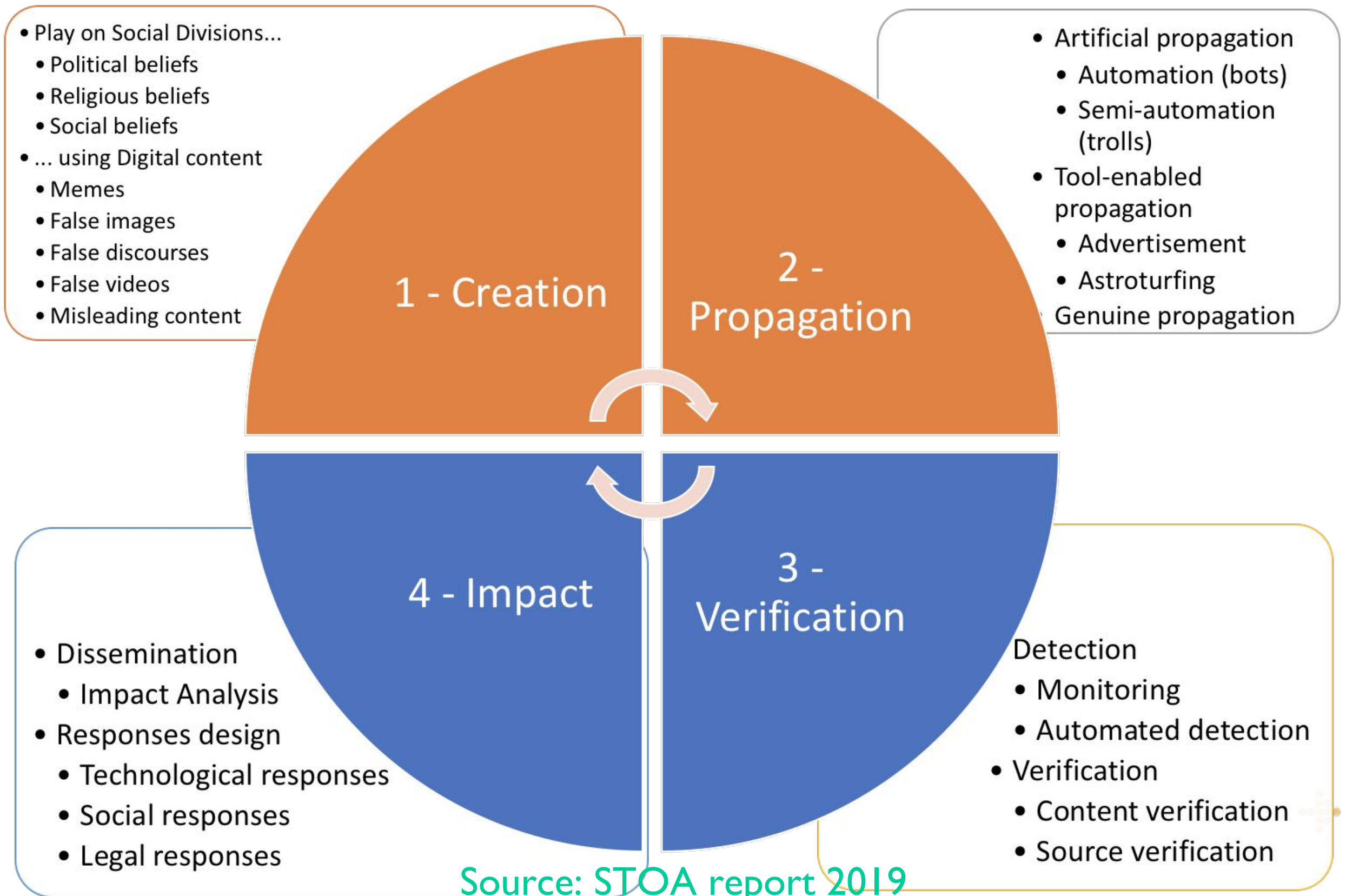
# Who should act to prevent it?

**Q5** News or information that misrepresent reality or that are even false are called "fake news". Which of the following institutions and media actors should act to stop the spread of "fake news"? (MAX. 3 ANSWERS)  
(% - EU)



Base: All Respondents (N=26,576)

# The Disinformation Lifecycle



# The 6 Questions of Disinformation Analysis

---

- **What** is being spread?
- **Who** is spreading it?
- **When** it spreads?
- **Where** it spreads?
- **Why** it spreads?
- **How** it spreads?



# The 6 Questions of Disinformation Analysis

---

- **What** is being spread?



# Online Falsehoods - Examples





# Online Falsehoods - Examples



Follow

Last photo taken of the shooter that is shooting YouTube HQ. Goes under the name "Samuel Rodriguez Hyde". Said to be one of DailyMotion's biggest personalities. Motivations unclear.



3:15 PM - 3 Apr 2018

12 Retweets 24 Likes



NOTORIOUS MASS MURDERER AND WHITE SUPREMACIST, SAM HYDE CONFIRMED AS SHOOTER AT YOUTUBE HQ #YoutubeHQShooting #YouTube #Shooting #MarchForOurLives 🧑🧑🧑 #NeverAgain



3:13 PM - 3 Apr 2018



# Online Falsehoods - Examples



<https://www.bbc.co.uk/news/uk-politics-eu-referendum-36570759>

# Don't you mean "Fake News"?



## Imposter sites



## Parody



### Boeing CEO Admits Company Made Mistake By Including Automatic Self-Destruct Function On All 737 Max Planes

CHICAGO—Acknowledging that certain practical considerations had been overlooked in production, Boeing president and CEO Dennis Muilenburg admitted at a press conference Monday that the company had made a mistake by including an automatic self-destruct function on all 737 Max airplanes. “At the time, we thought that having a simple, one-step option for destroying...

[Continue Reading](#)



# Definitions

- Information disorder theoretical framework (Wardle, 2017; Wardle & Derakshan, 2017)
- Three types of false / harmful information:
  - **Mis-information:** false information that is shared inadvertently, without meaning to cause harm.
  - **Dis-information:** intending to cause harm, by deliberately sharing false information.
  - **Mal-information:** genuine information or opinion shared to cause harm, e.g. hate speech, harassment.



# TYPES OF INFORMATION DISORDER

FALSENESS

INTENT TO HARM

## Misinformation

Unintentional mistakes such as inaccurate photo captions, dates, statistics, translations, or when satire is taken seriously.

## Disinformation

Fabricated or deliberately manipulated audio/visual content. Intentionally created conspiracy theories or rumours.

## Malinformation

Deliberate publication of private information for personal or corporate rather than public interest, such as revenge porn. Deliberate change of context, date or time of genuine content.

# Definitions (2)

---

- Currently the most widely agreed upon definition comes from the High Level Expert Group report:

“Disinformation...includes all forms of false, inaccurate, or misleading information designed, presented, and promoted to intentionally cause public harm or profit.” (Buning et al, 2018).



# Definitions (3)

---

- Often hard to distinguish mis- from dis-information
  - Intention of the information source or amplifier may not be easily discernible
  - Hard not only for algorithms, but also for human readers (Jack, 2017; Zubiaga et al, 2016)
- Mis- and dis-information are sometimes addressed as if they are interchangeable



# Categories of Information Disorder

FIRSTDRAFT

## 7 COMMON FORMS OF INFORMATION DISORDER



### SATIRE OR PARODY

No intention to cause harm but has potential to fool



### MISLEADING CONTENT

Misleading use of information to frame an issue or individual



### IMPOSTER CONTENT

When genuine sources are impersonated



### FABRICATED CONTENT

New content is 100% false, designed to deceive and do harm



### FALSE CONNECTION

When headlines, visuals or captions don't support the content



### FALSE CONTEXT

When genuine content is shared with false contextual information



### MANIPULATED CONTENT

When genuine information or imagery is manipulated to deceive



# Examples

- Parody



## Boeing CEO Admits Company Made Mistake By Including Automatic Self-Destruct Function On All 737 Max Planes

CHICAGO— Acknowledging that certain practical considerations had been overlooked in production, Boeing president and CEO Dennis Muilenburg admitted at a press conference Monday that the company had made a mistake by including an automatic self-destruct function on all 737 Max airplanes. "At the time, we thought that having a simple, one-step option for destroying...

[Continue Reading](#)

- Misleading Content



- False Context

- Decontextualised images/videos

NOTORIOUS MASS MURDERER AND WHITE SUPREMACIST, SAM HYDE CONFIRMED AS SHOOTER AT YOUTUBE HQ #YoutubeHQShooting #YouTube #Shooting #MarchForOurLives ### #NeverAgain



3:13 PM - 3 Apr 2018



# The 6 Questions of Disinformation Analysis

---

- What is being spread?
- Who is spreading it?
- When it spreads?
- Where it spreads?
- Why it spreads?
- **How** it spreads?



# Authoring False Stories is Easy

Play on emotions like fear and anger

The screenshot shows a website interface for creating fake news. At the top, there is a 'BREAKING NEWS' banner and a 'HOME' link. The main heading reads 'Create A Fake Story And Trick All Your Friends!' followed by 'Simply Create Your Own News And Then Share It On Your Social Network Pages!'. The form consists of three main sections: 'Title' with a placeholder 'Title Of Your Article', 'Text' with a placeholder 'The Content Of Your Article', and 'Image' with an 'Upload File' button and a file selection area showing 'Choose File' and 'No file chosen'. A large green 'Create Story' button is at the bottom.

**Tips:** You must be creative but keep in mind to make it fun.

**Fake Title:** Choose a catchy title for your joke. Make your friends curious.

**Description:** Be creative and make your friends curious.

**Image:** Upload one or search one via google images.

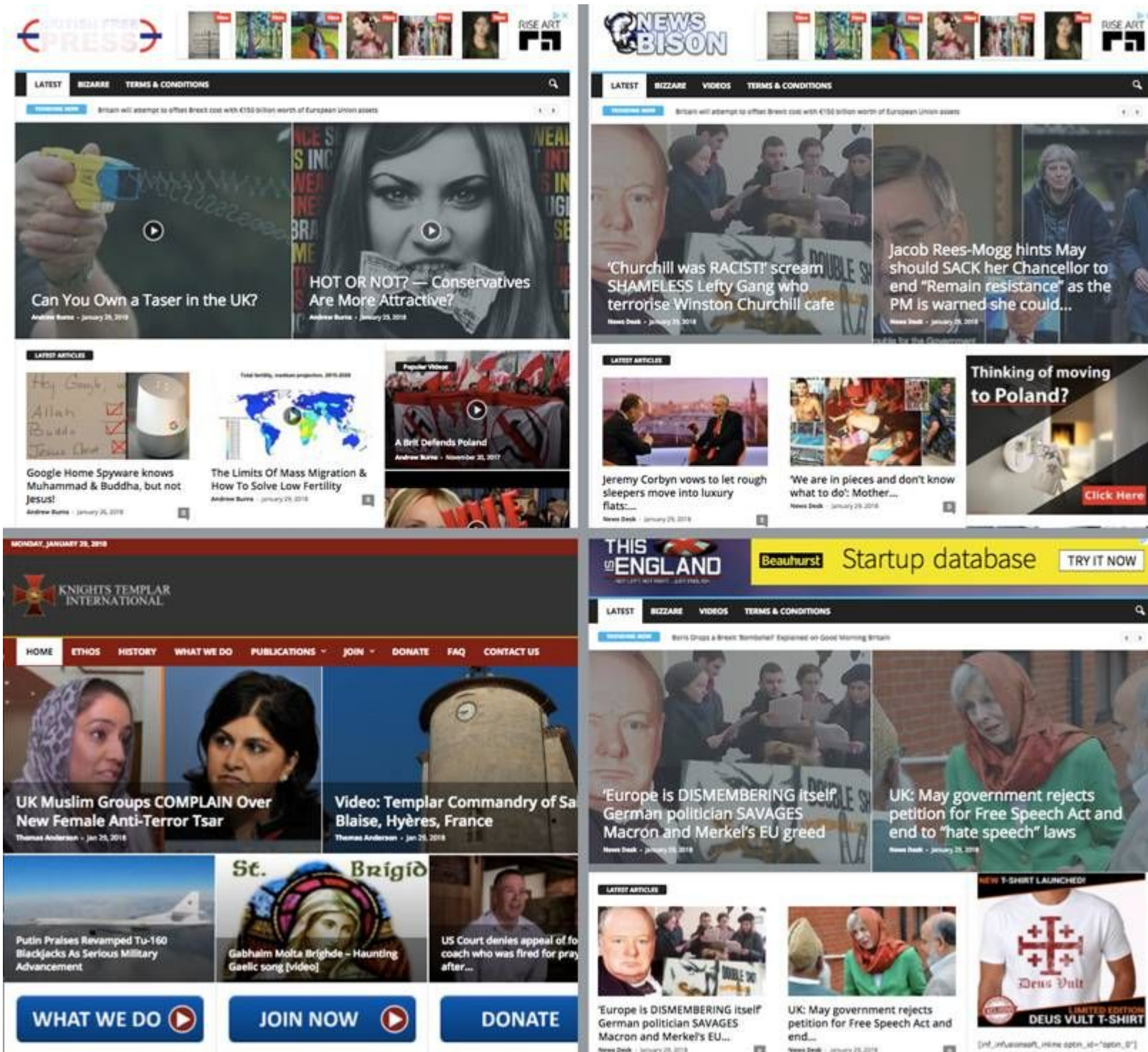
**Create A Joke,**  
Come Up With A Prank and Troll All Your Friends!  
Create something that will have all your friends confused and laughing!

Prank Your Boss,  
Prank Your Co-Workers  
Prank Your School  
Prank Your Friends  
Prank Your Neighbors



Simple & Fun! Prank Your Friend!

# Low credibility web site networks



- A network of websites that post disinformation or distorted, out-of-context news stories
- This example: a network of seemingly UK-based far-right news sites (operated from Eastern Europe)
- Shared and amplified through thirteen related Facebook pages
- 2.4 million likes (more than any UK Facebook political page)

Source: (Reynolds, 2018)



# Misinformation in search results



ferguson was

- ferguson was **a lie**
- ferguson was **staged**
- ferguson was **not about race**
- ferguson was **a thug**
- ferguson was **planned**
- ferguson was **he armed**
- ferguson was **a hoax**
- ferguson was **fake**
- ferguson was **stupid**
- ferguson was **not racist**

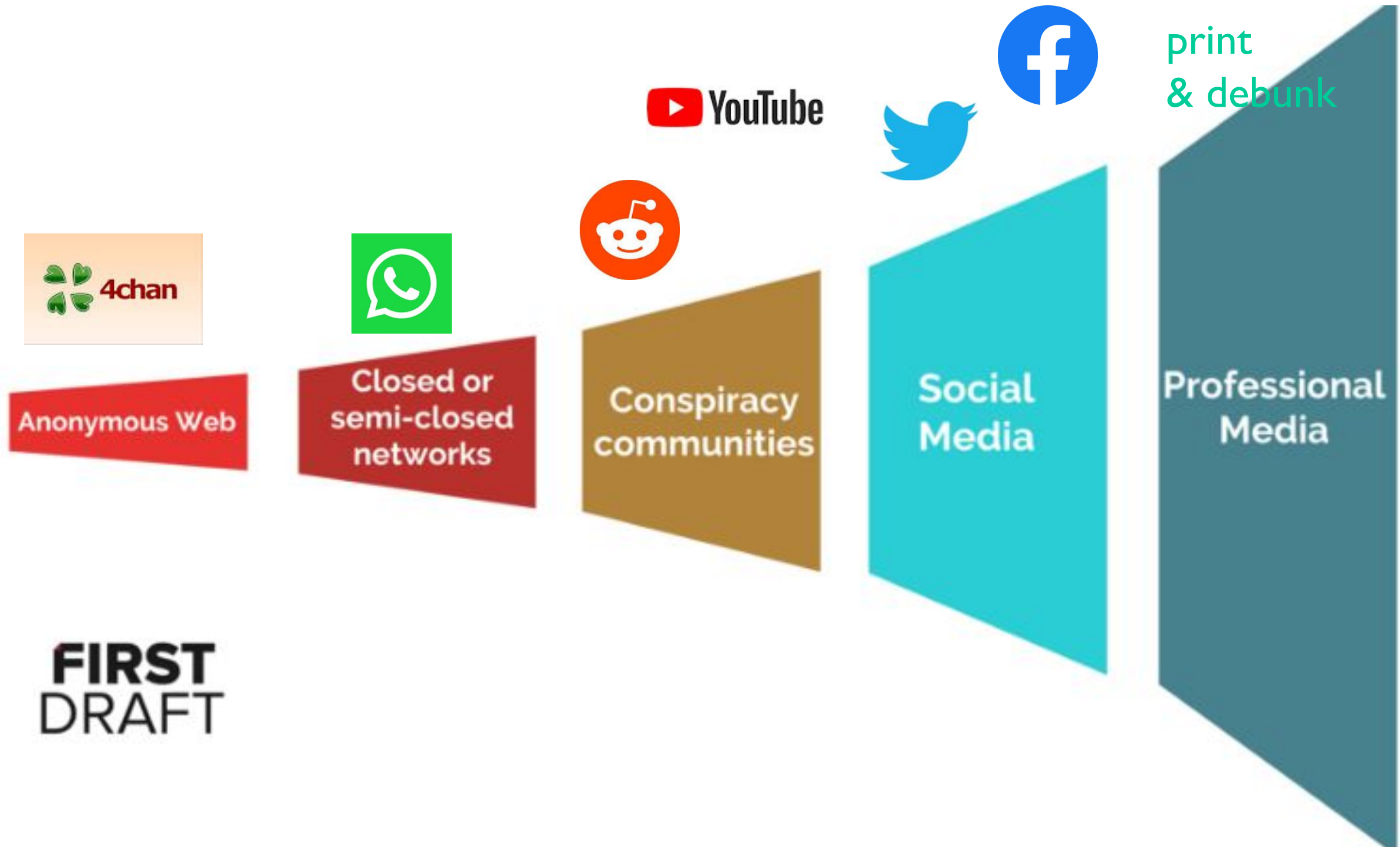
Google Search

I'm Feeling Lucky

*Report inappropriate predictions*



# The Trumpet of Amplification



**FIRST  
DRAFT**



# Closed networks



- WhatsApp groups are used to spread misinformation in many countries
- No API and messages are encrypted
- This example: Video produced in Pakistan (public service announcement), spread in India with false claims of child kidnapping
- Resulted in mob murders of innocent people
- Some steps from WhatsApp being implemented

Source: <https://www.nytimes.com/interactive/2018/07/18/technology/whatsapp-india-killings.html>



# The 6 Questions of Disinformation Analysis

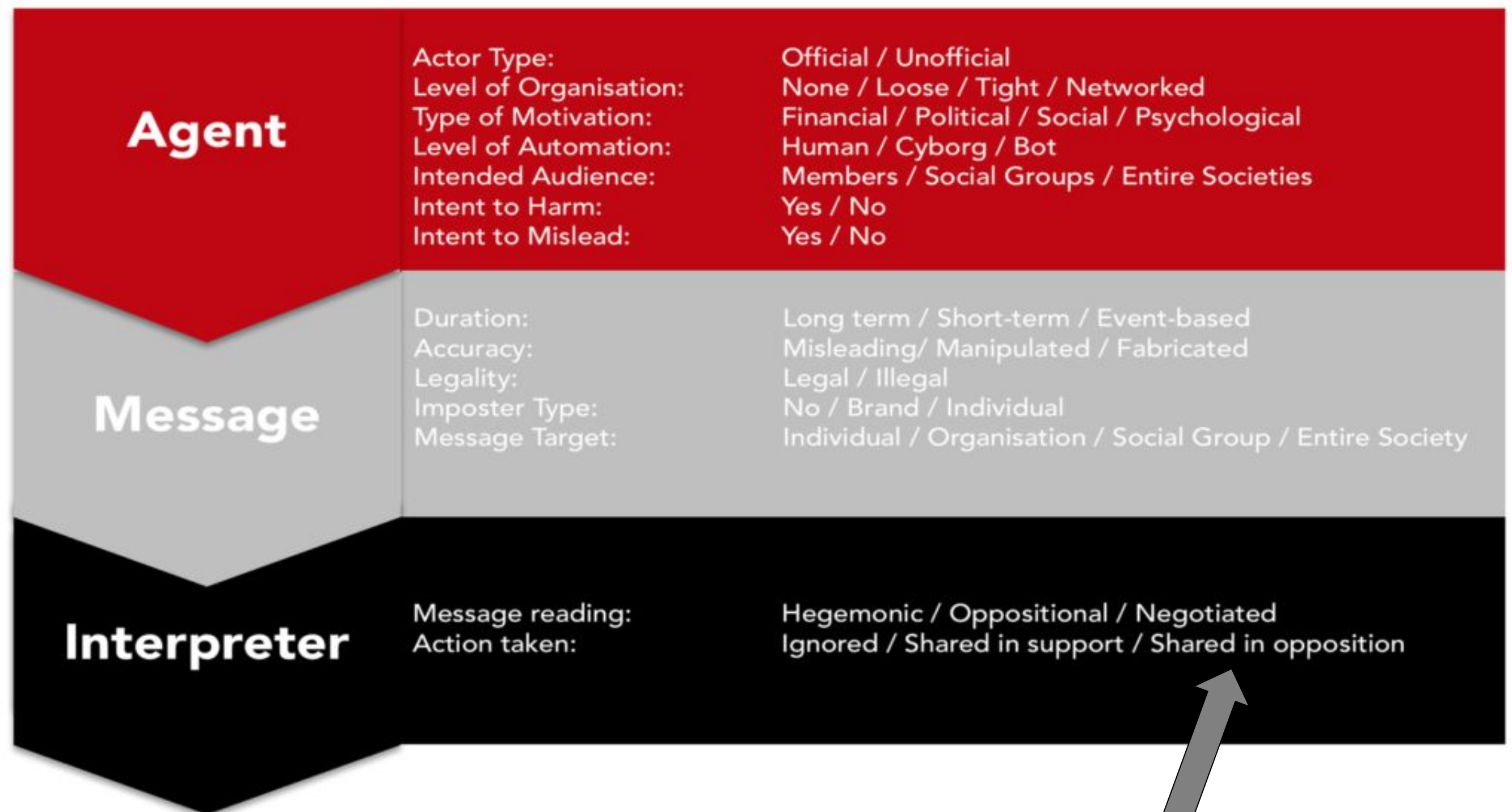
---

- What is being spread?
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- How it spreads?





# Agent, Message, Interpreter (AMI) model



# Fake Profiles

---

- A Macedonian man created and ran in a coordinated fashion over 700 Facebook profiles, spreading online disinformation for monetary gain
- IRA operated cyborg accounts spread misinformation during the 2016 US elections
  - Jenna Abrams - widely considered a real American; posted on diverse topics
- Fake accounts can be purchased to inflate follower counts



# Fake Accounts (2)

- Fake accounts try to gain credibility by following genuine accounts
  - the USA Today Facebook page lost around 9 million followers when the platform detected and suspended a large coordinated network of fake accounts (Silverman, 2017)
  - Politician's Twitter accounts are another example, with a recent study estimating as many as 60% of Donald Trump's followers being suspected fake accounts (Campoy, 2018), 43.8% - for Hillary Clinton, and 40.8% for Barack Obama.



# Advertising and Clickbait

- Online advertising used extensively to make money from junk news sites
  - Payments when the adverts are shown alongside the false content
  - Often employ clickbait to attract users
- A clickbait post is designed to provoke emotional response in its readers, e.g. anger, compassion, sadness, and thus stimulate further engagement



# Misinformation in Political Advertising Online

- Russia Today & related acc promoted just under 2,000 election-related tweets
  - generated around 53.5 million impression on U.S. based users (Edgett,2017)
- Issues around digital campaigning by political organisations during the 2016 UK EU membership referendum (DCMS report, 2018)
- Questions also around the Trump presidential campaign use of over 5.9 million Facebook adverts (Frier, 2018)



# Micro-targetted or dark ads

- online adverts that are visible only to the users that are being targeted
  - e.g. voters in a marginal UK constituency (Cadwalladr, 2017a)
- Do not appear on the advertiser's timeline or in the feeds of the advertiser's followers
- Micro-targeting - fine-grained ad targeting, based on job titles or demographic data
  - Cambridge Analytica (!)



# Micro-targetted or dark ads

- Used to spread misinformation during election campaigns
  - A VoteLeave dark ad made public by Facebook as evidence to the UK DCMS parliamentary inquiry
- Effective personal data protection on social platforms - priority for national governments and policy makers (non-users also affected)



# Transparency of Online Advertising

- Google political ads database

- <https://transparencyreport.google.com/political-ads/library>

- Twitter's Ad Transparency Center

- <https://ads.twitter.com/transparency>


- Facebook Ad Archive

- <https://www.facebook.com/ads/archive>

Ad performance

**Conservatives**  
Sponsored • Paid for by The Conservative Party

Like our page to support our plan to build a stronger, fairer country with real opportunity for all.



Conservatives  
Political Party  
650,864 people like this

Like Page

**Conservatives**  
View more ads from this Page

Paid for by **The Conservative Party**

When an advertiser categorises their ad as being related to politics or issues of national importance, they are required to disclose who paid for the ad. [Learn more](#)

**Ad performance**

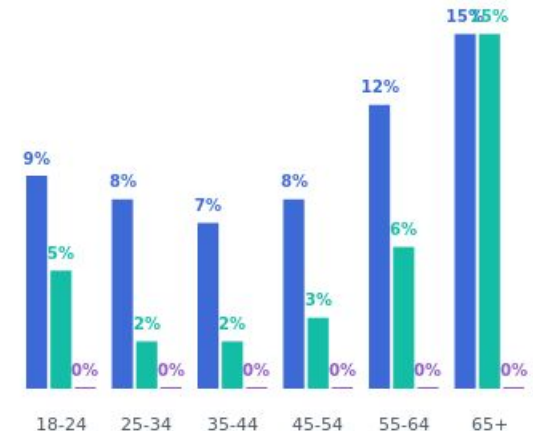
Active  
Started running on 19 October 2018

10K-50K Impressions      <£100 Money spent (GBP)

**Audience breakdown**

Age and gender

Men   Women   Unknown



| Age Group | Men | Women | Unknown |
|-----------|-----|-------|---------|
| 18-24     | 9%  | 5%    | 0%      |
| 25-34     | 8%  | 2%    | 0%      |
| 35-44     | 7%  | 2%    | 0%      |
| 45-54     | 8%  | 3%    | 0%      |
| 55-64     | 12% | 6%    | 0%      |
| 65+       | 15% | 5%    | 0%      |

Location





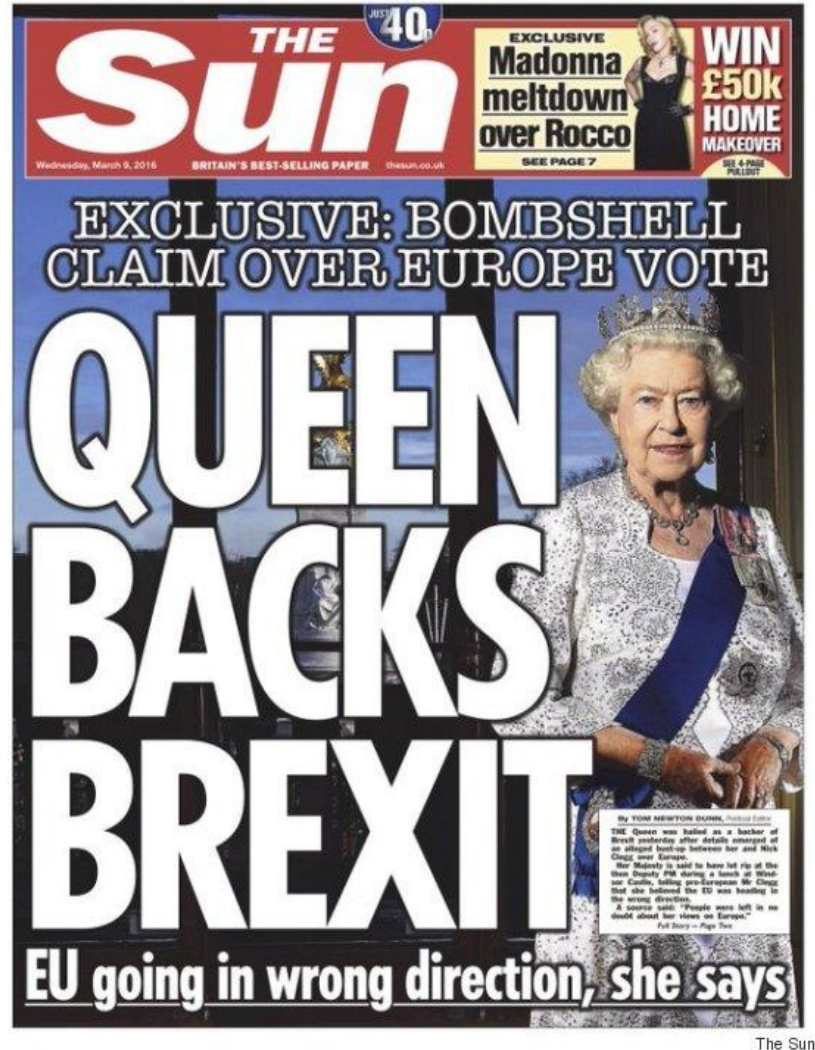
# Transparency of Online Advertising (2)

- Some of these lack automated APIs
  - manual analysis does not scale
- Calls for public open data repository (most notably FullFact)
- Independent mechanism for monitoring political advertising across all social platforms
- *“There should be a ban on micro-targeted political advertising to lookalikes online, and a minimum limit for the number of voters sent individual political messages should be agreed, at a national level.”* (DCMS report, 2018)



- £350m false claim - 10.2 times more tweets than the 3,200 tweets by the Russia-linked accounts suspended by Twitter
  - More than 1,500 tweets from different voters
    - *I am with @Vote\_leave because we should stop sending £350 million per week to Brussels, and spend our money on our NHS instead.*
    - *I just voted to leave the EU by postal vote! Stop sending our tax money to Europe, spend it on the NHS instead! #VoteLeave #EUreferendum*
  - Ipsos Mori (22/06/2016) - for 9% the NHS was the most important issue in the campaign
  - Ipsos Mori - over half of the UK population believed this claim to be correct

# Mainstream Media



- Mainstream media also sometimes publish inaccurate, misleading, or distorted information
- Sometimes it is intentional
- Sometimes they are misled themselves
  - Pressure of 24 news cycle
- The Queen Backs Brexit example was then picked up and spread by the Russian troll accounts
- UK Independent Press Standards Organisation upheld the complaint

# Euromyths

**Aviation** – [‘Open Skies’ treaty threatens fight against global warming, Feb 2006](#)

## B

**Baby rattles** – [EC to ban noisy toys, Jan 1996](#)

**Bagpipes** – [EU safety directives to ban playgrounds, trapeze artists and bagpipes, Aug 2005](#)

**Bagpipes, noise levels** – [Bagpipes to be quietened by an edict from Brussels, Apr 2008](#)

**Bailout** – [EU demanding £6bn from Britain for a new bailout, Sep 2013](#)

**Bailout, emergency funding** – [UK called upon to provide more emergency funding, Jun 2016](#)

**Balloons** – [EU bans children from blowing up balloons, Oct 2011](#)

**Bananas** – [Curved or small bananas to be banned by Brussels, Sep 1994](#)

**Bananas** – [Curved bananas, Mar 1998](#)

**Bananas, funding** – [£3billion for bananas, Feb 2013](#)

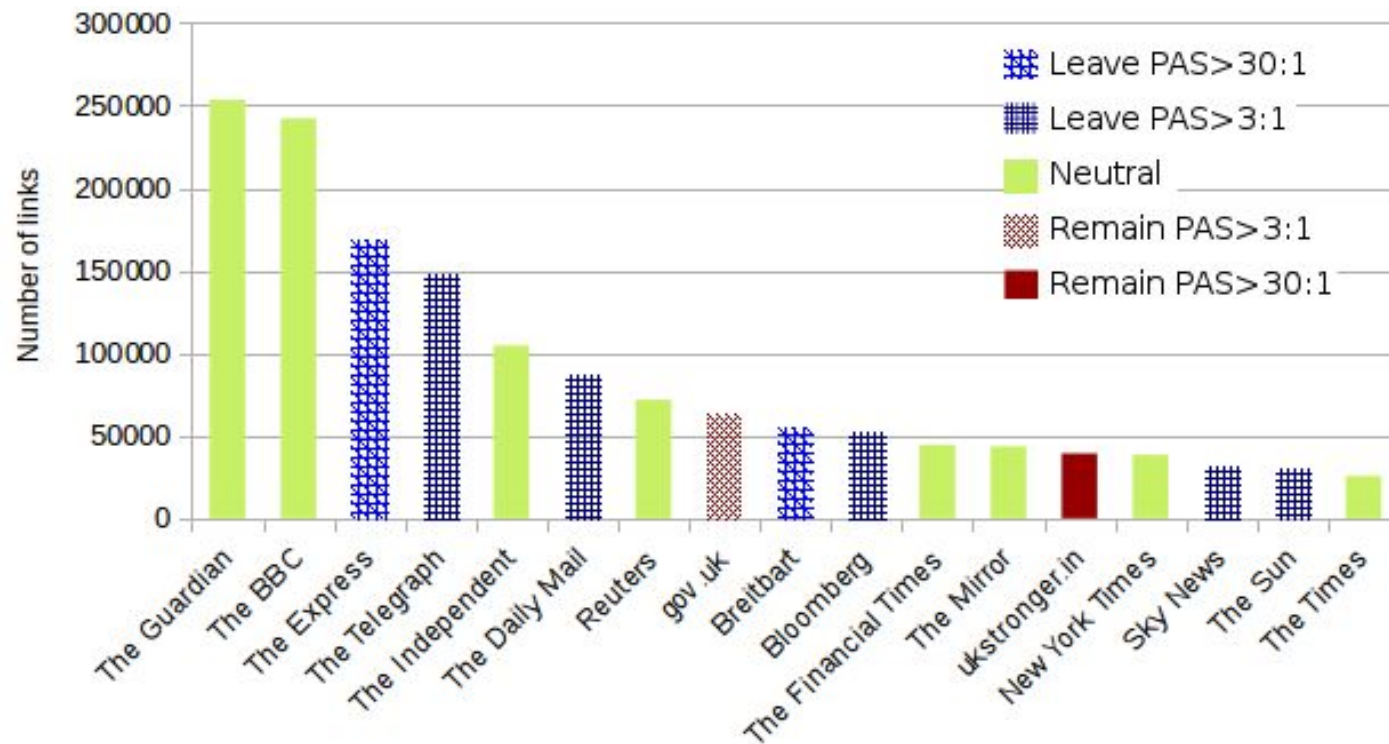
**Bank accounts, ID requirements when opening** – [Children to be prevented from opening bank accounts due to ID laws, Apr 1995](#)

**Barmaids** – [EU health directive to prevent barmaids from showing cleavage, Nov 2005](#)

**Barometers** – [Pressure rises on Britain’s barometer makers, Mar 2006](#)

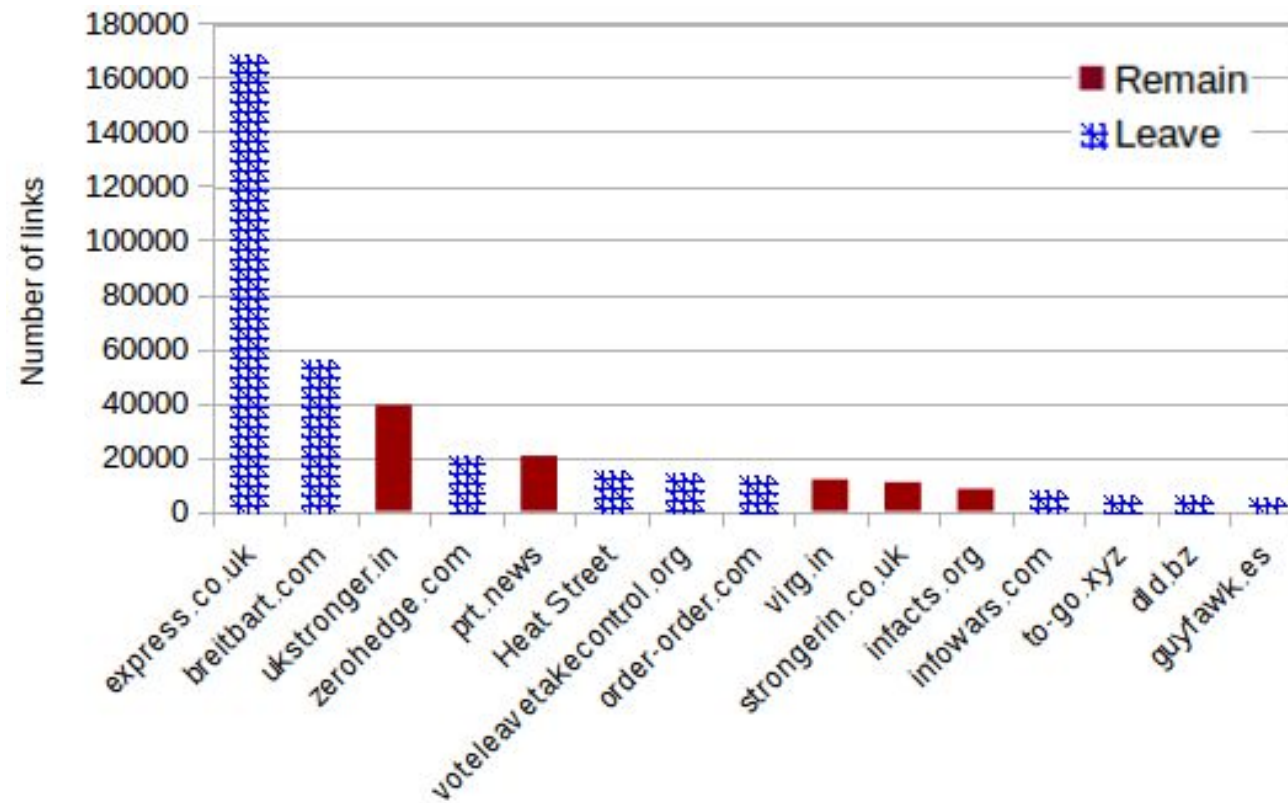


# Media Role in the Brexit Online Debate



- We studied how many leavers and how many remainers linked to a domain
- The audience ratio between partisan groups has been called "Partisanship Attention Score" (PAS)
- Partisan media not as influential as in US elections

# The Influential Partisan Sites in the Brexit debate on Twitter



- Express dominated (over 160,000 links)
- Breitbart - second most linked to (almost 40,000 links)
- The remain partisan sites were campaign, not media sites

<http://eprints.whiterose.ac.uk/136940/1/gorrell-influencers-brexit.pdf>

# Misinfodemics

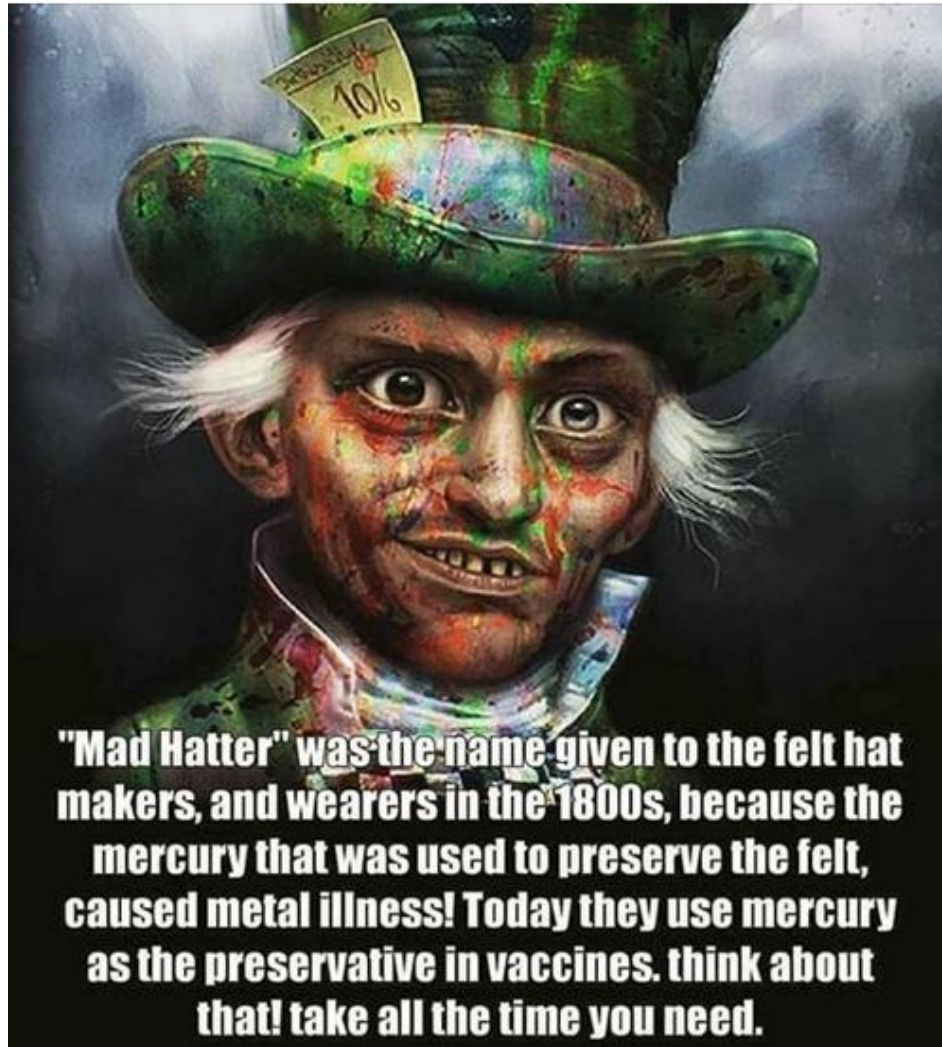
- “We know that memes—whether about cute animals or health-related misinformation—spread like viruses: mutating, shifting, and adapting rapidly until one idea finds an optimal form and spreads quickly. What we have yet to develop are effective ways to identify, test, and vaccinate against these misinfo-memes. One of the great challenges ahead is identifying a memetic theory of disease that takes into account how digital virality and its surprising, unexpected spread can in turn have real-world public-health effects.”

Source: (Gyenes & Mina, 2018)



# Anti-vaccine Misinformation & Measles Outbreaks

Not safe to eat in fish Or to wear on your head...but in vaccines, it's safe in the body? 🤔



<https://www.theguardian.com/cities/2019/mar/14/are-urban-anti-vaccine-hotspots-putting-children-at-risk>





# False Amplifiers: Bots



[Am J Public Health](#). 2018 October; 108(10): 1378–1384.

PMCID: PMC6137759

Published online 2018 October. doi: [10.2105/AJPH.2018.304567](https://doi.org/10.2105/AJPH.2018.304567)

PMID: [30138075](https://pubmed.ncbi.nlm.nih.gov/30138075/)

## Weaponized Health Communication: Twitter Bots and Russian Trolls Amplify the Vaccine Debate

- Bots that spread malware and unsolicited content disseminated anti-vaccine messages
- Russian trolls promoted discord
- Accounts masquerading as legitimate users create false equivalency, eroding public consensus on vaccination



# False Amplifiers: Definitions

---

- **Social bots**
  - programs “capable of automating tasks such as retweets, likes, and followers. They are used to disseminate disinformation on a massive scale, but also to launch cyber-attacks against media organizations and to intimidate and harass journalists.” (RSF, 2018)
- **A political bot** is a social bot designed to promote political content.
- **Sockpuppets/cyborgs** are fake accounts that pretend to be human users; aim to connect and influence
- **Trolls** - politically oriented sockpuppets/cyborgs



# False Amplifiers: Impact

---

- Social bots, cyborgs, and trolls have all been employed as fake amplifiers in online misinformation and propaganda campaigns (Gorwa & Guilbeault, 2018)
- In Mexico, for instance, it is estimated that 18% of Twitter traffic is generated by bots (RSF, 2018)
- Flood the platform with manipulated content thus making high quality information hard to find
- Fake comments on government consultations or phantom signatures on online petitions



# False Amplifiers: Fake Groups

---

- Astroturfing, i.e. creating artificial appearance of “grass-roots” support (recall the far-right British Facebook pages discussed above)
- Initially seeded with fake accounts, before drawing in genuine users.
- Other fake groups are created to “spread sensationalistic or heavily biased news or headlines, often distorting facts to fit a narrative” (Weedon, Nulan & Stamos, 2017).
- The credibility of fake Facebook groups can be enhanced through fake verification check marks (Silverman, 2017).



# Genuine Amplifiers

- The main amplifiers behind viral misinformation and propaganda are genuine human users (Vosoughi et al, 2018)
- Confirmation bias
  - reading news that conforms to the individual's political views
- Homophily
  - Individual's information sharing and commenting behaviour is influenced by the behaviour of their online social connections
- Confirmation bias and homophily lead to the creation of online echo chambers (Quattrociocchi et al. 2016)
- Polarisation
  - “social networks and search engines are associated with an increase in the mean ideological distance between individuals” (Flaxman et al, 2018)



# Genuine Amplifiers (2)

- The main amplifiers behind viral misinformation and propaganda are genuine human users (Vosoughi et al, 2018)
- Confirmation bias
  - reading news that conforms to the individual's political views
- Homophily
  - Individual's information sharing and commenting behaviour is influenced by the behaviour of their online social connections
- Confirmation bias and homophily lead to the creation of online echo chambers (Quattrociocchi et al. 2016)
- Polarisation
  - “social networks and search engines are associated with an increase in the mean ideological distance between individuals” (Flaxman et al, 2018)
- Polarised communities believe and share misinformation which conforms to their preferred narratives (Quattrociocchi et al. 2016)



# Genuine Amplifiers (3)

- What is the best strategy to reduce people's susceptibility to misinformation and the likelihood of its amplification?
  - Strategic communications researchers (Pamment et al, 2018) recommend presenting corrective information in ways that consider how and why the false story seemed credible.
    - What are the audience's dispositions?
    - Who do/don't they trust?
    - What aspects of the truth are they least/most likely to resist?
    - Question the frame, not just the content.
- Encourage debate and critical reflection (Harford, 2018; Pamment et al, 2018)



# The 6 Questions of Disinformation Analysis

---

- What is being spread?
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# What about online rumours?

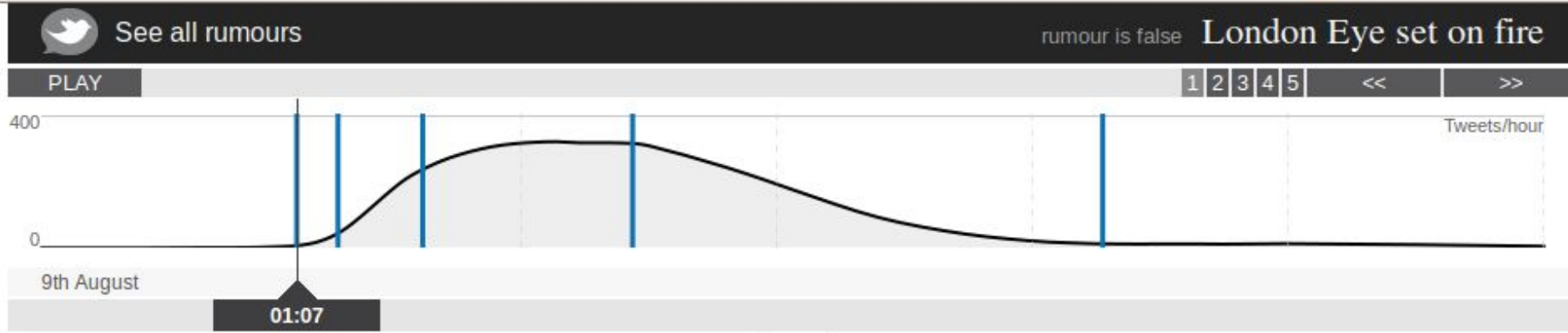
File Edit View History Bookmarks Tools Help

How riot rumours spread on Tw... +

www.guardian.co.uk/uk/interactive/2011/dec/07/london-riots-twitter

See all rumours rumour is false London Eye set on fire

PLAY 1 2 3 4 5 << >>



9th August 01:07

### How the rumour unfolded

Shortly after 1am on Tuesday, August 9, @zadio posts a link to an image of the London Eye apparently ablaze with the heartfelt message: 'Oh my God! This can't be happening!' The tweet is quickly picked up.

“

Oh my god! This can't be happening at London Eye! #Londonriots #Londonriot #Prayforlondon <http://twitpic.com/6372vo>

@zadi0, 18 followers


Tue 9 Aug 01:07

Influence of the tweet

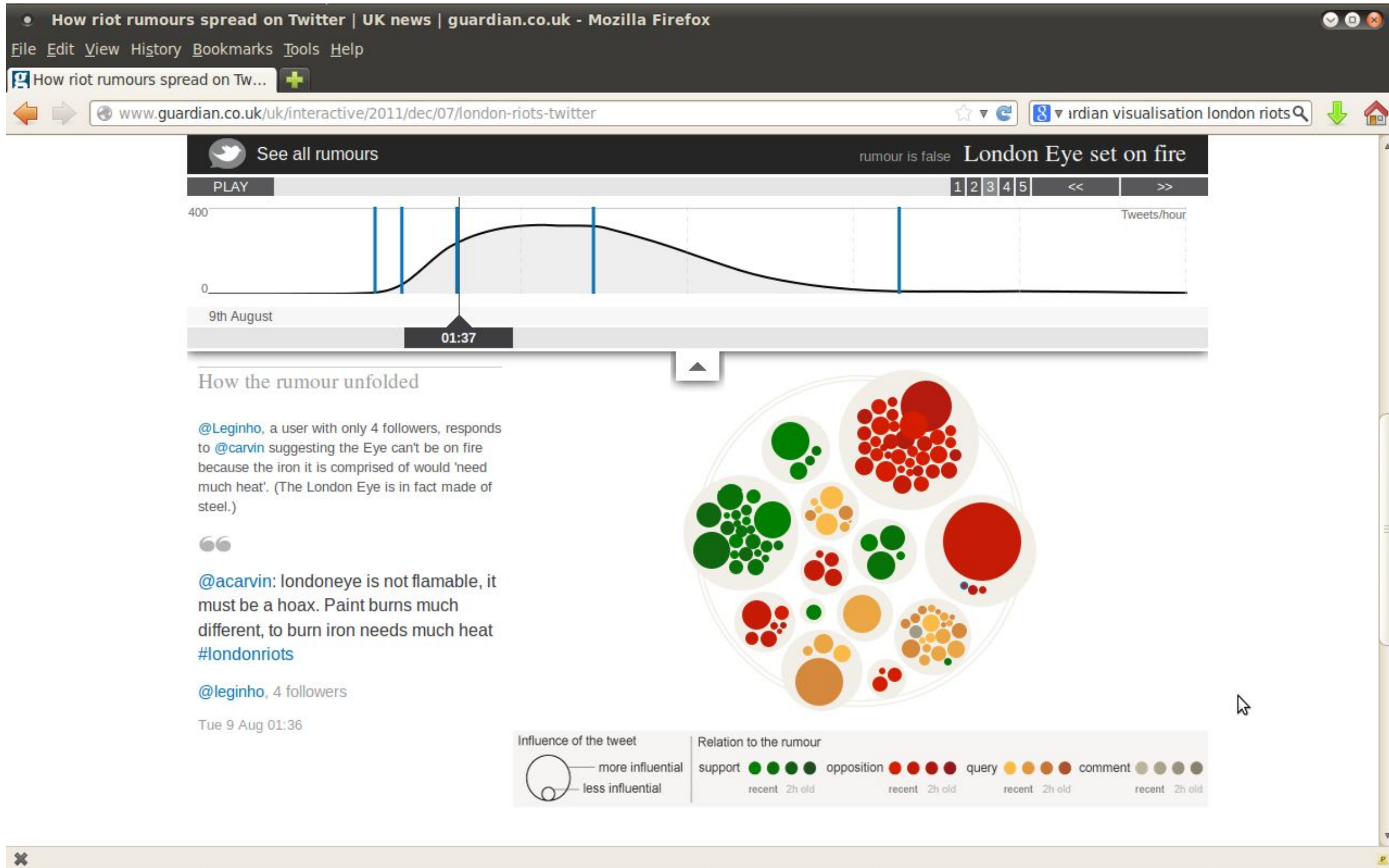
more influential — less influential

Relation to the rumour

support recent 2h old opposition recent 2h old query recent 2h old comment recent 2h old



# PHEME: ...Veracity, and Spread



# PHEME: Analysing Online Rumours

- Rumour is “*a circulating story of questionable veracity, which is apparently credible but hard to verify, and produces sufficient skepticism and/or anxiety*”
- **Mememes** are thematic motifs that spread through social media in ways analogous to genetic traits
- We coined the term **phemes** to add truthfulness and deception to the mix
- Named after ancient Greek PHEME, “embodiment of fame and notoriety, her favour being notability, her wrath being scandalous rumours”

@PhemeEU



# Example Rumours and Events

- Events:
  - Ferguson unrest
  - Ottawa shooting
  - Sydney seige
  - Charlie Hebdo shooting
  - German Wings crash
- Specific rumours:
  - Putin missing
  - Prince concert
  - Michael Essien
  - Gurlit collection

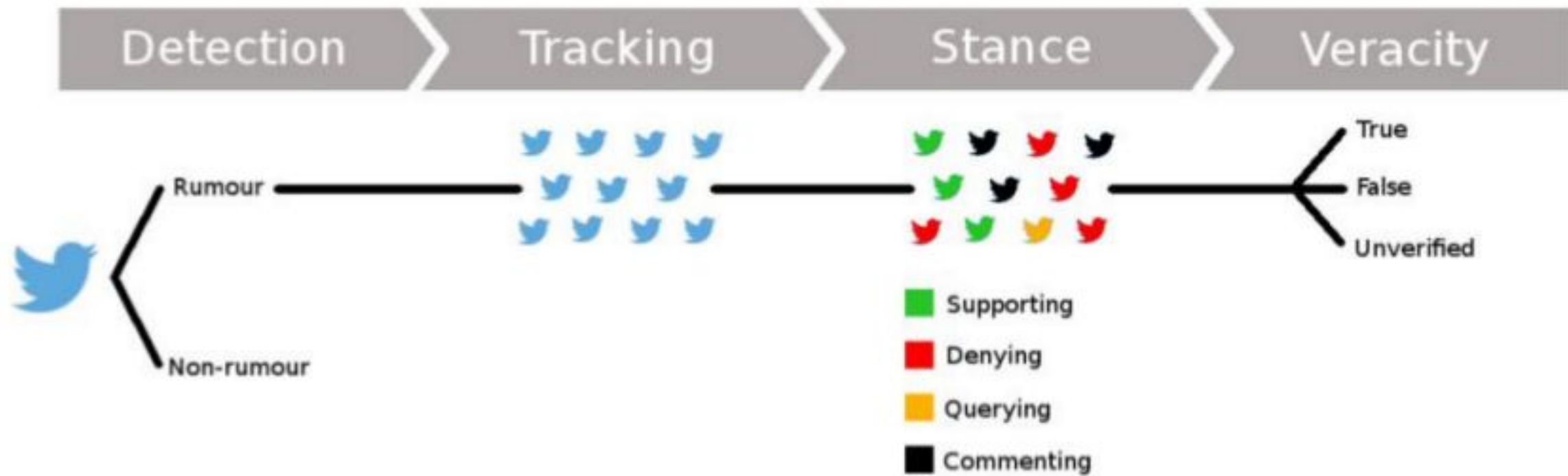


# Rumourous Thread - Example

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  | @ [redacted]<br>BREAKING: Hostages are being forced to hold an ISIS flag at a Lindt cafe in Sydney's Martin Place, as police man the doors outside <a href="#">#7NEWS</a><br>Sun Dec 14 23:08:15 +0000 2014 - <a href="#">see tweet on Twitter</a>   |
|  |  |  |  |  | @ [redacted]<br>BREAKING: Gunman takes hostages in cafe in Martin Place, Sydney <a href="#">dailym.ai/134wluW</a><br>Sun Dec 14 23:10:22 +0000 2014 - <a href="#">see tweet on Twitter</a>   |
|  |  |  |  |  | @ [redacted]<br>UPDATE: An ISIS flag is being displayed in the window of a café under siege in Sydney's Martin Place. <a href="#">#9News</a><br>Sun Dec 14 23:12:09 +0000 2014 - <a href="#">see tweet on Twitter</a>                                |
|  |  |  |  |  | @ [redacted]<br><a href="#">#BREAKING</a> : Hostages are being held and a siege is taking place at Sydney's Lindt Chocolat Cafe in Martin Place.<br>Sun Dec 14 23:12:32 +0000 2014 - <a href="#">see tweet on Twitter</a>                            |
|  |  |  |  |  | @ [redacted]<br><a href="#">#BREAKING</a> A police operation is underway in the heart of Sydney's CBD with one block of Martin Place blocked off.<br>Sun Dec 14 23:13:12 +0000 2014 - <a href="#">see tweet on Twitter</a>                           |
|  |  |  |  |  | @ [redacted]<br>BREAKING: A Sydney cafe at Martin Place is being held up - hostages inside have their hands against the windows, ISIS flag visible.. <a href="#">#7News</a><br>Sun Dec 14 23:14:29 +0000 2014 - <a href="#">see tweet on Twitter</a> |
|  |  |  |  |  | @ [redacted]<br>BREAKING: Live coverage of hostage situation unfolding in Sydney's Martin Place <a href="#">bit.ly/1wQXa3G</a> <a href="#">pic.twitter.com/iTwradHTb3</a><br>Sun Dec 14 23:16:34 +0000 2014 - <a href="#">see tweet on Twitter</a>   |
|  |  |  |  |  | @ [redacted]<br>Terrifying photo of hostages in Martin Place in Sydney, being held by men waving an ISIS flag <a href="#">pic.twitter.com/6ozBRQVNIG</a><br>Sun Dec 14 23:17:34 +0000 2014 - <a href="#">see tweet on Twitter</a>                    |



# PHEME: Analysing Rumours



Source: (PHEME project)

# PHEME: Rumour Stance Observations

- Supporting tweets are more likely to include links.  
i.e. provide evidence
- Looking at the temporal dimension, S/D/Q tend to occur in early stages of a rumour, and then mostly comments later
- We've looked at persistence, finding that users supporting a rumour tend to post more tweets to argue their beliefs



# The 6 Questions of Disinformation Analysis

---

- **What** is being spread?
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# Other Challenges

---

- Deep fakes
  - Synthetic videos and images “look and sound like a real person saying something that that person has never said.” (Lucas, 2018)
- Preserve important social media content for future studies
- Establish policies for ethical, privacy-preserving research and data analytics
- More funding for inter-disciplinary research
- Measure the effectiveness of technological solutions implemented by social media platforms
- Strengthening media and improving journalism and political campaigning standards

# Thank you!

## Questions?

*Details in this STOA report:*

Alaphilippe, A., Bontcheva, K., Gizikis, A. **Automated tackling of disinformation: Major challenges ahead.**

[http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS\\_STU\(2019\)624278](http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_STU(2019)624278)

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WeVerify: <https://weverify.eu/>  
COMRADES: <https://www.comrades-project.eu/>  
SoBigData: <http://sobigdata.eu/index>

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