

# An Introduction to Open Source Intelligence (OSINT)

Adina Pintilie

#### About us

Research consultancy that specialises in open source intelligence

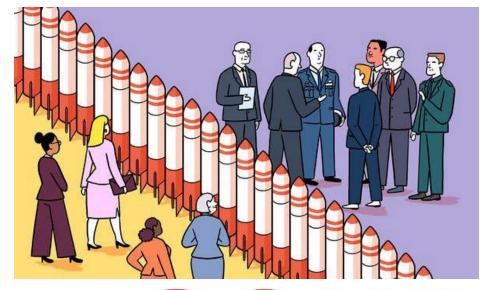
\* Currently undertaking risk consultancy research and analysis relating to nuclear non-proliferation, domestic and international security, public and private sector

 Our team brings together operation specialists and practitioners as well as academics



#### Who am I?













#### Outline

- 1. Introduction to **OSINT**: what it is, what it's not and where it's going.
- 2. Using **OSINT tools in academic research:** getting more out of your search engines, imagery and social media a case study
- 3. False friends, bigger questions and resources



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#### Conclusions

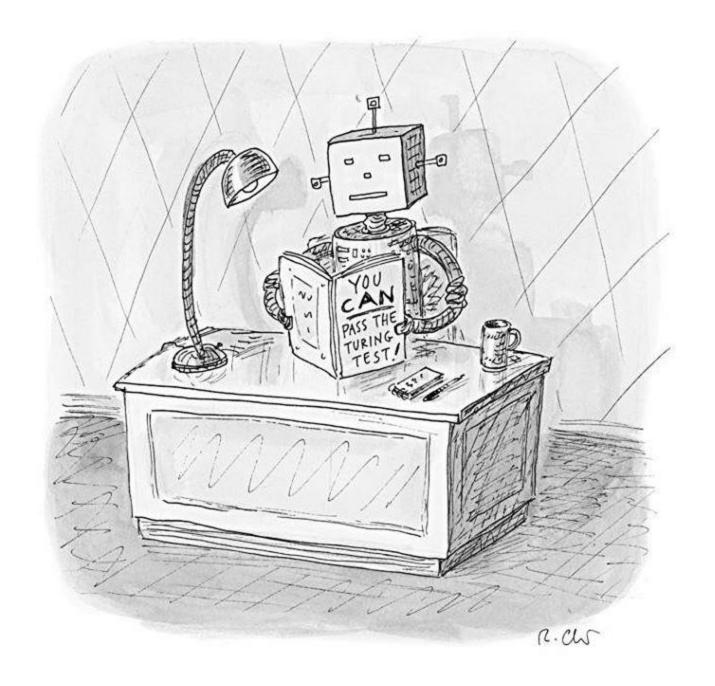
- \* To know what is secret you must know what is openly available
  - \* Information might be in unlikely places: Strava & Helmand Province, Afghanistan
- \* Consistency of observation is critical to understanding and explaining
  - \* Many more things can be observed than there are resources to do so
- \* The million channel universe: one to many and many to many communication
  - \* What do we know, what do they know? Contest for capability & the knowledge high ground
  - \* Impact on politics, diplomacy, law enforcement, the military & intelligence: lowering barriers
  - Old and new entities doing OSINT. Convergence of journalism, diplomatic reporting & OSINT



#### Conclusions

#### What's next?

- Quantum computing and AI
- \* The evolving nature of privacy: rights to and ownership of information
- \* IoT
- Data literacy





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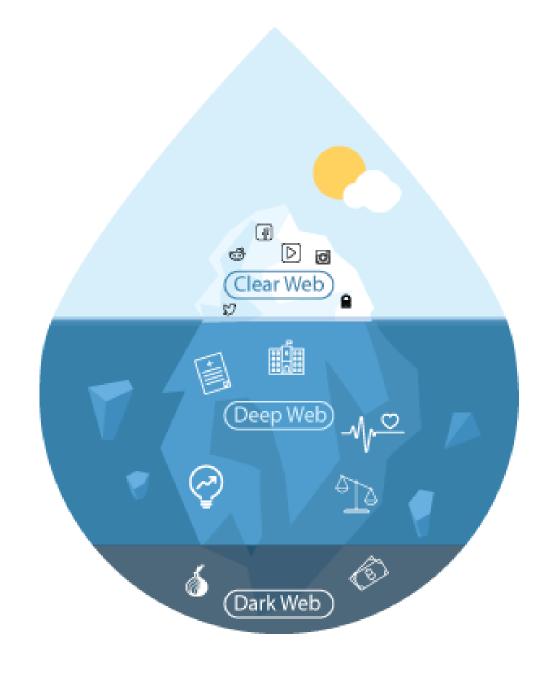
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### Search Engines and the Deep Web

- Google: 92% UK share, and 88% in USA
- Yandex: 42% share in Russia
- **Baidu:** 66% market share in China
- Each of these search engines can only access a small portion of the information available online.





#### Key principles for using search engines effectively

- Incognito mode: will prevent google from tailoring results based on previous searches.
- Don't just use Google. Use other search engines (e.g. Bing) and country specific search engines, e.g. Baidu in China, Yandex in Russia, Never in South Korea
- If you use Google, don't just use google.com / google.co.uk. Use country-specific domains a list is available here <a href="https://en.wikipedia.org/wiki/List\_of\_Google\_domains">https://en.wikipedia.org/wiki/List\_of\_Google\_domains</a>

#### Challenges of using search engines

- Different spellings of words, e.g. "ise" versus "ize" endings
- **Different names used**, e.g. Islamic State, ISIS, ISIL, IS, Islamic State of Iraq and Syria, Islamic State of Iraq and al-sham (as-sham)
- Translation and transliteration issues, e.g. when performing searches in multiple languages
- Names, e.g. individuals using different names/nicknames on different social media sites (e.g. Stephen Yaxley-Lennon-> Andrew McMaster, Paul Harris, Wayne King, Tommy Robinson)



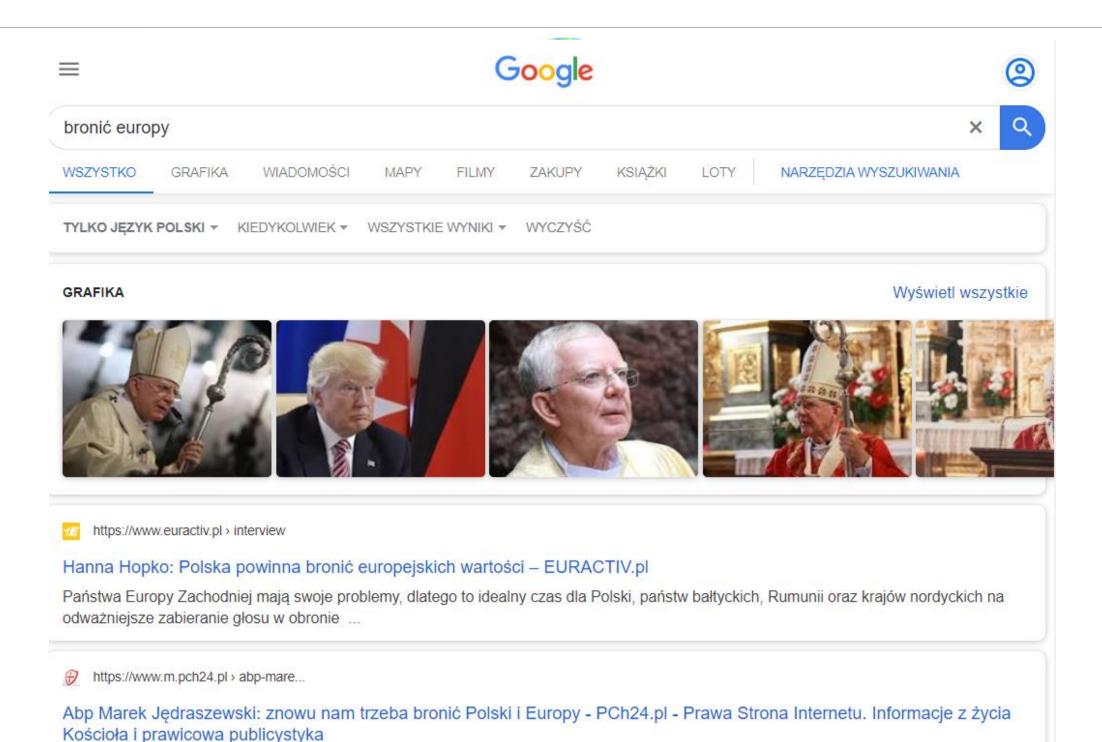
#### Search Engines

# Different spellings of names is a significant due diligence OSINT and record-keeping challenge

- Muammar Qaddafi
- Moammar Gaddafi
- Moammar Gadhafi
- Muammar el-Qaddafi
- Moammar Kadafi
- Muammar Gaddafi
- Muamar AlQadafi
- Moammar El-Gadhafi

- Muamar Khadafy
- Qadhafi
- Al Gathafi
- Al-Gaddafi
- In fact there is a website giving the top 112 spellings of the name!





17 wrz 2019 - Jesteśmy w obliczu nowych wyzwań, trudności i zagrożeń. Nie tyle politycznych, co kulturowych. Znowu nam trzeba bronić Polski i Europy - powiedział metropolita krakowski abp Marek Jędraszewski w ...



#### Basic Boolean Operators

- " " searches for specific phrase e.g. "Extinction Rebellion"
- **OR/AND** can show results for either of the phrases

  e.g. "University of Exeter" **OR** UOE | | "Extinction Rebellion" **AND** London
- NOT (also minus sign) excludes keywords from results e.g. "Extinction Rebellion" -UK
- () combine with **OR** and "" for multiple search terms

  e.g. ("University of Exeter" OR "UOE") AND ("XR" OR "Extinction Rebellion")
- \* wildcard

  e.g. heat\* would give heat, heated, heating, heater etc. (also good for dates)
- Make use of Google Guide http://www.googleguide.com/



#### ? GoogleGuide making searching even easier

(A printable PDF version is available.)

Basic Examples

This Search Finds Pages Containing... biking Italy the words biking and Italy

recycle steel OR iron information on recycling steel or recycling iron

"I have a dream" the exact phrase I have a dream

salsa -dance the word salsa but NOT the word dance

Louis "I" France information about Louis the First (I), weeding out other kings of France

castle ~glossary glossaries about castles, as well as dictonaries, lists of terms, terminology, etc. fortune-tellina all forms of the term, whether spelled as a single word, a phrase, or hyphenated

define:imbroalio definitions of the word **imbroglio** from the Web

<u>Calculator</u>

Operators Meaning Type Into Search Box (& Results)

+-\*/ basic arithmetic 12 + 34 - 56 \* 7 / 8

% of percentage of 45% of 39 ^ or \*\* raise to a power 2^5 or 2\*\*5

old units in new units convert units 300 Euros in USD, 130 lbs in kg, or 31 in hex

Restrict Search

numbers.

[#]...[#]

(or ext:)

Operators Meaning Type Into Search Box (& Results)

citv1 Book flights.

pages that point to the URL.

city2 (Book flights from San Francisco (SFO) to Boston (BOS).)

Halloween site:www.census.gov Search only one website or site: (Search for information on Halloween gathered by the US Census Bureau.)

domain.

Dave Barry pirate 2002..2006

Search within a range of

(Search for Dave Barry articles mentioning pirates written in these years.)

Find documents of the Form 1098-T IRS filetype:pdf filetype:

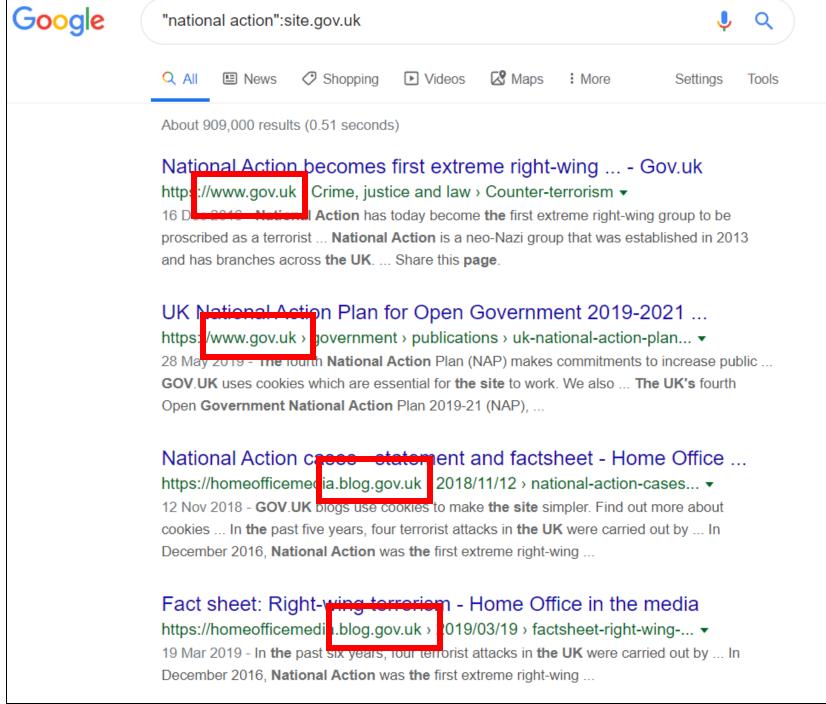
(Find the US tax form 1098-T in PDF format.) specified type.

Find linked pages, i.e., show link:warriorlibrarian.com link:

(Find pages that link to Warrior Librarian's website.)



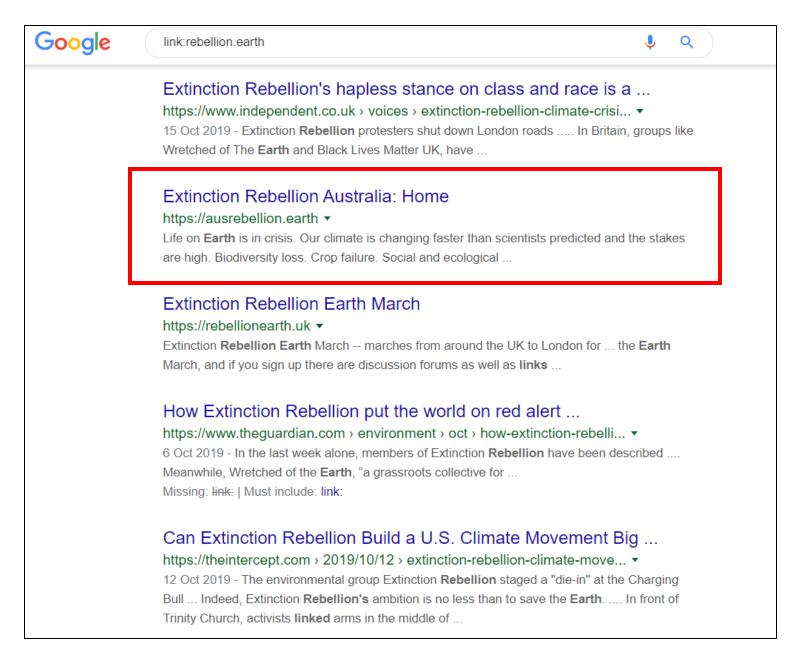
#### Site Search Example





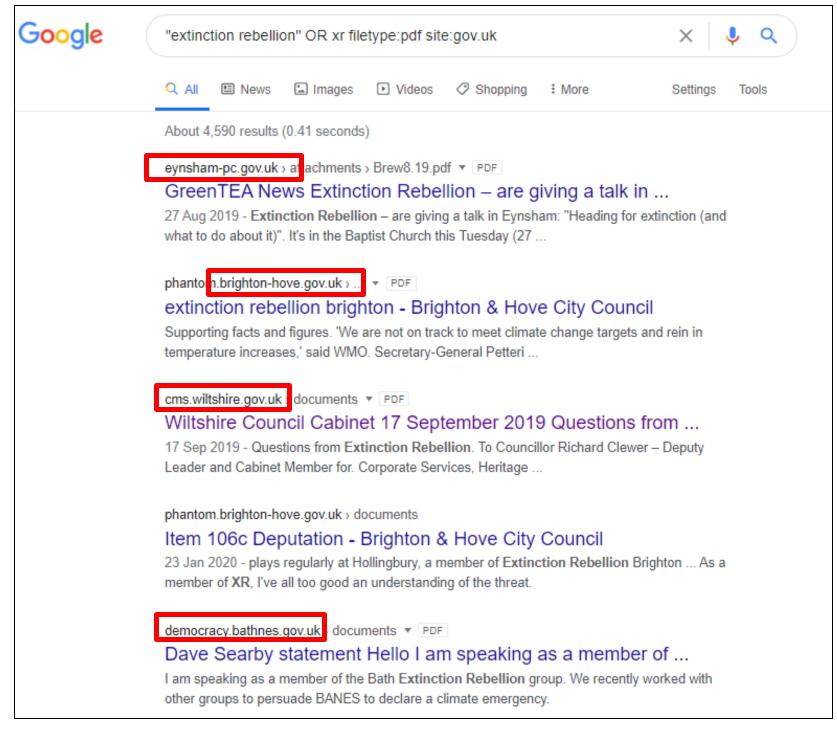
#### Link Search Example

Link searches can uncover networks of connected sites



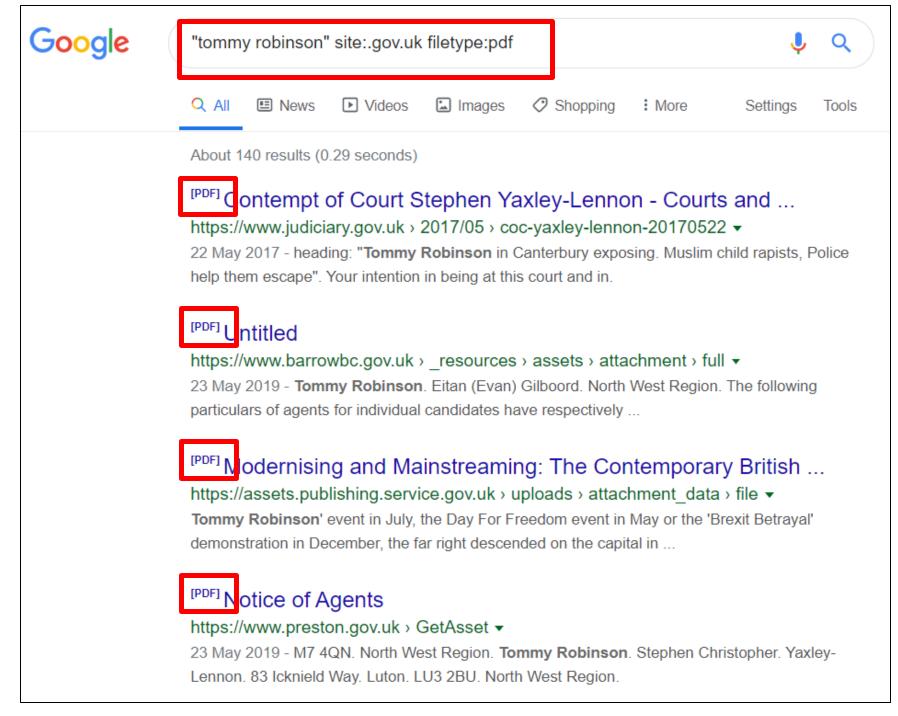


#### filetype: Search Example

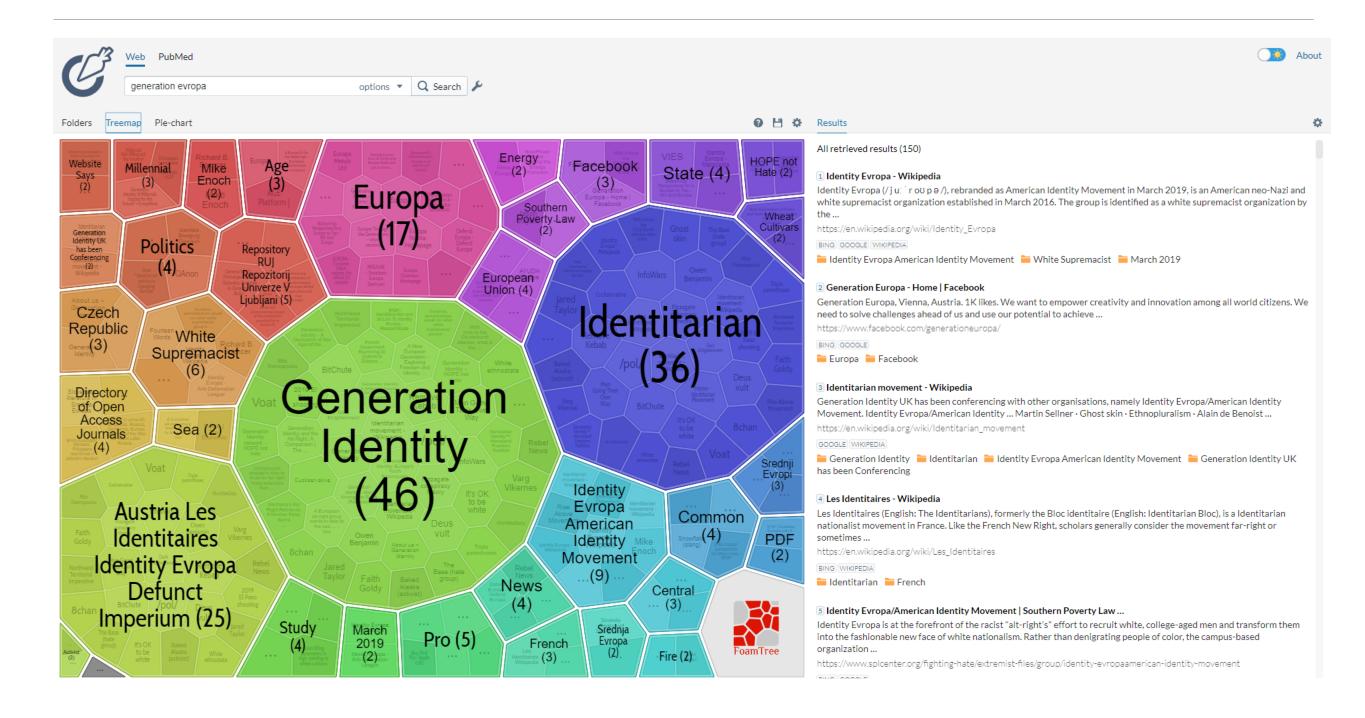




#### filetype: Search Example



# Carrot2 – Clustering search engine



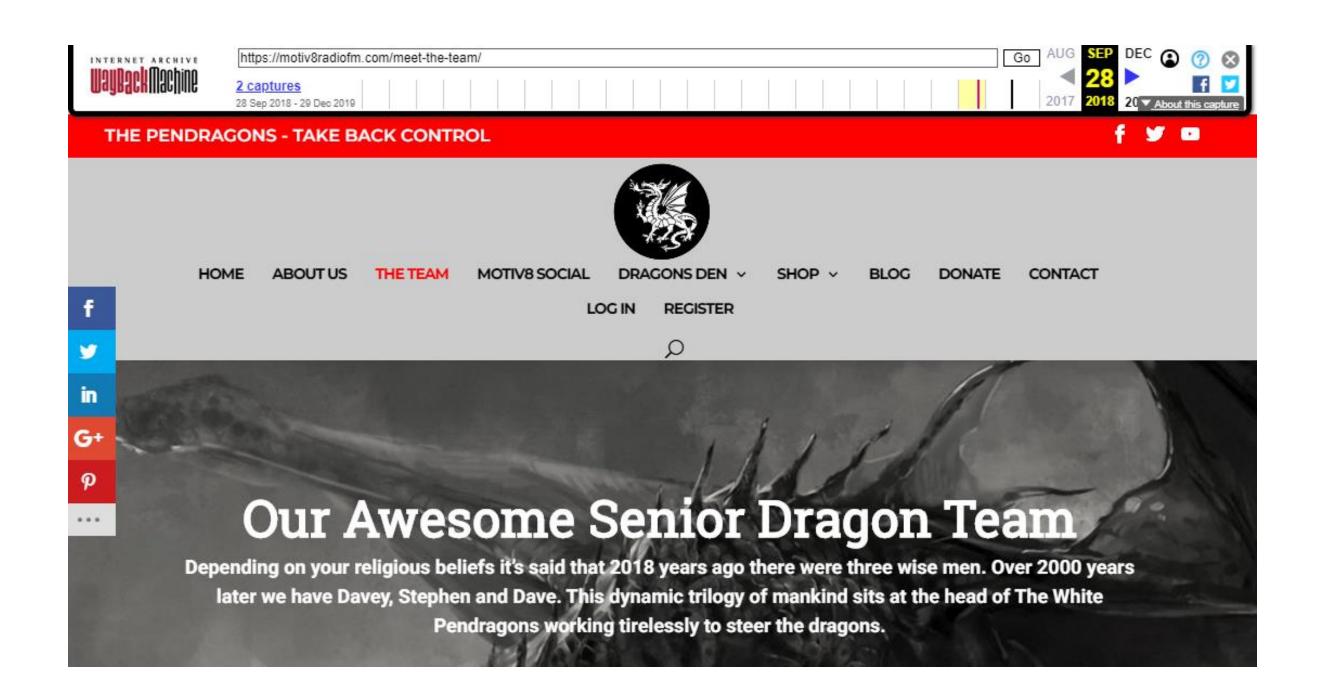


# Metasearch Engines





# When stuff goes missing...





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# Image Searching

#### Image searching has a number of applications for OSINT

- 1. Identifying Individuals: if you identify a picture of an individual online you can reverse search it to potentially find social media profiles and other information tied to their picture.
- 2. Identifying Organizations: you can reverse image search pictures of companies and buildings to potentially identify their physical locations an other useful information.
- **3. Verify Documents:** image searching can help verify documents, e.g. identity documents and other privileged information.



# Why is Image Searching Important?







# Why is Image Searching Important?



# Image searching – the big picture

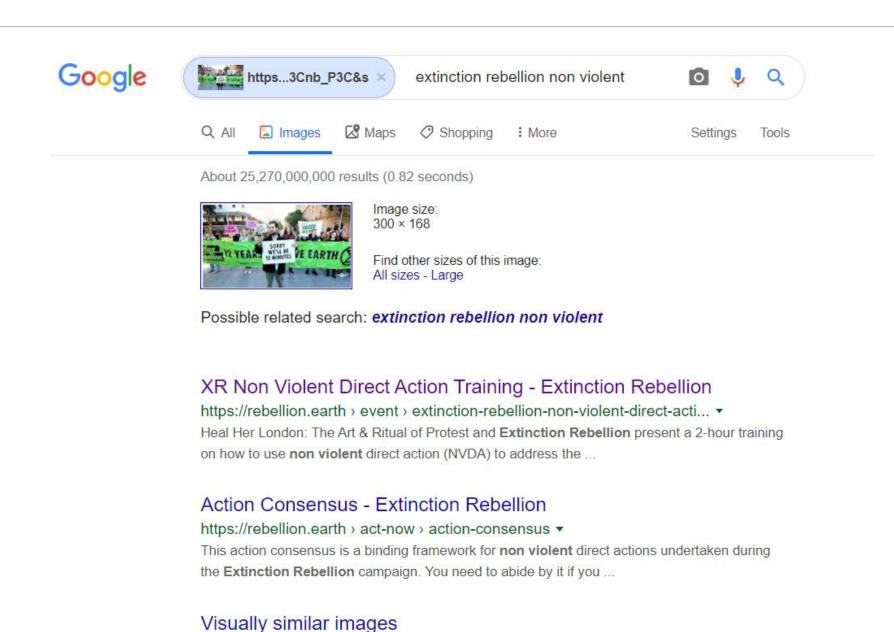
	XX.	0				9   9	STORY CO
	Elements Identified	Faces	Structures	Places	Digital/ Logos	Alternate Sizes	Flipped or Altered
Google	1	Neutral	Great	Great	Great	Good	Neutral
Yandex	2+	Great	Great	Great	Good	Good	Good
Bing	3+	Good	Good	Good	Good	Neutral	Great
TinEye	1	Neutral	Neutral	Neutral	Great	Great	Good

Source:

Verification Handbook for Disinformation and Media Manipulation, ed. Silverman, C., 2020



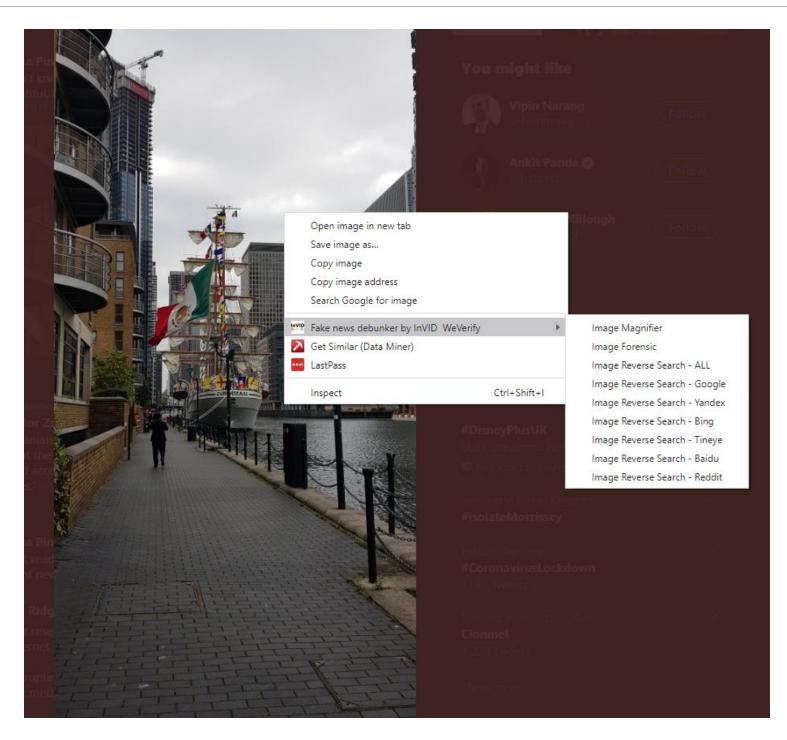
### Reverse image Searching - Google







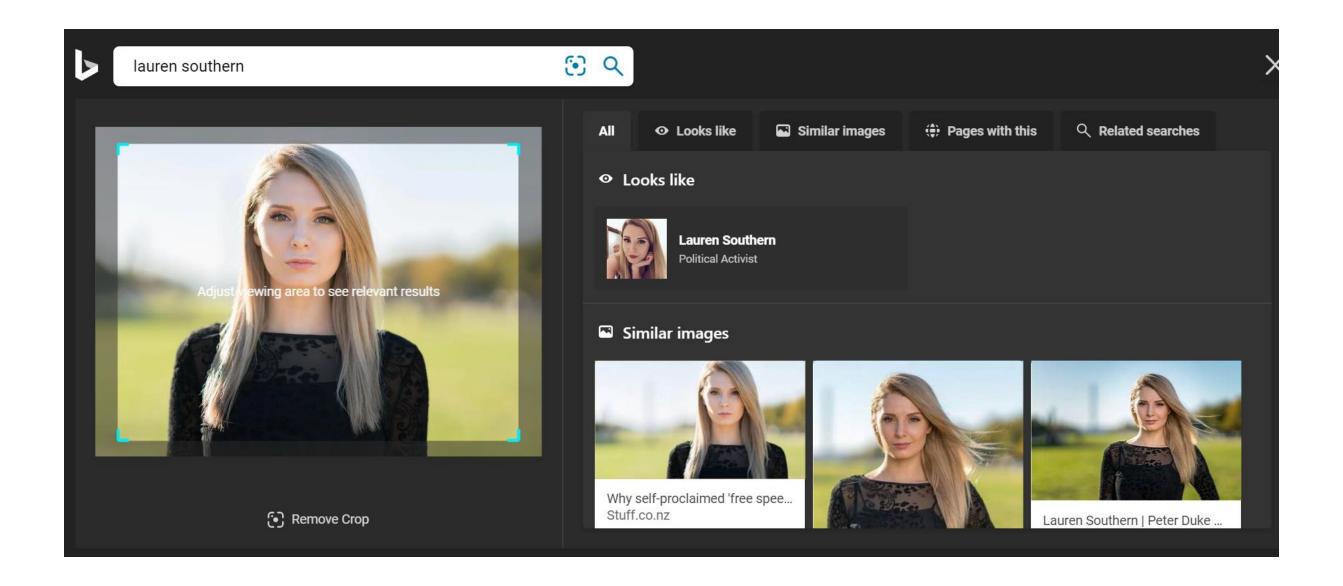
### Reverse image searching - InVid



Analysing images from <a href="tweets">tweets</a> with <a href="InVid">InVid</a>



# Big image Searching





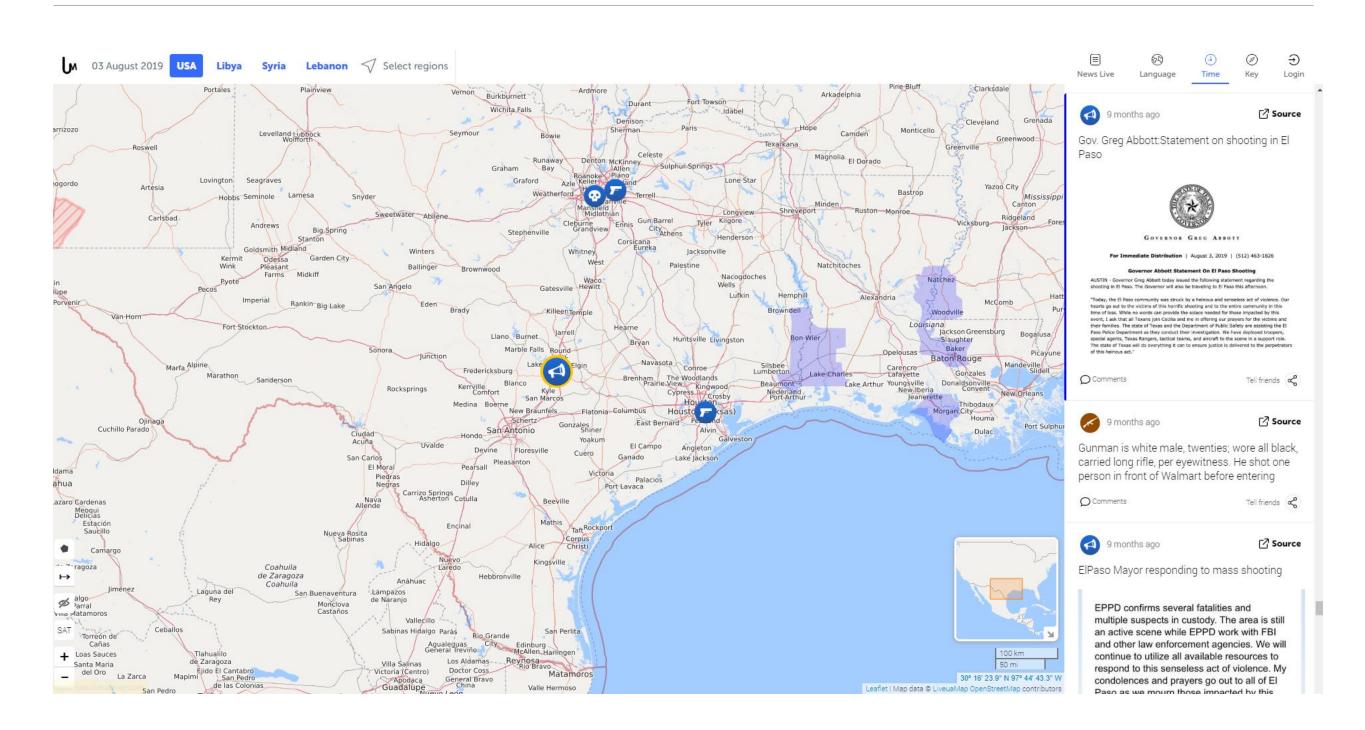
# More maps – Living Atlas

Q-Step in time





#### Liveuamap





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# What is Social Media Intelligence?

#### **Definition:**

"Social media intelligence refers to the insights generated from analysing information collected from social networks"



# Social Media Intelligence Sources

There are a whole range of social media sources, including – but not limited to:

- Social Networks (e.g. Facebook, Twitter, Instagram)
- Forums
- Message board (e.g. Reddit)
- Blogs
- Comment platforms (e.g. Disqus)
- Social wikis

- Social bookmarking sites
- Image sharing platforms
- Social curation
- Review and ratings sites
- Location networks
- Dating apps/websites
- Amazon wedding gift

lists

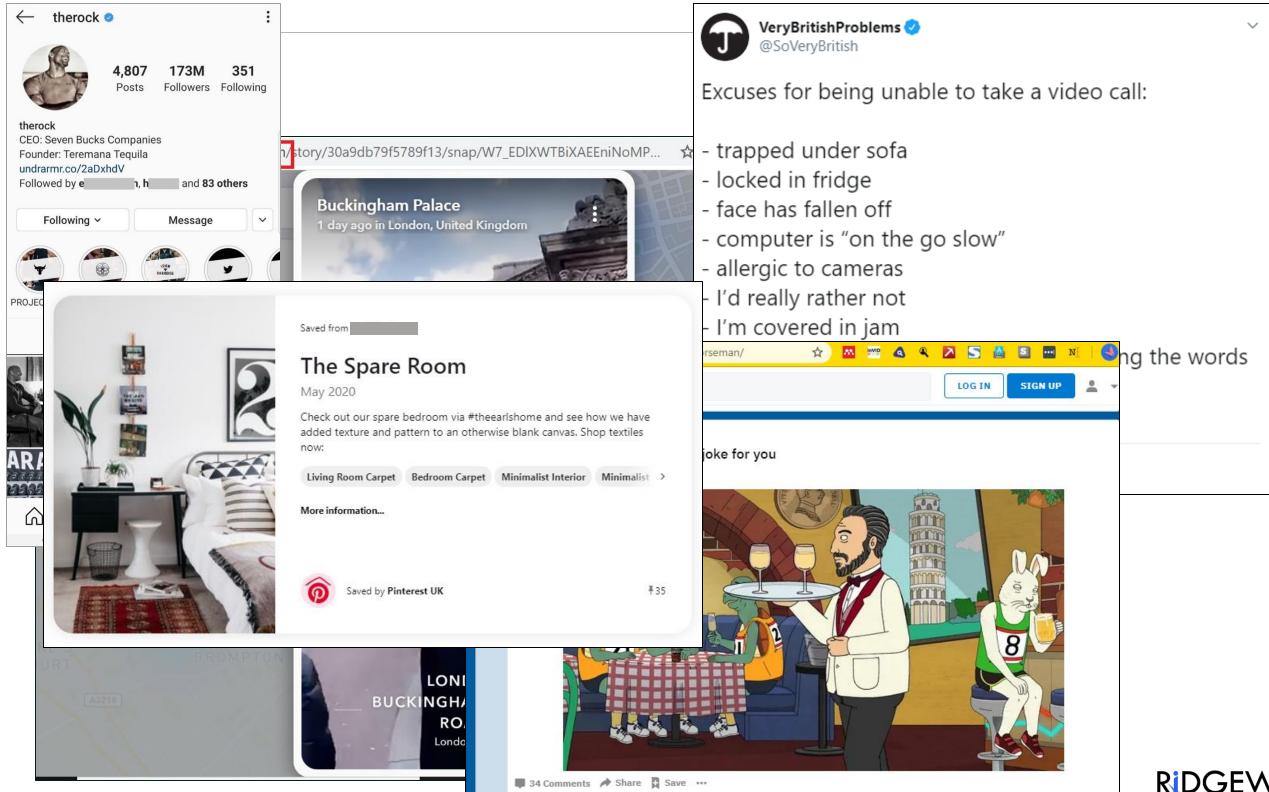


### The Social Media Landscape



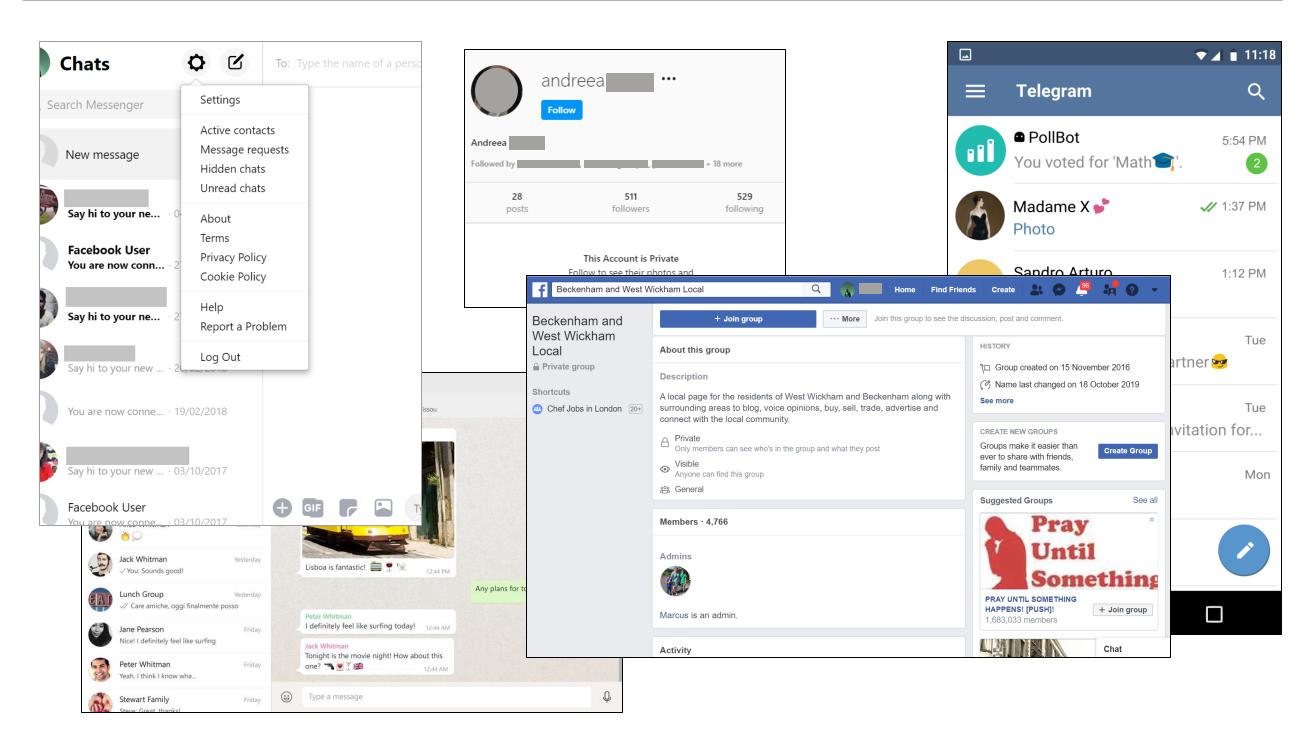


### Open and closed platforms





# Open and closed platforms

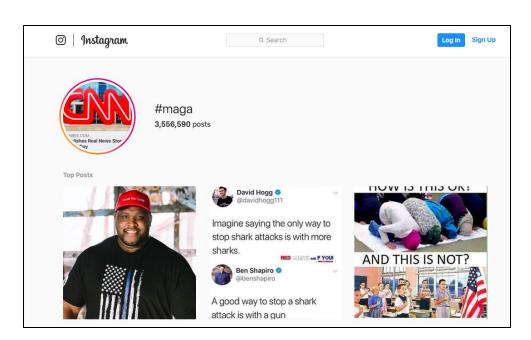




#### Open and closed platforms

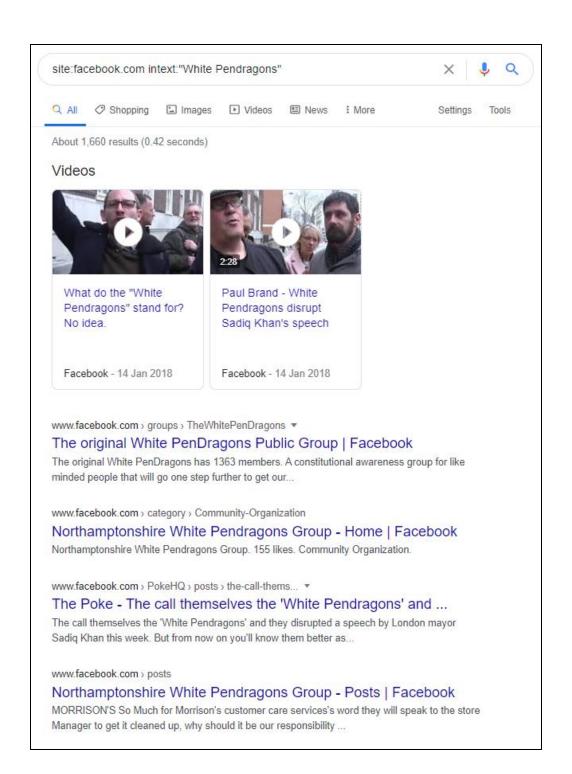
- Open platforms, in theory are much easier to search
- But risk that privacy settings change or political conditions change which limit access

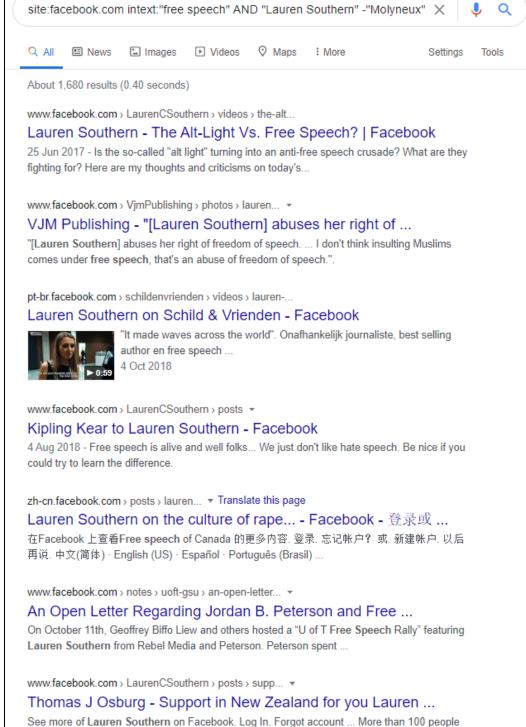






#### Searching Social Media with Search Engines

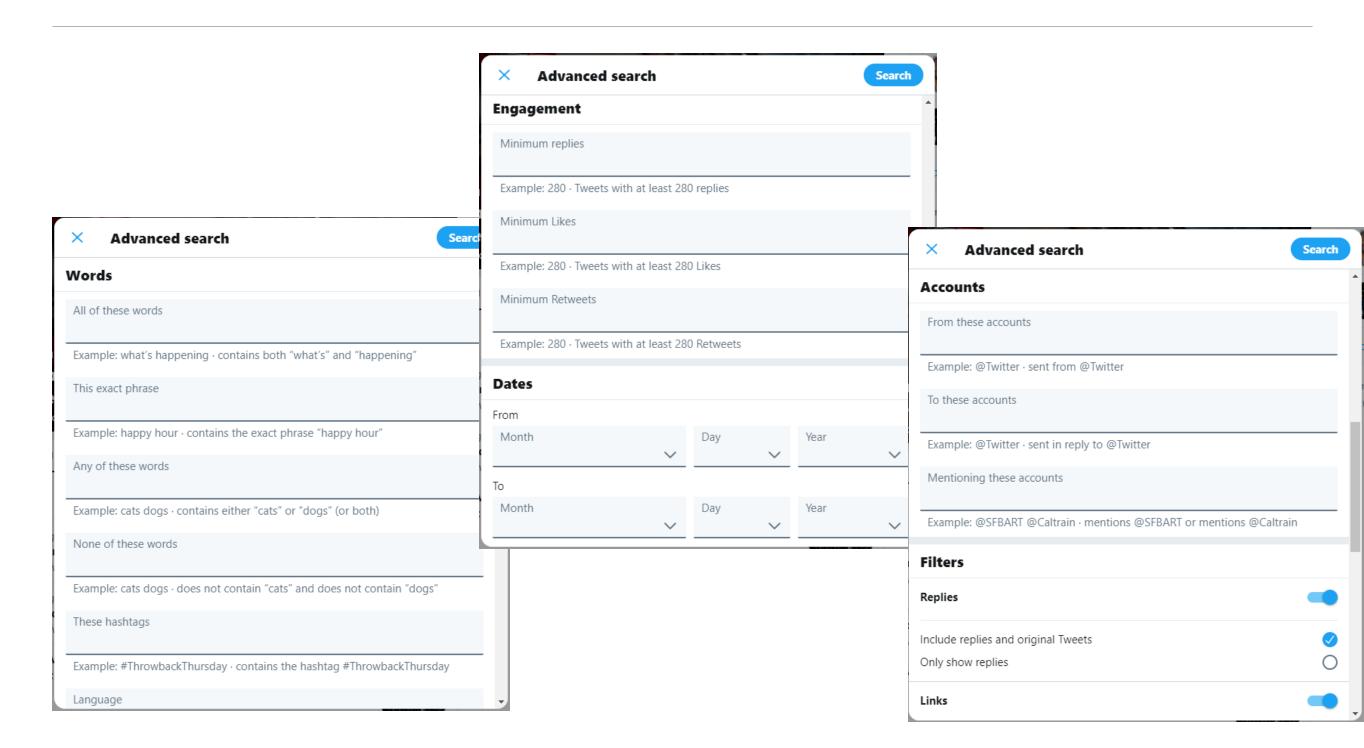




have turned out in Auckland to a free-speech rally... More than 100.

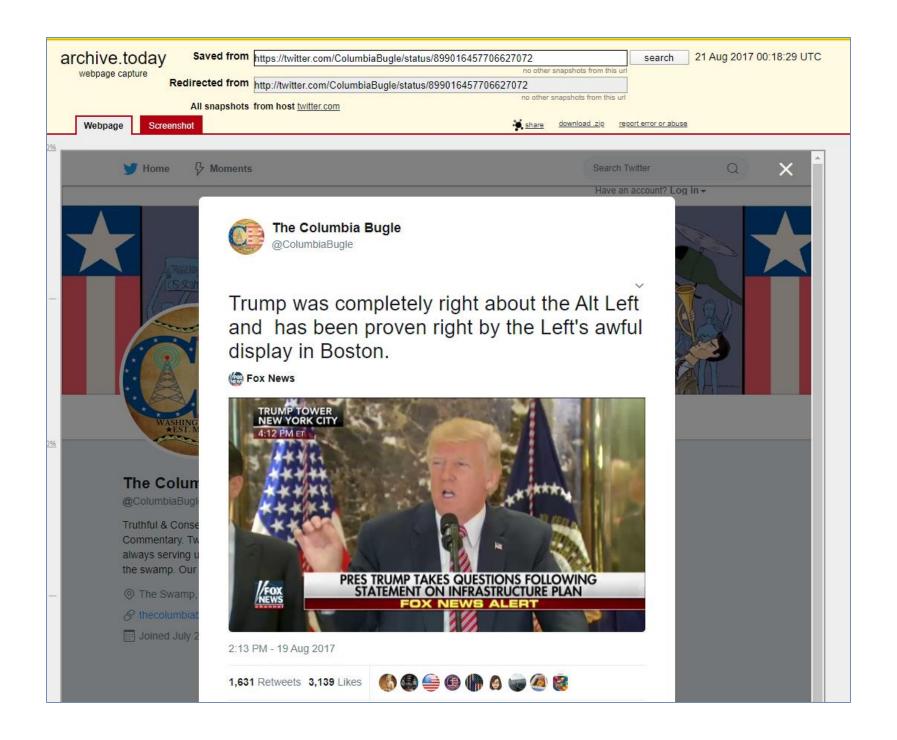


#### Twitter Advanced Search



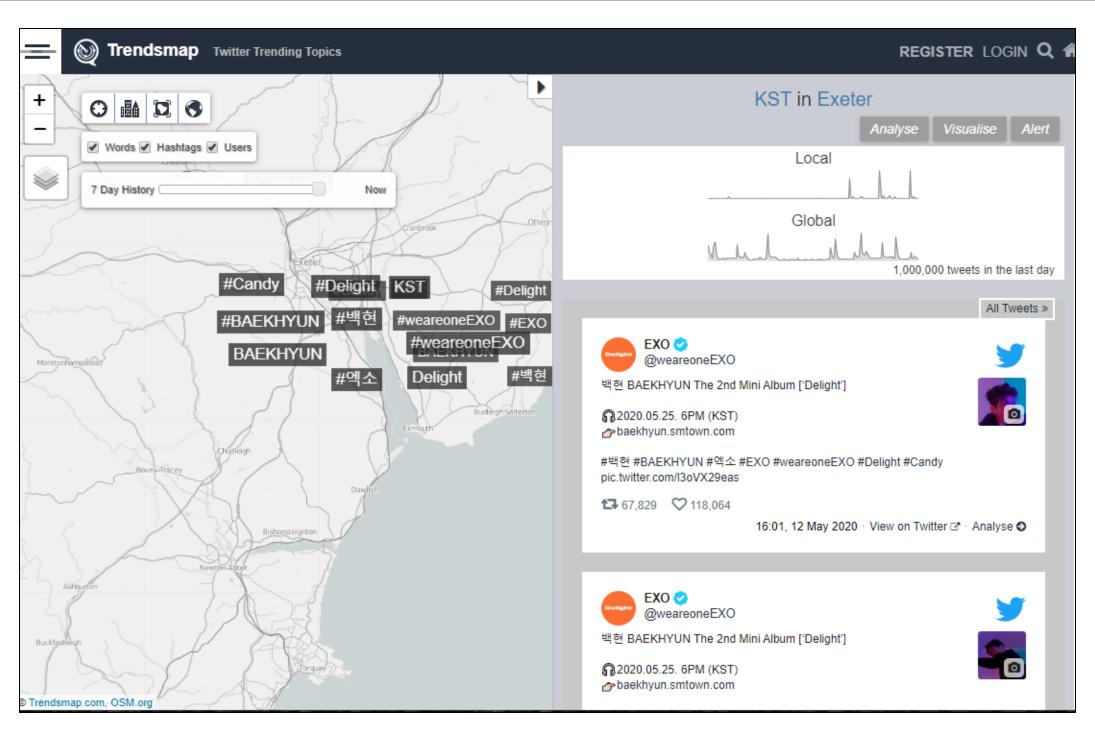


# When tweets go missing...



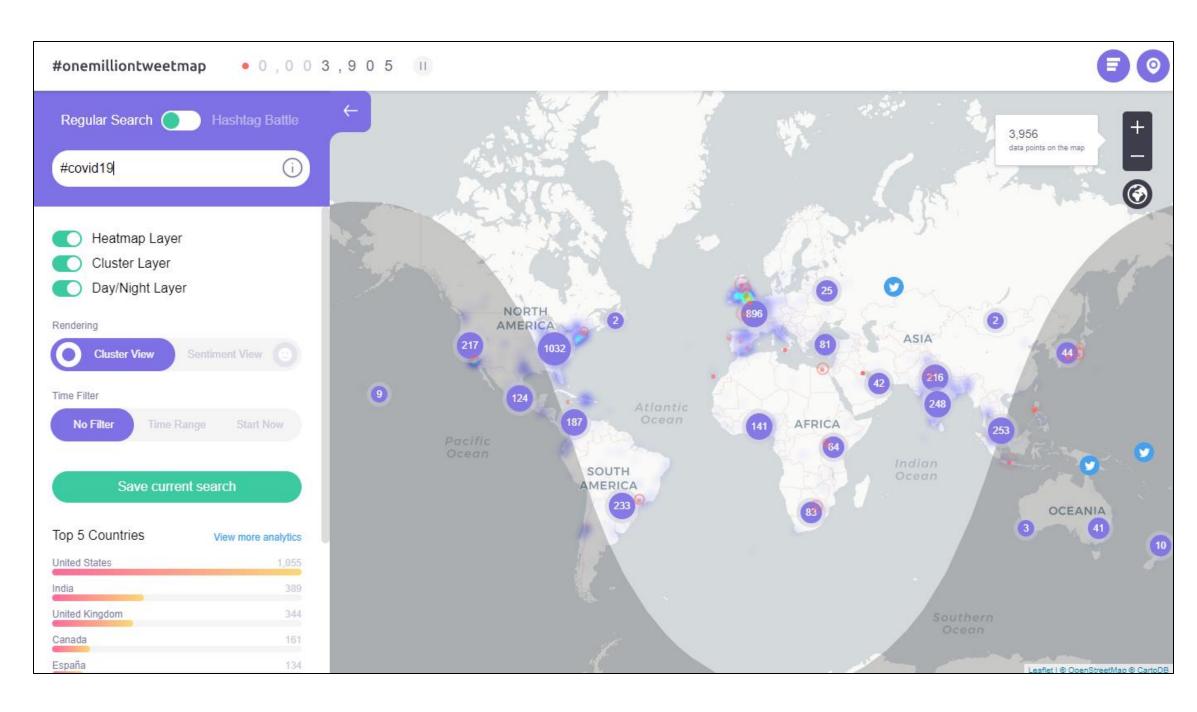


# Trendsmap





### #onemilliontweetmap





### Bots and inauthentic activity



Joined September 2019







Username followed by a 4 digit number	12 random characters in length which can consist of (a-zA-Z and 0-9)	Any first name followed by a random eight-digit number, indicating that the default username generated by Twitter has been used.
superman_1230 superman_2313 superman_9832 superman_3934 superman_4920	vP1tfI1ZoPG1 dNi29j2utANQ YQBrodhbPC84 TUq3R6GBWYyA XI87NreGshx8	Neil03121977 Sarah92839820   Claire02938593 John09340293 Stephen83749284



### Bots and inauthentic activity



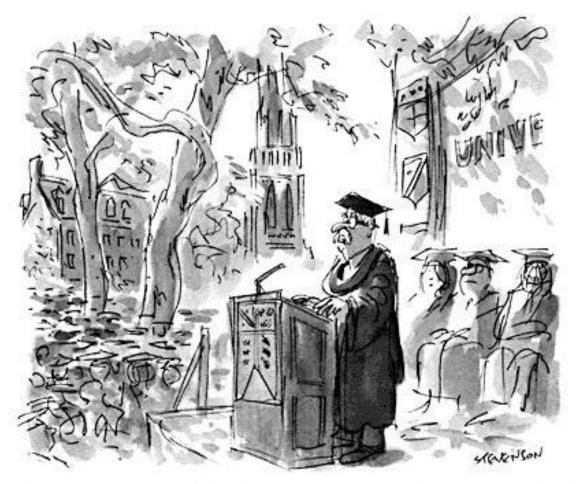


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#### Miracle tools



"I know so much that I don't know where to begin."

Source: <u>The New</u> <u>Yorker, 2012</u>





Exclusive pic of Nigel Farage arriving at his local polling station earlier today... #GE2015



11:11 PM · May 7, 2015 · TweetDeck

219 Retweets 140 Likes						
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	Replying to @JOE	1996_ · May 7, 2015 _co_uk eFootyBible HAHHAF	нанаанананана	V HAH ∴		
	Josh @JoshGraley Replying to @JOE @JOE_co_uk @Do		shlishnffc	<u>*</u>		
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	caano boys @SW Replying to @JOE @JOE_co_uk @Fo	6Chelsea · May 8, 20 _co_uk otyMemories Ahahaa		~		
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	darren mallette @dal_30 · May 9, 2015 Replying to @JOE_co_uk "@JOE_co_uk: Exclusive pic of Nigel Farage arriving at his local polling station earlier today #GE2015 * Iol    JUE					
	Q	17	O 1	1		

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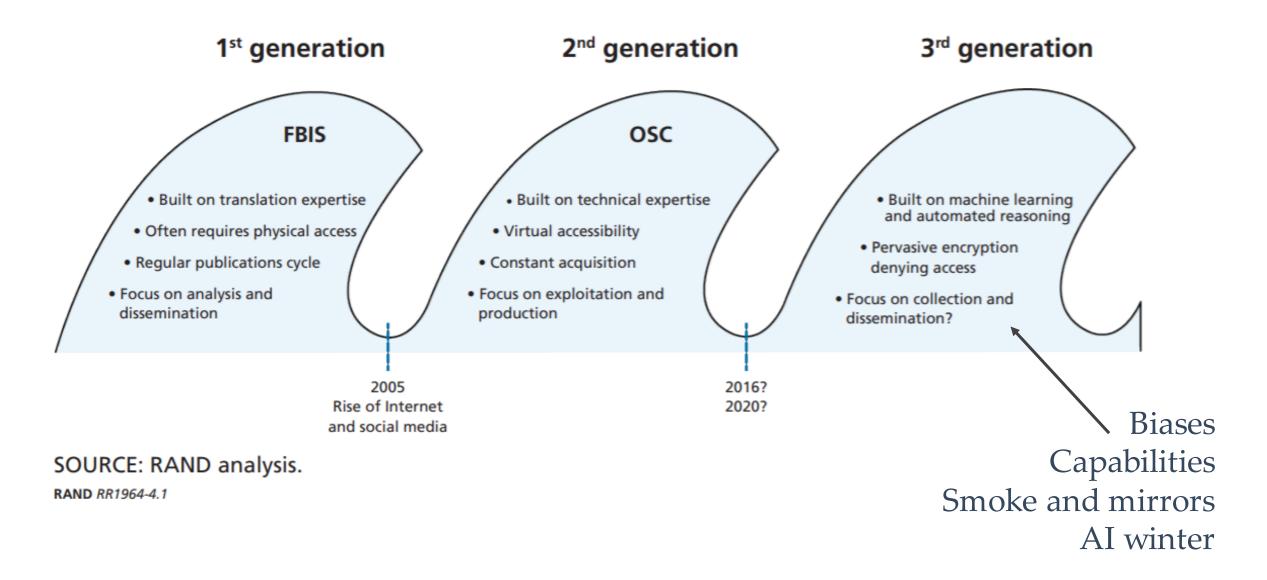


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#### The future is artificial

Figure 4.1
Characteristics of OSINT Generations





#### Keeping informed

- ❖ <u>Verification Handbook for</u> Disinformation and Media Manipulation, ed. Silverman, C., 2020
- \* Faros Foundation OSINT resources \* Twitter is your friend! dashboard
- **♦** The follower factory NYT investigation
- **Extensions:** 
  - **❖** InVid
  - FireShot
  - Project Naptha
  - \* RevEye

- Wayback Machine
- Crowd Tangle
- - **♦** @OsintCurious

  - **♦** @i\_intelligence

  - @quiztime



Just because you can conduct open source research doesn't mean you always should.

# Questions?

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