uc3m | Universidad Carlos III de Madrid

OpenCourseWare

Theory of Information and Communication

Sara Martínez Cardama

Lisandra Otero Borges

5.2. Ecosystems of Disinformation in the Digital Environment

1. Introducción

The literature has sought to define a complex informational phenomenon, marked not only by the rise of distorted narratives but also by a significant technological influence on information transmission, through terms such as "post-truth," "fake news," and "disinformation." Thanks to social media, this information is distributed with remarkable speed and virality. This phenomenon arises especially in the informational context addressed in this topic: social media platforms, where the boundaries between sender and receiver are blurred.

In this way, reflecting the prevailing climate of polarization, social media mirrors what Byung-Chul Han (2014) refers to as the *Outrage society*, emphasizing the ephemeral and viral nature of social processes at the expense of reflection or dialogue.

It is crucial for the field of Information and Documentation to understand these mechanisms. These mechanisms affect the selection of information and the critical capacity to assess it and contribute to significant informational disorders. These disorders provoke polarization, mistrust in information, and, on a larger scale, distrust in democracy.

Disinformation and the associated informational disorders represent a large-scale challenge, not only because of the quality and integrity of the information being generated but also because of how it is transmitted and the consequences of its consumption. These consequences include an increasing lack of trust in the democratic system and a crisis of public confidence, creating narratives parallel to objective facts. These narratives resonate with citizens due to their emotional and visceral nature (Del-Fresno-García, 2019)

The concept of disinformation has fluctuated in scientific literature, evolving from a simple understanding of "fake news" to the more complex notion of post-truth (Rodríguez Pérez, 2019). The latter has been defined as the replacement of facts with beliefs and emotions. In this regard, much of the scientific literature has debated whether this represents a new stage or merely incorporates the novelty of the digital realm. As Capilla (2019) reflects, we are thus facing "the same old lie?" Carrera (2018) similarly describes it as a commonplace idea that seems to suggest a departure from a previous period when truth was the norm.

It is important to note that the concept of post-truth, at least in the context of this text, refers to a specific climate or an informational stage that, while not entirely new, has been amplified by the influence of mechanisms inherent to new digital informational environments (virality, speed, algorithmic information selection, etc.).

Authors such as Wardle, Hossein, and Del Fresno-García have analyzed the use of these terms, often treated synonymously in the literature. These studies tend to view the concept of “fake news” as a reductionist construct, favouring more complex alternatives like “disinformation,” which is preferred by institutions such as the European Commission.

Several considerations arise regarding the term *post-truth*. Post-truth is defined as “circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal beliefs” (Oxford Dictionaries, 2016).

Disinformation is not understood in absolute categories. Not all misleading information stems from the same causes. Claire Wardle, a globally recognized expert in this field, has introduced the term *information disorder* as a broad category encompassing various forms of false, misleading, and manipulated content that have proliferated in recent

years. However, it is important to note that phenomena such as propaganda, conspiracy theories, and smear campaigns are not new and have historical precedents, as explored in this course (Figure 1).

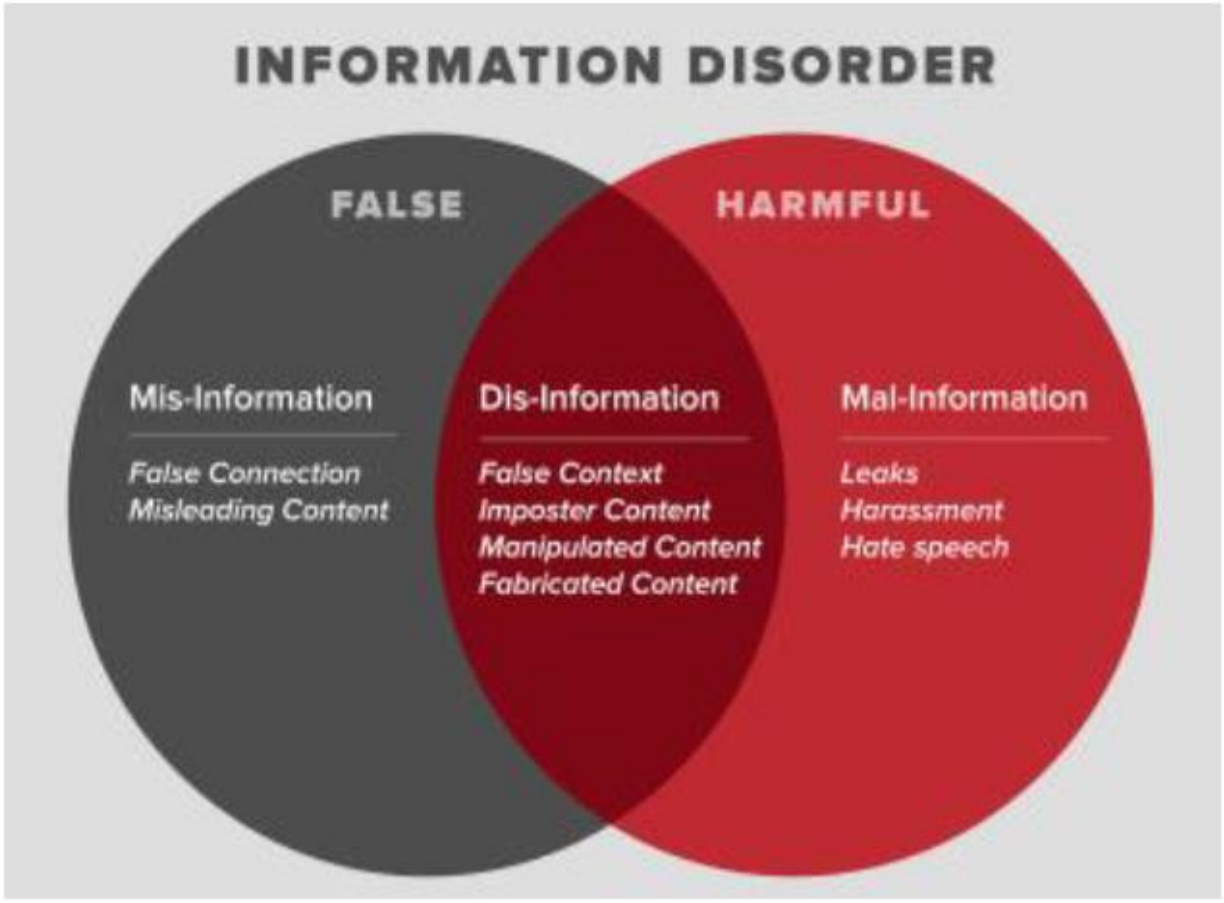

Figure 1 Information Disorder: toward an interdisciplinary framework for research and policy marking, 2017

In figure 1 we can see the explanation regarding these concepts:

- **Misinformation:** Errors made without malicious intent, such as incorrect photo captions, dates, statistics, or translations, as well as instances where satire is mistakenly interpreted as factual.
- **Disinformation:** Content that is deliberately fabricated or manipulated, including altered audio/visual material and intentionally created conspiracy theories or hoax.
- **Malinformation:** The intentional sharing of private information for personal or corporate gain rather than for public interest, such as in cases of revenge porn. It also includes altering the context, date, or time of authentic content to mislead.

Once explained, this author analyzes the 7 most common types of disinformation or misinformation found on social media (Figure 2):

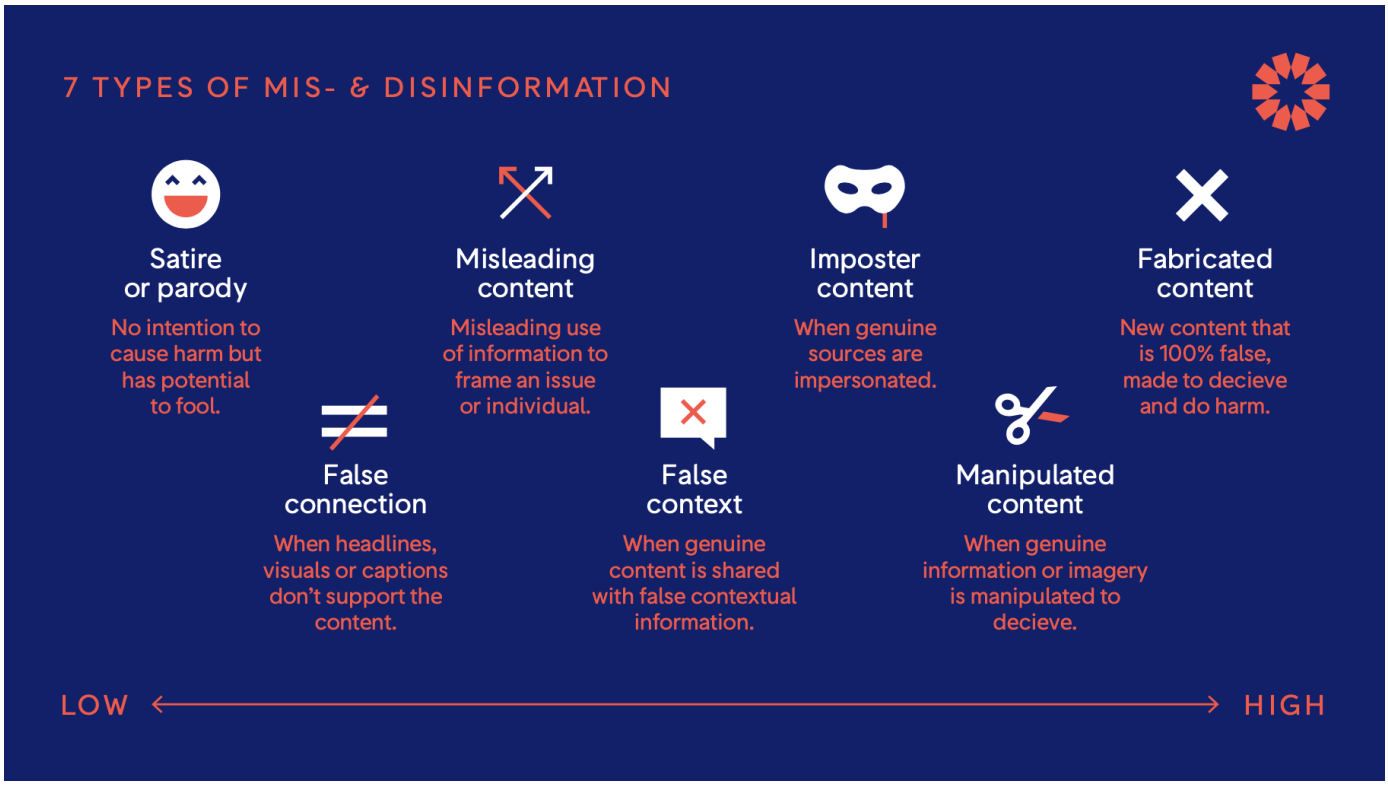

Figure 2 Seven types of mis- and disinformation. Warlde, 2017. https://firstdraftnews.org/long-form-article/understanding-information-disorder/

It can be summarized in the following table (Table 1):

Table 1 7 information disorders. By Warlde, 2017

Satire or Parody	Information created with humorous or entertainment intent, which may be misinterpreted as true.
Misleading Content	Selective or distorted use of information to create a false impression.
Imposter Content	When a trustworthy source or legitimate identity is forged to lend credibility to false information.
Fabricated Content	Completely fabricated information designed to deceive and cause harm.
False Connection	Headlines, images, or captions that do not match the actual content.
False Context	Genuine information presented in an incorrect context to distort its meaning.
Manipulated content	Alteration of images, videos, or audio to deceive or misrepresent the truth.

Despite the efforts of various authors to classify these disorders, as Corner (2017) points out, post-truth does not represent a break from the previous system but is instead distinguished by the technological and social context surrounding information.

Caridad-Sebastián, Morales-García, Martínez-Cardama, and García-López (2018) identify three leading causes for this context, integrating political, social, and technological aspects (Caridad-Sebastián et al., 2018). However, some approaches consider it insufficient to analyze this phenomenon solely from a social context and propose debates grounded in Postmodern Philosophy and its impact on the contemporary imaginary.

This text provides a concise overview of various factors that help to understand the framework of informational disorders in which we operate. It considers both exogenous and endogenous perspectives. The former refers to internal mechanisms of information search and selection.

2. Endogenous factors: the myth of human rationality

One often overlooked factor is the inherent nature of the human brain when analyzing information. These endogenous factors shape the information we consume while influencing the information we discard. Dive into concepts like heuristics and biases to understand how human informational capacity works and how decisions are made in complex situations.

In this context, it is worth recalling Herbert A. Simon (1972), the creator of the *Theory of Bounded Rationality*, declares that, due to cognitive or temporal limitations, humans do not seek maximization but rather a satisfactory solution. Within this framework, he defines *heuristics* as the rules we establish to make decisions, which can lead to biases. Simon was instrumental in conceptualizing heuristics as simplified strategies for problem-solving.

Another significant author, Daniel Kahneman, in his book *Thinking, Fast and Slow* (2011), further explores the rational decision-making model, defining two processing systems: System 1, which is fast and intuitive, and System 2, which is reflective and deliberate. Kahneman identifies heuristics in System 1 that can result in biases, such as availability or confirmation bias.

Model of Thinking and Decision-Making in Two Systems (Kahneman, 2011)

- **System 1**: Relies on heuristics and makes quick decisions without conscious awareness of the process.
- **System 2**: Employs a slow decision-making model, considering various factors and reflecting carefully.

It is, therefore, necessary to distinguish between heuristics and biases:

Heuristic

- **Definition**: A practical rule or mental shortcut that facilitates quick decision-making in uncertain situations.
- **Origin**:
    - Proposed in the 1970s by Herbert Simon.
    - Later, it was refined by Amos Tversky and Daniel Kahneman.

Two of the most common heuristics are:

- **Representativeness heuristic**: This mental shortcut involves inferring the likelihood that an input (person, event, object, etc.) belongs to a particular category by comparing it to a mental image or prototype.
- **Availability heuristic**: This heuristic estimates the probability of an event, the frequency of a category, or the association between two phenomena. It is based on the idea that "we tend to believe that what we can recall most easily is the most frequent or important."

Biases

- They often arise from using a heuristic or to gain a particular personal benefit (well-being, etc.).
- They are a systematic tendency toward error in judgment or decision-making.
- They are cognitive prejudices and predispositions that lead to almost automatic conclusions**.**

Depending on the authors and classifications, there may be almost 200 biases. These biases can be grouped into categories based on their effects and the areas where they are applied. In the Cognitive Bias Codex, they can be viewed graphically (Figure 3):

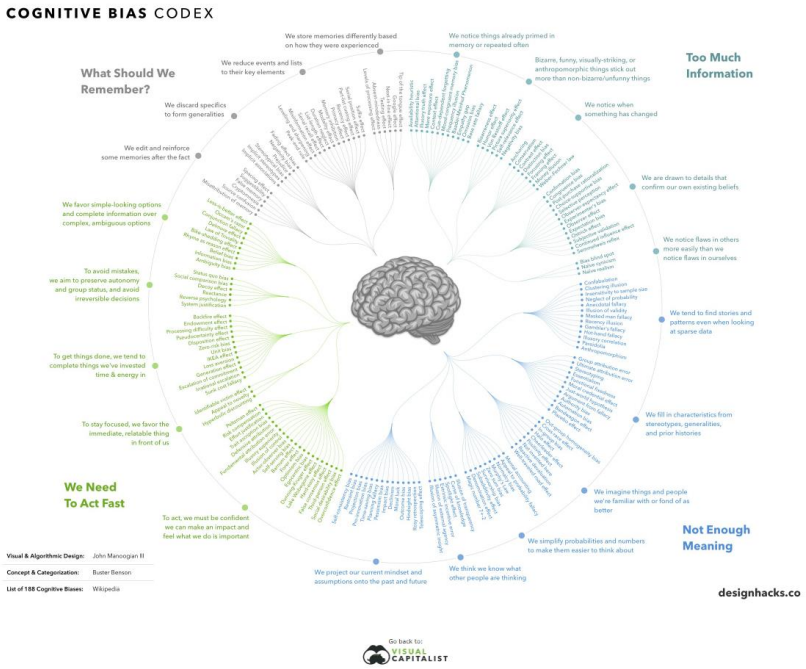

Figure 3 Cognitive bias codex https://www.visualcapitalist.com/every-single-cognitive-bias/

Another element associated with our way of thinking and analyzing information is the importance of cognitive dissonance. That is the uncomfortable feeling that arises when holding inconsistent ideas or attitudes. Proposed by Leon Festinger (1957), cognitive dissonance is considered one of the most significant findings in Social Psychology.

When confronted with information that contradicts our beliefs, we experience cognitive dissonance. Instead of changing our beliefs, we tend to reject the new information and rationalize our prior beliefs. This phenomenon fuels resistance to correcting errors stemming from disinformation.

The list of cognitive biases is not fixed, and research in Psychology and Cognitive Sciences continues to expand the types of biases as issues related to information processing and management grow. Many of these biases are based on the human tendency to make quick and convenient selections that best fit our pre-existing beliefs (known as confirmation bias) (Figure 4).

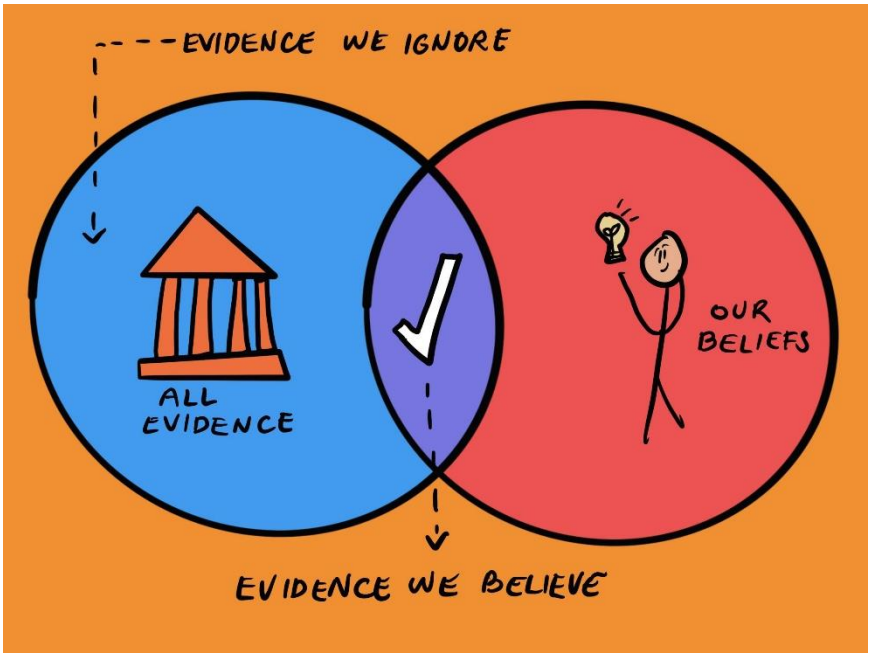

Figure 4 Confirmation bias. https://thedecisionlab.com/biases/confirmation-bias

Another internal issue affecting the informational context is the willingness to be influenced by the emotional component of current information, which shapes our perception of the world. The intersection between emotion and information fosters the proliferation of fake and viral news (Bowman & Cohen, 2020)

3. The external context of disinformation

The complexity faced by a social construct like *post-truth* lies in the peculiarities of the technological and social context in which current information is framed. Caridad Sebastián et al. (2018) have summarized this context into three fundamental causes:

1. **New behavior habits, access, and use of information**. The viral and rapid nature of information consumption, coupled with its strong emotional component in informational behavior, influences the reinforcement of pre-existing beliefs that already condition access to information (Hornsey, 2020). It is at this point where mechanisms of bounded rationality emerge and gain relevance when faced with complex problems. Theories like Festinger's *Cognitive Dissonance* (1957), based on an intellectual discomfort that seeks to be reduced and avoided, apply online, where users tend to choose content that confirms their beliefs, especially on new digital platforms.

2. **The technological context**. A deterministic view that solely blames bubble filters, echo chambers, and personalized search results for this situation cannot be offered, although they certainly act as clear conditioning factors.

3. **The social and political context, marked by political polarization**. This issue is not new, as it has dominated academic and social debates for decades. Focusing on American society, Bishop (2008) goes beyond political polarization, applying the *psychology of the tribe*, which suggests that homogeneous groups often adopt more extreme positions. Beyond adopting one stance or another and being partisan, there is a tendency to ignore evidence when analyzing facts. This *tribe's psychology* is amplified in the digital domain because of information selection and transparency limitations.

The relationship between polarization and disinformation is notable, though not directly causal. As we mentioned, political polarization has been fueled by disinformation, which is used to divide and manipulate public opinion. Disinformation can reinforce prejudices and tribalism, intensifying polarization (Magallón Rosa, 2022). According to this author, other influential factors include informational fatigue—a phenomenon resulting from information

overload, which leads to disengagement and disinterest in public matters, affecting civic participation and the perception of politics.

4. Information Policies Against Disinformation

What are the governmental measures taken to tackle disinformation? This complex problem cannot be addressed solely with political measures; it must involve all political and social agents. However, over the years, different governments have tried to legislate and implement measures to minimize its effects. Is there a way to reduce the effects of disinformation and propaganda while still preserving the openness of public discourse?

From the political sphere, the focus is directly on the social information environment that social media represents. As the European Parliament pointed out about these platforms: they provide politicians with direct access to audiences without their messages being challenged by professional journalists. The characteristics of populist communication strategies (e.g., their focus on people, anti-elitism, promotion of direct democracy) align perfectly with the characteristics of social media.

In recent years, there has been an increase in manipulation and propaganda strategies directed by third countries, such as Russia, towards democratic governments. The primary purpose of these tactics is to generate social polarization, foster political destabilization, and erode trust in democratic institutions.

These strategies pose a particular threat to European integration and identity, as they seek to weaken cohesion among member states. Furthermore, they represent a significant risk to key political processes, such as national elections or referendums. Brexit is a prominent example of how disinformation can influence large-scale political decisions.

Despite efforts to combat disinformation, regulation in this area presents serious challenges:

- **Difficulty in regulation**: Creating a legal framework that limits disinformation without compromising freedom of speech is complex.
- **Between passivity and ineffectiveness**: The measures adopted so far have ranged from insufficient responses, allowing the problem to spread, to ineffective actions that fail to address the root of the phenomenon.

It is crucial to find a balance between protecting democratic values and ensuring that the policies implemented effectively address disinformation at all levels.

Some of the measures taken by international bodies with competencies in this area include:

• United Nations (UN) and the Organization for Security and Cooperation in Europe (OSCE):

In 2017, they issued a Joint Declaration on Freedom of Expression, Fake News, Disinformation, and Propaganda, recognizing the dangers of disinformation and advocating for a balanced approach that respects fundamental rights. In this regard, the United Nations also issued a General Assembly Resolution, specifically Resolution A/RES/76/227, which was approved on December 24, 2021. This resolution focuses on promoting and protecting human rights in the context of disinformation.

The key elements of the resolution are promoting human rights (freedom of expression), media literacy, platform accountability and business model reviews, collaboration between various social and political agents, and protection for vulnerable groups.

• European Commission:

The European Commission has shown a constant interest in combating disinformation to protect the cohesion of the European project against the risks derived from information manipulation. Several initiatives have been launched in recent years. According to a Eurobarometer from February 2018, most Europeans considered fake news a serious problem, which has driven key initiatives to address this concern. Among the key actions are:

- **Report of Experts on Fake News and Online Disinformation (2018):** The Commission created a high-level independent group composed of 40 representatives from various sectors: social networks, tech companies, fact-checkers, media, academics, and civil society.

The report generated the following proposals:

  - More transparency of news and its circulation online (creation of credibility algorithms)
  - Promoting media and digital literacy
  - Empowering users and journalists to combat disinformation (collaboration with independent fact-checkers)
  - Sustainability of the media ecosystem (removal of ads from disinformation-spreading websites)
  - Ongoing evaluation and monitoring of the proposed solutions to verify their effectiveness.

In 2018, the Code of Practice on Disinformation was enacted, marking the first time the industry voluntarily agreed to self-regulation rules to combat disinformation. The signatories acknowledge their responsibility to address these issues, distinguishing disinformation from other forms of misleading content, such as satire or advertising errors. Additionally, they commit to supporting independent research on disinformation, sharing privacy-protected data, and promoting transparency on their platforms (European Commission, 2018).

Later, in 2022, the Strengthened Code of Practice on Disinformation was approved under the Digital Services Act (DSA), establishing new rules for large online platforms. This code involves key platforms in the digital ecosystem. It aims to tackle the growing challenges of online disinformation through more substantial commitments and specific measures, such as demonetizing disinformation and establishing a robust framework for monitoring and reporting, with qualitative and quantitative data at the EU and member state levels.

Regarding legislation, Magallón Rosa (2018) points out that regulating disinformation in the European Union is a complex issue. While there is consensus on the need to address the problem, there is still debate on how to do so. Legislation may be necessary to adapt to new scenarios and challenges, but there are also warnings about the risks of poorly crafted laws that could restrict freedoms under the guise of national security.

A notable example is Germany, which implemented the Network Enforcement Act (NetzDG), requiring platforms with more than two million users to remove illegal content within 24 hours. This law has been cited as a model by other countries seeking to regulate online content.

In 2018, a draft law was presented in France to combat disinformation during electoral processes. This text included measures to increase platform transparency and combat the spread of false information.

The European Union's regulatory framework has recently developed under the Digital Services Act (DSA), which establishes a regulatory framework for digital platforms and online services. The DSA imposes specific obligations on "Very Large Online Platforms" (VLOPs), platforms with more than 45 million users in the EU. These platforms must implement measures to manage content, prevent disinformation, and ensure transparency in their operations.

As Corredoira Alfonso (2024) notes, there are concerns about the effectiveness of compliance measures and the authorities' ability to address disinformation and illegal content effectively. The DSA is an ambitious framework, but its success will depend on practical implementation and the platforms' responses.

5. Fact-checking and the challenge of Information Literacy

As we can see, addressing the complexity of informational post-truth requires a multifaceted approach. For its part, journalism has harnessed automation to develop tools (fact-checkers) designed to identify and correct false content. However, despite their widespread use and growth, it is important to note that there has yet to be a comprehensive analysis of these tools' actual impact on changing individuals' beliefs (Walter et al., 2020). This is because it is often assumed that the effect of these tools depends solely on access to or lack of access to information, which, as previously discussed, is different. The phenomena influencing disinformation also involve highly subjective and emotional factors. While access to accurate information contributes to forming more neutral perspectives, it is not the only factor at play.

Fact-checking is a great tool to stop disinformation. However, it is a more complex phenomenon that pivots on other elements, with the citizens' decision-making process regarding information being essential. The automation of fact-checking has favored the development of fact-checking platforms linked to journalistic companies, traditional newspapers, or civic platforms to accelerate the verification process and increase society's trust in traditional media. Examples include Snopes, Politifact, Washington Post Fact-checker, Maldita… Some focus on specific areas, such as health or science, like the Maldita Ciencia or #Saludsinbulos projects, endorsed by the Association of Researchers in eHealth (AIES). Other platforms are developed independently, such as Hoaxy, a tool that helps visualize the tracking of fake news and debunked stories through its network visualization (Martínez Cardama, 2019) (Figures 5 and 6).

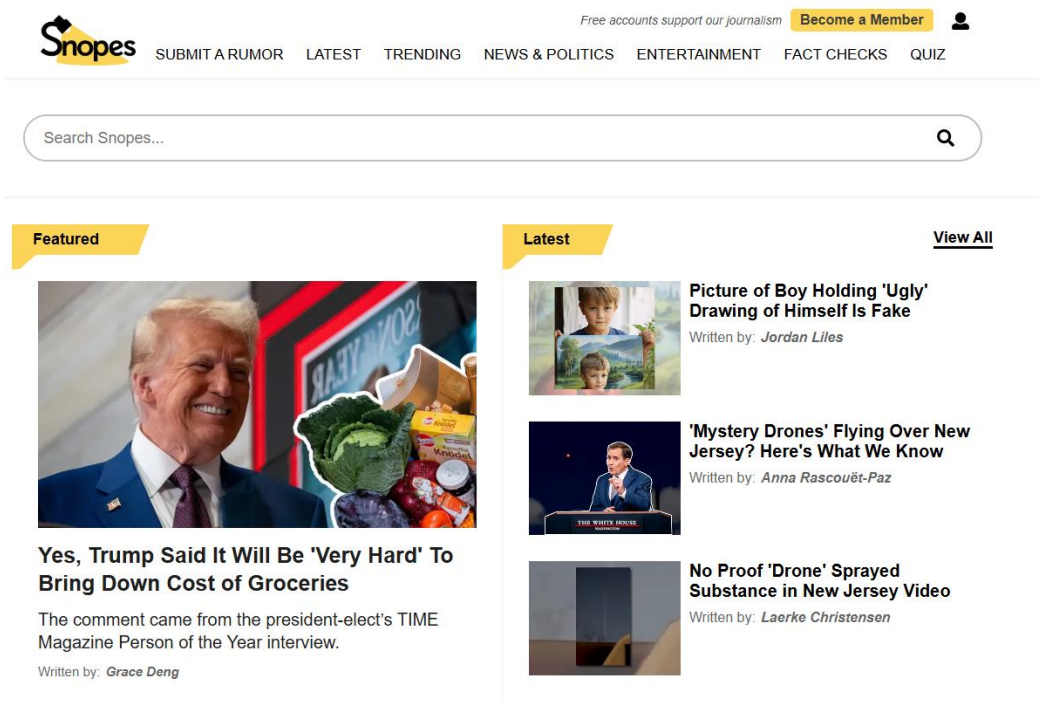

Figure 5 Snopes https://www.snopes.com/

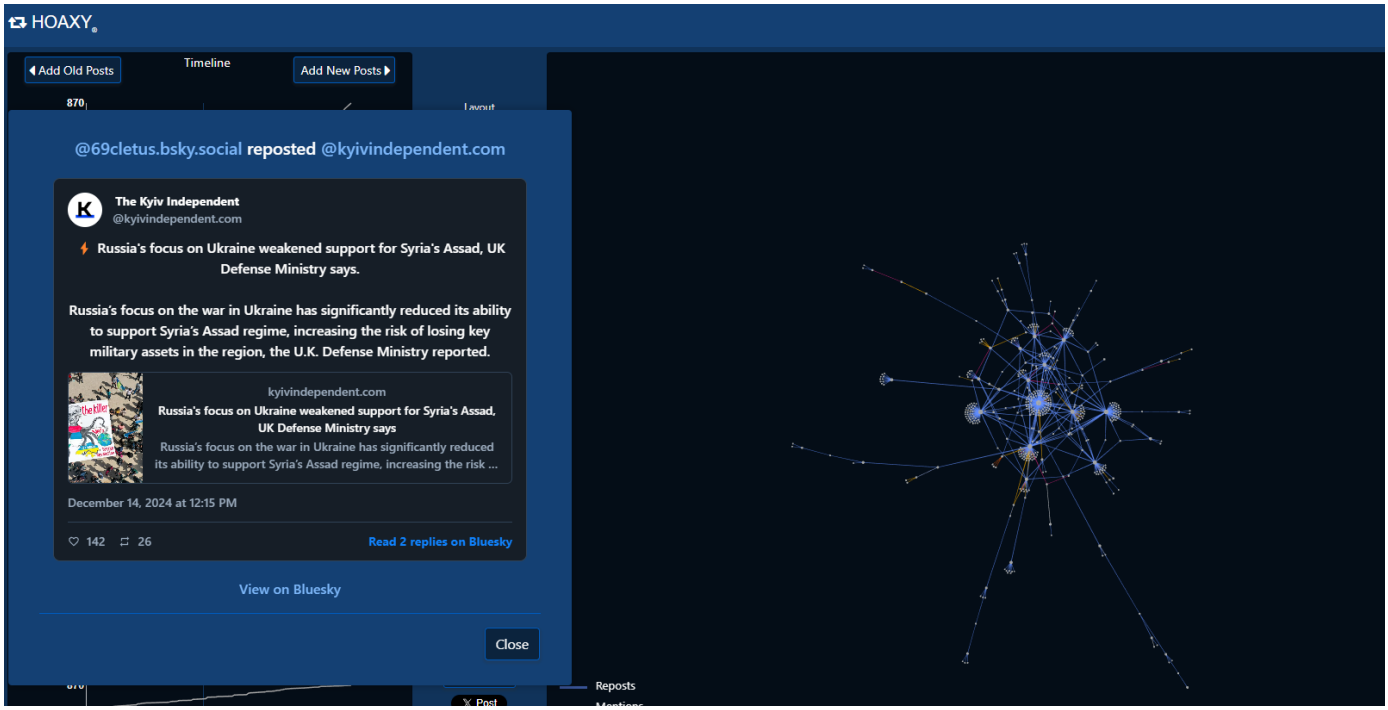

Figure 6 Hoaxy https://hoaxy.osome.iu.edu/

The emotional component that dominates information makes it difficult not only for informational or media literacy efforts but also for fact-checking itself. Once a lie sinks into the public consciousness, it has been proven that, even if debunked, it is tough to undo its impact: to confuse and polarize the individual.

The phenomenon of post-truth has led to media or journalistic literacy, which until recently had little relevance (Pérez-Tornero et al., 2018), emerging as one of the essential ways to address its effects. However, this media literacy must be understood as part of a broader informational literacy, approached from a more civic perspective (Caridad-Sebastián et al., 2018), and not limited to simply teaching about fact-checking platforms, for example. In this sense, Pérez-Tornero, Tayie, and Tejedor (2018) recognize two approaches: one, a media literacy model based on basic skills—teaching verification and techniques to detect fake news—and another, a more profound approach whose ultimate goal is to build democratic societies and foster the development of critical citizens.

Therefore, media literacy is not the end goal but rather a means to acquire a more complex informational competence suited to any form of information in the digital environment (Martínez Cardama, 2019)

6. Libraries and disinformation

Libraries have traditionally been the informational intermediaries of society, and the work of their professionals is more necessary than ever in this context, with three key action points (Caridad-Sebastián et al., 2018):

1. The repositioning and definition of new media literacy in the educational context
2. The promotion of critical thinking
3. The development of their advocacy role in the social debate

Regarding the first point, libraries have extensive experience training informational competencies through information literacy (IL), instructing users on applying evaluation criteria for sources. Today, this informational literacy should only be understood from the media perspective and the concept of multiliteracies, as social media platforms have become another mechanism for accessing information. One of the most repeated trends in the literature on fake news and libraries is the reflection on the criteria applied when evaluating sources, often in the form of checklists. While these lists have shown their validity in traditional documentary sources, they must fit the

viral information environments. These lists consist of indicators for evaluating the quality of information and have long been applied in traditional information literacy and website evaluation. Despite their usefulness, many authors acknowledge that their dynamics could work better in these viral environments. This is the case with tools like the CRAAP test, which evaluates information based on Currency, Relevance, Authority, Accuracy, and Purpose. These criteria are too broad to be applied in viral settings, as Farkas (2018) notes. She argues that it is difficult for a user to apply all these criteria when consulting information rapidly circulating and being shared. This leads to the need for faster evaluation mechanisms linked to fact-checking in viral environments associated with social media. Given this necessity, initiatives like Caufield's and his online book *Web Literacy for Student Fact Checkers* (2017) come in, incorporating evaluation mechanisms more closely related to fact-checking.

In particular, Caufield outlines four steps that the information verification process should follow (Caufield, 2017):

1. Check prior work: Specifically, whether someone has already verified the information or provided a previous synthesis of research on its validity.
2. "Swim upstream to the source": Caufield recommends going to the original source of the information to understand its truthfulness, as most sources do not constitute primary information.
3. Lateral reading: Caufield suggests that the truth about a source can often be found within the media itself, meaning that one must read what others are saying about it.
4. Return: To avoid getting lost in the information, it is recommended to return to the beginning, start the search again with different terms, and make other decisions.

These four basic steps are similar to those for applying other criteria related to traditional information evaluation in digital media. What differs is the application of technological tools to assist with the verification process. These technological tools provide strong support for fact-checking tasks.

An important contribution library can make to raise awareness about disinformation is the creation of reference materials, such as thematic guides based on resource selection. Content curation becomes crucial in these environments as a new infomediary skill. University libraries have begun developing these thematic guides, providing information about post-truth and its mechanisms, tools, and verification platforms and promoting their own databases or collections. These guides serve as platforms that expand access to reliable sources. Many also include exercises, tutorials, and the option to integrate a reference librarian as a contact (Martínez Cardama, 2023).

In this sense, digital reference can complement verification efforts perfectly. Regarding the latter, it is worth noting that there has yet to be a comprehensive analysis of the real impact of these tools on actual changes in individuals' beliefs (Walter et al., 2020), especially concerning rumours or deeply rooted elements like political statements. One of the most frequent criticisms of fact-checking platforms is their isolated nature and lack of participation and context. The concept of "community" is particularly interesting here, as it is essential in shaping beliefs in the post-truth era: people are more likely to believe opposing views if they come from their immediate environment.

Concepts such as "context" and "community" are present in libraries' reference work, where literacy plays a key role. Thus, fact-checking should blend traditional reference and user service (LeBeau, 2017) in a digital environment.

Finally, it is worth highlighting the cooperative digital reference service "Pregunta, las bibliotecas responden," which addresses several relevant issues: information search based on documentary sources and the work of information management professionals in libraries, who provide a more holistic perspective at all stages of citizenship. This service is key in helping people learn to verify information, as it serves the entire public (Figure 6).

Figure 7 Service "Pregunte, las bibliotecas responden" https://www.pregunte.es/consulta/pregunte.cmd