Case Study

The End of the Real
Building Tools to Navigate Reality in the Absence of a Common Truth

When reality itself has become a landscape of conflict, a forensic approach to understanding how truth is manufactured, contested, and weaponized through technological mediation emerges as a potential tool to navigate the current blurriness. This case study examines the infrastructures of belief, from museums as containers of legitimazed narratives to techniques like algorithmic recommendation systems, ideological echo chambers, or crowd-counting technologies capable of turning the same protest into opposite political narratives.

Rather than seeking to restore some great mythical Objectivity or debunk individual pieces of misinformation, the proposal is to develop tools and methodologies for "reality forensics," understanding it as a systematic analysis to unfold how technological systems shape perception and manufacture consensus. Through hands-on investigation of specific events, this case study aims to build collective capacities for navigating environments where truth has become a contested resource. The goal is not to determine what is "real," but to understand and dig to unearth the mechanisms through which different versions of reality are constructed, distributed, and made politically operative.

Introductory video →

Pulso: Domestic Data Streamers

Facilitating entities: Museo Nacional Thyssen-Bornemisza

In collaboration with: Observatorio Complutense de la Desinformación and Retina

GOBIERNO DE ESPAÑA MINISTERIO DE CULTURA

THYSSEN-BORNEMISZA MUSEO NACIONAL

T² Thyssen-Bornemisza
TB Art Contemporary
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02 Case Study conceptualization

The world is witnessing the emergence of what starts to be known as "manufactured realities:" environments where technological mediation doesn't just represent truth, but actively produces it. The 2024 global elections constituted a key moment in demonstrating how these can operate across multiple scales: from deepfake audio clips that circulate faster than their verification systems can respond, to crowd-counting technologies that transform the same demonstration into evidence for completely different political narratives.

Consider the case of the 2023 French pension protests, where government thermal cameras recorded 400,000 participants while organizers' mobile app check-ins claimed 1.2 million, and satellite analysis estimated 650,000. These are not measurement errors, they are the inevitable result of how different technological systems embed different assumptions about what counts as evidence, who counts as present, and how presence translates into political legitimacy. [1]

This pattern repeats across information systems: AI-generated academic papers that pass peer review; recommendation algorithms that create what researcher Joshua Citarella describes as "ideological drift chambers;"[2] deepfake technology that forces us to question the evidentiary status of video itself; synthetic media that makes the authentic indistinguishable from the artificial. Traditional responses, such as fact-checking, media literacy, or platform regulation, treat these behaviours as bugs to be fixed rather than features of how power operates. To mobilize the latter, forensic approaches, capable of analyzing not just individual deceptions, but the systemic transformation of how societies produce and validate knowledge, could help the way. It would require understanding the technical infrastructures and economic incentives, as well as political logics and cultural mechanisms that shape what gets counted as real and how trust operates.

This case study centers on "reality forensics" and takes contemporary information environments as crime scenes that require systematic investigation, evidence collection, and reconstruction of events. The aim is to develop tools to help people understand not just what to believe, but how belief systems are shaped by technologies and politically deployed. To do so, it will be essential to understand how previous belief systems have operated. If museums keep being one of the most trusted institutions by societies worldly, what can be learned from their affirmation construction mechanisms? How are narration biases being currently examined and dismantled? But also, if reality is shifting from evidence-based methods for affirmation construction to a digitally manufactured evidence era, what could be a museum's role or responsibilities in misinformation? If speculative (not hard-to-believe) scenarios become real, it will be important to be trained in recognizing the power dynamics underlying. What if sociobehavioural agreements can be made upon consensus on how to navigate uncertainty instead of relying on statistical claims?

To this end, three interconnected research streams will be addressed: Technical Systemic Breakdown by attempting to reverse-engineer the systems that shape perception, Counter-Infrastructure Development, by building alternative tools for collective sense-making, and Cognitive Immunity Training by developing practical skills to navigate manufactured uncertainty. Protest Counting Observatory will be taken as a concrete case study, among others, to analyse how measurement becomes political narrative –by applying multiple counting technologies to the same demonstration, this platform makes visible how technological choices embed political assumptions. The goal is not to restore objectivity or eliminate interpretation, but to create, collect and explore tools for understanding how reality is constructed. The ultimate purpose is to train stance behaviours to shift from passive consumption of pre-packaged, isolated truths to active participation in collective sense-making processes that can thrive in environments of manufactured confusion.

1. On major protest days (e.g., March 7, 2023), the French Interior Ministry and the CGT union presented radically different figures. The ministry claimed 1.28 million protesters nationwide, while the CGT claimed 3.5 million. For Paris alone, the figures were 81,000 (police) vs. 700,000 (CGT). Reuters. (2023, March 7).

2. Citarella, J. (2020). *Politigram & the Post-left*. Self-published. His lectures and interviews available on YouTube also elaborate extensively on this concept.
3. Muhammad Haroon, et al., "YouTube, The Great Radicalizer? Auditing and Mitigating Ideological Biases in YouTube Recommendations, arXiv:2203.10666(2022).

4. Naijia Liu, et al., "Short-term exposure to filter-bubble recommendation systems has limited polarization effects:Naturalistic experiments on YouTube" PNAS (Feb 18, 2025). - Link
5. Bobby Allyn, 'Deepfake video of Zelenskyy could be 'tip of the iceberg' in info war, experts warn npr (Mar 16, 2022).

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01. Photo: ajerichosakti, December 31, 2011.
02. Photo: Domestic Data Streamers April 2023
03. Photo: Domestic Data Streamers July 2024
04. Photo: HWNation November 30, 2011
05. Photo: Kevin laighleas June 2, 2007
06. Photo: Nicolai Druben November 25, 2021
07. Photo: PCdoB na Camara March 31, 2022
08. Photo: Rasande Tyskar August 23, 2024
09. Photo: Rob Walsh January 20 2017

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03 Key research approaches

Algorithmic Reality Engineering
or How Clicks Became Part of the Digital Weather

→ Recommendation algorithms, search engines, and social media are not merely tools for showing content, but active shapers of what users see as real or important. The experiment *YouTube, The Great Radicalizer? Auditing and Mitigating Ideological Biases in YouTube Recommendations* finds that users are often directed toward ideologically biased and increasingly radical content. This case study will make use of forensic analyses to reveal invisible editorial choices, in order to help users identify why they encounter certain content, assess the influence of digital architectures and the impact of their digital behavior in accessing different versions of reality.

Synthetic Media Ecosystems
or Why Your Favourite Influencer Suddenly Endorsed a Tractor.

→ From deepfakes to AI-generated synthetic academic papers, there is a specific aesthetic, technical, economic and political infrastructure sustaining the creation of artificial content. For instance, 'authentic-seeming audio-visual cues' is a feature used to create trust and reduce skepticism, as in the case of the 2022 Russian invasion of Ukraine, when a deepfake video showing President Zelenskyy urging troops to surrender was circulated. By acquiring the know-how of deepfakes' creation and detection, or understanding the supply chains that produce synthetic credibility, strategies for resistance can be speculated. This case study proposes to work with open-source manipulation documentation techniques and educational tools to help people recognize not just individual fakes but systematic synthetic content operations.

Contested Measurement Technologies
or How a Thermometer Can Lean Towards the Far-right

→ Medical statistics used during COVID-19, economic indicators deployed during financial crises, or environmental data in climate debates are examples of how different technological approaches to quantifying reality embed political assumptions and produce competing truths. This case will work with protest crowd-counting techniques to explore how thermal cameras, satellite imagery, mobile phone analytics, and AI crowd estimation create different versions of the same event. Could a **Protest Counting Observatory** be developed as a platform for transparent, multi-method verification that acknowledges rather than hides interpretive differences?

Manufactured Consensus Patterns
or How to Cast a Spell to Make Digital Ghosts Visible

→ Coordinated posting, bot networks, and algorithmic amplification are strategies through which artificial agreement is created to make fringe positions appear mainstream. "Ghostwriter" campaign attributed to Belarus, is an example of how fabricated grassroots movements spread from niche websites to mainstream media. These influence operations are facilitated by coordination platforms or networks of "*sock puppet accounts*" that are supported by funding mechanisms that channel state resources or opaque third-party funds into coordinated influence campaigns, ensuring long-term financing for bot networks, content farms, and amplification platforms. The case study delves into network analysis tools and the economic models to identify coordinated inauthentic behavior so communal countermeasures can be articulated in response.

Counter-Agnotology Tool Development
or Why Your Enemies are your Best Fact-checker

→ New tools are emerging to help people navigate environments of manufactured confusion. For instance, "Perspective multiplier", a system that shows how the same information is interpreted by different communities; or "Uncertainty interfaces", devices that, instead of looking for clarity, help users understand potential skeptical views upon own perspective and foreground methodological limitations. The goal is not to eliminate uncertainty but to develop collective capacities for intelligent skepticism and collaborative truth-seeking. The proposal is to work on prototypes for alternative verification systems, collaborative fact-checking platforms, and educational experiences that build immunity to manipulation techniques.

6. Ghostwriter (also known as UNC1151) is a long-running influence operation linked to Belarus that since ~2016 has hacked media sites, leaked stolen credentials, impersonated officials, and pushed anti-NATO, anti-opposition narratives.

7. Mandiant "UNC1151 Assessed with High Confidence to be Associated with GRU, Ghostwriter Campaign" Mandiant Blog (2021). - Link

8. Socket Puppets accounts fake online identities controlled by a single actor or group to create the illusion of diverse, independent voices. In coordinated influence operations, these accounts post, share, and comment on content in ways that mimic organic user behavior.

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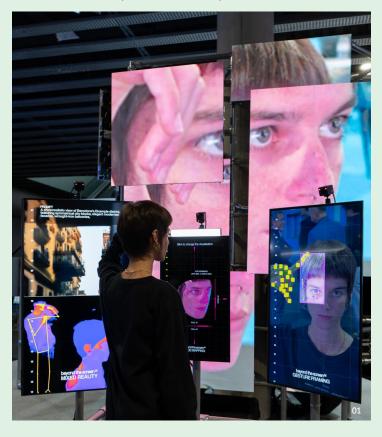Common Truth

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04 Pulso

Domestic Data Streamers

→ Pau Aleikum García and Marta Handenawer

is a collective from Barcelona comprising journalists, researchers, coders, artists, data scientists, and designers who have been focusing on exploring new data languages and their social implications since 2013. Their research and work translates into films, installations, digital experiences, performances, or exhibitions in a wide range of contexts such as schools, prisons, cinemas, museums, the streets of many cities, and even the United Nations Headquarters. Based in Barcelona, they have worked in over 45 countries from all continents and for cultural institutions such as the Tate Modern, the Hong Kong Design Institute or the California Academy of Sciences.

domesticstreamers.com →

01. Domestic Data Streamers, *Beyond the Screen*, 2025.
02. Domestic Data Streamers, *The Citizens' Office of Synthetic Memories*, 2024.
03. Domestic Data Streamers, *You Had to Be a Feminist*, 2020.

01

02

03

→ Pau Ailekum, 'Uncertain machines and the opportunity for artificial doubt. Embracing Uncertainty through AI Models' in *Medium* (Apr 18, 2023). link

"But in a world full of people who seem to know everything, passionately, based on little information, where certainty is often mistaken for power, what a relief it is to be in the company of someone brave enough to remain unsure."

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05 Facilitating entities

Museo Nacional Thyssen-Bornemisza

→ houses in the Palacio de Villahermosa one of the most important collections of paintings in the world, with a thousand works of art assembled over seven decades by the Thyssen-Bornemisza family. Since its opening to the public in 1992, MNTB has been fulfilling its mission to transmit knowledge, educate and socially integrate through its collection, an extensive program of exhibitions and the programming of a wide variety of activities. Its daily work is based on values such as excellence, sustainability, innovation, integrity, involvement, trust, teamwork and avant-garde spirit. It also emphasizes the dissemination of its collections with programs aimed at involving all kinds of audiences in a universal cultural project, based on the firm belief in the capacity of art to enrich people and to enhance creativity and critical thinking, improving their quality of life. MNTB, on the other hand, carries out extensive work in the field of sustainability. Both in its exhibitions and activities and in its internal management, it responds to the challenges of the climate emergency, firmly advancing in sustainability and social responsibility in accordance with the Sustainable Development Goals (SDGs) included in the United Nations 2030 Agenda.

museothyssen.org →

In collaboration with:

Observatorio Complutense de la Desinformación

→ Observatorio Complutense de la Desinformación is a project funded by the Spanish Ministry of Science and Innovation and the State Research Agency, bringing together more than forty international researchers to explore and understand the phenomenon of disinformation, its causes, consequences, and remedies. The principal investigators are Loreto Corredoira and Rafa Rubio. The starting hypothesis is that, given the constant risks and loss of trust associated with the growth of informational disorders— hoaxes, disinformation, false news items, deepfake videos, brain hacking, cybersecurity attacks involving data breaches, pseudo-media created ad hoc for campaigns, hostile narratives, the creation of manipulative websites, and the much-discussed "fake news"—, these phenomena have a negative impact in terms of scale, speed, and reach, which worsens during electoral periods. Therefore, it is necessary to provide states, and especially electoral authorities, with a sufficient legal framework to be able to fulfill their function in an entirely different ecosystem.

ucm.es/observatoriodesinformacion →

Retina

→ Retina (El País / PRISA Media) is a Spanish platform dedicated to analyzing the social, political, and economic implications of technological transformation. Founded in 2015 by El País, Retina explores how innovation, artificial intelligence, digital infrastructures, and emerging technologies are reshaping contemporary life.Through both its online publication and live events— such as Retina LTD and the Retina Observatory—it connects the worlds of research, business, and governance to foster debate around the ethical and social dimensions of innovation. Based in Madrid and distributed through PRISA Media's network (El País, Cadena SER, Cinco Días, AS, Los 40), Retina has become a reference hub for Spanish-language journalism on the future of technology and its impact on society, sustainability, and democracy.

retinatendencias.com →

06 Guest experts Some of the voices informing this case study, among others, are:

Saúl Baeza

does-work.com →

→ is DOES and MAYBE Director and VISIONS BY Magazine Founder and Editor-in-chief. He researches algorithmic resistance within the "Making With..." Research Group (TU Eindhoven Research). Saúl is the Co-Director of the Master in Design For Emergent Futures (MDEF), organised by the Institute for Advanced Architecture of Catalonia (IAAC) and Elisava Barcelona School of Design and Engineering, in collaboration with the Fab Academy. Saúl has been visiting professor and lecturer at international universities, educational institutions and cultural venues such as Harvard GSD, Central Saint Martins and London College of Communication (UAL), RMIT University Melbourne, Rhode Island School of Design, Pascual Bravo University in Medellín, Sónar+D, Victoria & Albert Museum, BASE, CCCB and DHUB, among others.

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Ben Ditto

→ is a creative director living and working in London. Ditto's projects span a broad spectrum of disciplines including moving image, CGI, creative coding, branding, AI, print and live experience to name just a few. Ben's utilisation of Instagram as a tool for reportage on topics ranging from military hardware to surgical procedures – and everything in between – has gained him a cult online following and propelled him to the realm of "niche micro-internet celebrity". This led to the cultivation of an online community, Ditto Nation, on Telegram and Discord, as well as a documentary series under the same name. Ditto was recently appointed as the creative director of Desdemona, a robot created in a collaboration between Hanson Robotics and Singularity Net, with the aim of creating the future of AI celebrity.

instagram.com/ben_ditto →

Delaram Sadeghzadeh

→ is a PhD candidate in Cognitive Neuroscience at University College London (UCL). Her research focuses on metacognitive processes (such as the observation, regulation, and control of cognition) in relation to misinformation detection. She examines how people judge truth, using behavioural studies, computational modelling, and neuroimaging. With a background in psychology and a strong interest in memory control, reality monitoring, and confidence calibration, she seeks to uncover the cognitive and neural mechanisms that influence misinformation susceptibility. She is also passionate about science communication and finding creative ways to make cognitive neuroscience accessible to diverse audiences.

07 Expanded study materials

visit are.na The End of the Real →

→ Zeynep Tufekci, "YouTube, the Great Radicalizer" in The New York Times (Mar 10,2018) - link

→ Dan Hicks, 'Get Real: The PostTruth Museum' in Texte zur Kunst (2024).

→ Danah Boyd, "You Think You Want Media Literacy... Do You?" in Data & Society: Points, Medium (Mar 09, 2018). - link

→ Ferenc Husz'ar, S. Ktena, Conor O'Brien, Luca Belli, A. Schlaikjer, Moritz Hardt, "Algorithmic amplification of politics on Twitter" in Proceedings of the National Academy of Sciences of the United States of America, Vol.119 (Oct 2021)

→ Florian Windhager, Saminu Salisu and Eva Mayr, 'Exhibiting Uncertainty: Visualizing Data Quality Indicators for Cultural Collections' Informatics 6(3), 29 (2019). - link

→ Jeff Orlowski (dir.) The Social Dilemma, Exposure Labs (2020).

→ Robert Chesney, Danielle K. Citron "Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security." in Lawfare Research Paper Series, No. 1/19 (December 2019) - link

→ Robert Kenner (dir.), Merchants of Doubt (Sony Pictures Classics, 2014).

→ Susan Leigh Star, "The ethnography of infrastructure" in American Behavioral Scientist, 43(3), 377–391 (Nov 1999). - link

→ Theo Anthony, (dir). All Light, Everywhere, Super LTD (2021).

→ Werner Herzog (dir.) Lo and Behold: Reveries of the Connected World Magnolia Pictures, (2016).

→ Yochai Benkler, Robert Faris, Hal Roberts, Network Propaganda: Manipulation, Disinformation, and Radicalization in American Politics (Oxford University Press, 2028) - link

→ Charlie Engman, "You Don´t Hate AI, You Hate Capitalism" in Art in America, Artnews (Sept 20, 2024) link

"To make machines (and masters) seem intelligent and original, it is crucial to hide the labor and workers that enable their operation. This invisibility and lack of credit is the very exploitation people protest when they accuse AI developers of stealing artwork to train their generative models."

→ Yael Brahms, "Philosophy of Post-Truth", Institute for National Security Studies (2022). link

"The result of a consistent and total substitution of lies for factual truth is not that the lies will now be accepted as truth… but that the sense by which we take our bearings in the real world — including 'truth vs. falsehood' — is being destroyed."
— Hannah Arendt