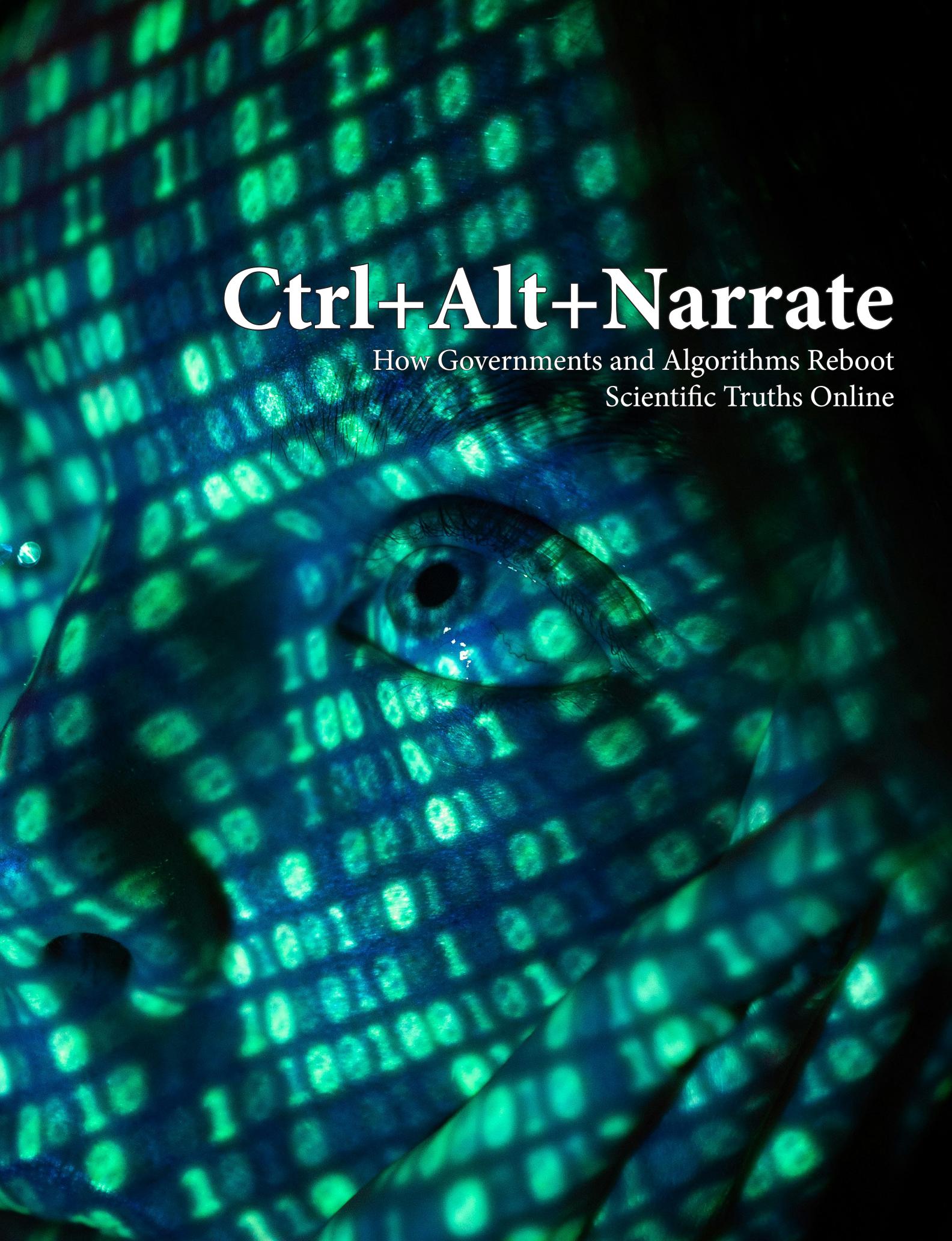


Ctrl+Alt+Narrate

How Governments and Algorithms Reboot
Scientific Truths Online





The Algorithm Will See You Now — How science is curated, contested, and controlled in the digital age.

In the spring of 2022, I came across news regarding the origins of COVID-19. On Twitter, the story was labelled a laboratory leak, and the comments were filled with anger and conspiracy theories. Meanwhile, on Weibo, the same topic was framed as foreign propaganda, with most users supporting the government's narrative of transparent information disclosure. Although both posts referred to the same event, they revealed vastly different interpretations and public reactions across the platforms. This experience made me realise that science communication is no longer just about transferring knowledge. We now live in a world where science is omnipresent — and yet constantly challenged.

As governments, digital platforms, and algorithms shape how the public engages with science, these narratives become not only about facts, but also about authority, exposure, and influence. They emerge from a complex mix of political agendas, algorithmic design, platform moderation, and national ideology.

Why This Magazine?

This mini-magazine was developed to examine one central question: How is science either highlighted or hidden in the digital environment? This edition focuses on the unseen mechanisms behind the stories we encounter — specifically, how scientific information is constructed, pri-

oritised, and circulated online.

In a world where science communication now depends heavily on social media, the public's understanding of issues like public health, climate change, and emerging diseases goes beyond the facts themselves. It is shaped by algorithmic design, amplification trends, and questions of authority.

This special edition investigates how digital narratives around science are influenced by the platforms that carry them, the governments that steer them, and the users who challenge, reshape, or reinforce them.

We pose questions such as: Who gets to define scientific truth? What does it now mean to trust science? Can scientific communication still claim neutrality? Is what we believe really science, or a story about science? Who communicates science, and who is left unheard?

Who Is This For?

This edition is aimed at those who not only care about science itself but are also concerned with how science circulates through crowded, politicised, and algorithm-governed digital environments.

Our primary audience includes scholars in science communication and researchers focused on digital media, platform governance, and the politics of information.

Why Now?

Our secondary readership includes social media content moderators, policymakers concerned with digital regulation and science policy, and public health professionals working to address misinformation online.

If your work or interests lie where science, power, and media intersect, this maga-

zine has been created with you in mind.

What's Inside?

In this edition, you will find case studies examining how narratives around the COVID-19 lab leak, climate change, and monkey pox have been constructed across platforms such as Twitter/X, Weibo, and Douyin. We investigate how platform algorithms give prominence to certain scientific views while diminishing others. This includes interviews with leading experts in science communication, platform governance, and digital sovereignty, as well as visual analyses of comment sections, moderation policies, and viral misinformation.

We use algorithmic sovereignty, platform design, and global information dynamics as our starting point. By examining how science is discussed on social platforms, comparing national strategies for regulating information during crises, and including insights from expert interviews, we aim to construct a layered perspective on science communication in today's digital environment. Through this magazine, we

examine who communicates science, the ways it is presented, and the reasons people come to believe one narrative over another. Our goal is to offer a critical, accessible, and visually engaging science communication resource for public reflection.

Have you ever noticed how the same scientific story appears differently depending on the platform—whether it is a pandemic, a climate study, or a vaccine announcement? Have you ever felt uncertain about whether the information presented during a health or climate emergency is credible or misleading? Have

you ever questioned whether algorithms, political agendas, or social pressures are quietly shaping what the public understands as truth? And have you wondered whether what you see is the whole story?

We are living in a time when science is highly visible, yet more disputed than ever. Events like the pandemic, climate disruption, and global health alerts reveal that scientific facts are not simply found and circulated—they are constructed, discussed, and regulated. These processes are no longer driven solely by researchers, but also by platforms, policy decisions, and public engagement.

This magazine is an attempt to map those processes. We will examine discussions taking place in comment threads on Weibo, TikTok, and Twitter, and observe how people express opinions about viruses, vaccines, and environmental change. Within those spaces, science is questioned, politicised, and sometimes distorted, while people attempt to make sense of fragmented information. We speak to editors, researchers, and communicators who manage these complexities every day.

Thank you, readers, for joining us. In an age where information is abundant and certainty is rare, we hope this edition prompts you to read with more care, question with greater curiosity, and think more deeply about the structures that influence the narratives we accept.

**Welcome to
the story
behind the science.**

Science Communication: When Science is No Longer “Neutral”

In a time when science overlaps increasingly with politics, and when platforms and algorithms shape communication, the line between “scientific facts” and “scientific narratives” has become difficult to trace. Scientific issues are often presented in vastly different ways across platforms. This variation is not only about how information travels – it also reveals underlying tensions around power, trust, and visibility.

To better understand how scientific knowledge is shared and contested, an interdisciplinary approach is needed. This edition draws from science communication theory, platform governance studies, and work on algorithmic sovereignty to examine how scientific narratives are produced, filtered, and given legitimacy in the global digital environment.

From Transmitting Knowledge to Constructing Narratives

Traditional science communication tends to focus on a straightforward flow of knowledge from experts to the public, with clarity and accuracy as central goals. Yet recent studies have highlighted that this process is not neutral – it is fundamentally about shaping meaning and influence.

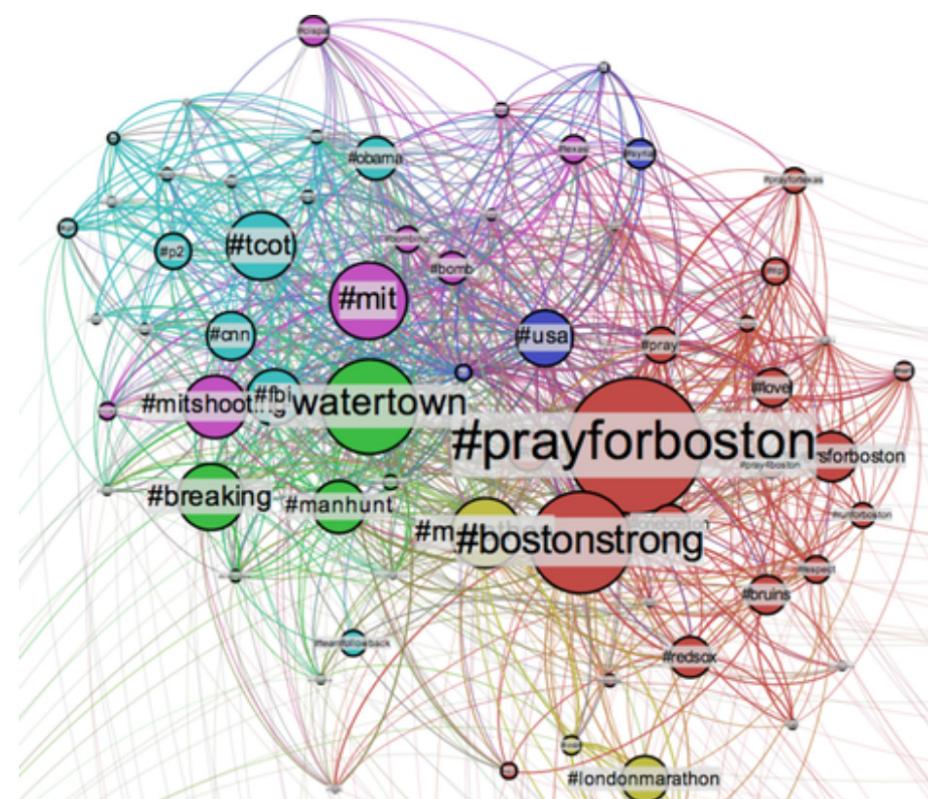
The way scientific content is presented has always been influenced by political climates, cultural norms, and media infrastructures. These contextual factors shape not only how information is created, but also how it is received and whether it is trusted.

Especially in the digital age, social plat-

forms are now a dominant space where science is communicated. Their algorithmic designs, moderation policies, and data-centric decisions shape not just which information appears, but also how credibility is formed and sustained.

This environment has made science a site of narrative struggle. As Kupferschmidt has observed, “Lies and conspiracy theories are often more sensational than the truth”. This makes misleading information easier to circulate.

Algorithms tend to favour content that provokes strong emotional reactions. For instance, following the Boston Marathon bombing in 2013, conspiracy theories spread rapidly across social media, circulating widely even before any official clarification. Similarly, the early stages of the COVID-19 pandemic saw the swift rise of lab-leak claims. The slow moderation response gave such content room to influence public opinion significantly.

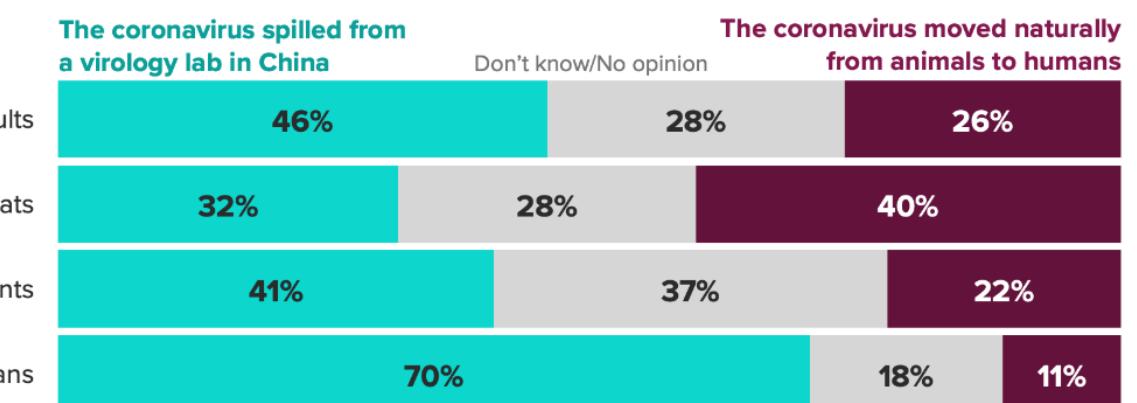


A network graph of tweets related to the 2013 Boston Marathon Bombing show accounts that spread misinformation were central to the information landscape during the event.

Source: Emerging Capacities of Mass Participation Lab, Tracking the Spread of Misinformation on Twitter after Crisis Events (2014).

Nearly Half of the Public Believes the Coronavirus Spilled From Wuhan Lab

U.S. adults were asked which of the following came closest to their opinion:



MORNING CONSULT

Poll conducted June 4-7, 2021, among 2,200 U.S. adults, with a margin of error of +/-2%. Figures may not add up to 100% due to rounding.

Source: Gaby Galvin (2021).

These cases reveal to us how the communication of scientific information is shaped by politics, culture, and the way platforms distort messages. This magazine treats “science” not merely as a set of facts, but as a narrative shaped through platform structures and state influence.

Platform Algorithms: Determine Whether Science is “Seen” or “Ignored”

When social media platforms act as the primary gatekeepers of public discourse, their algorithmic recommendations and moderation decisions become more than technical features. They function as structural forces that shape how science is perceived and whether it is treated as credible or dismissed.

Gillespie describes platforms as “custodians of the internet”, whose invisible

editorial functions – from algorithmic rankings to selective removals – directly affect which scientific narratives are elevated or sidelined.

Building on this, Reviglio & Agosti introduced the concept of “algorithmic sovereignty”, describing platforms as quasi-sovereign entities that regulate public behaviour through “super push” techniques and behavioural nudges. Their idea aligns with Yeung’s research on “algorithmic regulation”, which shows that platforms, while appearing neutral, actually shape user behaviour in calculated ways.

This means digital platforms are no longer passive channels for information. They play an active role in framing how science is communicated.

Take climate change as an example.

Platform algorithms often give more visibility to divisive or emotionally charged narratives, while peer-reviewed, expert-led content is pushed down in visibility rankings. One well-known case is the wide circulation of climate change denial. These posts are frequently prioritised because they provoke stronger emotional responses and higher engagement. Meanwhile, scientific consensus – such as that climate change is largely caused by human activity – is often harder to find on these platforms.

Such biases in algorithmic filtering mean that when people search for scientific information, they are more likely to encounter content that is polarised and emotionally driven.

The Struggle for the Sovereignty of Scientific Information -- Dual Regulation of the State and Platforms

The term “algorithmic sovereignty” originally comes from international politics. It refers to a state’s control over digital systems, including data circulation and the regulation of information. In the context of science communication, it highlights how both governments and platforms jointly shape the visibility, authority, and perceived legitimacy of scientific knowledge.

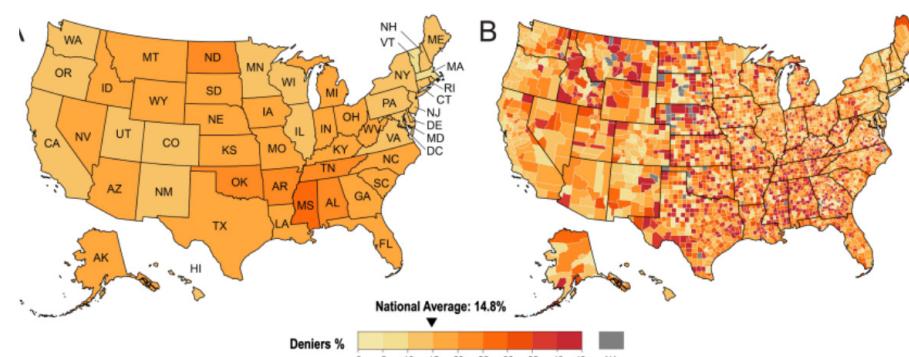
Dzgal et al. argue that strategic differences in algorithmic sovereignty between China, the United States, and Europe have led to distinct public access paths to scientific information.

During our interview, Dr. Goodnight explained: “The United States favours the market over government; while China favours government over market. Both countries find communication an energy commodity that needs to be controlled”.

This mix of regulatory models has led to a new form of narrative control, one where the lines separating science, governance, and political discourse are increasingly unclear.

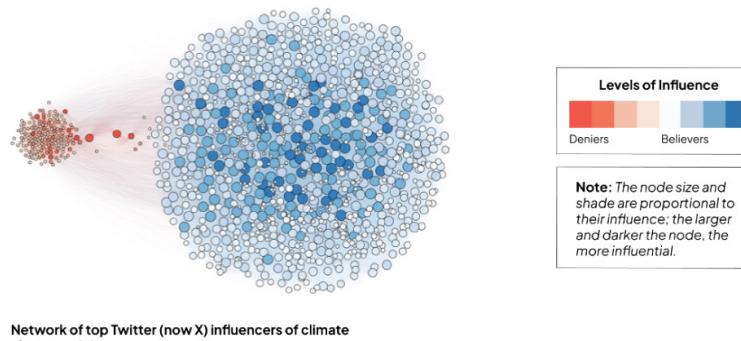
In the United States, regulation typically comes from private tech firms. These companies moderate content and impose bans according to internal standards, but the lack of openness means commercial or political motivations can be hidden. In contrast, China uses centralised governance under its model of digital sovereignty, which more directly structures how scientific information is surfaced and framed.

In both cases, the driving goal appears to be “control” rather than “clarity” in how political and scientific narratives are pre-

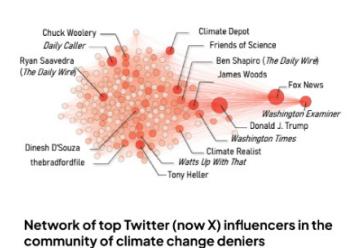


Climate change denialism in the U.S., by state (A) and county (B). (Note: Uncertainty is higher in counties with low population densities due to smaller tweet sample sizes.) Image credit: Gounaris and Newell in Scientific Reports, February 2024.

Source: Dimitris (2024).



Network of top Twitter (now X) influencers of climate change opinion



Network of top Twitter (now X) influencers of climate change opinion. Image credit: Gounaris and Newell in Scientific Reports, February 2024.

Source: Mullinix (2024).

sented.

Goodnight refers to this transformation as a shift into a “vibe economy”, where narratives succeed not because of accuracy, but because of the emotional impact they generate. As a result, the distinction between scientific discourse and political

messaging has become harder to maintain.

What Questions Are We Trying to Answer?

We examine three platforms – Twitter, Weibo, and TikTok – each representing a

distinct configuration of power between the state and the platform.

By comparing key case studies, including the COVID-19 lab leak theory, climate change discourse, and narratives surrounding monkey pox, we explore how algorithms and national policies influence which scientific narratives gain visibility; how public responses reinforce either mainstream or marginal narratives; and how credibility is built or destabilised within different media environments.

To address these questions, we apply a mixed-methods approach that includes critical discourse analysis (Fairclough, 1995) to examine language and power structures, NVivo-based thematic coding for systematically studying user comments and interactions, and in-depth expert interviews to offer grounded insights into platform governance and political context.



How Did We Do This Research?

— From text to platform, from comments to interviews

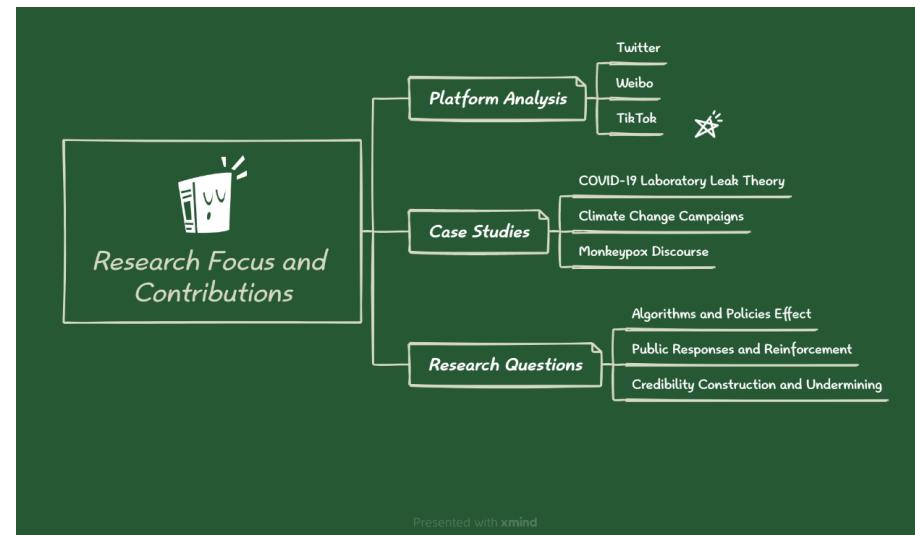
The research methods used for this magazine combine several approaches, including critical discourse analysis, thematic coding, expert interviews, and case study comparisons. Our aim is not to produce a conventional academic paper, but to create a piece of work that is readable, reflective, and grounded in practice.

Critical Discourse Analysis (CDA) As a Core Perspective

We use Fairclough's (1995) three-layer framework for discourse analysis. The textual layer focuses on language features and the structure of scientific narratives. The discourse practice layer examines how scientific information is produced, distributed, and referenced. The social practice layer investigates the ideological assumptions, power structures, and broader social context influencing discourse.

This approach allows us to understand how platforms frame "credible science" through both language and structure.

Thematic Coding Analysis Using NVivo
To explore public engagement in depth,

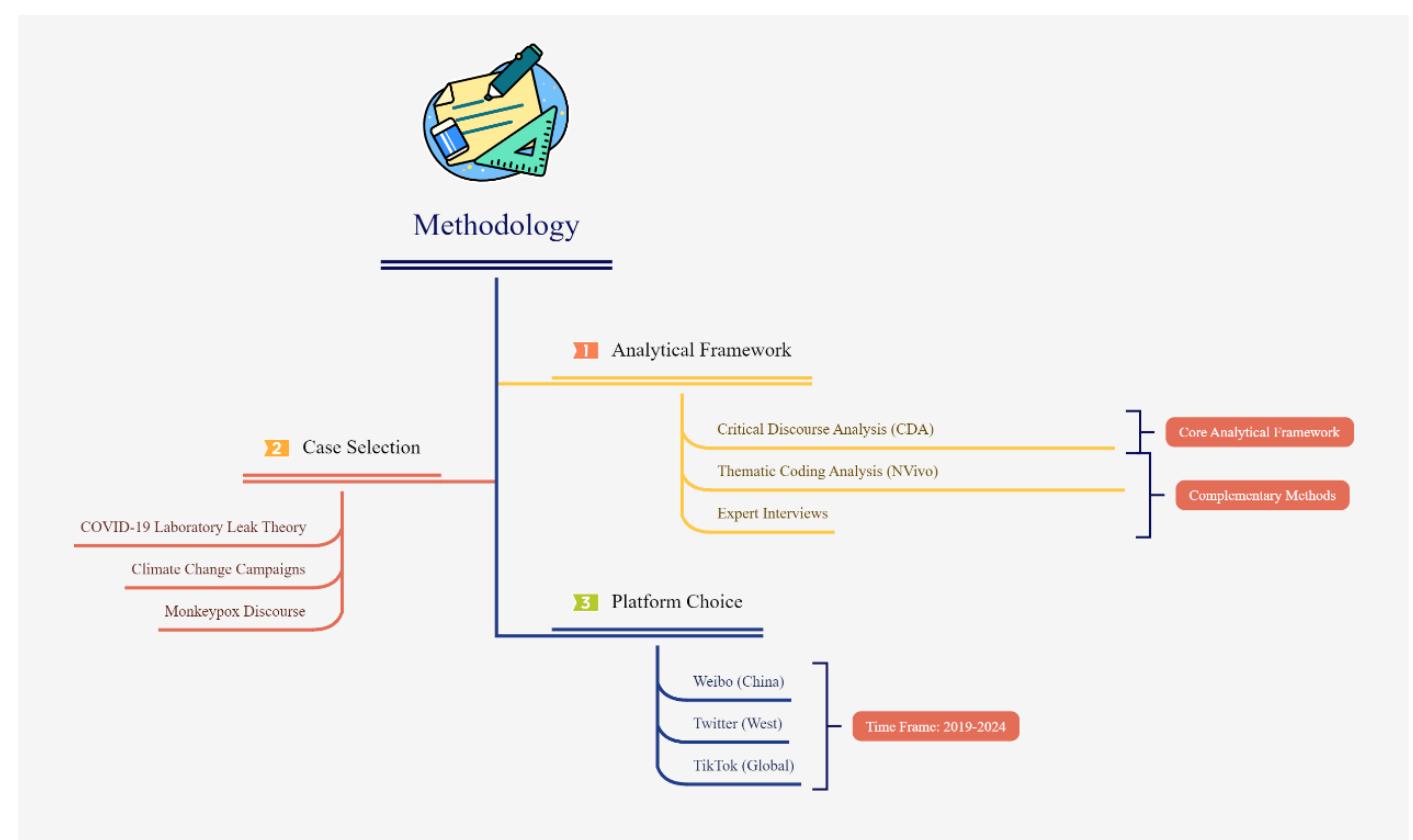


we used NVivo to code a large number of user comments. Our coding focused on several key dimensions: emotional tone, perceived responsibility and trust, expressions of nationalism or transnational identity, and rhetorical strategies used to support arguments or claims.

This method connects the platform's design and the role of state influence to shifts in how science is shared and understood within the digital ecosystem.

Interviews with Three Experts: Narrative Logic behind the Platform

We conducted interviews with three experts in science communication, platform governance, and political discourse. Their insights reveal how algorithmic systems, regulatory frameworks, and digital policy decisions operate in practice. All interview data were transcribed, coded, and thematically analysed using the qualitative research framework outlined by Saunders et al. (2019) to ensure both consistency and analytical rigour.



Case Selection: Three Battlefields of Scientific Narrative

We selected three representative topics for analysis: COVID-19, given its global controversy and visibility; climate change discourse, which highlights the influence of platforms and the circulation of emotional responses; and the monkey pox outbreak, which exposes the use of labels and manipulation of information.

These cases span from 2019 to 2024, capturing the progression from the early phase of the pandemic through to the post-pandemic period. They collectively document the transformation of digital science narratives over time.

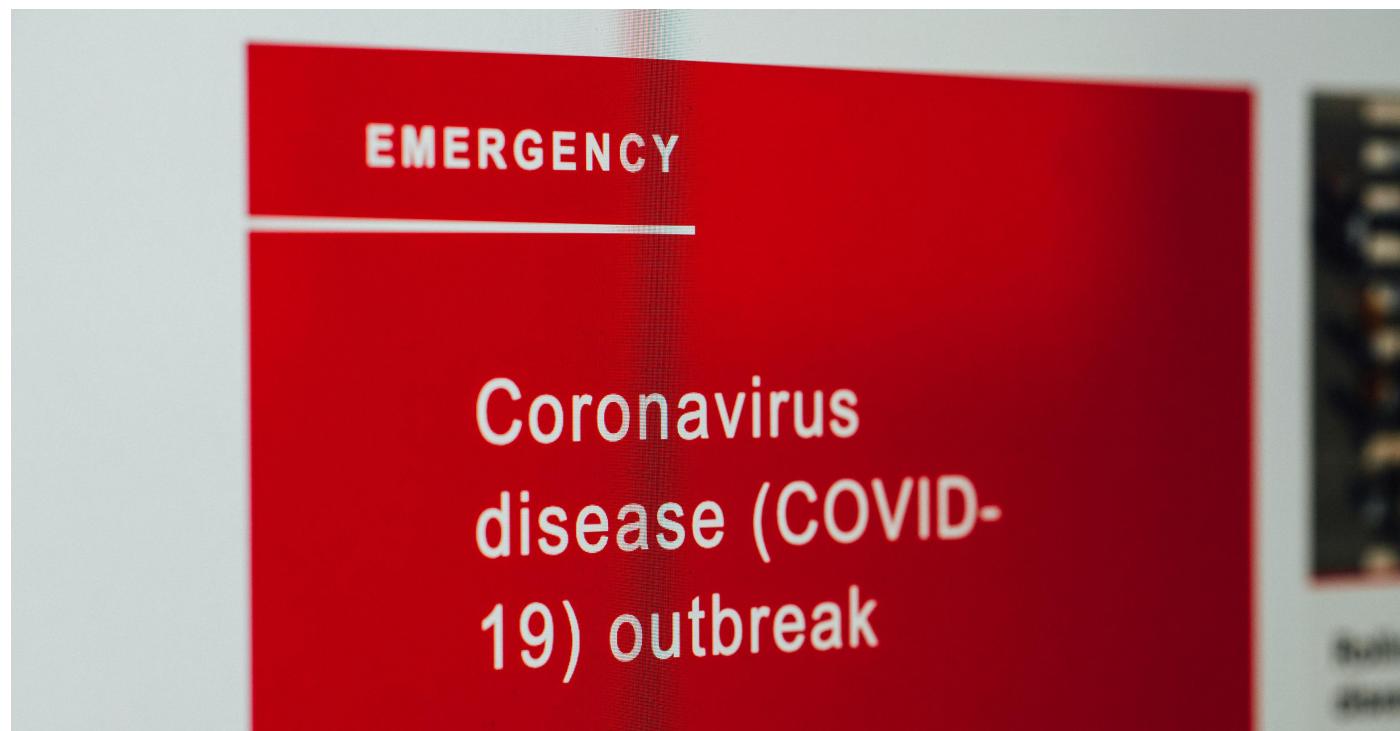
Platform Selection: Three Structures, Three Ecosystems

Weibo, a Chinese social media platform dominated by the state, represents a system driven by government-controlled

discourse. Twitter, often regarded as a symbol of free expression in the West, reflects a model based on open and decentralised information flow. TikTok, with its hybrid Chinese-English interface, demonstrates the complexity of content circulation within globally intertwined political and cultural contexts. By choosing these cases, we are able to compare how differing social, political, and technological infrastructures shape the creation, distribution, and interpretation of scientific narratives within the digital sphere.

**‘Whoever controls the media,
controls the mind.’**

— Jim Morrison



Case 1: COVID-19 Origin Tracing Controversy – A Global Narrative War about the Virus

At the beginning of 2020, a then-un-known virus began spreading quietly. As it moved from breaking news to widespread social media coverage, a parallel battle over its “true” origin also emerged.

1.1 Content Analysis: Two Origin Narratives

Since the emergence of COVID-19, debate over the virus’s origin has intensified. On platforms like Weibo in China and Twitter in the West, two dominant narratives have competed for visibility: natural origin and laboratory leak.

On Weibo, official narratives emphasise a natural origin supported by scientific consensus, while framing the lab-leak theory, often promoted in the West, as scapegoating. State-affiliated media regularly post research summaries and expert

commentary, reinforcing the position that the World Health Organisation supports the natural origin view, while categorising the “laboratory leak theory” as anti-China misinformation. Strict moderation policies remove conspiracy-related content, and user comments frequently reflect trust in governmental communication, agreement with scientific findings, and rejection of rumours. This creates a largely one-sided discourse environment, limiting the scope and intensity of public disagreement. It serves as a state-driven tone-setting mechanism. As Dr. Goodnight noted in our interview: “In China, national discourse and neighbourhood mobilisation together constitute the information ecology during the epidemic”.

On Twitter, however, the lab-leak narrative spread rapidly. Users cited politicians’ statements and media investigations,

and the controversy gained momentum through spontaneous engagement, resulting in a cascade of conflicting interpretations. In our interview, Dr. Martin observed that Weibo operates through information filtering, while Twitter tends to allow debates to unfold without interference. This contrast illustrates two fundamentally different governance approaches: Weibo upholds the authority of official discourse through regulation, while Twitter’s openness permits disputes to evolve independently.

1.2 Analysis of the Comment Area: The Battlefield of Discourse on Different Platforms

A close reading of discussions across Weibo, Twitter, and TikTok reveals what feels like entirely separate realities. Rather than presenting a unified conversation,

these platforms host ongoing debates marked by conflicting perspectives on trust, doubt, and public understanding.

1.2.1 Weibo: Setting the Tone (and Suppressing It)

On Weibo, public sentiment appears to align more closely with the official narrative that COVID-19 originated naturally. Conspiracy theories are largely dismissed. Users often show support for state-led scientific research and government messaging by liking and sharing posts. When searching for terms such as “COVID-19 + laboratory”, many users report receiving messages like “content unavailable” or “this post has been removed for violating relevant laws and regulations”.

The comment sections tend to reflect a consistent and harmonised tone. Examples include statements like “There is no national boundary in the face of the virus – unity is the right path”, “Western media spread too many rumours,” and “Scientific prevention and control, united as one!” These messages are widely shared. Others explicitly urge users to “believe in science, believe in the country,” rejecting conspiracy narratives. Weibo’s content moderation functions as a kind of digital barrier—maintaining the dominance of state messaging while reducing the visibility of dissenting opinions. This results in a largely one-directional discussion space that reinforces public confidence in government institutions and scientific bodies.

1.2.2 Twitter/X: Freedom and Chaos

By contrast, discussions on Twitter (now X) follow a very different pattern. Many posts question the Chinese government’s transparency, with some users citing leaked documents to support theories about a laboratory origin. The platform



中国新闻网

2021年09月22日 20:55 来自微博 weibo.com

【大数据溯源：#美国零号病人大概率2019年4月出现#】中国科学院科技论文预发布平台(ChinaXiv)9月22日发表一项基于新的数据分析方法得到的溯源结果显示，美国新冠“零号病人”大概率出现在2019年9月前后，最早是罗德岛州首例感染发生概率50%的日期为2019年4月26日，远早于美国官方公布的全美首例确诊日期2020年1月20日。#美国新冠零号病人可能2019年4月出现#(记者 孙自法 资料图)» 大数据溯源：美国新冠“零号病人”大概率2019年4月出现 收起»



[Big data tracing: #US patient zero is likely to appear in April 2019#] On September 22, the Chinese Academy of Sciences' pre-publication platform for scientific papers (ChinaXiv) published a tracing result based on a new big data analysis method, showing that the US COVID-19 "patient zero" is likely to appear around September 2019. The earliest date of the first infection in Rhode Island with a 50% probability is April 26, 2019, which is much earlier than the official date of the first confirmed case in the United States on January 20, 2020. #US COVID-19 patient zero may appear in April 2019#



宁波江北交警

以爱为名 In the name of love

2021年12月08日 16:12

投诉

...



海曙交警

: 手机

2021年12月08日 15:35

...



湘潭公安

: 手机

2021年12月08日 15:26

...



北仑交警大队

：以爱为名，星夜驰援，同舟共济，共抗疫情！这个冬夜因你们而温暖，加油 手机

In the name of love, rush to help, work together, and fight the epidemic together! This winter night is warm because of you!



鄞州交警

：以爱为名，星夜驰援，同舟共济，共抗疫情！

2021年12月08日 14:51

...



Fox News @FoxNews · Jun 28

New WHO report fails to rule out COVID-19 lab leak origin as China continues to impede investigation



From foxnews.com

hosts widespread scepticism, with users expressing open doubts about the reliability of official information.

News outlets and independent users ask pointed questions such as, “Why is so much information being withheld? Where is the truth?”, which in turn fuels the spread of conspiracy narratives.

The hashtag “#WuhanLabLeak” became a widely used label, with numerous users sharing unverified “leaked documents” or anonymous claims to support the lab-leak theory. Some of these tweets have been reposted thousands of times, gaining between 2.4k and 4.5k likes. Politicians’ emotionally charged statements have also appeared among top search results. In an effort to challenge the official version of events, these posts are often accompanied by alleged evidence. Based on both direct observation and data collected during the early months of the pandemic, I found that from February to May 2020, the volume of discussion surrounding lab-leak theories surpassed that of vaccine development.

Another point of concern is the continuous discourse on censorship and information suppression. Some users post “internal details” sourced from overseas media or anonymous leaks in attempts to question the official line.

Ironically, the content that gains the most attention often lacks any scientific foundation. As Kupferschmidt noted, “Rumours are rarely corrected in time, and the spread of corrected information is far less than the original false content”.

Twitter’s algorithm appears to favour content that is emotionally charged or controversial. Even when the platform later attaches “information prompts” or “official source links,” the initial narrative effect tends to persist.

bioRxiv
THE PREPRINT SERVER FOR BIOLOGY

biorxiv.org
Recovery of deleted deep sequencing data sheds ...
The origin and early spread of SARS-CoV-2 remains shrouded in mystery. Here I identify a data set ...

181 3K 5.1K

Select Subcommittee on the Coronavirus Pandemic (@COV...) · Dec 3, 2024

Replying to @COVIDSelect

COVID-19 ORIGINS

A lab-related incident involving dangerous gain-of-function research in China is the most likely origin of the COVID-19 pandemic.

EcoHealth Alliance Inc. used U.S. taxpayer dollars to facilitate gain-of-function research in Wuhan, China. READ MORE

The Origins of the Coronavirus Pandemic, Including but Not Limited to the Federal Government's Funding of Gain-of-Function Research

COVID-19 ORIGIN: COVID-19 most likely emerged from a laboratory in Wuhan, China. The FIVE strongest arguments in favor of the “lab leak” theory include:

- 1.The virus possesses a biological characteristic that is not found in nature.
- 2.Data shows that all COVID-19 cases stem from a single introduction into humans. This runs contrary to previous pandemics where there were multiple spillover events.
- 3.Wuhan is home to China’s foremost SARS research lab, which has a history of conducting gain-of-function research at inadequate biosafety levels.
- 4.Wuhan Institute of Virology researchers were sick with a COVID-like virus in the fall of 2019, months before COVID-19 was discovered at the wet market.
- 5.By nearly all measures of science, if there was evidence of a natural origin it would have already surfaced.

PROXIMAL ORIGIN PUBLICATION: “The Proximal Origin of SARS-CoV-2” publication — which was used repeatedly by public health officials and the media to discredit the lab leak theory — was prompted by Dr. Fauci to push the preferred narrative that COVID-19 originated in nature.

GAIN-OF-FUNCTION RESEARCH: A lab-related incident involving gain-of-function research is most likely the origin of COVID-19. Current government mechanisms for overseeing this dangerous gain-of-function research are incomplete, severely convoluted, and lack global applicability.

ECOHEALTH ALLIANCE: EcoHealth Alliance Inc. — under the leadership of Dr. Peter Daszak — used U.S. taxpayer dollars to facilitate dangerous gain-of-function research in Wuhan, China. After the Select Subcommittee released evidence of EcoHealth violating the terms of its NIH grant, HHS commenced official debarment proceedings against and suspended all funding to EcoHealth.

- New evidence also shows that the Department of Justice has opened an investigation into EcoHealth’s pandemic-era activities.

NIH FAILURES: NIH’s procedures for funding and overseeing potentially dangerous research are deficient, unreliable, and pose a serious threat to both public health and national security. Further, NIH fostered an environment that promoted evading federal record keeping laws — as seen through the actions of Dr. David Morens and “FOIA Lady” Marge Moore.

206 2.4K 4.5K 1.7M

This kind of open environment resembles a conflict without weapons, where all viewpoints are given room to circulate and spark debate. While this openness reflects Twitter’s support for diverse opinions, it also raises serious challenges around identifying and verifying credible information.

1.2.3 TikTok: Silence and Division

TikTok presents a more complex scenario. As a global platform, it operates within a dual framework.

In the Chinese mainland version, Douyin, content related to COVID-19 origins was nearly “technically ignored”. In contrast, the international version of TikTok hosted numerous short videos promoting conspiracy theories about the pandemic, many of which accumulated millions of views. Although the platform applied warning labels to some of this content, it did not remove it entirely.

This illustrates the platform’s locally adapted content governance strategies. TikTok applies a hybrid model of narrative control, tailoring moderation approaches to regional political and cultural contexts. As a result, even on the same platform, entirely different narratives may be presented depending on the audience.

The discourse ecosystems on these three platforms — Weibo, Twitter, and TikTok — demonstrate distinct governance approaches. Weibo enforces strict content filtering to maintain state-approved narratives. Twitter, with its open structure, permits a broad range of views, including conspiracy theories. TikTok, meanwhile, adopts region-specific moderation practices, allowing its global operation to accommodate different political environments. Together, these strategies shape how narratives of trust, doubt, and authority are constructed — a reflection of the

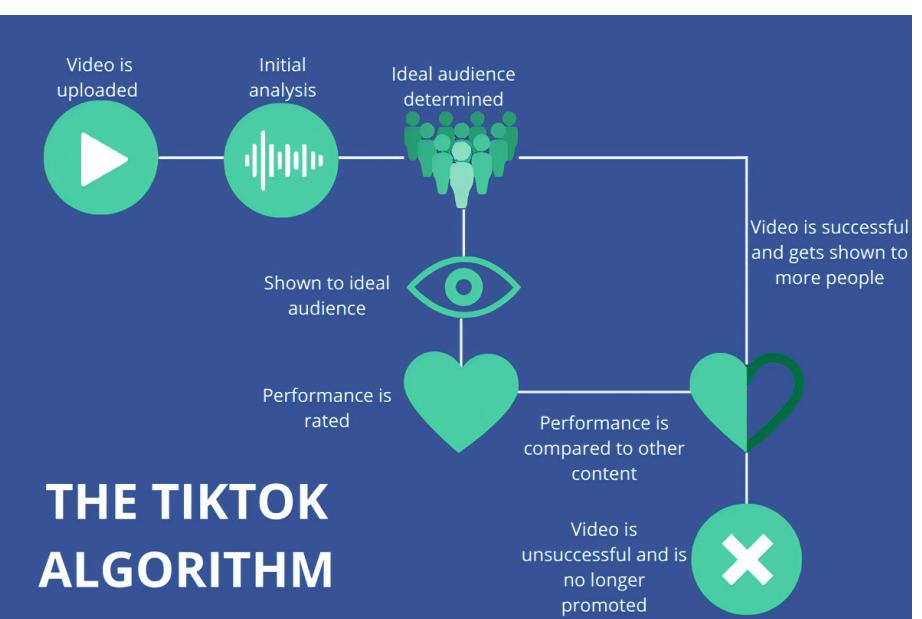
Sharri Markson (@SharriMarkson) · Jun 13, 2021

EXCLUSIVE: The Wuhan Institute of Virology kept live bats in cages, new footage from inside the facility has revealed.

youtube.com

WORLD EXCLUSIVE: Footage proves bats were kep...
The Wuhan Institute of Virology kept live bats in cages, new footage from inside the facility has ...

148 1.7K 2.8K



discourse battles structured by platform design.

1.3 Algorithmic Intervention and Information Timeliness

In our interview, Dr. Martin noted, “they (Facebook) were under pressure from the White House during the epidemic and implemented large-scale content censorship, even suppressing official health information, resulting in the suppression of scientific information”. Professor Fisher echoed this view, remarking that during politically sensitive periods it becomes

difficult to preserve both the independence of scientific communication and advocacy for it. She also observed a rise in misinformation during the pandemic. These observations suggest that platforms such as Twitter and Facebook, influenced by political pressure, engaged in extensive content moderation which at times suppressed even credible scientific information — paradoxically amplifying misinformation.

Additionally, platform resistance to applying friction—that is, hesitancy to impose measures that limit the spread of con-

tent—may have further encouraged the circulation of controversial or extreme viewpoints. For example, *research shows that discussions around the lab-leak theory on Twitter peaked in February 2020, yet mainstream news organisations did not actively counter this narrative until several months later.*

Platform algorithms tend to prioritise political content, often reducing the visibility of scientific material. According to Dwyer & Martin, *scientific news made up just 2.8% of the most shared content, while political news accounted for 10.6%*. Dr. Martin's study confirms that although algorithms can, in theory, broaden the global reach of scientific communication, their real-world effect is inconsistent and often skewed.

The recommendation systems on these platforms often boost emotionally charged or conspiratorial posts, delaying the spread of verified scientific content. This dynamic illustrates the dual impact of social media algorithms: while they accelerate information flows, they also enhance the reach of misinformation. The lab-leak controversy reveals how digital platforms simultaneously serve as both facilitators of public discourse and amplifiers of distorted narratives.



Case 2: Climate Change Campaigns — When Environmental Protection Meets Platform Mechanism

When it comes to climate change, scientific content does not always take precedence on digital platforms.

2.1 National Discourse vs. Individual Action

2.1.1 Weibo: Covered by Policies

In China, discussions around environmental protection are shaped by state-led narratives. On Weibo, official media outlets promote concepts such as “ecological civilisation” and “green development,” focusing primarily on positive achievements. Terms like “carbon neutrality” and “green and low-carbon life” have become popularised. Central and local government accounts regularly share updates on policy progress and environmental campaigns, highlighting milestones in ecological policy. This messaging fosters

 大兰州 
59分钟前 来自 微博视频号
【#高质量发展甘肃行# | 在黄沙中崛起的绿色堡垒】“十四五”期间，甘肃省武威市凉州区围绕“碳达峰，碳中和”目标，抢抓国家打造河西地区千万千瓦级大型风光电基地战略机遇，立足区域资源禀赋和产业优势，积极探索光伏治沙新模式，布局打造九墩滩光伏治沙示范园区，促进全区经济绿色转型高质量发展。该园区规划占地面积50万亩，装机容量1500万千瓦，园区建成后年可发电量约260.25亿千瓦时，年产值约75亿元。

量发展中国行##绿电点亮新武威# 口丝路声音的微博视频 收起^

[#High-quality Development in Gansu#A green fortress rising in the yellow sand] During the 14th Five-Year Plan period, Liangzhou District, Wuwei City, Gansu Province, centered on the goal of "carbon peak and carbon neutrality", seized the strategic opportunity of the country to build a large-scale wind and photovoltaic power base of tens of millions of kilowatts in the Hexi region, based on regional resource endowments and industrial advantages, actively explored new models of photovoltaic sand control, and planned to build the Jiutan Photovoltaic Sand Control Demonstration Park to promote the green transformation and high-quality development of the region's economy. The park is planned to cover an area of 500,000 mu and have an installed capacity of 15 million kilowatts. After the park is completed, it can generate about 26.025 billion kilowatt-hours of electricity annually, with an annual output value of about 7.5 billion yuan.



a strong, state-centred green identity and encourages public consensus aligned with government policy.

Yet, what space exists for grassroots environmental activism? These voices appear to be overshadowed by dominant state narratives. Activists struggle to gain visibility on the platform, receiving limited algorithmic support or engagement. The interplay between platform algorithms and national discourse elevates official messaging as the default "green story," making it difficult for individual contributions to reach broader audiences. Personal environmental efforts often remain on the margins, unable to move beyond the boundaries of sanctioned narratives.

2.1.2 Twitter/TikTok: Wrapped in Entertainment and Emotionality

In Western contexts, climate-related discussions are often marked by emotion and confrontation, with a focus on both individual expression and collective dissent. Platforms such as Twitter and TikTok function as spaces for protest, where users voice frustration over issues like carbon markets and government inaction. Most of these conversations are initiated by NGOs and media organisations rather than official institutions.

From clips of Greta Thunberg's speeches to livestreams of street blockades by Extinction Rebellion, environmental messages frequently take the form of highly charged content.

However, this visibility comes at a cost. Algorithms tend to favour dramatic visuals and emotionally intense messages, forcing environmental content to adopt sensational forms in order to be noticed. Green activism ends up competing with eye-catching filters and personal outbursts to attract attention.

人民论坛

06月18日 09:04 来自 iPhone客户端

【#学习金句#】“绿水青山就是金山银山”2005年，时任浙江省委书记的习近平在浙江安吉余村首次提出“绿水青山就是金山银山”的科学论断。大江南北的山水草木，见证了习近平总书记心系中华民族永续发展的深厚情怀。今年是“绿水青山就是金山银山”理念提出20周年，一起重温习近平总书记对生态环境保护的嘱托和期盼，努力建设人与自然和谐共生的美丽中国。#总书记对生态文明建设的殷殷嘱托##人不负青山 青山定不负人#

□人民论坛的微博视频 收起^



[#Learn the golden sentence# "Green water and green mountains are gold and silver mountains"] In 2005, Xi Jinping, then Secretary of the Zhejiang Provincial Party Committee, first proposed the scientific conclusion that "Green water and green mountains are gold and silver mountains" in Yu Village, Anji, Zhejiang. The mountains, rivers, plants and trees across the country have witnessed General Secretary Xi Jinping's deep feelings for the sustainable development of the Chinese nation. This year marks the 20th anniversary of the proposal of the concept of "Green water and green mountains are gold and silver mountains". Let's review General Secretary Xi Jinping's instructions and expectations on ecological environmental protection and strive to build a beautiful China where people and nature coexist in harmony.

Greta Thunberg @GretaThunberg · Nov 23, 2024

As the COP29 climate meeting is reaching its end, it should not come as a surprise that yet another COP is failing. The current draft is a complete disaster. But even if our expectations are close to non-existent, we must never ever find ourselves reacting to these continuous betrayals with anything but rage.

The people in power are yet again about to agree to a death sentence to the countless people whose lives have been or will be ruined by the climate crisis. The current text is full of false solutions and empty promises. The money from the Global North countries needed to pay back their climate debt is still nowhere to be seen. The host country - Azerbaijan - is a repressive and authoritarian petro-state that has committed ethnic cleansing and genocidal acts towards Armenians. Civil society present at COP29 are being silenced, yet continue fighting and pushing negotiators towards the bare minimum.

All this while oppression, inequalities, wars and genocides all over the world continue to intensify. Those in power are worsening the destabilisation and destruction of our life supporting ecosystems. We are on track to experience the hottest year ever recorded, with the global greenhouse gases reaching an all time high just last year.

It is clear that our current systems are not working in our favour. The COP processes aren't just failing us, they are part of a larger system built on injustice and designed to sacrifice current and future generations for the opportunity of a few to keep making unimaginable profits and continue to exploit planet and people.

With every negotiation, with every speech made by a world leader and with every agreement they sign, it becomes clear that it is up to us as a global collective to take the action we so desperately need and show where the leadership truly lies. They are not going to do it for us, as this COP29 yet again proves.

#COP29 #PayUp #ClimateJusticeNow

As Dr. Martin commented during our interview, "The platform doesn't care whether you are a scientist or not, it only cares whether you can 'make people stop'." This leads to a narrowing of discourse. Environmental conversations are pushed toward emotional extremes, making it difficult to sustain a nuanced or ongoing public dialogue. As a result, climate issues are often reduced to moments of spectacle, rather than extended discussions grounded in evidence or context.

2.2 Analysis of the Comment Area

In today's digital landscape, the comment sections of platforms like Weibo, Twitter, and TikTok have become key spaces for public expression around environmental concerns. Variations in each platform's content culture, user demographics, and moderation systems have significantly shaped how environmental discussions unfold and are received.

2.2.1 Weibo: The Echo Chamber of National Environmental Pride

On Weibo, comment sections on environmental topics often echo the national narrative of modernisation. These conversations align closely with official messaging. When state media or government accounts post content about "ecological civilisation" or "green development," responses are overwhelmingly positive. Users like, share, and comment with messages such as "figures up to China's green future," "proud of our ecological progress," or "jointly build a beautiful home." These remarks express collective affirmation rather than individual opinions. This environment creates a kind of digital chorus, reinforcing a unified and patriotic framing of environmental protection. The comment section becomes less a space for debate and more a performance of shared national values, where environmentalism is celebrated as part of

鱼儿在水里7秒记忆 🐟: 大美中国 ❤️
06月05日 14:59 Great beauty of China

-Asteroids 🌎: 青山焕彩铸金脉, 绿水化雨润苍茫 🌸🌸
06月05日 14:25 Green mountains are shining and casting golden veins, green wates are turning into rain and moistening the vastness

徒步阿longly: 好美
06月05日 14:22 So beautiful

一口椰奶枝 🌰: 保护环境
06月05日 14:22 Protect the environment

咔呲豆几 🎉: 好美丽哟!
06月05日 14:21 So beautiful!

鹤壁新闻网: 转发微博
06月05日 15:06

Pinned
Greta Thunberg @GretaThunberg · Nov 15, 2021

A reminder: the people in power don't need conferences, treaties or agreements to start taking real climate action. They can start today. When enough people come together then change will come and we can achieve almost anything. So instead of looking for hope - start creating it.

29K 28K 147K

Nigar Ogeday 🇮🇹 🇭🇺 🇺🇦 🇦🇪 🇩🇪 ... @ogeday_ni... · Nov 10, 2024

You can no longer fool the developing world with human rights and climate fairy tales. States and people do not accept Soros artists like you. Because they know very well that you will only bring harm. You are talking nonsense. You are of no use.

4 2 14 623

Alex Pigot @AlexPigot · Nov 5, 2024

Absolutely correct, Greta. Peaceful and immediate conclusions to wars and urgent action to prevent climate change disaster are now the two sides of the same coin - human life.

9 9 65 5.7K

the country's modern progress.

2.2.2 Twitter: A Stage for Global Voices and Resistance

In stark contrast, Twitter's comment spaces operate more like arenas for debate and dissent. As a global platform,

it draws a wide range of voices – supporters, critics, activists, sceptics – all competing for visibility. Hashtags such as #ClimateJusticeNow frequently spark high-energy exchanges, emotional appeals, and urgent calls for change.

Comments range from encouragement to

sharp criticism. Supporters rally around messages like “We must act now,” while others challenge policy effectiveness or question political motivations. These threads often reflect the broader tension in international climate discourse. The comment section becomes a condensed version of global environmental debate, characterised by its openness to disagreement and conflict.

2.2.3 TikTok: Emotional Resonance and Visual Protest

On TikTok, emotional intensity and visual storytelling dominate environmental discussions. Short videos addressing climate-related fears, lifestyle shifts, or activism evoke strong viewer reactions. For example, the hashtag #ClimateAnxiety has gained traction as young users post clips that express their worries, frustration, and urgency about the future. Scenes of protest and climate-related distress go viral frequently. In this context, TikTok acts more as an emotional amplifier than an informational space. Individual stories gain momentum quickly, resonating with global audiences. Comments often feature deeply personal expressions – fears, hopes, anger – written in expressive or poetic language. Rather than offering policy critiques, users build emotional solidarity through shared sentiment and experience.

2.3 Differences in Platform Mechanisms

Variations in platform design continue to deepen the divergence in how environmental narratives take shape.

In China, national discourse functions as a dominant filter, shaping and amplifying state-sanctioned narratives about environmentalism. Algorithmic design and moderation policies on platforms such as Weibo tend to prioritise content aligned with the government’s messaging, reinforcing a loop where alternative perspec-

tives are either sidelined or removed. Consequently, Weibo often promotes posts from official institutions, while independent voices struggle to gain traction. Green-themed tags and campaigns are primarily led by government accounts, making it difficult for everyday users to gain visibility for grassroots environmental initiatives.

In contrast, platforms like Twitter and TikTok in the West tend to favour visually engaging and novel content. Individual expression is more visible and dynamic, but this also opens space for polarising narratives. Twitter’s real-time posting and open structure support a wide spectrum of views – ranging from cooperative dialogue to heated disputes. This unfiltered environment gives energy to climate discussions, turning comment sections into active arenas for activism and debate. TikTok contributes through algorithmically boosted challenge videos, intensifying protest-oriented and emotionally charged climate content.

In today’s rapid media landscape, the visibility of a message depends not just on its content, but on a combination of platform architecture, political interests, and prevailing social values.

When monkeypox emerged in 2022, social media once again became a battleground of competing narratives. The outbreak highlighted how discourse surrounding disease can quickly extend beyond science, revealing deeper cultural biases and platform-specific dynamics.

Case 3: Monkeypox Discourse — Beyond the Disease, there are Labels

On Twitter, monkeypox became associated with marginalised identities, particularly Africa and the LGBTQ community. Media outlets circulated terms like “African disease” and “homosexual transmission,” reinforcing harmful stereotypes. In the comment sections, users echoed these narratives, posting remarks such as “They brought the virus again” or “It’s none of my business,” reflecting detachment and othering.

Although the World Health Organization quickly released a statement condemning such stigmatisation, and Twitter added fact-checking prompts, the discriminatory framing had already taken hold. As Reisach (2020) explains, *algorithms on social platforms often reinforce group-based prejudices by promoting biased content to targeted audiences*. Pro-

Concerned Citizen @BGatesIsaPyscho · Aug 16, 2024

Monkeypox update

A rapid spread of a lethal version of Mpox, first in Africa & now in Europe

At least 17,500 cases in 2024

There were more than 3000 cases in the UK in 2022

Legacy Media Sky News found a Presenter to get excited about Mpox - unlike last

Show more

1:50 **skynews.com** which killed the actor in October **BREAKING NEWS** U.S. authorities say five people

2K 940 2.4K 808K

Afrika Stories @Afrika_Stories · May 28, 2022

Monkey Pox has not yet been confirmed in any **African** country. But western medias have been reporting about Monkey Pox using Black/**African** people images.

2K 940 2.4K 808K

file-based recommendation systems can create self-reinforcing echo chambers, where harmful narratives spread with little resistance.

3.2 Weibo: Non-Explicit Strategies

On Weibo, a different communication strategy emerged. The authorities managed the topic with restraint, adopting a low-profile tone that avoided direct associations with specific identities or locations. This was an implicit effort to reduce stigma. Official notices framed monkey pox as controllable and discouraged panic, carefully avoiding overt geographic or demographic labels. While this approach helped maintain public calm and contributed to social stability, it also meant that discussion about the rights and needs of marginalised groups was largely absent. By prioritising stability, this strategy effectively limited opportunities for open dialogue about health equity and inclusion.

The contrast between Twitter's tendency toward stigmatisation and Weibo's cautious silence illustrates how platform-specific strategies influence public perception. Algorithms, moderation policies, and cultural contexts all contribute to whether narratives are inclusive or exclusionary. Ultimately, the monkey pox case reveals a broader truth: technology and narrative are tightly connected. How a virus is framed – and who is associated with it – can lead to lasting social effects.

3.3 TikTok: Emotional Expression

TikTok's response to monkey pox reveals a different expressive mode compared to Twitter and Weibo. The short-form video format and recommendation system encourage users to respond in emotionally direct and visually creative ways.



Many users attempted to reduce fear around the outbreak by posting personal reflections, casual commentary, and even humorous content. Some creators produced accessible science videos outlining monkey pox symptoms and preventative measures, using light-hearted tones to ease public anxiety. Others used the platform to challenge stereotypes and push back against discriminatory narratives. Common video messages included statements like, "Stop calling it an 'African disease'—that's disrespectful," or "We need to approach the outbreak rationally, not with fear." These clips reflected a strong sense of emotional engagement and collective frustration with stigmatising language.

Cross-case Observation

— “We now live in the age of narrative competition” - Dr. Goodnight

Comparing digital narratives around COVID-19, climate change, and monkey pox across three major platforms – Weibo, Twitter/X, and Douyin – reveals three distinct but overlapping modes of scientific communication. These models coexist, intersect, and compete for attention and legitimacy, shaping how science is seen and trusted online.

State-led Narrative Control Platform: Weibo, Douyin

In this structure, the state plays a central role in crafting and circulating scientific messages. Its defining features include:

- A unified discourse that closely aligns with government objectives, such as Weibo's framing of climate change within the national "ecological civilisation" agenda;
- A moderation system that filters dissent, conspiracy theories, or unsettling commentary. For instance, Weibo's
- management of COVID-19 origin debates promotes natural explanations, dismisses foreign conspiracy claims, and removes posts that challenge this view;
- Fragmented and fast-changing discourse. During the early stages of COVID-19 and monkey pox, conspiracy theories frequently gained more attention than verified information – particularly on Twitter;
- Algorithms that reward engagement, not accuracy.



This approach positions science as a function of state credibility, with trust rooted in official authority and dissent reduced in the interest of social cohesion.

Platform-Driven Narrative Diffusion Platform: Twitter/X, TikTok

In contrast, the platform-driven model prioritises visibility over verification. Its main drivers include:

- Emotionally charged content that triggers outrage, empathy, or affirmation. On TikTok, for example, climate advocacy is often packaged as dramatic visuals or expressive protest.
- Fragmented and fast-changing discourse. During the early stages of COVID-19 and monkey pox, conspiracy theories frequently gained more attention than verified information – particularly on Twitter;
- Algorithms that reward engagement, not accuracy.

In this model, science becomes a viral product, shaped more by platform interaction and user emotion than by institutional expertise or validation.

Hybrid Governance Platform: TikTok (Chinese and International Versions)

TikTok presents a more intricate case: it operates through a hybrid governance model that adapts its content policies

based on regional political frameworks. The platform applies localised moderation approaches shaped by national regulatory expectations. It maintains distinct content review practices across markets and incorporates both state-guided and platform-centred approaches, depending on regional conditions.

For instance, Douyin, the Chinese version, largely steers clear of contentious topics

and aligns more closely with the state-led model. In contrast, TikTok's international version permits a broader circulation of emotionally expressive content. This dual approach reflects a flexible system of control where scientific messages are adjusted to suit the political and cultural environment of each region.

Conclusion

In today's fragmented and fast-paced information landscape, public trust in science is facing new and complex challenges. When we examine recent crises—such as the pandemic, climate change, and the monkey pox outbreak—it becomes clear that scientific storytelling has shifted from pure knowledge-sharing to a contested space shaped by control, power, and social identity. Platform moderation systems, algorithmic recommendation tools, and national policies on algorithmic sovereignty now collectively influence how people perceive and evaluate scientific information.

Ultimately, the issue at hand is no longer just about content but about structure. This dual structure, formed by the interplay between governmental authority and market-driven platforms, creates vastly different trust pathways in different societies when responding to the same scientific event. The way science is communicated, validated, and received is increasingly dependent on how platforms, states, and users interact. Looking forward, building a scientific communication system that is open yet structured, reliable yet welcoming, might be essential to regaining and maintaining public trust. This, however, requires a collective

effort to stay rational, engage critically, and resist contributing to the spread of misinformation or emotionally charged narratives.

