

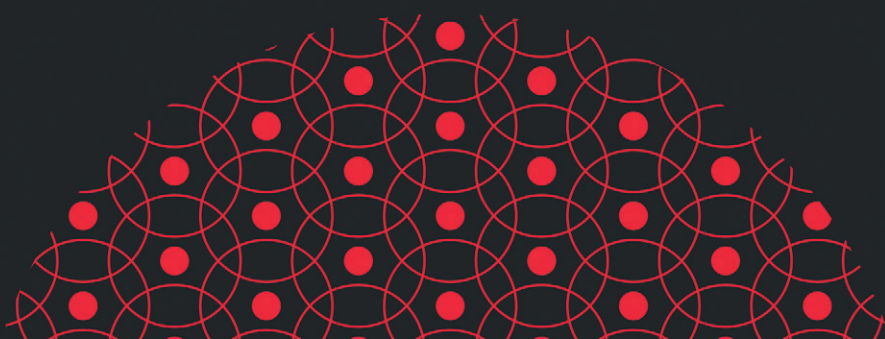


EMERALD POINTS

# NAVIGATING THE WEB OF DISINFORMATION

Employing Social Network Analysis to  
Decode Disinformation Dynamics in  
Modern Societies

**MARIANN HARDEY**  
**WASIM AHMED**



# NAVIGATING THE WEB OF DISINFORMATION

An absolute pleasure to read, each chapter is timely, insightful, and brimming with scholarship. A valuable contribution for anyone seeking depth and relevance in this field.

— *Zabidul Islam Jobair* – Former Lecturer,  
Department of Journalism, Media and Communication,  
Daffodil International University (DIU)

A practical, concise guide for anyone analysing disinformation networks: it clearly explains which centrality measures to use in different scenarios and how layout choices reveal clusters, bridges, and key influencers.

— *Alessandro Zonin* – Adjunct Professor in Data Analytics &  
Big Data, Social Network Analysis,  
University of Verona – [www.digitaldatastories.it](http://www.digitaldatastories.it)

As an early career researcher at the cusp of public and consumer health informatics & social network analysis, I found this book's guidance on centrality and layout algorithms invaluable. The authors write with such clarity that questions about SNA or NodeXL seem to be answered before they are even asked, making it an accessible and powerful resource for tackling disinformation.

— *Nishant Jain, PhD, MS, MHA, FAMIA*  
– Early career researcher in health informatics

This book is a masterclass in the strategic application of Social Network Analysis to understand disinformation. Few works manage to ground complex tools in civic relevance so effectively. The book spans historical and contemporary disinformation, offering frameworks that directly inform civic response.

— *Dr. Syeda Shahid* – Assistant Professor,  
Learning Technologies, Towson University

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BY

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INVESTOR IN PEOPLE

*In memory of Professor Simon J. James, a brilliant mind and a generous spirit, whose unwavering commitment to the power of narrative continues to inspire me and others. Your legacy lives on in the minds you shaped and the stories we tell. And to my daughter, Darcey, who is just beginning her own journey of critical reading and discovery.*

— Maz

*To my father, whose unwavering support meant the world to me while I was studying for my PhD (2014–2017). I am especially grateful for his help in covering a funding shortfall that enabled me to attend and present at a conference in Boston, USA, during my PhD in 2017. The experience was profoundly valuable.*

— Wasim

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# FOREWORD: LOST IN A LABYRINTH OF INFORMATION

BY MARIANN HARDEY AND WASIM AHMED

What you hold in your hands is the culmination of a shared journey as researchers. This book draws on our combined research and our distinct perspectives as UK academics, as parents and our commitment to an education that fosters independent critical thinking. Every page reflects this collaborative spirit, an ongoing dialogue between us that we hope resonates with you and helps you navigate when you encounter disinformation.

In a world lost in a labyrinth of information, certainty has become our most precious and endangered resource. The information age promised that having access to more information than ever before would make us more enlightened and sure about the world. More data should logically lead to more clarity. However, the opposite has happened. The volume of information, much of which is false, misleading or contradictory, has created a labyrinth. Instead of making us more certain, it has overwhelmed our ability to isolate truth from lies, making genuine certainty a rare and valuable commodity.

Left unchecked, this confusing labyrinth of information threatens to collapse into what this book terms the ‘Disinfocalypse’, a chaotic state where the very concept of objective truth is called into question. This is a state of deliberate, engineered assault on information, weaponised for political gain, economic advantage or sheer chaotic purpose.

Our journey began, as it often does, in the frenetic digital spaces of academic research. Yet for both of us, this exploration quickly became deeply personal.

Together, we’ve witnessed how the architecture of social media, designed for engagement above all else, can inadvertently (and often deliberately) amplify information intended to harm and divide. We’ve seen sophisticated campaigns, backed by state actors and well-funded groups, expertly blend partial truths with outright fabrications. We have ourselves encountered the

dangerous allure of a ‘universal truth’, that comforting, monolithic narrative disinformation readily offers as a way through the information labyrinth.

This book is the product of an enduring intellectual partnership rooted in the humanities. One of us began our academic careers studying English Literature, and the other in Philosophy. The humanities equipped us with the ability to read between the lines of narratives and understand the importance of establishing sources and evidence driving conversations. This analytical insight allowed us to understand not just what people say, but why they say it, and what it reveals about culture, identity and perception.

In an information age, a range of tools are available to support the writing process. Given the topic of this book, it is essential to be transparent about the technologies that assisted us in editing and refining our work. These tools were used thoughtfully and selectively, notably to support one of the authors, who is dyslexic. Among the tools used were large language models such as ChatGPT-4, Microsoft Copilot and general writing support tools such as Grammarly. These helped clarify phrasing and improve readability. We also used the Paperpile reference manager to organise and format citations. These tools were employed to enhance clarity and never to generate original ideas or arguments, and all substantive content reflects the authors’ research, analysis and voice. We take full responsibility for the content and intellectual contributions of this book.

Through these chapters, we face an uncomfortable reality that, despite widespread concern, our collective strategies for resistance are often misaligned with the sophistication of disinformation. We argue that the answer isn’t a simplistic ‘red pill’ that reveals a singular, hidden truth, but rather a shift in how we engage with information and, crucially, how we help future generations. Our commitment, as academics, educators, parents and citizens, is to advocate for a new form of literacy. One built on critical thinking, intellectual humility and a commitment to evidence-based discourse.

The authors contributed equally to this work and share first authorship.

# INTRODUCTION – THE DISTORTED REALITY WE LIVE IN

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## ABSTRACT

*We have entered an era of institutionalised disinformation, where engineered narratives are deliberately used as tools of power to alter public opinion and distort our shared reality. This presents a critical challenge: distinguishing truth from falsehood now demands a new level of critical literacy, a skill made more vital as artificial intelligence (AI) increasingly blurs the lines between information sources. In response, this book champions social network analysis (SNA) as a key methodology, providing the tools to uncover the structural patterns, key actors and hidden dynamics that drive these disinformation campaigns.*

**Keywords:** Institutionalised disinformation; digital literacy; public trust; information crisis; post-truth; AI

## THE DISTORTED REALITY WE LIVE IN

In his 2025 Michael Faraday Prize Lecture, ‘*Science under Threat: The Politics of Institutionalised Disinformation*’, Professor Salim Abdool Karim, the 2024 winner, issued a stark warning. With the gravitas of a visionary unveiling a looming storm, Karim considered the profound risks disinformation poses, not merely to the hallowed halls of science but to health, the delicate sinews of trust between people, the dance of politics and, ultimately, the future of society.

Karim’s arguments are grounded in history, where he recounts the deliberate steps taken by the KGB, their chillingly named Special Disinformation Office, a harbinger of things to come. He exposed how disinformation was

exerted in an official capacity by government agencies, as a weapon designed to sow confusion and discredit inconvenient truths.

Karim's assertions draw a through-line from past Russian state propaganda to the strategies of US government information during Trump 1.0, when the reality of COVID-19 was systematically downplayed and casualties were reduced to mere statistics. Now, in the era of Trump 2.0, we witness the full bloom of entrenched institutionalised disinformation, with the US state departments strategically leveraging social media for mass amplification.

Karim's words echo with a disquieting resonance:

... this becomes a challenge because now what you're doing is that the institutions of the state, who you depend on for the truth, are now the ones not giving you the truth. (*The Royal Society, 2025*)

As a South African epidemiologist who has dedicated his life to the prevention and ultimately the elimination of HIV, Karim understands, perhaps more acutely than most, the dangers of an information age where the very apparatuses of the state become compliant with, or even audacious generators of, disinformation.

It seems inevitable, given the escalating prominence of billionaires, the influence of politicians and the ever-shifting sands of global politics, that our current anxieties coalesce around the use of technology for misrepresentation, the systematic undermining of the Free Press, the takeover of the legal system and the relentless attack on intellectuals and science. This convergence points to what Michael [Filimowicz \(2024\)](#) diagnoses as a societal *Information Disorder* in his book of the same title and the symptoms of a profoundly unwell information ecosystem.

The process begins with a calculated assault on scientific integrity and culminates in the annihilation of public trust in facts themselves. *If truth then becomes a malleable commodity, shaped by the most powerful and amplified by an algorithm, what becomes of reality? What kind of world are we unwittingly building, where perception trumps provable fact and a shared understanding cannot take shape?*

Ray Bradbury's chilling 1953 novel, *Fahrenheit 451* ([Bradbury, 2017](#)), portrayed a stark future where a totalitarian regime purged knowledge by setting books ablaze. We witness, in Bradbury's opening chapter, an old woman's defiance as she lights a match, immolating herself and her home, denying the state not just her books but her thoughts and, ultimately, her life.

The burning of books, an erosion of a shared narrative, is a central theme in Bradbury's work. This is the first act for what happens when a society can

no longer agree on facts: ‘But you can’t make people listen. They have to come round in their own time, wondering what happened and why the world blew up under them. It can’t last’ (Bradbury, 2017 Chapter 3, pp. 146).

As we go on to argue in later chapters, in the absence of proven facts and trusted entities, social media reinforce the spread of disinformation, making it much harder to identify truths and for them to penetrate public discourse.

Karim ends his lecture standing firmly in the wasteland of information overload, with a call to action and a prediction. It seems unrealistic to think that we can untangle the conditions under which people perceive the world or that disinformation will be a static entity that can be easily distinguished from other forms of content. Karim and others call for action against commercial companies like Cambridge Analytica, who possess a superior understanding of disinformation and the short-term narratives that disrupt public understanding. Truly independent and fact-checked sources will recede against sensational and dominant narratives as we shift from the information age into institutionalised disinformation.

‘Disinfocalypse’ seems a real threat, where it is difficult, if not impossible, for individuals, no matter how perceptive and careful they are, to distinguish between facts and falsehoods. The ultimate impact of disinformation will depend on whether social and political processes work to advance it or can build points of resistance, averting a societal collapse.

Artificial intelligence (AI) has already played a key role in shaping how disinformation is created, influencing which perspectives are amplified and which are further ostracised and rendered silent. This reality demands a new kind of literacy. Both of us are parents, and we witness our children learning not just to read but to read critically. A skill now essential for spotting fake news and resisting disinformation. The popularity of novels and fun-fact books specifically designed to introduce young readers to these vital concepts (see Further Reading at the end of this **Introduction**) illustrates just how fundamental this educational shift has become. Ultimately, instilling critical reading sensitivity in our younger generations may prove to be the single most crucial step in navigating – and perhaps even transforming – the disorienting landscape of modern disinformation.

## How to Find Your Way Through This Book

Throughout the book, we make a case for social network analysis (SNA) as a robust research methodology, which can be used to help uncover the

structural patterns, key actors and diffusion dynamics that underpin coordinated disinformation campaigns across digital ecosystems.

The book provides a structured exploration of disinformation and its entanglement with social networks, digital technologies and societal systems. It begins by framing the distorted reality shaped by disinformation (**Introduction**), before examining how social networks facilitate its spread (*Chapter 1*). *Chapter 2* introduces SNA as a methodological tool for studying disinformation, followed by a focused look at the roles of seeders and amplifiers in *Chapter 3*. *Chapter 4* addresses the architecture and execution of disinformation campaigns while *Chapter 5* surveys approaches to countering them.

The second half of the book deepens the analytical lens, applying SNA to the identification of AI-driven disinformation (*Chapter 6*) and exploring its strategic use within political systems (*Chapter 7*). *Chapter 8* shifts focus to the impact of disinformation on public health, highlighting its tangible consequences. The final chapter (*Chapter 9*) considers the future trajectory of disinformation, offering reflections on new challenges and potential responses. Together, these chapters provide a multi-layered account of how disinformation operates, evolves and affects the world around us.

We have set out to explain the traps and self-perpetuating feedback loops of disinformation. While specific examples are often used to illustrate network associations and wider complexities, this book is emphatically not an ‘aha!’ moment of the ‘good’ versus ‘bad’ information sources. Nor is it an instruction to hermetically seal yourself off from the platforms and networks you find interesting to explore. Quite the contrary. If the concerns raised within these pages resonate with you, know that a range of practical strategies exist to improve how you encounter disinformation and minimise its effects.

Many of the harms we discuss stem from a collective failure to openly discuss this pervasive issue, fuelled by an often-mistaken assumption among educators that Gen Z and other digitally native generations inherently possess the skills to navigate complex and often hostile digital spaces safely. They don’t, and we don’t.

To maintain focus and avoid unnecessary legal and political quagmires, we have deliberately chosen not to emphasise every fleeting conspiracy theory or individual influencer. If a particular conspiracy theory isn’t fully explained or defined, rest assured that the specific detail isn’t crucial for grasping the broader principle we are illustrating; these are merely signposts, anchoring a general argument to one distinct corner of the internet.

Finally, a note on accessibility: while acronyms and abbreviations are defined upon their first mention, their subsequent uses might be less consistent. This reflects the organic flow of our thoughts and discussions. A

comprehensive glossary is provided for standard terms, allowing you to easily reference key concepts as you dip in and out of chapters. We have also made a concerted effort to consistently reference academic research and reports that offer accessible overviews, prioritising open-access (free) materials to encourage further, independent exploration. The key to this is reading more.

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# DISINFORMATION AND SOCIAL NETWORKS

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## ABSTRACT

*The information age has witnessed a dramatic surge in the spread of disinformation, presenting formidable challenges to societies globally. This chapter addresses the growing issue of disinformation and its profound impact on public perception and the shaping of societal realities. Once envisioned as a boundless library fostering global connection, the digital world has, regrettably, developed a significant 'truth problem'. No longer confined to hushed corners, falsehoods cascade through our social media feeds with alarming speed and often deliberate intent. Here, we explore the defining characteristics of disinformation as it takes root and spreads across social networks. We uncover how it rewrites the narratives that shape our understanding of the world. To illustrate this, we trace the surprisingly viral journeys of these digital fictions. SNA will be briefly introduced as a methodological tool to be explored in greater detail in Chapter 2, providing a structured approach to examine these dynamics and measure how disinformation cascades through digital platforms and affects different communities.*

**Keywords:** Algorithmic amplification; social networks; trust erosion; online influence; networked publics

## INTRODUCTION

Remember when your distant aunt, who last communicated via a slightly blurry holiday selfie five years ago, started sharing enthusiastic posts about her ‘guaranteed income’ opportunities or ‘miracle weight-loss’ cures? Or perhaps you’ve been targeted by a slew of similar profiles, all professing undying love for a particular brand in your comments section.

These encounters can feel like the equivalent of digital door-to-door salespeople, armed with dubious claims and relentless enthusiasm. While initially these intrusions might elicit a chuckle or an eye-roll, they serve as a reminder that the very infrastructure we use to share our Grumpy Cat memes and life updates is also a conduit for less benign forms of information. These include the deliberate and often sophisticated spread of disinformation.

Before we set out our table in this chapter, a quick note on the defining characteristics of the ‘information age’. This concept reflects how the high volume of information does not just define current lives but also gives attention to how information itself is conceptualised and handled.

You may want to read James Gleick’s *The Information: A History, A Theory, A Flood, a working definition of the ‘information age’*. Gleick argues that the information age is best understood as a historical period characterised by the unprecedented exponential growth in the production, storage, dissemination and accessibility of information, driven by advancements in digital technology.

At its core, the information age fundamentally redefines what information is:

- Information as a **quantifiable entity** – something that can be coded, measured and re/processed.
- This era ushered in the **automation of information processing** – the ability of machines, such as those employing machine learning and artificial intelligence, to handle data at speeds and scales unimaginable in previous eras due to the computational power required.
- Crucially, it witnessed the **blurring of boundaries**, as information flowed relatively easily across geographic, disciplinary, social and cultural lines.
- Yet, this very abundance presents a **paradox** – while there’s a lot of information, its meaning and clarity are scarce, leading to new challenges in navigation and discernment (Try finding anything new to watch on a streaming service despite the overwhelming catalogue of content).

In essence, the information age is about the transformation of society by information technologies, making information both omnipresent and, paradoxically, increasingly complex to manage and understand.