# Disinformation and Scholarly Communications

## Will White

**About the Author**

Will White holds a Masters in Library and Information Science from the University of Illinois, Urbana-Champaign. He has researched with the World Health Organisation, University of Illinois Information Quality Lab, and John Deere. His research interests include mis/disinformation, information warfare, extremism, and information literacy.

## Abstract

Much has been written lately on disinformation, particularly regarding right-wing extremism and COVID-19. Few attempts, however, have been made to classify specific forms of disinformation, and little attention has been paid to disinformation's impact on scholarly communications. This essay identifies three types of disinformation affecting academic publishing based on authorial intent: parodic, which critiques the scholarly process through mimicry and humour; opportunist, which seeks to promote the author's scholarly image; and malicious, which distorts the reader's perception of a controversial issue like vaccination or climate change. In doing so, the paper provides an overview of notable instances of published disinformation, such as the

Sokal affair, while highlighting the current threat of pandemic-related disinformation posing as scholarly research. The malicious disinformation section also explores how academic and pseudoscientific parlance can be adopted by white nationalists and conspiracy theorists. This paper demonstrates that a taxonomic approach to published disinformation can simultaneously make identifying falsified academic research easier, while exposing vulnerabilities in the publishing system. Furthermore, it also attempts to raise awareness of published disinformation as not just a problem confined to academia, but rather a contributor to the ongoing 'culture wars' and a potential threat to both public health and national security.

## Introduction

Disinformation has been recognised in recent years as a rapidly growing problem, particularly after the 2016 United States presidential election.[1] The development of social media and America's increasing political polarisation have contributed to an increasingly large number of citizens receiving information from dubious sources. This has led to academics such as Simon Blackburn[2] and Lee McIntyre[3] to refer to American society as being 'post-truth'.[4] While discussion surrounding disinformation and fake news has waxed and waned since Donald Trump announced his candidacy for president, the confluence of the COVID-19 pandemic and the 2020 election[5] has resulted in disinformation becoming more prevalent than ever. Disinformation's threat to international security and political stability has been demonstrated by world events ranging from the Russian invasion of Ukraine[6] to Canada's Freedom Convoy

---

1   Hunt Allcott and Matthew Gentzkow, '<u>Social Media and Fake News in the 2016 Election</u>', *Journal of Economic Perspectives* 31 № 2 (2017): 211–36.

2   Simon Blackburn, *On Truth* (Oxford: Oxford University Press, 2018).

3   Lee McIntyre, *Post-Truth* (Boston: MIT Press, 2018).

4   Dominic Malcolm, '<u>Post-Truth Society? An Eliasian Sociological Analysis of Knowledge in the 21st Century</u>', *Sociology* 55 № 6 (2021): 1063–79.

5   Amy Mitchell, Mark Jurkowitz, J. Baxter Oliphant, and Elisa Shearer, '<u>Misinformation and Competing Views of Reality Abounded throughout 2020</u>', *Pew Research Center*, 22 February 2021.

6   Jason Abbruzzese, '<u>Russian Disinformation, Propaganda Ramp Up As Conflict in Ukraine Grows</u>', *NBC News*, 24 February 2022.

protests[7] and the ongoing aftermath of the 'Big Lie' and 2021 US Capitol insurrection.[8]

In his seminal essay 'What Is Disinformation?', Don Fallis defines disinformation as 'nonaccidentally misleading information'.[9] Whereas misinformation is simply misleading information regardless of intent, disinformation intentionally deceives its audience. While much has been written since 2016 on disinformation, most research focuses specifically on 'fake news' and its impact on social media and news coverage. Comparatively little attention has been paid to disinformation's effect on scholarly communications. Scholars writing on disinformation in academic publishing have primarily focused on predatory publishers, unscrupulous for-profit entities that use deceptive practices and often publish factually dubious papers. Whereas predatory publishers are notorious propagators of disinformation, reputable peer-reviewed academic publications have traditionally been seen as largely immune to disinformation. Reports of journals that have fallen prey to published academic disinformation have mostly centred on elaborate hoaxes, such as the Sokal and Grievance Studies affairs. Only recently has disinformation in academic publishing been widely viewed as a serious threat due to an avalanche of pandemic-related research, some of which is factually untrue.[10]

This paper argues that there are roughly three types of disinformation impacting scholarly communications which can be classified according to authorial intent: *parodic disinformation*, which mimics scholarly discourse in order to critique the publication process; *opportunist disinformation,* which is designed to promote the author or publisher's scholarly image; and *malicious disinformation*, which seeks to distort the public perception of a scientific or sociopolitical issue. These three types of disinformation

---

7    Charlie Angus, 'Lessons from the Convoy: We Are Losing the War on Disinformation', *Centre for International Governance Innovation*, 22 February 2022.

8    Tovia Smith, 'They Believe in Trump's "Big Lie": Here's Why It's Been So Hard to Dispel', *NPR*, 5 January 2022.

9    Don Fallis, 'What Is Disinformation?', *Library Trends* 63 Nº 3 (2015): 406.

10   Victoria L. Rubin, 'Disinformation and Misinformation Triangle: A Conceptual Model for "Fake News" Epidemic, Causal Factors and Interventions', *Journal of Documentation* 75 Nº 5 (2019): 1013–34; Anthony King, 'Fast News or Fake News? The Advantages and the Pitfalls of Rapid Publication through Pre-Print Servers during a Pandemic', *EMBO Reports* 21 Nº 6 e50817 (2020).

have been ordered from least to most concerning, with malicious disinformation currently threatening to drown out scientifically rigorous research regarding COVID-19 and vaccinations. By taking a taxonomic approach to disinformation, this paper hopes to make identifying factually dubious research easier and promote increased discussion of the existential threat disinformation poses to academic publishing and academia at large. Finally, this paper will examine how disinformation posing as academically or scientifically credible research has consequences that reverberate beyond scholarly publishing. The paper's third section examines two currently relevant trends of malicious disinformation co-opting academic parlance: falsified COVID-19 research seeking to erode public trust in vaccines, and white nationalist propaganda attempting to prove biologically the genetic inferiority of Jews and African Americans. These two cases will hopefully demonstrate how falsified scientific information can erode public trust in scientific and political institutions, and consequentially threaten national security.

## Parodic disinformation

In 1996 a New York University physics professor named Alan Sokal submitted a paper to the cultural studies journal *Social Text* titled 'Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity'.[11] Sokal's paper, which humorously proposed quantum gravity to be socially constructed, was written as a joke; nonetheless, the paper was taken seriously by *Social Text* and published in its May issue. This attracted national attention, prompting journalists and academics to refer to the event as the 'Sokal affair'. Sokal's paper is an archetypal example of *parodic disinformation*, which uses imitation and humour to critique the publishing system, while intentionally being realistic enough to be accepted for publication. In writing his essay, Sokal intended not to cause public disbelief in quantum mechanics, but rather to test the limits of the publishing process and what he calls 'the

---

11    Alan Sokal, 'Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity', *Social Text* 46/47 (1996): 217-52.

intellectual arrogance of […] postmodernist literary theory'[12] represented by writers such as Jacques Lacan and Jacques Derrida. As Sokal wrote in the magazine *Lingua Franca* a few months after his essay's publication, when he revealed his paper to have been a hoax, 'I decided to try a modest (though admittedly uncontrolled) experiment: Would a leading North American journal of cultural studies […] publish an article liberally salted with nonsense if *(a)* it sounded good and *(b)* it flattered the editors' ideological preconceptions?'[13] Sokal goes on to explain that 'while my method was satirical, my motivation is utterly serious […] what concerns me is the proliferation, not just of nonsense and sloppy thinking per se, but of a particular kind of nonsense and sloppy thinking: one that denies the existence of objective realities, or (when challenged) admits their existence but downplays their practical relevance'.[14]

The Sokal affair sparked widespread debate not just on whether or not Sokal's actions were justified, but on critical theory, postmodern philosophy, and the academic publishing industry. Sokal's essay is generally seen within the context of the 'science wars', a series of public spats between scientists and postmodern theorists on the nature of intellectual inquiry. In his essay 'Cultural Studies and Its Discontents: A Comment on the Sokal Affair', Ken Hirschkop argues 'his parody was unmistakably aimed not at science studies in general but at those who would install cultural studies as the new queen of the sciences'.[15] The Sokal affair typifies what Jim Schnabel refers to as 'hoaxlike deception in science', in which a scientist performing a hoax passes it off as scientifically rigorous in order to expose an inadequacy in the targeted field. Schnabel argues the scientist is 'most likely to be successful when his or her views about the targeted researcher's methodology and knowledge claims are orthodox with respect to his or her intended audience'.[16] By mimicking the language and rhetoric of postmodernist theorists, Sokal

---

12  Alan Sokal, 'A Physicist Experiments with Cultural Studies', *Lingua Franca* (1996): 62-64.

13  Ibid.

14  Ibid.

15  Ken Hirschkop, 'Cultural Studies and Its Discontents: A Comment on the Sokal Affair', *Social Text* Nº 50 (1997): 131.

16  Jim Schnabel, 'Puck in the Laboratory: The Construction and Deconstruction of Hoaxlike Deception in Science', *Science, Technology, & Human Values* 19 Nº 4 (1994): 459.

succeeded in passing off his paper as credible cultural studies research and subsequently provoked public debate regarding the 'unintelligible' research and merits of postmodern thought versus scientific knowledge.

Since the Sokal affair a number of academics have submitted parodic disinformation to academic journals, the most notable being the 'Grievance Studies' affair or 'Sokal Squared' scandal. Between 2017 and 2018 three academics—James A. Lindsay, a mathematician; Peter Boghossian, an assistant professor of philosophy at Portland State University; and Helen Pluckrose, a medievalist—submitted a series of essays on identity studies they referred to as 'Grievance Studies' to peer-reviewed journals in the social sciences. Some of their successfully published papers include: a study of canine rape culture in Portland dog parks; 'Our Struggle Is My Struggle: Solidarity Feminism As an Intersectional Reply to Neoliberal and Choice Feminism', a feminist reworking of a chapter from *Mein Kampf*; and an essay titled 'Going In through the Back Door: Challenging Straight Male Homohysteria, Transhysteria, and Transphobia through Receptive Penetrative Sex Toy Use', which recommends that men anally self-penetrate 'to become less transphobic, more feminist, and more concerned about the horrors of rape culture'.[17] By the time their hoax was revealed by the *Wall Street Journal*, seven of their twenty papers were either published or accepted for publication.

Like Sokal's essay, the papers were designed to simultaneously be absurd enough for the careful reader to recognise as parody, yet convincing enough to have a chance at publication. Another similarity with Sokal is that these essays were meant to mimic and lampoon critical theory and postmodernist rhetoric, as well as the current state of academic publishing in the social sciences and humanities at large. As the trio later explained in an article for *Areo*, the fact that some of their essays made it through the peer review process

---

17    Alexander Kafka, '"Sokal Squared": Is Huge Publishing Hoax "Hilarious and Delightful" or an Ugly Example of Dishonesty and Bad Faith?', *Chronicle of Higher Education*, 3 October 2018.

> isn't so much a problem with peer review itself
> as a recognition that peer review can only be as
> unbiased as the aggregate body of peers being
> called upon to participate […] the skeptical checks
> and balances that should characterize the scholarly
> process have been replaced with a steady breeze of
> confirmation bias that blows Grievance Studies
> scholarship ever further off course […] this isn't
> how research is supposed to work.[18]

Polarised debate erupted regarding the efficacy of the authors' actions. As reported in the *Chronicle of Higher Education*, 'some scholars applauded the hoax for unmasking what they called academe's leftist, victim-obsessed ideological slant and low publishing standards, [while] others said it had proved nothing beyond the bad faith and dishonesty of its authors'.[19] Harvard government professor Yascha Mounk lauded the trio for exposing how 'some of the leading journals in areas like gender studies have failed to distinguish between real scholarship and intellectually vacuous as well as morally troubling bullshit',[20] while University of Washington biologist Carl Bergstrom derided the hoax as 'a hollow exercise in mean-spirited mockery'.[21] Mikko Lagerspetz argues that 'the boundary between a seriously written paper and a "hoax" gradually became blurred' due to the Grievance Studies affair.[22] Lagerspetz also ties the affair into the larger US 'culture war', noting the 'political distrust' of gender studies and other fields often targeted by conservatives for promoting a far-left agenda in classrooms.

Although publication of parodic disinformation by academic journals remains rare, the Sokal and Grievance Studies affairs continue to inspire copycats seeking to critique and humiliate scholarly journals. As recently

---

18  Helen Pluckrose, James A. Lindsay, and Peter Boghossian, 'Academic Grievance Studies and the Corruption of Scholarship', *Areo*, 10 February 2018.

19  Alexander Kafka, 'Sokal Squared'.

20  'What the "Grievance Studies" Hoax Means', *Chronicle of Higher Education*, 9 October 2018.

21  Ibid.

22  Mikko Lagerspetz, '"The Grievance Studies Affair" Project: Reconstructing and Assessing the Experimental Design', *Science, Technology, & Human Values* 46, Nº 2 (2020): 402.

as November 2021, *Higher Education Quarterly* published a now retracted paper, titled 'Donor Money and the Academy: Perceptions of Undue Donor Pressure in Political Science, Economics, and Philosophy',[23] whose authors' names, Sage Owens and Kal Avers-Lynde, III, were soon discovered to spell out SOKAL III in their initials.[24] The paper claims to study academics who are influenced by donations from right-wing benefactors into promoting conservative causes and political candidates. Although the paper's true authors were never identified, they were likely motivated to critique and deceive the publishing process for having a perceived liberal bias. The *Chronicle for Higher Education* reported that UnKoch My Campus, a left-wing student organisation seeking to investigate the influence of the Koch Foundation and other right-wing donor groups on college campuses, was contacted by the individual purporting to be Sage Owens asking to have the study promoted.[25] The organisation's executive director cited suspicion that 'the hoax […] target[ed] her organization by seeking to spread misinformation and undermine the work of academic researchers'.[26] The incident was then covered by the Republican Party affiliated publication the *National Review*, which was told by the individual writing as Owens 'we wanted to see in this case if [it] would be possible to publish a paper in an elite journal when the paper is full of blatant and clear statistical errors'.[27] Notably, 'Sage Owens' refused to disclose a motive to the *Chronicle for Higher Education* when contacting them, stating 'we plan to reveal the full extent of this hoax later'.[28] Giving a motive statement to the *National Review* instead suggests that the paper's authors were likely conservative activists courting a Republican audience and that they sought to critique the academic publishing and higher education systems for having a perceived pro-liberal, anti-Republican bias.

23  Sage Owens and Kal Avers-Lynde, III, 'Retracted: Donor Money and the Academy: Perceptions of Undue Donor Pressure in Political Science, Economics, and Philosophy', *Higher Education Quarterly* (2021).

24  Eric Kelderman, 'Another "Sokal" Hoax? The Latest Imitation Calls an Academic Journal's Integrity Into Question', *Chronicle of Higher Education*, 1 December 2021.

25  Ibid.

26  Ibid.

27  Zachary Evans, 'Academic Journal Publishes Hoax Paper Alleging Right-Wing Donor Influence in Universities', *National Review*, 1 December 2021.

28  Kelderman, 'Another "Sokal" Hoax?'

As exhibited by the discourse surrounding both the Sokal and Grievance Studies affairs, parodic disinformation exists to offer critique and test the limits of the publication process. Parodic disinformation operates in an ethically grey area, prompting dialogue over whether the author's actions were justified or merely exploitative. It also has an inherent entertainment value compared with typically dry academic rhetoric which allows it to capture widespread attention and facilitate public dialogue. The Sokal and Grievance Studies cases also demonstrate how parodic disinformation primarily targets the social sciences and humanities. This reflects how these fields have a reputation of viewing truth more subjectively than the hard sciences do; as a result, a hoax women's studies article is more likely to pass the peer review process than one denying climate change. Humanities and social sciences journals' relatively open acceptance of truth thus makes them an easier target of criticism and successfully published disinformation than STEM (science, technology, engineering, mathematics) fields. Parodic disinformation's targeting of social sciences and the humanities demonstrates their perhaps unequal standing in public and scholarly opinion compared with the hard sciences. Parodying social science disciplines like sociology and gender studies through fabricated academic research works implies they are both less serious and less true than the 'real' sciences.

The Sokal III incident, clearly inspired by Sokal and 'Sokal Squared', demonstrates how parodic disinformation is generally skewed towards the politically conservative. The paper's ironic characterisation of academics as bought by corporate donors simultaneously parodies the left's perceived fixation on the Koch Foundation and other Republican-affiliated organisations, while suggesting that liberals rather than conservatives control academic discourse and the scholarly publishing process. This arguably plays into the common, factually inaccurate conservative narrative that the Democratic Party has an unhealthy influence on higher education, and that academia is biased against Republicans. Parodic disinformation can be viewed as a factor in the wider 'culture wars', which have inflamed American culture in recent decades and possibly contributed to the election of Donald Trump and the eventual January

6 rally. When the original Sokal affair was published in the early 1990s, books critiquing higher education such as Dinesh D'Souza's *Illiberal Education: The Politics of Race and Sex on Campus* were popular among conservatives.[29] Higher education remains at the culture wars forefront, as evidenced by laws being passed that seek to ban critical race theory and homosexuality from being taught or discussed in K-12 classrooms.[30] Parodic disinformation's lampooning of the scholarly communications process thus risks feeding into the perception of academic publishing and America's education system at large as untrustworthy, politically biased and corrupt, whether or not it intends to.


## Opportunist disinformation

Whereas parodic disinformation seeks to challenge and critique the scholarly process through imitation and humour, *opportunist disinformation* is designed merely to pad the author's academic résumé. This also differs from parodic disinformation in that falsifying data to appear credible is more prevalent in the hard sciences than social sciences. Medical fields are particularly susceptible to falsified data, with data falsification being cited as the most common cause of retraction from publication in medical disciplines such as obstetrics and gynecology.[31] Unscrupulous scholars can employ a variety of deceptive strategies in hopes of bolstering their image. Adam Marcus and Ivan Oransky's essay 'Why Fake Data When You Can Fake a Scientist?' details how some scholars create imaginary aliases to make their papers appear more credible.[32] They describe how one now discredited academic created a fictional co-author for several of his essays, while another attempted recommending himself as a peer

---

29   Judith S. Eaton, '<u>Dinesh D'Souza's Illiberal Education: A Review Essay</u>', *Community College Review* 19 Nº 4 (1992): 7–14.

30   Adrian Florido, '<u>Teachers Say Laws Banning Critical Race Theory Are Putting a Chill on Their Lessons</u>', *NPR*, 28 May 2021; '<u>Florida House of Representatives Passes "Don't Say Gay" Bill</u>', *BBC News*, 24 February 2022.

31   L.M. Chambers, C.M. Michener, and T. Falcone. '<u>Plagiarism and Data Falsification Are the Most Common Reasons for Retracted Publications in Obstetrics and Gynaecology</u>', *BJOG: An International Journal of Obstetrics & Gynaecology* 126 Nº 9 (2019): 1134–40.

32   Adam Marcus and Ivan Oransky, '<u>Why Fake Data When You Can Fake a Scientist?</u>', *Nautilus*, 24 November 2016.

reviewer for his own papers using a combination of real and faked aliases. The automatic paper-generating software SciGen, which was originally created to expose conference scams, ended up being used by academics and students to generate fake papers in order to pad their résumés.[33] Mara Hvistendahl's reporting for *Science* details how an underground publication ring based in China sold authorship credits to those desperate to get published.[34] Many of these sold papers were likely generated through SciGen by peddlers wishing to make a profit.[35]

Numerous academics have also managed to expose vulnerabilities in the peer review system. In 2014 the *Journal of Vibration and Control* made headlines for retracting sixty articles produced by a fraudulent 'peer review and citation ring'; a year later, major medical publisher BioMed Central made headlines for retracting forty-three papers due to faked peer reviews.[36] In a separate 2015 incident, Springer, which controls BioMed Central and several other publishers, retracted sixty-four articles across ten of its journals for having submitted faked peer review reports.[37] The blog *Retraction Watch* monitors instances of peer-reviewed publishers retracting papers due to data fabrication, plagiarism, and other deceptive tactics, and operates a database of retracted articles.[38]

Opportunistic disinformation published in peer-reviewed journals can occasionally have real-world consequences, particularly in the medical field. Writing for *Science*, *Retraction Watch* correspondent Adam Marcus reports how medical researcher Joachim Boldt in a paper for *Anesthesia & Analgesia* fabricated data claiming intravenous hetastarch solutions containing colloids were safe, despite previous findings linking hetastarches to kidney damage and occasional death. Marcus mentions how multiple medical societies pulled guidelines they enacted endorsing

33   John Bohannon, 'Hoax-Detecting Software Spots Fake Papers', *Science*, 27 March 2015.

34   Ibid.

35   Ibid.

36   Fred Barbash, 'Major Publisher Retracts 43 Scientific Papers amid Wider Fake Peer-Review Scandal', *Washington Post*, 27 March 2015.

37   Ewen Callaway, 'Faked Peer Reviews Prompt 64 Retractions', *Nature*, 18 August 2015.

38   Retraction Watch Database.

colloids based on Boldt's research,[39] and researchers from the University of Winnipeg found that critically ill patients exposed to hetastarches were at 'statistically significantly greater risks of kidney damage and death'.[40] Academics who had worked with Boldt speculate he was primarily motivated by self-aggrandisement, with one noting 'he became one of the most distinguished anaesthetists and his motivation was to publish, publish, publish' and another commenting Boldt was 'flown first class to speak at various meetings around the world [...] wined and dined and considered to be one of the leading experts in his field'.[41]

Opportunistic disinformation can be propagated not just by scholars, but by publishers themselves. The term 'predatory publisher' was coined by University of Colorado-Boulder librarian Jeffrey Beall, who until 2017 operated the widely cited listing of predatory publications *Beall's List*.[42] Most predatory journals use the standard open access gold model, charging a fee for successfully submitted essays, and either forgo the peer review process or fabricate peer review rubrics.[43] Predatory publishers utilise numerous unethical tactics, ranging from cross-referencing and self-citing their own articles to artificially inflating H-indexes to boost their impact factor, in an attempt to appear more credible.[44] In 2016 the Federal Trade Commission sued notorious predatory publishing company OMICS International for fraud, alleging the publisher

> claims distinguished experts as editorial board members and as speakers at its conferences without their consent; fails to disclose publishing fees ranging from hundreds to thousands of dollars until after articles are accepted; cites phony impact factors (a measure of prestige indicating how often a journal's articles get cited elsewhere); and

39   Adam Marcus, 'A Scientist's Fraudulent Studies Put Patients at Risk', *Science* 362 (2018): 394.

40   Ibid.

41   Jacqui Wise, 'Boldt: The Great Pretender', *BMJ* 346, March 2013: 17–18.

42   Stef Brezgov, 'List of Publishers', *ScholarlyOA*, 27 May 2019.

43   Zachary Taylor, 'The Hunter Became the Hunted: A Graduate Student's Experiences with Predatory Publishing', *Publishing Research Quarterly* 35 Nº 1 (2019): 129.

44   Ibid., 123.

> maintains that journals are indexed in PubMed
> when they aren't.[45]

Due to their prioritisation of profit over quality, predatory publishers are notorious proliferators of hoax academic papers. In a sting operation aimed at exposing predatory publishers, *Science* correspondent John Bohannon details how he submitted faked scientific papers to hundreds of journals from *Beall's List*, 82 per cent of which accepted them.[46] While predatory publishers go to great lengths to appear reputable, careful attention to detail can often expose them. Zachary Taylor notes how 'grammar errors in written feedback, an absence of scholarly indexing, and inaccurate rubric numbering are a few examples of how predatory publishers—and their inattention to detail—can be identified and avoided'.[47] Despite their often glaring errors, however, many medical-themed predatory publishers profit from drug companies seeking to tout their products, often backed by questionable data. Esmé Deprez and Caroline Chen's *Bloomberg Businessweek* investigation into OMICS International details how researchers for pharmaceutical companies like Pfizer, AstraZeneca, and Gilead have submitted studies to OMICS despite its shoddy reputation. They note how predatory publishers can become 'a venue for companies to publish studies that aren't sufficiently groundbreaking for the lead journals, or those they'd prefer not be subject to rigorous vetting—either to get them out sooner or to avoid scrutiny'.[48]

Although many scholars submit to predatory publishers by mistake, others do so intentionally for a variety of reasons that reflect some of academia's inadequacies. As Zachary Taylor observes, graduate students and emerging scholars are more likely to submit to predatory publishers due to widespread pressure to 'publish or perish'.[49] Opportunistic disinformation is also common in developing nations where scholars face more inequities than their North American or European counterparts,

45  Esmé E. Deprez and Caroline Chen, 'Medical Journals Have a Fake News Problem', *Bloomberg Businessweek*, 29 August 2017.

46  John Bohannon, 'Who's Afraid of Peer Review?', *Science* 342 Nº 6154 (2013): 60–65.

47  Taylor, 'Hunter Became the Hunted', 136.

48  Deprez and Chen, 'Medical Journals Have a Fake News Problem'.

49  Taylor, 'Hunter Became the Hunted', 122.

and from which many predatory journals originate. Adeyinka Tella's essay 'Nigerian Academics Patronizing Predatory Journals' describes 'desperation at the thought of missing out on promotion [and] long waits for reviews from reputable journals'[50] as reasons for their common usage in Nigeria. As Serhat Kurt observes in her essay surveying authors who publish in predatory journals, 'scholars in the developing world felt that reputable Western journals might be prejudiced against them and sometimes felt more comfortable publishing in journals from the developing world'.[51]

Opportunist disinformation can reflect a dangerous, Machiavellian view of scholarly publication as an 'end justifies the means' way to get ahead rather than to contribute truthful and meaningful knowledge to the scholarly record. Predatory publishers' dis-informative tactics illustrate how the academic publishing model can be misused to both deceive unwitting scholars and court those seeking to publish factually dubious data in order to make a profit. Opportunistic disinformation can also expose not only vulnerabilities in the academic publishing system which bad actors can take advantage of, but inadequacies in academia that pressure scholars into employing unscrupulous tactics.

## Malicious disinformation

*Malicious disinformation* is perhaps the most threatening and influential form of disinformation covered in this essay, particularly in the context of the COVID-19 pandemic, in that its motives reach beyond the realm of scholarly communications. While authorship of malicious disinformation can be opportunistic in nature, its key attribute is a wilful intent to distort the public perception of an issue through fabricated data and misleading claims. This form of disinformation often operates counterintuitively to reputable academic research by seeking to erode rather than strengthen public trust in scientific and governmental institutions. Proliferators of

---

50   Adeyinka Tella, 'Nigerian Academics Patronizing Predatory Journals', *Journal of Scholarly Publishing* 51 № 3 (2020): 182–96.

51   Serhat Kurt, 'Why Do Authors Publish in Predatory Journals?', *Learned Publishing* 31 № 6 (2018): 141.

malicious disinformation tend to target divisive topics like vaccinations and climate change, exploiting pre-existing biases with fabricated data that reinforces their beliefs.

Perhaps the first major case of malicious disinformation in scholarly publishing was that of now disgraced British physician Andrew Wakefield's 1998 essay 'Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children' in the renowned medical journal *The Lancet*. Wakefield's claims that twelve children developed autism from the MMR (measles, mumps, and rubella) vaccine[52] were proven after publication to be fabricated and *The Lancet* the article; retracted the *Sunday Times* reported years later that Wakefield intentionally manipulated data to suggest a link to autism.[53] Despite this, Wakefield's essay significantly damaged public trust in vaccinations and is widely attributed to have intensified the burgeoning anti-vaccination movement.[54] As noted in the article 'The Anti-Vaccination Movement: A Regression in Modern Medicine', Wakefield's paper indirectly caused vaccination rates to decline worldwide:

> The damage, however, was already done and the myth was spread to many different parts of the world, especially Western Europe and North America. In the UK, for example, the MMR vaccination rate dropped from 92% in 1996 to 84% in 2002. In 2003, the rate was as low as 61% in some parts of London, far below the rate needed to avoid an epidemic of measles. In Ireland, in 1999–2000, the national immunization level had fallen below 80%, and in part of North Dublin, the level was around 60%. In the US, the controversy following the publication of the

52   A. Wakefield et al., 'Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children', *Lancet* 351 № 9103 (1998): 637–41.

53   Brian Deer, 'MMR Doctor Andrew Wakefield Fixed Data on Autism', *Sunday Times*, 8 February 2009.

54   Azhar Hussain, Syed Ali, Madiha Ahmed, and Sheharyar Hussain, 'The Anti-Vaccination Movement: A Regression in Modern Medicine', *Cureus* 10 № 7 e2919 (2018): 1.

study led to a decline of about 2% in terms of
parents obtaining the MMR vaccine for their
children in 1999 and 2000. Even after later studies
explicitly and thoroughly debunked the alleged
MMR-autism link, the drop in vaccination rates
persisted.[55]

While instances of published malicious disinformation have sporadically occurred since the Wakefield scandal, the COVID-19 pandemic has resulted in a disturbing influx of malicious disinformation disguised as reputable scientific research. The World Health Organization director proclaimed in February 2020, 'we're not just fighting an epidemic; we're fighting an infodemic'.[56] Although COVID-19 disinformation has mostly been reported on in the context of social media and 'fake news' outlets like Infowars, numerous scientific journals are publishing dis-informative data related to the pandemic. Some of the currently most widely viewed scientific papers perpetuate COVID-19 disinformation. Jaime A. Teixeira da Silva notes the current popularity of journal articles touting disproven claims of hydroxychloroquine as a successful COVID-19 treatment, and he identifies 'members of the public, young students, early career researchers, clickbait-hungry media outlets, or academics […] that are unable to critically assess the academic and scientific content, and flaws, of biomedical literature [as being] at greatest risk of being carriers of disinformation'[57] related to the virus.

The influence of Andrew Wakefield's fabricated scholarship on the MMR vaccine can be felt in disinformation linking the COVID-19 vaccines to autism. The non-profit organisation AutismOne, which focuses on exposing vaccines that cause autism,[58] held its 2021 annual pseudoscientific medical conference in September themed 'Autism in the Age of COVID-19', targeting coronavirus vaccines.[59] The event's

55   Ibid.

56   Tedros Adhanom, 'Munich Security Conference', *World Health Organization*, 15 February 2020.

57   Jaime A. Teixeira da Silva, 'An Alert to COVID-19 Literature in Predatory Publishing Venues', *Journal of Academic Librarianship* 46 Nº 5 (2020): 1.

58   Jonathan Jarry, 'Masks Fall When Antivaxxers Congregate', *McGill Office for Science and Society*, 11 June 2020,

59   AutismOne Conference 2021.

headliner, Robert F. Kennedy, Jr, is an environmental lawyer who was inspired by Wakefield's *Lancet* paper to become an anti-vaccine activist and has frequently collaborated with Wakefield 'exposing' vaccines.[60] Kennedy is a member of the 'Disinformation Dozen', identified by the Center for Countering Digital Hate as twelve individuals responsible for around 65 per cent of COVID-19 vaccine misinformation shared on social media.[61] Another member of the Disinformation Dozen, Rizza Islam, posted a February 2021 video to his Instagram account targeting African Americans with anti-vax misinformation alleging that the COVID-19 vaccines cause higher rates of autism among non-white children, echoing Wakefield.[62]

A major contributing factor to COVID-19 disinformation's rampant spread is the torrent of pandemic-related research overwhelming publishers and pressuring them to expedite or waive the peer review process. Victoria Rubin cites 'information overload' as a major factor of disinformation's spread, noting that 'few news readers can spare the time and energy to fact-check every piece of information they come across'.[63] The current deluge of COVID-19 research therefore makes it particularly difficult for non-academics overloaded with new information to differentiate between credible data and disinformation. The overwhelming volume of COVID-19 papers is also resulting in a decreased percentage of research being peer reviewed. Anthony King's essay 'Fast News or Fake News? The Advantages and the Pitfalls of Rapid Publication through Pre-Print Servers during a Pandemic' describes how many medical scholars are forgoing the peer review process and publishing their research on preprint servers such as medRxiv due to pressure to publish COVID research as quickly as possible. King notes that while preprint servers are proving useful in making important medical research publicly available at rapid speed, the lack of peer review has resulted in a deluge of hoax preprints spouting disinformation, such as a paper comparing COVID-19 to

---

60   Jonathan Jarry, 'The Anti-Vaccine Propaganda of Robert F. Kennedy, Jr.', *McGill Office for Science and Society*, 16 April2021.

61   Imran Ahmed, *The Disinformation Dozen*, Center for Countering Digital Hate, 2021.

62   Ibid.

63   Rubin, 'Disinformation and Misinformation Triangle, 1022.

HIV.[64] Willa Tavernier echoes King's nuanced view of preprints having both risks and merits in her essay 'COVID-19 Demonstrates the Value of Open Access', arguing that 'while the absence of peer review on these platforms has the potential to widely disseminate misinformation, the robust use of preprint servers by the scientific community has worked to rebut spurious claims, in effect crowdsourcing rapid expert peer-review'.[65]

While nearly all COVID-19 researchers view disinformation as a threat, many are divided or unsure on what practices should be taken to combat its spread. As noted by King and Tavernier, preprints are a particularly controversial topic due to the double-edged sword of expediency and susceptibility to disinformation. According to a survey on COVID-19 misinformation published in the *Journal of Korean Medical Science*, slightly over half (50.8 per cent) of scholars surveyed responded that preprints cannot be relied upon, and 62.5 per cent 'affirmed that peer review is a mandatory system for prepublication checks despite the need for fast processing and dissemination of scholarly articles on COVID-19'.[66] The survey also reflected divided opinion regarding changing retraction practices, with '23.4% proposing lower threshold, 31.3% suggesting otherwise, and another 36.7% being not sure'.[67]

Outside academic journals, malicious disinformation frequently borrows or mimics language from scholarly sources, distorting the facts in the process, in order to shape a political narrative. Jevin West and Carl Bergstrom's paper on 'Misinformation in and about Science' utilises the term 'citation misdirection' to describe how mis/disinformation often misquotes or manipulates statistics from scholarly reports in order to distort the truth to its own ends.[68] As an example, West and Bergstrom describe how NBC News in 2017 tweeted a distorted statistic from an academic paper quoted in one of the organisation's news articles. While

---

64   King, 'Fast News or Fake News?'.

65   Willa Tavernier, '<u>COVID-19 Demonstrates the Value of Open Access: What Happens Next?</u>', *College & Research Libraries News* 81 Nº 5 (2020): 226.

66   Latika Gupta et al., '<u>Information and Misinformation on COVID-19: A Cross-Sectional Survey Study</u>', *Journal of Korean Medical Science* 35 Nº 27 (2020).

67   Ibid.

68   Jevin D. West and Carl T. Bergstrom, '<u>Misinformation in and about Science</u>', *PNAS* 118 Nº 15.

the original study noted that applications from international students decreased at 40 per cent of schools, the NBC News tweet asserted that 'International applications at American schools are down nearly 40%'.[69] The authors note how this was tweeted during a period of massive protests against the Trump Administration's immigration policy, and that the NBC News Twitter account attempted to echo the liberal backlash with its distortion.[70]

Malicious disinformation is designed to prey upon and exacerbate our politically polarised climate, furthering the public erosion of trust in scientific and governmental institutions. Polarising topics such as COVID-19 and vaccinations are ripe targets for malicious disinformation due to the combination of information overload and the politicisation of science. Trust in medical professionals can be measured as roughly divided between political party lines. An August 2019 Pew Research poll cites 48 per cent of Democrats having a 'great deal' of faith in scientists, compared with only 27 per cent of Republicans.[71] Americans are also politically divided on medically proven mitigation efforts such as social distancing, with a June 2020 Johns Hopkins University poll reporting '89% of Democrats viewed social distancing as very important, relative to 72% of Independents and 66% of Republicans'.[72] Americans are therefore more likely when seeking COVID-related information to turn to sources that conform to their political beliefs, with many rejecting peer-reviewed research in favour of social media.

Malicious disinformation can distort and mimic academic, scientifically credible language in an attempt to promote conspiracy theories and extremist ideologies. In his scholarly analysis of online QAnon data, Matthew N. Hannah notes how the individual behind the movement known as Q often 'relies on a slippage between disparate data—sets of signs collected by the adherents through online research—and those

69    Ibid., 3.

70    Ibid.

71    Cary Funk et al., 'Trust and Mistrust in Americans' Views of Scientific Experts', *Pew Research Center*,
      2 August 2019.

72    Colleen Barry, Hahrie Han, and Beth McGinty, 'Trust in Science and COVID-19', *Johns Hopkins
      Bloomberg School of Public Health*, 17 June 2020.

same data interpreted as information provided by Q in the drops and by other anons on social media and elsewhere, which are then deployed through authoritative visualizations to recruit and guide newcomers into the movement'.[73] As Hannah notes, Q's posts, or 'drops', bear out what Haken and Portugali describe as 'the paradoxical relationship between having more data while receiving less accurate information'.[74] In other words, Q creates the illusion of credibility by referencing a plethora of sources, while in the process forsaking accuracy for narrativity.

Academic language is similarly co-opted by white supremacists and other extremists in order to promote hateful and racist ideologies. Aaron Panofsky and Joan Donovan's study on genetic ancestry testing among white supremacists demonstrates how articles on the neo-Nazi website Stormfront often mimic the language of scientific publications in an attempt to 'prove' the biological inferiority of Jews and other ethnic and racial minorities.[75] Panofsky and Donovan note how Stormfront users 'read and debate academic articles, download their genetic data and analyze it in resources they consider more informative, and some seek to cultivate allegiances with academics they believe sympathetic to their ideas', thus engaging in a form of 'citizen science' that borrows from scientific knowledge and reshapes it to rationalise their white supremacist beliefs.[76] Beverly Ray and George Marsh's report 'Recruitment by Extremist Groups on the Internet' details how hate groups co-opt scientific-sounding language in order to both rationalise their ideologies and attract new members.[77] One prominent neo-Nazi institution described by Ray and March, National Alliance, employs pseudoscientific language on its website to disparage African Americans based on their physiology:

73   Matthew N. Hannah, 'A Conspiracy of Data: QAnon, Social Media, and Information Visualization', *Social Media + Society* 7 Nº 3 (2021): 3.

74   Ibid.; Hermann Haken and Juval Portugali, 'Information versus Data', in *Information Adaptation: The Interplay between Shannon Information and Semantic Information in Cognition*, Hermann Haken and Juval Portugali (eds), SpringerBriefs in Complexity (Cham: Springer International Publishing, 2015), pp. 11–17.

75   Aaron Panofsky and Joan Donovan, 'Genetic Ancestry Testing among White Nationalists: From Identity Repair to Citizen Science', *Social Studies of Science* 49 Nº 5 (2019): 653–81.

76   Ibid., 675.

77   Beverly Ray and George E. Marsh, 'Recruitment by Extremist Groups on the Internet', *First Monday*, 6 Nº 2 (2001).

> The culture of a race, free of alien influences, is
> telling evidence of that race's essential nature.
> The African Negro with a cow-dung hairdo, a
> bone through his nose, and teeth filed down to
> sharp points, in other words, presents to us a far
> more accurate image of the Negro essence than
> does the American Black in a business suit who
> has been trained to drive an automobile, operate
> a typewriter, and speak flawless English […].
> Negro culture inferiority is the consequence of the
> physical inadequacy of the Negro brain in dealing
> with abstract concepts. On the other hand, the
> Negro shows an ability approaching that of the
> White at mental tasks requiring only memory.
> That is why the Negro can be trained relatively
> easily to adapt to many aspects of White culture
> […]. It has been well known since the large-scale
> intelligence testing of U.S. Army recruits in World
> War I that the average Negro IQ is approximately
> 15 per cent below that of the average White.
> Apologists for the Blacks have tried to explain
> away the earlier test scores as being due to the
> effects of segregated schools and Black poverty; i.e.
> they claimed the tests were 'culturally' biased.[78]

The above passage attempts to mimic academic parlance with phrases such as 'culture inferiority' and cites meaningless statistics to appear verifiable. These pseudo-academic phrases are paired with racialised eugenic language used by Nazi Germany, the Confederate States of America, and other regimes that were for centuries espoused to 'scientifically' demonstrate the inferiority of non-whites. National Alliance and other hate groups deliberately combine outdated, racist terminology with more modern, academic-sounding phrases in attempt to legitimise their

---

78   Ibid.

eugenic propaganda by creating the impression that their publications reflect established scientific knowledge.

Malicious disinformation that poses as scientifically accurate information should be treated as not merely an epistemological concern, but an issue of national and international security. Writing for *Security and Defence Quarterly*, Wojciech Łukasz Sługocki and Bogdan Sowa note how disinformation 'is used to polarize views among the civilian population and generate distrust of state actions'.[79] They detail how medical disinformation throughout the COVID-19 pandemic has severely eroded public trust in governmental and medical institutions worldwide, and has consequentially frozen government operations and health responses worldwide by sparking massive revolts against vaccines.[80] Dr Tara Kirk Sell of the Center for Health Security at the Johns Hopkins Bloomberg School of Public Health similarly warns that medical disinformation related to COVID-19 has negative implications for US national security, and suggests that the National Security Council collaborate with the 'departments of Health and Human Services, Defense, Homeland Security, the State Department, and the intelligence community' to curb its spread online.[81] Malicious disinformation regarding COVID-19 has also fuelled hatred towards targeted racial and ethnic minorities blamed for spreading the virus, as indicated by the rapid rise in violence against Asian Americans since 2020.[82] Similarly, pseudoscientific malicious disinformation is used by extremist movements such as neo-Nazi organisations and QAnon to recruit, mobilise, and justify their beliefs.

79   Wojciech Sługocki and Bogdan Sowa, 'Disinformation as a Threat to National Security on the Example of the COVID-19 Pandemic', *Security and Defence Quarterly* 35 № 3 (2021): 70.

80   Ibid.

81   Tara Kirk Sell, 'Meeting COVID-19 Misinformation and Disinformation Head-On', *Johns Hopkins Bloomberg School of Public Health*.

82   Center for the Study of Hate and Extremism, Report to the Nation: Anti-Asian Prejudice & Hate Crime, CSUSB, 2021.

## Conclusion

This article's taxonomic approach to disinformation in academic publishing demonstrates the variety of motives behind fabricating scholarly research. While disinformation intends to deceive, the motivations behind that deception are not always the same. Parodic disinformation serves to critique the publishing process; opportunist disinformation seeks to take advantage of the scholarly process for self-gain; and malicious disinformation manipulates the scholarly process in order to sow public distrust regarding divisive issues. Although all forms of disinformation can disrupt the scholarly process, malicious disinformation poses a far greater threat to academic publishing than the other two forms, as well as having greater outreach beyond academia. Furthermore, although parodic disinformation exists in a morally grey area, reports of obviously fabricated joke essays being accepted by predatory publishers can reveal just how willing these publishers are to publish disinformation in order to make a profit.

Analysing forms of disinformation in scholarly communications also exposes weaknesses in the academic publishing system at large. Parodic disinformation's disproportionate focus on the humanities and social sciences show how research in these fields is widely perceived as inferior compared with scientific research. Opportunist disinformation can illustrate how factors such as pressure to 'publish or perish' can motivate researchers to fabricate data or turn to predatory publishers. Malicious disinformation regarding COVID-19 has exposed the vulnerabilities of preprint servers during an infodemic. Being published by an academic journal allows disinformation to garner more perceived credibility and a wider audience than most disinformation posted on social media. This can also result in disinformation being covered by news publications as credible research, further aiding its spread.

While disinformation within scholarly communications threatens to weaken and destabilise the publishing process, its impact beyond journals and the academy should concern officials ranging from medical officials to national security analysts and politicians. Parodic disinformation can

wittingly or unwittingly inflame public culture-war-related tensions and exacerbate political polarisation by reinforcing the narratives that academia is beholden to a liberal agenda, and that cultural studies such as gender studies, queer theory, and critical race theory are pretentious and irrelevant. Opportunistic scientific disinformation spread by unscrupulous researchers seeking to improve their research profile can consequentially put patients in medical danger. Malicious disinformation poses the greatest danger in that it deliberately seeks to erode public trust in scientific and political institutions. Medical disinformation concerning vaccines has exacerbated the COVID-19 health crisis and contributed to massive anti-government, anti-science protests, such as the Freedom Convoy trucker movement. Malicious disinformation can co-opt academic language in order to mobilise support for conspiracy theories and racist extremism. The confluence of the COVID-19 infodemic and increased global support for far-right extremism should demonstrate to both academic researchers and the general public that pseudoscientific disinformation can result in the loss of lives and political instability; that further research on disinformation and how to combat it is needed; and that scholarly research based on facts is more vital than ever.

# Bibliography

Abbruzzese, Jason, 'Russian Disinformation, Propaganda Ramp Up As Conflict in Ukraine Grows', *NBC News*, 24 February 2022.

Adhanom, Tedros, 'Munich Security Conference', *World Health Organization*, 15 February 2020.

Ahmed, Imran, *The Disinformation Dozen*, Center for Countering Digital Hate, 21 March 2021.

Allcott, Hunt, and Matthew Gentzkow, 'Social Media and Fake News in the 2016 Election', *Journal of Economic Perspectives* 31 Nº 2 (2017): 211–36.

Angus, Charlie, 'Lessons from the Convoy: We Are Losing the War on Disinformation', *Centre for International Governance Innovation*.

AutismOne Conference 2021.

Barbash, Fred, 'Major Publisher Retracts 43 Scientific Papers amid Wider Fake Peer-Review Scandal', *Washington Post*, 27 March 2015.

Barry, Colleen, Hahrie Han, and Beth McGinty, 'Trust in Science and COVID-19', *Johns Hopkins Bloomberg School of Public Health*, 17 June 2020.

Blackburn, Simon, *On Truth* (Oxford: Oxford University Press, 2018).

Bohannon, John, 'Hoax-Detecting Software Spots Fake Papers', *Science*, 27 March 2015.

Bohannon, John, 'Who's Afraid of Peer Review?', *Science* 342 Nº 6154 (2013): 60–65.

Brezgov, Stef, 'List of Publishers', *ScholarlyOA*, 27 May 2019.

Center for the Study of Hate and Extremism, *Report to the Nation: Anti-Asian Prejudice & Hate Crime*, CSUSB, 2021.

Chambers, L.M., C.M. Michener, and T. Falcone, 'Plagiarism and Data Falsification Are the Most Common Reasons for Retracted Publications in Obstetrics and Gynaecology', *BJOG: An International Journal of Obstetrics & Gynaecology* 126 Nº 9 (2019): 1134–40.

Deer, Brian, 'MMR Doctor Andrew Wakefield Fixed Data on Autism', *Sunday Times*, 8 February 2009.

Deprez, Esmé E., and Caroline Chen, 'Medical Journals Have a Fake News Problem', *Bloomberg Businessweek*, 29 August 2017.

Eaton, Judith S., 'Dinesh D'Souza's Illiberal Education: A Review Essay', *Community College Review* 19 Nº 4 (1992): 7–14.

Fallis, Don, 'What Is Disinformation?', *Library Trends* 63 Nº 3 (2015): 401–26.

Funk, Cary, et al., 'Trust and Mistrust in Americans' Views of Scientific Experts', *Pew Research Center*, 2 August 2019.

Gupta, Latika, et al., 'Information and Misinformation on COVID-19: A Cross-Sectional Survey Study', *Journal of Korean Medical Science* 35 Nº 27 (2020).

Haken, Hermann, and Juval Portugali, 'Information versus Data' in *Information Adaptation: The Interplay between Shannon Information and Semantic Information in Cognition*, Hermann Haken and Juval Portugali (eds). SpringerBriefs in Complexity (Cham: Springer International Publishing, 2015), pp. 11–17.

Hannah, Matthew N., 'A Conspiracy of Data: QAnon, Social Media, and Information Visualization', *Social Media + Society* 7 Nº 3 (2021).

Hirschkop, Ken, 'Cultural Studies and Its Discontents: A Comment on the Sokal Affair', *Social Text* Nº 50 (1997):131–33.

Hussain, Azhar, Syed Ali, Madiha Ahmed, and Sheharyar Hussain, 'The Anti-Vaccination Movement: A Regression in Modern Medicine', *Cureus* 10 Nº 7 e2919 (2018).

Jarry, Jonathan, 'Masks Fall When Antivaxxers Congregate', *McGill Office for Science and Society*, 11 June 2020.

Kafka, Alexander C., '"Sokal Squared": Is Huge Publishing Hoax "Hilarious and Delightful" or an Ugly Example of Dishonesty and Bad Faith?', *Chronicle of Higher Education*, 3 October 2018.

Kelderman, Eric, 'Another "Sokal" Hoax? The Latest Imitation Calls an Academic Journal's Integrity Into Question', *Chronicle of Higher Education*, 30 November 2021.

King, Anthony, 'Fast News or Fake News? The Advantages and the Pitfalls of Rapid Publication through Pre-Print Servers during a Pandemic', *EMBO Reports* 21 Nº 6 e50817 (2020).

Kirk Sell, Tara, 'Meeting COVID-19 Misinformation and Disinformation Head-On', *Johns Hopkins Bloomberg School of Public Health* [n.d.].

Kletter, Melanie, 'Fighting the Infodemic: New Strategies for News Literacy', *School Library Journal* 66 Nº 8 (2020): 38–41.

Kurt, Serhat, 'Why Do Authors Publish in Predatory Journals?', *Learned Publishing* 31 № 6 (2018): 141–47.

Lagerspetz, Mikko, '"The Grievance Studies Affair" Project: Reconstructing and Assessing the Experimental Design', *Science, Technology, & Human Values* 46 № 2 (2021): 402–24.

Malcolm, Dominic, 'Post-Truth Society? An Eliasian Sociological Analysis of Knowledge in the 21st Century', *Sociology* 55 № 6 (2021): 1063–79.

Marcus, Adam, 'A Scientist's Fraudulent Studies Put Patients at Risk', *Science* 362 № 6413 (2018): 394.

Marcus, Adam, and Ivan Oransky, 'Why Fake Data When You Can Fake a Scientist?', *Nautilus*, 24 November 2016.

McIntyre, Lee, *Post-Truth* (Boston: MIT Press, 2018).

Mitchell, Amy, Mark Jurkowitz, J. Baxter Oliphant, and Elisa Shearer, 'Misinformation and Competing Views of Reality Abounded throughout 2020', *Pew Research Center*, 22 February 2021.

Owens, Sage, and Kal Avers-Lynde, III, 'Retracted: Donor Money and the Academy: Perceptions of Undue Donor Pressure in Political Science, Economics, and Philosophy', *Higher Education Quarterly*(2021).

Panofsky, Aaron, and Joan Donovan, 'Genetic Ancestry Testing among White Nationalists: From Identity Repair to Citizen Science', *Social Studies of Science* 49 № 5 (2019): 653–81.

Pluckrose, Helen, James A. Lindsay, and Peter Boghossian, 'Academic Grievance Studies and the Corruption of Scholarship', *Areo*, 10 February 2018.

Poulter, Martin, and Nick Sheppard, 'Wikimedia and Universities: Contributing to the Global Commons in the Age of Disinformation', *Insights: The UKSG Journal* 33 № 1 (2020): 1–16.

Ray, Beverly, and George E. Marsh, 'Recruitment by Extremist Groups on the Internet', *First Monday* 6 № 2 (2001).

Retraction Watch Database.

Rubin, Victoria L., 'Disinformation and Misinformation Triangle: A Conceptual Model for "Fake News" Epidemic, Causal Factors and Interventions', *Journal of Documentation* 75 № 5 (2019): 1013–34.

Schira, H. Rainer, and Chris Hurst, 'Hype or Real Threat: The Extent of Predatory Journals in Student Bibliographies', *Partnership: The Canadian Journal of Library and Information Practice and Research* 14 № 1 (2019): 1–16.

Schnabel, Jim, 'Puck in the Laboratory: The Construction and Deconstruction of Hoaxlike Deception in Science', *Science, Technology, & Human Values* 19 № 4 (1994): 459.

Sharun, Sara, and Erika E. Smith, 'Educational Development Partnerships and Practices: Helping Librarians Move beyond the One-Shot', *College & Research Libraries News* 81 № 9 (2020): 445–49.

Shu, Kai, et al. 'Combating Disinformation in a Social Media Age', *WIREs: Data Mining and Knowledge Discovery* № 6 (2020): 1–23.

Słogocki, Wojciech, and Bogdan Sowa, 'Disinformation as a Threat to National Security on the Example of the COVID-19 Pandemic', *Security and Defence Quarterly* 35 № 3 (2021): 70.

Smith, Tovia, 'They Believe in Trump's "Big Lie": Here's Why It's Been So Hard to Dispel', *NPR*, 5 January 2022.

Sokal, Alan, 'A Physicist Experiments with Cultural Studies', *Lingua Franca* (1996): 62–64.

Sokal, Alan, 'Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity', *Social Text* 46/47 (1996): 217–52.

Tavernier, Willa, 'COVID-19 Demonstrates the Value of Open Access: What Happens Next?', *College & Research Libraries News* 81 № 5 (2020): 226. Taylor, Zachary W. 'The Hunter Became the Hunted: A Graduate Student's Experiences with Predatory Publishing', *Publishing Research Quarterly* 35 № 1 (2019): 122–37.

Teixeira da Silva, Jaime A., 'An Alert to COVID-19 Literature in Predatory Publishing Venues', *Journal of Academic Librarianship* 46 № 5 (2020).

Tella, Adeyinka, 'Nigerian Academics Patronizing Predatory Journals: Implications for Scholarly Communication', *Journal of Scholarly Publishing* 51 № 3 (2020): 182–96.

Wakefield, A.J., et al., 'RETRACTED: Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children', *Lancet* 351 № 9103 (1998): 637–41.

'What the "Grievance Studies" Hoax Means', *Chronicle of Higher Education*, 9 October 2018.

Wise, Jacqui, 'Boldt: The Great Pretender', *BMJ* 346, 19 March 2013.