

# Watchdog Science Journalism: How Retraction Watch Fosters Accountability in Science

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## Abstract

Although science reporters have long been urged to adopt the role of the journalistic watchdog, scholars have not extensively examined how this role can be understood conceptually or in practice. This exploratory case study examines Retraction Watch, founded in 2010, as an illuminating example of watchdog science journalism that holds science to account around the epistemological claim, central to science’s cultural authority, that it is self-correcting. Drawing on a thematic analysis of interviews with senior staff at the site and scholars who study retractions, the study finds that the site has undertaken accountability journalism of the little-scrutinised phenomenon of retractions, has reported systematically on retractions, has questioned and determined the reasons for retractions, has created a database of retractions to aid science in its self-correction, and has provided knowledge-based journalism for its specialist public interested in scientific integrity. The article argues that Retraction Watch has expanded beyond journalism to operate as a novel journalistic hybrid institution that combines science journalism with the scientific infrastructure of its database, activities underpinned by a normative value of accountability. As a journalistic hybrid institution, it illustrates what future organisational forms of science journalism might look like.

## Keywords

accountability journalism; journalistic hybrid institution; research integrity; retraction; science journalism; watchdog science journalism

## 1. Introduction

Scholars and journalists have for decades called for science reporters to be more critical of science (Kiernan, 2022; Murcott, 2009; Nelkin, 1995). These calls have come in a context where science journalism has

tended historically to conform to a transmission communication model in which reporters faithfully relayed information from science to the public (Trench, 2007), resulting in reporting that was too supportive of the scientific enterprise. One proposed way for journalists to adopt a more critical orientation is by undertaking the watchdog role, which holds “scientists, scientific institutions, industry and policy-oriented organisations to scrutiny” (Fahy & Nisbet, 2011, p. 780). But there has been little examination of what this role entails and how its methods and processes can hold scientists accountable to citizens who fund research through taxation and rely on science as a guide to personal and political decisions. These calls, therefore, confront the conceptual problem that it is not clear how the phenomenon of watchdog science journalism can be understood theoretically or in practice, especially in a digital era of changing roles, emergent practices, and new organisational forms of journalism.

One outlet that can illuminate the phenomenon is Retraction Watch, recurrently described with reference to the watchdog role. Founded in 2010, it reported from its inception on retractions, published notices in academic journals stating that a paper had been formally withdrawn from the scientific record. It later developed the first comprehensive database of retractions that it made available as an open research resource for the scientific community. The site has been described as producing “watchdog science journalism” (Mede et al., 2025, p. 1) and has been categorised as a new type of “watchdog” organisation that emerged in the digital era to monitor scientific publishing (Biagioli & Lippman, 2020, p. 17). Such scrutiny matters for public trust in science, as the public legitimacy of science is connected to the legitimacy of science publishing (Csiszar, 2020). In this study, I identify and analyse the central characteristics and core processes of Retraction Watch to illuminate the phenomenon of watchdog science journalism. I argue that Retraction Watch is a journalistic hybrid institution that combines science reporting with the research infrastructure of its retraction database to foster accountability in science, guided by the normative value of accountability. I argue that the hybrid form enables the site to hold science to account around the epistemological claim, central to the cultural authority of science, that the institution of science is self-correcting.

## 2. Literature Review: Watchdog Science Journalism, Retractions, and the Journalistic Hybrid Institution

Because so few studies have addressed watchdog journalism, the phenomenon has remained significantly undertheorised. One consequence is the absence of an agreed-upon or authoritative definition of watchdog science journalism. Fleerackers et al. (2026) offered a wide-ranging definition, arguing that this form of journalism uncovers research integrity problems in scientific publishing and the actors behind them, and reports on “misuses and abuses of science methods, processes, outcomes, and authority by those practicing, funding, and/or using science in the public domain.” Their analysis centred the watchdog function on research integrity, an umbrella term for problematic practices including a lack of adherence to ethical standards and procedures, the manipulation of data, the falsification of evidence, and fabrication of data. This is a useful definition, especially in its emphasis on research integrity, yet the concept can be strengthened by grounding it in established definitions of watchdog journalism.

The watchdog function, argued Norris (2016, p. 538), was “most pervasive in Anglo-American democracies, where a long liberal tradition has encouraged scepticism towards the potential abuse of state power.” Within this context, the watchdog role is central to the social role of journalism, its philosophical origins lying in

classical liberal theories of democracy in which news media are institutions separate from the state and the market, with a specific role to scrutinise the government and the powerful on the public's behalf (Norris, 2016). Journalists in the watchdog role have an adversarial orientation towards elite authority. Their role is to hold the powerful to account, to ensure institutions function properly, and to ensure officials act in accordance with the standards of the institutions they control (Norris, 2016).

Given the deep intellectual roots of the watchdog idea in Anglo-American democracies, scholarship from that context sharpens the concept's definition. Writing in a collection examining the press as a core institution in American democracy, Bennett and Serrin (2005, p. 169) provided a detailed definition of the role and its functions. The watchdog role, they argued, "may involve simply documenting the activities of government, business, and other public institutions in ways that expose little-publicized or hidden activities to public scrutiny." They defined watchdog journalism as:

(1) independent scrutiny by the press of the activities of government, business, and other public institutions, with an aim toward (2) documenting, questioning, and investigating those activities, in order to (3) provide publics and officials with timely information on issues of public concern. (Bennett & Serrin, 2005, p. 169)

The concept of journalistic independence is open to different interpretations, but in this article, I apply the definition from the Society of Environmental Journalists, adapted to science, which described it as "independence from vested interests" (Palen, 1999, p. 159). This study's definition of watchdog science journalism, then, is: independent scrutiny by journalistic outlets of the activities of science with an aim toward documenting, questioning, and investigating those activities, in order to provide publics and officials with timely information on science-related issues of public concern.

When scholars have discussed watchdog journalism, they have connected it with the related idea of accountability. Waisbord (2000), for example, argued that a crucial function of watchdog journalism was to foster accountability. He argued that accountability meant governments and powerholders should be open and transparent in their workings, explaining their actions and decisions to various publics, a process that ultimately strengthens public trust in democratic institutions.

Yet accountability also suffers from a lack of definitional precision. The emerging field of accountability studies has helped address this weakness. Scholars in the field agreed accountability had its origins in the discipline of accounting. The concept was "anchored in the mundane yet important practice of record-keeping" (Bovens et al., 2016, p. 3). A reliable record provides the evidence on which powerful institutions or individuals can be asked to explain their actions, enforce their standards, and meet their professional duties. Accountability is concerned, therefore, with providing answers to the public or parts of the public that have a "legitimate stake" in demanding an account (Bovens et al., 2016, p. 3). As applied to science for this article, accountability is defined as a process based on record-keeping in which powerholders in science provide an open and transparent public account of their past actions, decisions, and workings to publics with a legitimate stake in a scientific issue.

Ideas of accountability in science have gained prominence across the first decades of the twenty-first century, as signs of systemic dysfunction multiplied, leading to the view that there is a "crisis" in science

(Saltelli & Funtowicz, 2017, p. 5). There have been concerns about the reproducibility of scientific studies, the rise of predatory journals charging academics to publish but offering no editorial oversight, the rise of “paper mills” selling work and authorship to scientists, the mainstream reporting of prominent scientists who have committed egregious fraud, and the massive rise in articles retracted from scientific journals, with more than 10,000 articles retracted in 2023 alone (Fang & Casadevall, 2024; Plümper & Neumayer, 2026; Van Noorden, 2023). The rising rate of retractions, in particular, has been interpreted as a significant indication of problems in science, as retractions represent “unequivocal evidence of project failure” in science (Fang & Casadevall, 2024, p. 294). Retracted papers account for a small fraction of the scientific literature, but their effects are corrosive. They misrepresent the current state of scientific knowledge, divert scientists into unproductive research, provide an unreliable foundation for medical treatments, and erode public confidence in science (Fang & Casadevall, 2024).

Retractions, however, have received little sustained journalistic coverage, and those reported on have tended to concern high-profile instances (Rada, 2007). When journalists reported on an original paper, they tended not to report on its retraction (Rada, 2005). When journals issued a retraction notice, journalists rarely updated their stories on the original paper (Valinciute & Halfman, 2025). Fleerackers et al. (2026) explained why reporters did not cover retractions and research integrity issues more often. Their interview-based study of science reporters in Canada and the UK concluded that the extensive time and labour involved was a barrier to time-pressed and resource-poor journalists. They concluded perceptively that watchdog science journalism was “a feasibility-bound role” (Fleerackers et al., 2026, p. 18), contingent on having the time and resources to undertake it, a conclusion that points to the need to understand the organisational environments that enable science journalists to do such work.

These constraints exist at a time when the specialism is being remade in the twenty-first century (Guenther, 2019; Schäfer, 2017). Widespread digitisation has disrupted the traditional business model of science journalism, and the rise of digital communication has created a new ecology of communication between science and the public in a pluralistic and participatory media environment (Weingart & Guenther, 2016). In this ecology, important audiences for science news are highly-motivated readers with strong professional or political affinities for a field or issue. They constitute a science-focused issue public, who expect high-quality content and often participate in producing and distributing it (Fahy & Nisbet, 2011). To meet this demand, and to report on complex scientific issues, there is a need for “knowledge-based journalism” (Nisbet & Fahy, 2015, p. 223) in which journalists with reporting skills and advanced expertise in a particular area produce high-quality journalistic content. Moreover, these technological and financial changes have created the conditions for emergent structural forms of science journalism that require scholarly analysis (Schäfer, 2017).

The journalism scholar Stephen Reese described and defined one emergent structural form of journalism—what he called the “journalistic hybrid institution” (Reese, 2021, p. 17). He argued that the financial and digital disruptions of the news industry led to what he characterised as a “de-institutionalisation of journalism” (p. 1), a process marked by a decline, in the US especially, in the numbers of staff journalists in newsrooms (summarised in Guenther, 2019). For Reese (2021, p. 4), such de-institutionalisation led to an erosion of the “so-called ‘iron core,’ accountability function of journalism.” An article in *Nature* contained the prediction that the drop in the number of science reporters, coupled with the rapid expansion in information disseminated by scientific institutions, would herald the end of critical science journalism, including watchdog coverage (Brumfiel, 2009).

Reese argued that one reaction to these trends was the emergence of a new type of institutional configuration that combined the newsroom-centred structures of traditional journalism with the professional practices and social missions of civil society organisations, a combination often facilitated by new technologies. Reese (2021) argued that these institutions were defined by the activities they undertook and the shared values and norms that gave those activities coherence. Professionals in the organisation shared “collective frames of meaning” (Reese, 2021, p. 112) about their work and the institution’s mission, as well as shared normative values that underpinned and guided the institution’s various activities. Reese argued that such normative values, which have tended to remain implicit in the analysis of traditional media, should be emphasised in the analysis of emerging institutions. The social value of these new institutions, he argued, was tied to the norms guiding their work, and these shared norms gave the organisation a coherence and a “clear sense of journalistic mission” (Reese, 2021, p. 160).

Two experienced science and health journalists, Ivan Oransky and Adam Marcus, founded Retraction Watch in 2010 in this socio-cultural context. At the time, Oransky was executive editor at Reuters Health, having held senior editorial positions at *The Scientist* and *Scientific American*. Marcus was then managing editor of the specialist publication *Anesthesiology News*. Oransky, in 2010, started the blog Embargo Watch. It scrutinised the contentious embargo system through which journals provided journalists with research papers and media releases ahead of formal publication, a system that gave reporters time to prepare their stories, but also gave journals a high degree of control over the topics and timings of science news (Kiernan, 2006). As Retraction Watch developed, it began work on what would become its database of retractions, a comprehensive database of retracted articles that would be made available to scientists worldwide.

The site’s development followed a series of formal milestones. The Center for Scientific Integrity (CSI) was formed in 2014 as the non-profit parent organisation of Retraction Watch. It received a series of grants from 2014 to support its work from philanthropic foundations, including the MacArthur Foundation, the Laura and John Arnold Foundation, and the Helmsley Charitable Trust. Its active grants in 2026 were from the WoodNext Foundation and Coefficient Giving, formerly Open Philanthropy. The site has also been funded by reader donations and, for a time, the licensing of the database to commercial and non-profit organisations (Oransky, 2023). The CSI is also paid for work its reporters publish in other outlets that have partnership agreements with the organisation. In 2018, it launched its database of retractions. In 2023, the Retraction Watch Database was acquired by Crossref, a non-profit organisation that indexes published scholarly data, an acquisition that provided a sustainable foundation for its work. Crossref pays an annual service fee to the CSI for the maintenance and operation of the Retraction Watch Database. Retraction Watch, then, is an established digital-native outlet with a distinct organisational and financial configuration, making it an example of what science communication scholar Mike Schäfer called the emerging “different shapes of science journalism” that warranted scholarly investigation (Schäfer, 2017, p. 56).

### 3. Method

My analysis has taken the form of an exploratory case study. Yin (1984, p. 23) defined the case study as “an empirical enquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used.” The exploratory case study is a sub-category that Yin argued could be applied to specific cases to generate wider theoretical insights about a novel or underexplored phenomenon. I purposefully

selected the site because a detailed analysis promised greater conceptual understanding of the undertheorised phenomenon of watchdog science journalism. I selected the site as both a critical and an extreme case, a highly unusual example given its almost exclusive focus on retractions and research integrity (Creswell & Poth, 2018).

My exploratory case study aimed to identify and clarify the central characteristics and core processes of watchdog science journalism as illustrated in Retraction Watch's work. The principal source of evidence was semi-structured elite interviews. I chose interviews because they provide insights unavailable elsewhere and are productive for generating theory (Bogner & Menz, 2009). I conducted a total of ten interviews with seven interviewees. There were two categories of interviews. The first category featured interviews with core, senior staff at the site. Interviewing them provided direct access to their insider explanations and experiences, unavailable through another method, allowing me to gain direct access to their distinct frames of reference for understanding their work (Dexter, 1970). I conducted two sets of interviews at different points, in 2022 and 2026, capturing their considered reflections on recent institutional changes at the site.

The second category consisted of scholars who have studied retractions. I purposefully selected them as representatives of an "interpretive community" (Fish, 1976, p. 483) around retractions and research integrity. Undertaking common professional activities, interpretive communities share broad frameworks for understanding the meaning of texts and their contexts, agreeing on shared meanings and narratives about them (Berkowitz, 2019; Lindlof, 2002). I selected these researchers because they have published scholarly papers on retractions and research integrity, are familiar with the work of Retraction Watch, and represent a reasonable spread of academic disciplines. A full list of interviews can be found in Table 1.

**Table 1.** Interviewee names, positions, affiliations, and interview date or dates.

| Interviewee          | Position                                                        | Affiliation                         | Interview date(s)                      |
|----------------------|-----------------------------------------------------------------|-------------------------------------|----------------------------------------|
| Dr. Ivan Oransky     | Executive director (CSI) and co-founder (Retraction Watch)      | CSI                                 | July 27, 2022 and February 25, 2026    |
| Mr. Adam Marcus      | Editorial director (CSI) and co-founder (Retraction Watch)      | CSI                                 | October 28, 2022 and February 27, 2026 |
| Dr. Alison Abritis   | Research director (Retraction Watch)                            | Retraction Watch                    | October 25, 2022 and March 10, 2026    |
| Prof. Alison Avenell | Clinical chair in health services research                      | University of Aberdeen, UK          | October 5, 2022                        |
| Dr. Elisabeth Bik    | Microbiologist and independent scientific integrity consultant  | Independent consultant              | December 9, 2022                       |
| Prof. Ferric Fang    | Professor of laboratory medicine and pathology and microbiology | University of Washington, US        | October 4, 2022                        |
| Prof. Jodi Schneider | Associate professor of information                              | University of Wisconsin-Madison, US | August 12, 2022                        |

My research received ethical approval from the Research Ethics Committee at the Faculty of Humanities and Social Sciences at Dublin City University. Interviews were conducted via Zoom. All interviewees agreed, through the informed consent process, to have specific quotations attributed to them directly, and all were

given the opportunity to review and clarify their quotations before submission. Given the increased centrality of Retraction Watch's reporting and its database to this community of scholars, it is unsurprising that the interviewees have had various links with Retraction Watch. Fang is on the CSI's Board of Directors; Bik has a formal connection with the CSI through the Elisabeth Bik Science Integrity Fund, which provides financial support to science-integrity advocates. Schneider has professional associations with Oransky. He was an advisory board member on a grant project, led by Schneider and funded in 2020, that examined how to reduce the inadvertent spread of retracted research, and they have served together on National Information Standards Organization (NISO) committees related to retraction. Avenell said she donated money to Retraction Watch.

I analysed the interview data through a reflexive thematic analysis in the tradition of Braun and Clarke (2006, 2022), an approach that does not prescribe a codebook, but argues that a researcher's prior specialist knowledge, conceptual frameworks, and epistemological perspective are constitutive features of the analytic process. I have taken in this study an interpretivist epistemological position, shaped by my interdisciplinary standpoint within the fields of science communication, journalism studies, and the sub-field of science journalism. My process of theme development was primarily deductive, but also contained a significant element of induction. I began with a deductive, theory-driven approach in which the interview data was organised around a set of conceptual categories—watchdog journalism, accountability, independent scrutiny, documenting and investigating matters of public concern, and the provision of timely information to publics—that were based on this study's definitions of watchdog science journalism and accountability. These categories functioned as the primary organising ideas through which I interpreted the interview evidence.

From this starting point, I undertook a reflexive, iterative process, rereading the interview transcripts to construct analytic themes by interpreting how participants' accounts related to, illustrated, and refined the initial conceptual categories. This process resulted in the creation of the first four out of the final five themes. As part of my ongoing reflexivity throughout my analysis, I constructed the last theme—about the site's classification as a journalistic hybrid institution—in an inductive process. This theme emerged from patterns in participants' accounts of how they understood and described the organisation and its functions. I supplemented the interview data with two other forms of evidence: line charts presenting longitudinal patterns in the site's journalism and database, and facts and examples from the site demonstrating aspects of its work. These corroborate and enrich the interview evidence in interview-based case studies (Creswell & Poth, 2018; Diefenbach, 2009).

#### 4. Research Questions

Drawing on participants' accounts, what are the characteristic features and core processes of Retraction Watch's watchdog journalism? How do participants understand the site's role, through its journalism and its database, in fostering accountability in science?

## 5. Analysis: Characteristic Features and Core Processes of Retraction Watch

### 5.1. Journalism Anchored in an Ethos of Accountability

The site's defining characteristic has been its ethos of accountability journalism. For Oransky (personal communication, July 27, 2022), the site's approach to journalism was consciously shaped by a determination to avoid the uncritical science promotion that has sometimes characterised science journalism:

One of the things that I'd always cared about, and this was before Retraction Watch, before Embargo Watch, which to me was also a kind of accountability journalism, was, you know, not treating hospitals, researchers, research institutions, journals, universities, not treating them like they were flawless and like we were all just there to promote science.

The site's accountability journalism focused on retractions to examine and test the canonical claim that science was self-correcting. The sociologist of science Robert K. Merton argued that the authority of science rested on institutional checks and balances ensuring that errors, fraud, and biases were corrected in subsequent research, making its evidence base more reliable over time (Merton, 1973). Oransky (personal communication, July 27, 2022) argued it was vital to scrutinise this claim because it underpinned the epistemological basis of science and arguments for its social value:

When we started, I had a sort of working hypothesis that self-correction was not nearly as robust and effective and useful as we all were led to believe....The reason why it's important is because, in order to be able to trust the evidence base, in order to be able to trust that what someone is saying is actually based on evidence...you need to know that the system is set up so that, you know, it is getting closer to the truth, that it is not allowing....out-and-out fraud or just bad mistakes to prevail....How are you going to move forward? How are you going to develop any kind of health benefit, technology intervention without knowing that the system, maybe not immediately, but over some reasonable period of time, will correct?

The site's accountability journalism examined the self-correction undertaken by scientific journals, the vital custodians of the scientific record. Journals merit scrutiny also because of their concentrated economic power. Larivière et al. (2015) argued that journal publishing has operated as an oligopoly of international conglomerates, with the top five publishers in 2013 accounting for more than 50 percent of all published papers. Marcus (personal communication, October 28, 2022) argued that these publishers were not fulfilling their accountability functions by withholding from readers the reason why an article was retracted:

I think we felt like "big publishing," scholarly publishing, was getting away with too much. What they were getting away with was not cheating; they were getting away with being opaque and not serving their readers, and not serving the public, all while making billions of dollars a year. And so, we wanted to hold them to account.

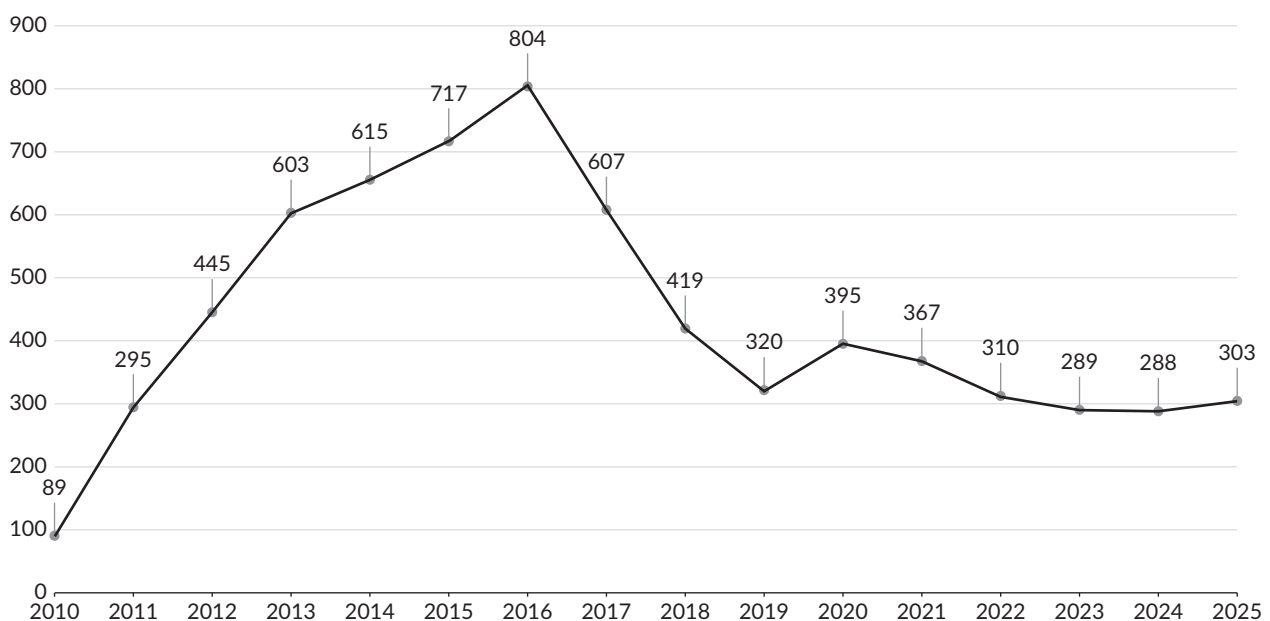
Researchers of scientific integrity agreed that profitable publishers needed scrutiny of their correction practices, since a lack of accountability—a lack of providing answers to researchers—had implications for the reliability and accuracy of the scientific record. As a representative expression of this viewpoint, Avenell (personal communication, October 5, 2022) said:

The publishers really haven't got to grips with the whole issue of correcting research, either for honest errors or for the continuum all the way up to research that is completely fabricated. Their business model, these immensely profitable businesses—you wonder where their key thrust is in terms of what is their purpose. Is actually conveying correct research and advancing science really their main purpose? Or is it just in making money and protecting against litigation?...Somebody has to try to hold these huge organisations to account.

## 5.2. Documenting Retractions and Questioning and Investigating the Reasons for Retractions

While the site's accountability journalism focused on journals to test the claim that science is self-correcting, its reporters built their stories from individual retraction notices. In this regard, its reporting is aligned with science journalism historically, which has frequently drawn on journal articles as primary sources (Guenther, 2019). A traditional constraint on science coverage in mainstream outlets has been that science and health stories had to compete with stories from other domains for the attention of editors acting as gatekeepers who decided which were published and given prominence (Guenther, 2019). Journalists at the site were able to avoid this competition and focus on retractions.

Even though retractions are formal publications, they have received little journalistic attention. While there have been occasional reports of retractions before the site was founded, Marcus (personal communication, October 28, 2022) noted that "no one was doing it systematically." One foundational process anchors the site's watchdog journalism: The routine documentation of retractions. Suggestive evidence of this routine documentation can be seen in Figure 1, which charts the annual number of posts on Retraction Watch from its foundation to 2025. I calculated these totals in March 2026 by summing the monthly post totals listed on the site's archive pages.



**Figure 1.** The annual number of posts on retractionwatch.com from 2010 to 2025, as calculated by the researcher from the monthly post totals listed on the site's archive pages.

But documenting retractions was rarely straightforward. Journalists and researchers agreed that notices did not always disclose why a paper had been retracted. A notice would state that a paper had been retracted, but often the reason was not evident. One study summarised these problems by observing that retractions were “often slow, opaque and inconsistent” (Grey et al., 2020, p. 2085). To address this, reporters went beyond the notice to investigate why a paper had been retracted, using the established journalistic method of interviewing. They sought the reason by questioning journal editors, paper authors, publisher representatives, and other scientists. Oransky (personal communication, July 27, 2022) noted that such questioning revealed a far more complex picture of the retraction than was stated in the notice:

When we did dig into them, we realised that the retraction notices, which were the sort of public face of all of this, were woefully inadequate if they existed at all, and that felt like a transparency problem....We had this untapped mine, wonderful mine, of great stories that actually had a transparency, accountability sort of narrative built in.

Researchers agreed that a crucial element of the site’s work was its skilled journalistic questioning and investigation around retraction notices. Fang (personal communication, October 4, 2022) said the journalists’ methods were able to unearth details of the retraction not previously publicised by a journal:

A lot of times we don’t get those details, and it can be very illuminating to figure out how this happened, not only why people did what they did, but how it escaped notice.

Bik (personal communication, December 9, 2022) said:

Retraction Watch has done an amazing job in asking further, asking more questions like, why? You know, if it [the journal] says...“yeah, it’s a republication”—what do you mean by that? Can you give some more details? And they have done an amazing job in getting publishers to be a little bit more open on why a paper got retracted, and those things are important because, especially if you have based part of your research on a paper that now got retracted, you want to know which parts of the paper you could still trust.

As other elements of its documentation, the site has recorded trends related to retractions, including a “leaderboard” of researchers with the most retracted articles, retractions by Nobel Prize winners, retracted Covid-19 papers, and the ten most highly-cited retracted papers ([www.retractionwatch.com](http://www.retractionwatch.com)).

### ***5.3. The Retraction Watch Database Has Documented Retractions and Questioned the Reasons for Retractions***

The creation of the database began in the mid-2010s, indicating that, from close to its foundation, the site planned to expand beyond journalism into a larger institutional form. The database was related to accountability and aimed to enhance self-correction in science. As the site’s research director, Alison Abrisit (personal communication, October 25, 2022), said, a role of the database was:

To improve the quality of literature that is coming out. So, I like to think that we have a good role in not only cleaning up literature but making literature that is being published come to a higher perspective, or a higher standard.

The site's journalism aimed in part to bring retractions to greater public scrutiny. But its founders recognised a deeper and more systemic problem: The record of retractions in the scientific literature was inconsistent and unreliable. Although they are formal scientific publications, retraction notices have proved difficult to gather, collate, and index, even within scholarly databases such as PubMed, Web of Science, and Scopus. Just as the site's reporting aimed to systematically cover retractions, its database aimed to systematically organise them.

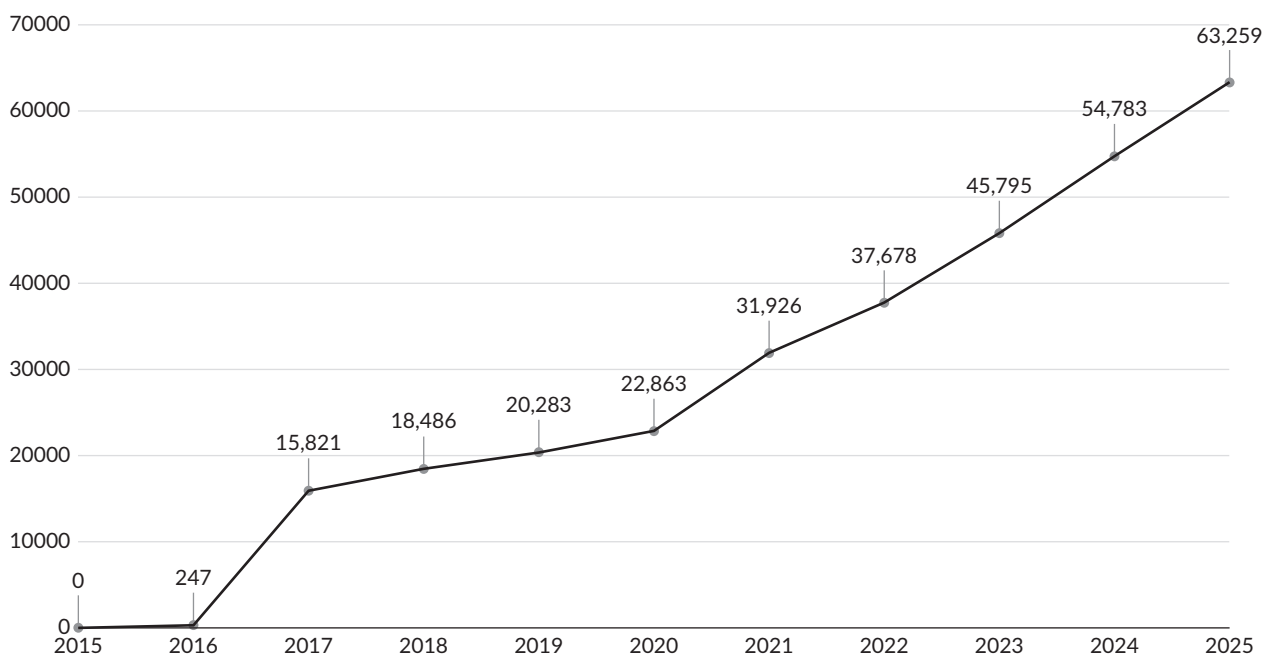
This work went beyond simple identification and collation. Populating the database featured core processes similar to the site's journalism: Documenting retractions and investigating why articles were retracted. These processes have been essential to the systematic categorisation of retractions. Abritis (personal communication, March 10, 2026) said identifying the reasons for retractions and capturing them in the database was "a highly dynamic process," an investigative activity that required familiarity with the language of scientific publishing, which can often appear unclear, evasive, and opaque. Abritis (personal communication, October 25, 2022) said:

We look for retractions. We look for the term withdrawal. We look for the term removal, and so that's what we're doing, and what we're finding out is it's a lot more work than we ever thought of.

The reasons for retraction, as the site categorises them, include duplication of data, error in data, falsification or fabrication of data, falsification or fabrication of results, false or forged authorship, manipulation of data, manipulation of images, misconduct by author, plagiarism of data, plagiarism of image, plagiarism of text, computer-aided content or computer-generated content (for the full list, see Retraction Watch, 2025). Abritis (personal communication, October 25, 2022) said that when retracted articles were found, some were difficult to categorise because the reason for retraction was not stated:

There's no consistency, even within a journal [about] how a retraction notice is published. So here you're trying to build a database which is a standardisation of a process that has no standardisation.

The database developed into a novel piece of scientific infrastructure. But deciding that a database of retractions was needed and creating it, like the creation of other databases, was not a neutral process. It resulted from sustained organisational and interpretive knowledge work that enabled research by providing shared, standardised information for scholars. The database also shaped what research became possible, supplying new categorised data and opening new research questions. Moreover, the database was made available to scholars, opening access to knowledge to a greater number of researchers (on the knowledge work of database construction, see Bowker & Star, 1999; Star & Ruhleder, 1996). The core watchdog process of careful, consistent documentation over time is evident in the information captured in the Retraction Watch Database, formally launched in 2018. Figure 2 below maps the total number of retractions in the database between 2015 and 2025.



**Figure 2.** The total number of retractions in the Retraction Watch Database between 2015 and 2025. Source: Retraction Watch and the CSI.

By mid-2026, the site listed more than 500 papers citing the work of Retraction Watch (Retraction Watch, 2026). Jodi Schneider (personal communication, August 12, 2022) expressed a view shared among interviewed researchers about the site's scholarly value:

For people who are trying to do research about retractions, the Retraction Watch Database itself has become a really valuable resource. It's very common for researchers to get access to the database itself, and you can see a lot of recent publications that are mentioning that as the data source.

#### **5.4. Providing Publics and Officials With Timely Information on Science-Related Issues of Public Concern**

Compared to science journalism generally, aimed at mostly non-specialist audiences (Guenther, 2019), Retraction Watch's journalism has largely focused on a specialist public. According to its founders, a significant proportion of its audience has consisted of readers professionally interested in research integrity: scientists, journalists, professionals in scientific publishing, and officials involved in research integrity. This public can, therefore, be considered an elite science-focused issue public for research integrity.

As Marcus detailed (personal communication, October 28, 2022), journals at first disliked the scrutiny from the site, but had to pay increasing attention because of the influence of its audience of "mostly scientists, some policymakers, some journalists...exactly the sort of people who journal editors care about." A study that examined the site's X page found further evidence about its public. It found that users who commented on a sample of the site's posts were mainly from scientific and academic backgrounds, with almost 41 percent of those commentators identifying themselves as "scientists, scholars, or academic institutions" (Mede et al., 2025, p. 13). Though niche, the public has been sizeable: At the end of 2011, the site noted that it would

surpass 1.5 million pageviews, and in 2024, it reported a record year for traffic with 7.5 million pageviews (Oransky, 2011, 2024).

As well as a source of information, the site became an outlet around which the issue public of researchers interested in scientific integrity could gather, as Avenell (personal communication, October 5, 2022) described:

It is most useful to read about other people's experiences so that you can, if you like, vicariously share the frustrations that one has. Because I think if you spoke to anybody who works in the areas that we do where we are investigating studies and negotiating with journals about trying to correct the literature, it is immensely frustrating and a thankless task, and nobody thanks you. And so, to some extent, for people like me, I think the good thing about Retraction Watch is that it shows you you're not alone. These are the experiences of other people. There's a community of you working together.

Schneider (personal communication, August 12, 2022) described how the different elements of the site—its journalism and its database—cohere to provide a complementary set of facts and interpretations for its audience:

Reading retraction notices and categorising often very limited information that's in those, sometimes for legal reasons, that's valuable....Then going and digging and kind of reading between the lines and sort of putting the pieces together and getting further information and writing stories about it—that's also valuable....Each of those things is really value-added....For me, I love at least the collated information, the sort of first layer of what's retracted...that ought to be well-curated information but...unfortunately it's not so well curated...and Retraction Watch is a really, really good source of that information.

### ***5.5. Retraction Watch Functions as a Journalistic Hybrid Institution Underpinned by a Normative Value of Accountability***

Over time, the site developed into a journalistic hybrid institution, combining science journalism with the scientific infrastructure of its database. With the sustainable financial base provided by Crossref's acquisition of the database, the site has continued to expand. I conducted the second set of interviews for this study in 2026, one aim of which was to gather reflections from senior staff about how the site had changed since the acquisition. The interviews were conducted a year after a range of new initiatives began under the auspices of the CSI. The Medical Evidence Project draws on metascientific methods to examine the medical literature. The Sleuths in Residence programme supports researchers on projects that examine the scientific literature. The Elisabeth Bik Science Integrity Fund provides financial support for the work of science-integrity advocates.

These expanded activities cohere because each is underpinned by the normative value of accountability. Asked how they would categorise the CSI's work, spanning research, investigation, and journalism, both Retraction Watch founders emphasised accountability as a central unifying value. For Oransky (personal communication, February 25, 2026):

It certainly still has a journalistic core, and the journalism we do is central to our mission. I always cringe at the word advocacy, because I think it's important to not be an advocate when you're a journalist. However, I think there are things you can advocate for, like transparency, like quality, like oversight and

accountability. They're journalistic principles....If I were to try and describe it, it would be a non-profit organisation that is trying to improve the state of science by examining its processes and outputs in different ways.

And for Marcus (personal communication, February 27, 2026):

The fundamental goal is the same as Retraction Watch, which is to illuminate problems in research, research publishing, the practice of science, and bring those to the attention of the public, and to the research community, and try to help foster a culture of more accountability.

## 6. Conclusion

My exploratory case study of Retraction Watch has several limitations. My selection of the site as an extreme and critical case means the identified characteristics and processes of the site cannot be generalised to other science journalism outlets. The conclusions that can be drawn from the case are also restricted because the site had a unique process of development in the American media context and was shaped by the distinct professional histories, expertise, and motivations of its founders. A further limitation is that the study's base of evidence consists primarily of a small number of interviews and is heavily reliant on accounts from senior staff at the site, who could be expected to present the site favourably. I also acknowledge that additional interviews with more researchers might have introduced different perspectives about the site's work. Nevertheless, the study is not presented as a definitive analysis of the site, but as an exploratory study that aims to create a deeper theoretical understanding of watchdog science journalism.

Within these acknowledged limitations, my central argument is that Retraction Watch has undertaken watchdog functions as it came to operate in a novel institutional configuration, a journalistic hybrid institution, as theorised by Reese (2021), combining science journalism and the scientific infrastructure of the retraction database to hold science to account around its claim to be self-correcting. While journalism and database construction are sociologically distinct activities, they are given coherence within Retraction Watch because they are underpinned and guided by the shared normative value of accountability. That ethos was central to the site's original journalistic mission and carried over into all its subsequent activities. The idea of accountability, the need to scrutinise science to enable self-correction, and the agreed focus on the responsibility of journals as custodians of the scientific record have been core frames of reference guiding its journalism and research.

Retraction Watch fostered accountability in science through its journalistic and research processes, which have commonalities. In its journalism, it applied to science publishing the established processes of watchdog journalism articulated by Bennett and Serrin (2005). Its reporters *documented* retractions and *questioned* and *investigated* the reasons for them, looking beyond opaque notices to uncover information that they relayed into journalistic narratives of accountability. Through these processes, the site fostered accountability in science, opening the often-hidden processes of retraction to public scrutiny, illuminating the quality-control systems of science, and asking publishers to answer to the wider scientific community about why papers were retracted. Researchers had a legitimate stake in knowing this information, as they sought to build their own research on reliable knowledge. This was specialist journalistic work, and the site's reporters—notably Oransky and Marcus—had the combination of reporting skills and specialist understanding to undertake

knowledge-based journalism in the domain of retractions and research integrity (Nisbet & Fahy, 2015). This commitment to accountability—Reese’s (2021, p. 4) “iron core” of journalism—is central to its reporting. The focus on accountability also sets Retraction Watch apart from other types of hybrid or boundary-spanning organisations that supply scientific information to improve science journalism, such as Science Media Centres (Broer & Pröschel, 2022).

In the construction and continuous development of its database, the site scrutinised retractions through a similar set of processes to its watchdog science journalism. Researchers *documented* retractions and *questioned* and *investigated* the reasons for them to systematically capture an accurate record of these publications for the wider research community. These processes fostered accountability by giving researchers a comprehensive corpus of evidence on which to study retractions, helping produce papers that critiqued and corrected the scientific record. As it is continually updated, the database provides timely information to its public of researchers, helping make science more transparent about its self-correction and the accuracy of the scientific record. As a journalistic hybrid institution, Retraction Watch’s journalism and research work have been built on a foundation of careful record-keeping and documentation (Bovens et al., 2016).

The single case of Retraction Watch cannot be generalised to science journalism overall, but elements of it can be transferred to other cases. My analysis has documented how Retraction Watch undertook watchdog science journalism, demonstrating that these processes, established in watchdog reporting generally, applied to one example of science journalism. Identifying and explaining these processes contributes to emergent scholarship on how watchdog science journalism is defined and understood (Fleerackers et al., 2026). It is plausible to assume that these processes will apply to other cases of watchdog science journalism, especially the core processes of documentation and questioning, and the provision of timely information to a public with a stake in scientific issues. The case also demonstrates that there is a significant public for high-level watchdog science journalism, who seek out specialised reporting on the sociology of science, the governance of science, and the epistemological reliability of research literature. As interviews with researchers demonstrated, the site’s success is connected to meeting the information needs of a narrow, elite issue public. At a time of heightened concern over the reliability of the scientific record (Saltelli & Funtowicz, 2017), its work met a demand for high-quality information on research integrity. But one potential inference from its success is that the production and consumption of such high-level science journalism will remain the preserve of elite publics without being aimed at or circulated through wider society. The site is a rich case for future analysis of the content of its journalism, the reasons for fluctuations in its coverage, the role of philanthropic funding in its work, and the effects of its work on the wider public understanding of science.

Retraction Watch as a journalistic hybrid institution is an illustrative example of potential future organisational forms of science journalism. If the identified trends in Western countries continue (Guenther, 2019), the specialism will face continued financial pressures and digital disruption. Science journalism might need to adopt new hybrid institutional forms, such as fusing a journalistic organisation with an advocacy organisation or a research organisation. Such novel forms could sustain the production of science journalism, while opening new ways to distribute it, alongside related public interest information including datasets, policy briefs, and research findings. These new “shapes of science journalism” (Schäfer, 2017, p. 56) will take different forms, contingent on the histories and motivations of their creators, their socio-cultural context, and their funding sources, but their coherence and social value will rest on shared

normative values related to the public interest ethos that has guided journalism in liberal democracies. As an example of what these forms can look like, Retraction Watch remains an illustrative case, a distinct digital-age organisation that stands as a significant example of the long-anticipated, but little-realised, idea of watchdog science journalism.

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The author declares no conflict of interests.

### Data Availability

Data is not available.

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