

Beyond Amplifiers and Watchdogs: Rethinking Institutional Science Communication–Journalism Relations in Hybrid Media Ecosystems

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Abstract

Contemporary science communication increasingly unfolds within hybrid media ecosystems where scientists, institutional communicators, journalists, and audiences interact under rapidly changing conditions. In these ecosystems, universities and other research organisations have become highly visible communicative actors, supported by growing investments in strategic science communication. At the same time, science journalism faces economic precarity, shrinking newsroom capacity, and growing reliance on institutional sources. These developments have fuelled long-standing debates about hype, churnalism, and the erosion of journalism's watchdog function, often framed as ethical or professional failings. However, these tensions between institutional science communicators and science journalists can also be seen as the structural consequences of contemporary science communication rather than as interpersonal conflicts or normative shortcomings. We conceptualise this relationship through two analytical lenses. A high-tension perspective foregrounds risks to journalistic independence, critical scrutiny, the watchdog role, and public trust under conditions of media asymmetry and the expansion of institutional authority over the public communication of science. A low-tension perspective highlights functional interdependence, role complementarity, and the ways institutional communication can enable science journalism in constrained media environments. Rather than treating these perspectives as competing accounts, we use them to illuminate different normative stakes within the same ecosystem. We thus propose a framework for constructive interdependence that acknowledges blurred boundaries and role overlap while actively protecting the integrity of independent

scrutiny, and argue that safeguarding journalism's watchdog role should be understood as a shared responsibility across communicators, institutions, and intermediaries. While we wrote this piece primarily for science communication scholars, we hope that the proposed framework offers science journalists, institutional science communicators, and research funders four concrete principles for protecting independent scrutiny as science communication ecosystems continue to change.

Keywords

churnalism; institutional science communication; journalism; science communication; science journalism; science PR; professional roles

1. Introduction: Competing Logics at the Science-Media Interface in Hybrid Media Ecosystems

Historically, journalism acted as the primary mediator between science and the public (Dunwoody, 2008, 2014; Guenther, 2019; Nelkin, 1995). Today, research organisations have become major players that proactively produce press releases and online or social media content and enter into partnerships with the media, resulting in a shift from a journalism-centred model to a multi-actor system in which organisations play a central role (Peters, 2022). In contemporary science communication ecosystems, relationships and interactions are no longer structured around stable, linear roles. Instead, they are shaped by rapidly evolving digital information environments in which scientists, institutional communicators, journalists, influencers, and audiences, among others, interact in increasingly complex ways (Krause et al., 2025; Mede et al., 2025; Schäfer, 2017). New players such as algorithmically driven platforms increasingly disrupt traditional journalistic gatekeeping and blur the boundaries between journalism, institutional communication, and other communicative actors, intensifying tensions between attention-oriented, strategic science communication, and the critical, mediating role historically associated with science journalism (Franks et al., 2023; Guenther, 2019; Metag et al., 2023). Authority over how science is represented and interpreted is therefore no longer concentrated among a small set of professional communicators but is distributed across a competitive ecosystem populated by multiple, more or less powerful non-journalistic actors who communicate strategically and directly with public and policy audiences. While acknowledging the multiplicity of actors that have different, and often overlapping, roles in the public communication of science, in this article, we focus on two main actors and their relationship in modern science communication ecosystems: institutional science communicators and science journalists. However, these two groups do not act in isolation. Scientists are central to both, serving as sources and spokespersons for institutional communication and as the subjects and sources of journalistic scrutiny, while increasingly communicating directly with public audiences in ways that bypass both (e.g., on social media; Guenther et al., 2023). Other actors, including social-media influencers, algorithmically driven platforms, and increasingly active audiences, further shape the visibility and content of scientific information within which communicators and journalists operate. We return to these actors later, to show how boundaries blur and how scientists, social-media influencers, platforms, and audiences move across the roles we distinguish here.

In modern communication environments, universities and other research organisations or even companies have become increasingly visible and influential in the public communication of science. Corporate science communication, or science public relations (PR), is now widely recognised as a strategic organisational

function shaped by institutional logics, reputation-building, and performance metrics tied to attention, visibility, impact, and funding competitiveness (Schäfer & Fähnrich, 2020; Weingart, 2012). Across many countries, staff capacity and infrastructure for institutional science communication have expanded markedly (Entradas et al., 2023, 2024). Research outputs are packaged and promoted through professionalised infrastructures, ranging from embargoed press releases to coordinated social-media campaigns, processes described by Marcinkowski and Kohring (2014, p. 1) as “institutionalised push communication.” Decisions about which research becomes visible, how it is depicted, and when it is communicated are thus embedded in branding strategies, managerial expectations, and competitive research environments.

Science journalists operate within the same ecosystems but under a fundamentally different mandate. Like institutional communicators, journalists create attention for scientific issues, aiming to make scientific knowledge accessible, intelligible, and socially relevant (Dunwoody, 2008, 2014). By doing so, science journalists follow their own logic and professional criteria (such as news factors) that in many ways depart from established criteria within science (e.g., Guenther, 2019), which can become a source of tension between the two groups. However, in a democratic society, journalism carries a distinct responsibility: to scrutinise scientific claims, interrogate uncertainty, expose misconduct and fraud, and hold powerful actors (including individual scientists, as well as universities and other research organisations/companies) to account. This includes independent and critical work in line with journalism’s watchdog function: fact-checking, challenging exaggerated claims in journal papers and press releases, and exposing scientific misconduct. Conventionally positioned as independent watchdogs, journalists in democracies are normatively accountable to public audiences rather than to the organisations they report on. The democratic function of journalism most directly at stake is accountability, that is, the capacity to hold scientific and institutional power to account, together with the closely related epistemic function of safeguarding the reliability of the knowledge that enters public debate. Nevertheless, when asked, most science journalists would say that they see themselves as neutral providers of information rather than as critical watchdogs (e.g., Dunwoody, 2014; Guenther, 2019).

Based on these insights, it is not surprising that relationships between institutional science communicators and science journalists are often described as uneasy or conflict-laden, with ongoing debates about science PR, hype, churnalism, and the erosion of journalism’s critical distance from scientific authority reflecting these tensions (Guenther & Joubert, 2021; Joubert, 2019). Much of this debate, however, has tended to label tensions between communicators and journalists as matters of ethics, professional misconduct, or failure, rather than seeing them as features of contemporary science communication ecosystems (e.g., Bucchi & Schäfer, 2025). In contrast, this conceptual article argues that such tensions are better understood as structural conditions within contemporary and hybrid science communication ecosystems. We propose that these tensions arise from unequal power relations, divergent accountability structures, and the reconfiguration of media infrastructures in which both professions are embedded. Rather than asking whether science communicators or journalists are behaving properly or improperly, we will shift the analytical attention to how their roles are shaped, constrained, and, at times, forced into uneasy interdependence by broader economic and institutional dynamics.

At the surface level, institutional science communicators and science journalists share several points of alignment. Both translate complex scientific information and knowledge for public or policy audiences; both value accuracy, clarity, and timeliness; and both operate under intense time pressures in competitive

attention economies. In practice, journalists often rely on institutional communicators for access to scientists, embargoed press releases, expert contacts, and contextual materials. Institutional communicators, in turn, rely on journalists to extend the reach and perceived legitimacy of scientific information beyond institutional channels into trusted media spaces. This functional interdependence is not an equal one (as was theoretically proposed, for instance, in the intereffication model; Bentele & Nothhaft, 2008; see also Comfort et al., 2024) but coexists with fundamental divergences in professional orientation. Institutional communicators are structurally accountable to their employers and management, in some cases to funders; their performance is often evaluated through metrics tied to attention, visibility, reach, and reputational impact. Journalists, by contrast, as watchdogs, are normatively accountable to publics and democratic ideals, including the scrutiny of power, the exposure of wrongdoing, and the interrogation of uncertainty and conflict.

Understanding this relationship in hybrid media ecosystems, therefore, requires moving beyond binary distinctions between “good” and “bad” actors—i.e., actors who either fulfil their (normative) roles or not. Instead, it calls for an interrogation and understanding of how professional roles are enacted under unequal structural conditions. To that end, we distinguish between high-tension and low-tension dynamics as analytical lenses rather than mutually exclusive states. A high-tension perspective foregrounds risks to journalistic independence, the watchdog function, and public trust in science amid media precarity and the expansion of institutional communication authority. A low-tension perspective, by contrast, highlights functional interdependence, complementary roles, and how institutional communication can enable science journalism in constrained media environments. Rather than treating these perspectives as competing realities, we use them to illuminate different normative stakes within the same hybrid science communication ecosystem. By bringing these perspectives into dialogue, we aim to move beyond binary oppositions between good and bad or between “amplifiers” and “watchdogs,” and to develop a framework for constructive interdependence that acknowledges role overlaps and blurred professional boundaries while actively protecting the integrity of independent scrutiny. In doing so, we argue that safeguarding journalism’s watchdog function should not be solely a journalistic concern but a shared responsibility among institutions, intermediaries, and funders.

In this conceptual article, we navigate between high- and low-tension perspectives and disregard a no-tension perspective as, based on the literature, tension is inherent in the relationships between these actors, with conflicting professional norms and dissimilar cultural values stated as reasons for this (e.g., Guenther & Joubert, 2021). Furthermore, although it may seem that the high- and low-tension perspectives are mutually exclusive, they can actually be seen as two extremes on the same continuum. Naturally, there is a spectrum of views between the two. We decided to focus on the extremes to show that there are two readings of the same tension. The low-tension reading foregrounds the conditions under which these tensions operate productively, as functional interdependence and role complementarity; the high-tension reading foregrounds the conditions under which the same tensions become antagonistic, placing journalistic independence and accountability at risk. The relevant boundary condition is thus qualitative rather than metric.

Although this article is a conceptual contribution written primarily for science communication scholars, we intend the framework to be equally useful in practice: it offers science journalists and institutional communicators, as well as research funders, a shared language for treating these tensions as structural rather than personal, and a basis for shaping training, editorial policies, institutional guidelines, and funding arrangements that protect independent scrutiny, or the so-called “watchdog function” of science journalism.

2. High-Tension Dynamics: Media Precarity, Churnalism, Hype, and the Erosion of the Watchdog Function

The high-tension perspective emphasises how structural transformations in contemporary media systems have intensified friction between institutional science communication and journalism, with significant implications for journalism's watchdog role and for public trust in both journalism and science (Weingart & Guenther, 2016). Metag (2021) highlights how visibility has become a central yet contested goal in contemporary science communication, revealing tensions between promotional, attention-oriented communication logics and more reflective practices such as critical journalism and public dialogue. At the same time, shrinking specialist beats, newsroom cutbacks, and growing reliance on freelance work have made most science journalism increasingly dependent on institutional sources for information and economic survival, thereby amplifying institutional voices and weakening traditional watchdog journalistic functions (Franks et al., 2023). Of course, many science journalists remain gatekeepers (e.g., Rosen et al., 2016) and not all media companies have been hit the same way. Nevertheless, science journalism is under pressure and one of the many outcomes of this can mean single-source journalism: Science journalists do not have the time to seek additional independent sources to confirm or contradict information (Guenther, 2019)—and at this stage, the independent watchdog role is already threatened.

But this can spiral even more. Institutional communicators have begun producing media-ready science content at scale, enabling rapid, low-cost science coverage in which news outlets can republish press releases with little or no independent verification—a practice commonly described as “churnalism” (Brück et al., 2025; Davies, 2009; Guenther et al., 2024). Empirical studies across national contexts document substantial similarity between press releases and subsequent news coverage, particularly in under-resourced media environments such as science journalism (Comfort et al., 2024; Heyl et al., 2020; Sumner et al., 2014; Vogler & Schäfer, 2020). Churnalism can be seen as an amplification of the threat posed by single-source journalism; independent science coverage and the watchdog role of science journalists are at stake when external material is not only treated as a source but when complete content is used in journalism, even when produced by a disinterested source. This undermines journalism's societal function. However, importantly, as will be elaborated in Section 5, churnalism is better understood as a symptom of structural asymmetry than as a moral failing. As professional science journalism has shrunk, science PR has expanded. In media environments that reward speed, homogeneity, and recognisable formats, for media companies who have been hit hard, reliance on institutional material becomes structurally rational, even as it erodes science journalism's capacity for independent scrutiny.

These asymmetries are further intensified by the expansion of institutional communication into direct-to-public publishing via websites, online platforms, and social media where research organisations gain increasing control over how scientific advances are framed and contextualised, often privileging novelty and positive findings. This creates a situation that departs massively from the time before digitisation, when science journalism was the main and only source of scientific information for public audiences (e.g., Guenther, 2019). These dynamics are further complicated by the growing use of generative artificial intelligence (AI) tools that can produce content such as press releases, news articles, and simulated opinion pieces at unprecedented speed and scale, potentially accelerating content homogenisation and further displacing human editorial judgement and investigative work.

From this high-tension perspective, the erosion of journalism's watchdog function is not merely a professional concern but a democratic one. As Deighton (2026) argues, without sustained investment in independent science journalism and watchdog functions, societies risk losing a critical mechanism for holding scientific institutions, companies, and even governments to account—particularly in moments of controversy, crisis, or heightened uncertainty. Read in this way, hype and churnalism are not isolated pathologies but visible symptoms of deeper structural imbalances that place journalism's critical role under increasing strain.

3. Low-Tension Dynamics: Role Complementarity in a Constrained Media Ecosystem

A low-tension perspective offers an alternative analytical reading of the structural conditions described in Section 2. Rather than viewing institutional science communication as a threat to journalistic integrity, independence, and roles, this perspective understands it as a legitimate and necessary component of contemporary science communication ecosystems operating under conditions of attention scarcity, media precarity, and intensified competition for attention and visibility. This perspective recognises institutional science communication as a professional practice that renders scientific work visible, intelligible, and socially relevant while remaining ethically grounded. As proposed by Vissers et al. (2024), science communication and PR are mutually beneficial activities that are entwined along a continuum. This continuum refers to the overlap in their practices and outputs and not to an equivalence in accountability, since institutional communicators remain answerable to their employing organisations and journalists to their publics. Mutual benefit does not imply symmetry: Under conditions of media asymmetry, the relationship increasingly favours institutions, which is exactly the tension our framework (see Section 5) seeks to manage.

From this viewpoint, there is nothing inherently problematic or unethical about institutions promoting scientific achievements or communicating research advances to society, even if systemic problems such as resource asymmetries between institutional and independent science communication arise at the level of the ecosystem. Institutional science communicators can be understood as additional important mediators between science and society (Peters, 2022; Volk et al., 2023), whose work enables wider dissemination of research in ways that can benefit scientists, journalists, and publics alike (Shipman, 2014, 2015; VanDyke & Lee, 2020; Vissers et al., 2024). Proponents of this perspective may point out that science has always competed for attention and public legitimacy, from early public demonstrations to contemporary social-media posts (DuFault, 2025), and that communication specialists frequently emphasise that most institutional science communicators practise responsible science communication, which prioritises accuracy, audience understanding, and trust rather than mere attention, visibility, or reputational gain (Greer, 2025; Shipman, 2014, 2015).

This perspective also highlights the functional interdependence between institutional communicators and journalists in constrained media environments. During crises or controversies, when newsrooms need fast access to credible scientific information, institutional communicators become critical intermediaries and journalistic allies by facilitating access to experts and contextual information, helping to counter misinformation and pseudoscience (Perreault & Perreault, 2021; Vissers et al., 2024). Ethical science PR can thus support transparency, dialogue, and institutional reflexivity, particularly when oriented towards building public trust rather than maximising publicity (Borchelt & Nielsen, 2014; Irwin & Horst, 2016). Seen through this lens, science PR does not replace journalism but may enable it by lowering transaction costs and

supporting journalistic work under severe time and resource constraints, even though such enabling can, over time, shade into dependency and reshape journalistic practice asymmetrically.

At the same time, this complementary role is conditional rather than guaranteed. It depends on the continued existence of independent editorial judgement and journalistic autonomy, rather than serving as a substitute for them. Although PR and journalism are anchored in different normative traditions, they are interwoven in practice and often draw on overlapping techniques and repertoires (VanDyke & Lee, 2020). For example, marketing and branding strategies can be deployed in science communication to combine scientific accuracy with emotional resonance, thereby making research more relatable and socially salient, increasing citizen engagement and perceived relevance (Kapono et al., 2023; Newman & Beets, 2023).

Hence, viewed through a low-tension lens, the relationship between institutional communicators and journalists is best understood as complementary rather than adversarial. Institutional science communication redistributes communicative labour within hybrid media ecosystems, supporting the circulation of scientific information and knowledge while reshaping journalistic practice. This perspective does not deny the risks identified by the high-tension lens, but it explains why institutional communication persists as a structurally embedded feature of contemporary science communication ecosystems, produced by structural dynamics such as path dependence and institutional lock-in, rather than as a temporary or pathological deviation. Describing this persistence as structural is an analytical claim about its causes, not a normative judgement that it is necessary or desirable; indeed, several of these conditions are among the risks our framework seeks to manage.

4. Intermediaries, Infrastructures, and Blurred Boundaries in a Hybrid Ecosystem

The dynamics described above do not operate solely through professional roles but are mediated and stabilised by a growing set of intermediary infrastructures that shape the circulation of scientific information and knowledge within hybrid media ecosystems. These include press-release distribution services (e.g., AlphaGalileo, EurekAlert!, or idw—Informationsdienst Wissenschaft), science media centres, and platform-based publishing models (e.g., *The Conversation*) that structure access to expertise, visibility, and legitimacy. Such intermediaries occupy an ambivalent position: They facilitate the flow of scientific information while reinforcing reliance on institutional sources. Hence, they speak to both the high- and low-tension perspectives.

From a neutral or functional viewpoint, these infrastructures can serve as protective buffers in crowded, resource-constrained media environments. By providing credential verification, embargo management, and basic quality control, they lower barriers to access and may help sustain science coverage where specialist journalism has declined. In this sense, intermediaries can support both high- and low-tension dynamics: They may enable journalism by lowering transaction costs while also stabilising institutional communication as a routine input into science news production.

From a high-tension perspective, however, these same infrastructures risk normalising a science-news ecology in which institutional material becomes the default input for journalism (Weingart & Guenther, 2016). When intermediaries prioritise efficiency, speed, and ready-to-use content, they may inadvertently amplify structural asymmetries between well-resourced institutions and under-resourced newsrooms (Brück

et al., 2025). Without parallel investment in independent reporting capacity, gatekeeping mechanisms alone are insufficient to safeguard journalism's critical watchdog role; this also extends to other roles, such as investigative journalism. Rather than resolving tensions between amplification and scrutiny, intermediaries may instead redistribute them across organisational and infrastructural layers.

These infrastructural dynamics are closely intertwined with increasingly blurred professional boundaries between institutional communication and journalism. In contemporary science communication ecosystems, distinctions between these roles are difficult to maintain, even at the level of individual actors. Many science journalists migrate into institutional communication roles in search of a new job, stability, and improved working conditions, often bringing journalistic norms and public-service orientations into PR. At the same time, some science journalists prioritise public education and popularisation over critical interrogation, adopting affirmative or enthusiastic tones rather than investigative scrutiny (Nelkin, 1995; Schäfer, 2017). It fits that most science journalists have a scientific background anyway (Guenther, 2019). Freelancers frequently operate across both domains, producing independent journalism in some contexts while undertaking commissioned writing for research organisations and companies in others.

Hybrid platforms such as *The Conversation* institutionalise these overlaps by embedding journalistic formats within structures anchored in academic expertise and institutional support (Guenther & Joubert, 2021). These arrangements blur the lines between amplification and watchdog roles, producing outputs that resemble journalism while operating under different accountability structures. As a result, many science communicators are not simply cheerleaders for science, and many science journalists do not consistently perform a watchdog function. These blurred boundaries are not temporary anomalies but enduring features of contemporary science communication ecosystems. Bucchi and Schäfer (2025) argue that public communication by scientific institutions and scientists is governed by persistent structural tensions including: tensions between attention, visibility, and credibility; openness and control; and autonomy and institutional alignment. They trace these tensions to broader structural developments and call for institutional and governance responses rather than a one-size-fits-all fix. Extending this argument, we suggest that tensions between institutional communication and science journalism are similarly redistributed across intermediary infrastructures and hybrid professional roles. In this sense, amplifiers and watchdogs are not fixed categories but relational positions shaped by systemic conditions, reinforcing the need for approaches that address governance, infrastructure, and power rather than professional conduct alone.

5. Towards a Constructive Framework to Protect Integrity in Interdependence Between Institutional Communicators and Science Journalists

Instead of advocating a return to strict professional boundaries that no longer align with real-world conditions, we propose a framework for constructive interdependence among institutional science communicators and science journalists, as illustrated in Figure 1. The framework is informed by scholarship that highlights how persistent structural tensions are reshaping contemporary science communication ecosystems (Bucchi & Schäfer, 2025; Schäfer & Fährnich, 2020). In these evolving landscapes, research organisations are emerging as increasingly dominant communicative actors, highlighting the need to balance demands on institutional and individual reputations, attention, and visibility on the one hand with accountability, transparency, scrutiny, and the public interest on the other. It responds directly to the structural tensions outlined in the preceding sections, recognising that both high- and low-tension dynamics

are enduring features of contemporary science communication ecosystems. The framework has four components—normative clarity, structural transparency, reciprocal respect, and ecosystem-level investment—that have been discussed widely in the science communication literature already but are brought together and discussed here in new ways.

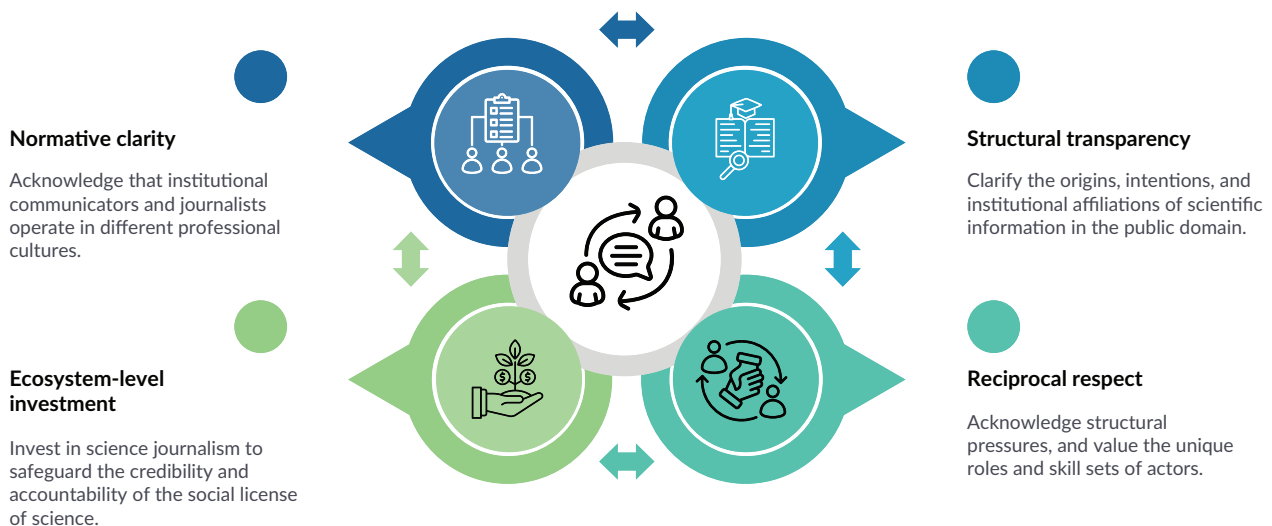


Figure 1. A suggested framework to support integrity and interdependence between institutional science communicators and science journalists.

The framework is neither intended as a set of professional best practices nor ethical prescriptions for individual actors. Instead, it offers an ecosystem-level intervention that identifies conditions under which collaboration, overlap, and mutual reliance can coexist with the protection of independent scrutiny, i.e., science journalism’s watchdog function of critically examining scientific claims and holding the institutions and actors that produce and communicate science to account. We view this framework as a starting point for a more concrete dialogue among scholars, science journalists, institutional communicators, and funders seeking to sustain independent scrutiny about how the principles set out below can be enacted through professional training, editorial policies, institutional guidelines, and funding decisions.

5.1. Normative Clarity

Both institutional science communicators and science journalists require clearer articulation of their distinct accountabilities and shared commitments to responsible science communication. Normative clarity involves recognising that, despite some overlaps in practical trajectories, institutional communication and journalism are rooted in different professional cultures (Peters, 2022; VanDyke & Lee, 2020). Institutional communicators work within organisational mandates focused on reputation, visibility, and stakeholder relations. Journalism, on the other hand, gains its legitimacy from independence, verification, and public accountability.

In hybrid communication settings where actors often collaborate, these distinctions can become blurry and difficult to navigate. Normative clarity is particularly important in these hybrid organisational settings where professional expectations are ambiguous or overlapping, as it helps delineate responsibility without denying interdependence. Clearly recognising role differences helps avoid the implicit expectation that communicators should act as surrogate journalists or that journalists should serve as cheerleaders for

science. Better understanding and acknowledgement of these differences should be put into practice through professional training, codes of ethics, editorial policies, and institutional communication guidelines.

5.2. Structural Transparency

As science communication increasingly circulates through institutional blogs, expert commentary platforms, and social media channels, it becomes harder for readers and viewers to distinguish between journalistic reporting, institutional promotion, and expert opinion, leading to concern about its long-term effect on public perceptions of and trust in science (Autzen, 2014; Weingart & Joubert, 2019). Transparency about the origins, intentions, and institutional affiliations of scientific information within hybrid media environments will help audiences to recognise this influence, enabling them to interpret information within its appropriate institutional contexts (de Oliveira et al., 2026). Transparency requires clear labelling of institutional or promotional content and the preservation of editorial independence in hybrid publishing formats.

5.3. Reciprocal Respect

Constructive relationships rely on mutual recognition of roles, constraints, and professional expertise. Institutional communicators operate under managerial pressures that prioritise strategic visibility, reputational considerations, and funders' expectations. Journalists, by contrast, frequently work within conditions of newsroom contraction, accelerated publication cycles, and limited resources. Recognising these structural pressures can foster more constructive professional relationships and reduce the tendency to interpret tensions as (ethical) failings. Reciprocal respect also involves recognising the unique skills that different actors bring to the science communication ecosystem. Institutional communicators are catalysts and matchmakers that bridge the worlds of science and journalism, making science more visible and accessible to society. Journalists, in turn, have professional skills in translating, contextualising, and transferring complex knowledge to make it accessible and meaningful to their readers and viewers. They also have a duty to reflect critically on science and the production of new knowledge. Constructive collaboration depends on recognising the need for these complementary roles and skill sets (Besley & Nisbet, 2013; Dunwoody, 2008; Peters et al., 2008). Reciprocal respect does not imply the absence of critique. Instead, it recognises that different actors contribute distinct types of knowledge and professional skills to a shared communicative ecosystem. Reciprocal respect is therefore not a personal disposition that communicators or journalists are simply urged to adopt but a condition to be embedded in the structures that govern their interaction, such as editorial standards, professional codes, joint training, and intermediary organisations such as science media centres. The intended readers of this principle are thus not only individual practitioners but also the editors, communication managers, professional associations, and funders who design and maintain these structures and are positioned to translate mutual recognition into durable institutional practice.

5.4. Ecosystem-Level Investment

Changing media business models and digital publishing environments have reshaped journalistic roles and resources, raising concerns about the capacity for sustained independent scrutiny of science (Dunwoody, 2014; Fahy & Nisbet, 2011). Since science journalism's crucial watchdog role is under threat, it requires material support, not just normative commitment. Independent science journalism relies on editorial

strength, specialised expertise, and institutional safeguards that enable journalists to scrutinise scientific claims and organisational practices. In media ecosystems where newsroom resources are shrinking, overdependence on institutional communication risks creating information environments dominated by content with a promotional slant. Supporting independent science journalism should therefore be seen as an investment in the credibility and accountability of science communication ecosystems and a long-term structural safeguard for science's social licence.

Taken together, these four principles emphasise that the sustainability of science communication ecosystems relies not on eradicating tensions between institutional communication and journalism, but on managing those tensions in a way that maintains both accessibility and accountability. We hope that these principles help to reframe the relationship between institutional communication and journalism as one of managed interdependence. This is a normative aspiration rather than a description of current relations as either unresolved conflict or forced convergence. In this view, protecting journalism's watchdog function is not solely a journalistic responsibility, nor can it be secured through ethics alone. It is a shared, ecosystem-level responsibility that must be institutionally enabled, materially supported, and normatively defended within contemporary science communication ecosystems.

6. Conclusion: From Binary Opposition to Shared Responsibility

The amplifier–watchdog distinction remains analytically useful, but only when understood as a productive tension rather than a moral hierarchy. Science journalists and institutional communicators are neither adversaries nor interchangeable actors, but interdependent professionals operating under unequal structural conditions. Reframing this relationship, therefore, requires shifting analytical attention away from ethics and professional purity towards questions of governance, infrastructure, and power.

Protecting journalism's watchdog function is not a matter of asking communicators to be less strategic or journalists to be more resilient. It is about recognising independent scrutiny as a public good that must be institutionally enabled, materially supported, and normatively defended within contemporary science communication ecosystems. From this perspective, the future of science journalism cannot be secured by any single profession or actor. It is a shared responsibility across communicators, institutions, intermediaries, and potential funders—one that demands sustained commitment to holding science to account.

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