Truth-Seeking as Collaborative Work: Expert-Journalist Infrastructure in High-Stakes News Moments

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Abstract

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The modern, networked information environment enables public attention to converge and intensify quickly during high-stakes news moments. Sometimes, this attention is expected, as in elections; other times, it emerges suddenly, sparked by violence, leaks, protests, or when local developments escalate into national stories. In periods of heightened uncertainty, both directly affected individuals and ambient observers strive to make sense of unfolding developments while searching for plausible explanations. In this interpretive scramble, rumors and misleading frames can emerge and solidify within hours or days, sometimes in the absence of timely, credible information.

Journalists have long assisted the public in interpreting complex, contested realities in their role as explainers and annotators—a role increasingly vital as people face an overwhelming volume and speed of information. To fulfill this role, journalists must "truth-seek", or make sense of events themselves. Yet, as this dissertation shows, access to experts—an efficient and valuable information source—and the systems supporting that access are patchwork, unevenly distributed, and break down with the demands of

real-time reporting. These constraints widen the gap between public demand for information and journalists' ability to provide timely interpretation to the public, especially for journalists with limited resources and amid industry strain.

Drawing on qualitative methods—including ethnography, interviews, and participant observation—I present three studies that examine the sociotechnical and professional dynamics of journalist–expert collaboration during high-stakes news moments in the United States, including two contested presidential elections and other high-attention events such as public health crises, social justice protests, and moments of platform accountability and political violence.

- The first study investigates how journalists reporting on digital misinformation, often during or about these events, navigate knowledge gaps under deadline pressure, surfacing tensions around sourcing, tools, and ethics, and revealing a growing desire for more timely access to academic expertise.
- The second study analyzes thirty cases of journalist–researcher collaboration during high-tempo news events surrounding the 2020 U.S. election and certification period, identifying a typology of journalists' needs and uncovering recurring ethical, logistical, and structural tensions.
- The third study examines a structured many-to-many online helpdesk deployed during the 2024 U.S. presidential election, demonstrating how intentional design of expert support spaces can mitigate previously identified challenges, while also requiring ongoing coordination and care.

Finally, I offer a conceptual contribution by articulating journalist–expert

networks as part of the broader public sensemaking process and as a form of infrastructure: critical yet fragmented networks, tools, and routines that become visible in moments of strain—strain that emerges where high-stakes news events intersect with the demands of today's networked information environment. This reframing offers both a conceptual shift and a normative claim: if journalists serve the the public by providing interpretation at speed, then improving access to expert knowledge during high-stakes news moment deserves attention, support, resourcing, and design—early provocations for which are offered as both a framework and a call to action in the final chapter of this dissertation.

Contents

Acknowledgements **ix**

1 Introduction **1**
1.1 Urgent Uncertainty 1
1.2 Journalists' Expanding Explanatory Role 4
1.3 Truth-Seeking in Real Time 5
1.4 Purpose and Research Questions 6
1.5 What This Dissertation Offers 7
1.6 Structure of this Dissertation 8
1.7 Integration of prior work 10

2 Background **11**
2.1 Sensemaking and Misinformation in the Digital Era 11
2.2 Journalism, Authority, and the Tempo of Crisis 17
2.3 Sources as Gatekeepers, Guides, and Participants in Public Knowledge Work 27

3 Research Context and Methods **36**
3.1 Disciplinary Context and Research Trajectory 36
3.2 Key Terms and Conceptual Clarifications 43
3.3 Methodological Framework and Research Design 50
3.4 A Reflexive Account 59

4 Study 1: Understanding the Work of Investigative Journalists Reporting on Problematic Information Online **62**
4.1 Abstract 64
4.2 Introduction 65
4.3 Background 67
4.4 Methods 72
4.5 Findings 75
4.6 Discussion 89
4.7 Conclusion 94

4.8 Acknowledgments 95

5 Study 2: Insights from Journalist-Researcher Collaborations at Speed 96
5.1 Preamble 96
5.2 Abstract 99
5.3 Introduction 99
5.4 Background and Related Work 102
5.5 Method 106
5.6 Findings 112
5.7 Discussion 126
5.8 Conclusion and Limitations 131
5.9 Acknowledgments 131

6 Study 3: Experts on Call: Infrastructuring Temporary Collaboration Spaces to Support Journalists 133
6.1 Preamble 133
6.2 Abstract 136
6.3 Introduction 136
6.4 Background 139
6.5 Methods 146
6.6 Findings 150
6.7 Discussion 167
6.8 Conclusion 174

7 The Infrastructure of Real-Time Truth-Seeking 176
7.1 A Race to Meaning 177
7.2 Sensing Infrastructure 187
7.3 Designing with and for Journalism 197
7.4 Final Thoughts 202

8 Conclusion 204
8.1 Summary and Contributions 204
8.2 Revisiting the Research Questions 205
8.3 Synthesis and Broader Implications 210
8.4 Final Reflections and Future Work 211

Bibliography 213

List of Figures

5.1 Study 2 Screenshot of Collaborative Miro Board. 111

6.1 Composition of journalists (n=437) and experts (n=96) who participated in the 2024 election helpdesk. Journalists represented a range of outlet types and publication mediums, while experts came from non-profit election organizations, academia, law, advocacy groups, and private sector election security. 145
6.2 Activity Chart Over Participation Period on #helpdesk Channel 147
6.3 Collaborative Coding Board 148
6.4 Diagram illustrating how social and technical structures in the helpdesk fostered value exchanges between journalists and experts. 151

7.1 The Race to Meaning: The Five Senses in This Work 179
7.2 Focus area and situation of my work in the five senses diagram 186
7.3 Flow Diagram of Ways Journalists Search for and Find Experts. 188
7.4 Flow Diagram of Ways Journalists Search for and Find Experts with Breakdowns. 193

List of Tables

4.1 Participant details 74

5.1 Participant details 108
5.2 List of researchers and journalists interviewed post-collaboration 110
5.3 Typology of Collaboration Types 114

6.1 Participant Types and References 149

7.1 Observed breakdowns in journalist–expert sourcing routines, grouped by access route. 194
7.2 User Needs and Early Design Ideas Table 199

Dedicated to my grandmother, Linda Briggs...

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"Besides, as the vilest Writer has his Readers, so the greatest Liar has his Believers; and it often happens, that if a Lie be believ'd only for an Hour, it has done its Work, and there is no farther occasion for it. ***Falsehood flies, and the Truth comes limping after it****; so that when Men come to be undeceiv'd, it is too late; the Jest is over, and the Tale has had its Effect…"*

Jonathan Swift
The Examiner (1710)

Chapter 1

Introduction

1.1 Urgent Uncertainty

On May 2, 2022, at 8:32 PM, Politico published a 98-page leaked draft opinion for Dobbs v. Jackson Women's Health Organization, signaling the U.S. Supreme Court's intention to overturn Roe v. Wade and end the federally protected right to abortion (Gerstein and Ward, 2022). This unprecedented leak from the U.S. Supreme Court marked a significant breach of institutional protocol and sparked immediate national reaction. Even those who anticipated this outcome described feeling disbelief and shock at the suddenness of the leak and its implications (Luthra, 2023). Within hours, protests erupted on the steps of the Supreme Court (Rummler, 2022).

As the news broke and images of protests circulated, so did confusion, speculation, and legal commentary. The document's technical and legal nature made it difficult for many to fully grasp what had happened—or what would happen next. Legal rulings are notoriously difficult for the general public to interpret (Martínez, Mollica, and Gibson, 2022), and the complexity was compounded by the fact that numerous states had already passed so-called "trigger laws"—statutes designed to automatically or quickly ban abortion if Roe v. Wade was overturned (Jiménez, 2022). The specific timelines and provisions of these laws varied by state, creating confusion about when and where abortion access would remain legal.

The leak thrust individuals, communities, and institutions into immediate *sensemaking*—a process Weick (1995) defines as interpreting ambiguity to construct meaning and enable action. Speculation on social media quickly turned to the draft's legitimacy, the identity of the leaker, and broader implications for other rights, such as same-sex marriage, as well as urgent

questions about current abortion access. Clinics in states with "trigger laws," like Alabama, were flooded with calls from people asking whether abortion was still legal—and for how long (Santana, Wagster Pettus, and Galofaro, 2022).

The broader online information environment offered little clarity for making sense of what was unfolding. Research has shown that the quality of abortion-related information available online is often poor, particularly on social media, where misleading information can circulate rapidly and disproportionately harm marginalized communities (Pagoto, Palmer, and Horwitz-Willis, 2023). In such moments, people impacted by the ruling or attuned to its implications were not just trying to understand what had happened—they were urgently seeking information to guide immediate, deeply personal decisions.

In the days after the leak, Google searches for "vasectomy" spiked in several of these states, illustrating how sensemaking involves not just interpreting events, but identifying possible actions in response to uncertainty (Sellke et al., 2022). Christie, a 42-year-old mother of two in Texas, discovered she was pregnant just days after the ruling and was met with a maze of legal confusion and logistical obstacles. "I was frantically calling everywhere," she recalled, unsure of whether abortion services were still available and how to navigate changing laws (Luthra, 2023). Christie's experience was illustrative—it captured the disorientation that can come as people try to understand rapidly shifting realities.

1.1.1 Information Gaps and Collective Sensemaking

D. Wilson (2000) defines information-seeking behavior as "the purposive seeking for information as a consequence of a need to satisfy some goal." In moments of disruption—when assumptions are upended or events defy existing understandings—this goal becomes the urgent reconstruction of meaning. These ruptures, referred to by Weick and others as *sensebreaks* (Weick, 1995; Giuliani, 2016), mark the point at which established understanding falters and people begin actively seeking information to reorient themselves. Research in crisis contexts shows that, in such moments, people draw on both official and unofficial channels (Palen et al., 2009; Reuter and Kaufhold, 2018), rely on journalists to help interpret events (Austin, Fisher Liu, and Jin, 2012; Bruns, 2013), and use social media to monitor,

discuss, and piece together developments in real time (Hughes and Palen, 2009; Riddell, 2024).

Following sensebreaking events, the search for meaning can quickly become a shared, collective process. Summarizing extensive prior work by Weick (Weick, 1988; Weick, 1995; Weick, Sutcliffe, and Obstfeld, 2005) and Shibutani (1977), Starbird (2023) describes this as *collective sensemaking*: a process unfolding in real time on digital platforms as people "make sense of uncertain and ambiguous information under conditions of anxiety *together*." During this collective process, people collaboratively construct *interpretations* that feel coherent and actionable. Weick emphasizes that sensemaking prioritizes *plausibility* over objective accuracy (Weick, 1995), noting specifically in later writing that people "search for meaning, settle for plausibility, and move on" (Weick, Sutcliffe, and Obstfeld, 2005).

Sensemaking unfolds over time, but its early stages—when uncertainty is highest and people are most receptive—are especially consequential. As people try to arrive at that interpretation, they extract cues from the information and frames available to them, updating their understanding over time (Weick, 1988). But the availability of authoritative information after sensebreaks can be delayed or incomplete, a gap that Golebiewski and boyd (2018) describe as a *data void*. These gaps between sensebreak and authoritative information can create fertile ground for speculation, rumors, and misinformation—understood here as false or misleading content, including distorted interpretive frames (Starbird, 2023).

The Dobbs leak exemplified this process. As a moment of *sensebreak*, it disrupted assumptions about the confidentiality of Supreme Court deliberations. It triggered widespread uncertainty about the draft's authenticity and its legal and political implications. Although the Court confirmed the draft's legitimacy the following day (Schorr, 2022; *Press Releases - 2022*), deeper questions about motive, legality, and long-term impact remained unresolved. In this interpretive vacuum, rumors gained early traction—including false claims linking the leak to George Soros's son (Kasprak, 2022) and misreadings of a footnote as a plan to increase the "domestic supply of infants" (The Associated Press, 2022; MacGuill, 2022)—before they were publicly debunked *over a week later*.

High-stakes news moments (further described in Chapter 3)—where public urgency and speculation can outpace institutional response—are escalating in both frequency and reach, driven in part by the speed and scale of

online information flows. In a networked media environment, people can be *ambiently* attuned to crises beyond their immediate communities (Hermida, 2010). This heightened attentiveness is coupled with a growing expectation that accurate information will be immediately available—an expectation shaped by infrastructures and habits built around on-demand access (Rosenberg and Feldman, 2008).

A recognizable pattern has emerged: a sensebreaking event disrupts shared understanding, attention surges, and collective sensemaking unfolds online—sometimes during a window before authoritative information is available or shared. In that gap, rumors and misinformation can spread rapidly and uncontested, gaining visibility and even virality before corrective frames or vetted information can be presented. If people settle on a *plausible* explanation and move on before those corrections arrive, it can be hard to re-engage them with new information, especially once public attention fades or the event no longer feels personally relevant.

1.2 Journalists' Expanding Explanatory Role

Journalism is a critical source of credible information and interpretation during moments of uncertainty and crisis (Austin, Fisher Liu, and Jin, 2012; Wilcox and Cameron, 2006; Lasorsa, 2003). In such moments, journalists are expected to do more than report what is happening—they are also tasked with helping the public make sense of it. This explanatory or annotative function has grown in importance as journalism's traditional gatekeeping role has eroded (Schudson, 2008; Carlson, 2017), and as audiences contend with an increasingly fragmented and saturated information environment. Schudson (2008) argues that explanatory journalism is vital to democratic life—not only for informing the *affected* public, but also for surfacing backgrounded issues and offering interpretive cues to the *attentive* public, making complex developments newly visible and available for collective conversation and public scrutiny.

The ability to contextualize events, surface relevant facts, and connect seemingly disparate issues for the public has become a central and highly visible part of journalistic practice (Carlson, 2017). Meeting this need requires more than simply verifying and consolidating information; it demands the construction of *interpretation* that helps audiences make sense of complex and evolving events. In fast-moving or emergent news environments, like

the Dobbs leak, journalists must construct these at speed, helping the public situate unfolding events within broader social and political contexts. This active meaning-shaping role aligns with the concept of *sensegiving*—the deliberate effort to influence how others interpret uncertain situations—developed by Gioia and Chittipeddi (Gioia and Chittipeddi, 1991) and further elaborated in crisis communication research (Maitlis and Sonenshein, 2010; Giuliani, 2016).

Starbird (2023) has argued that the solution to misinformation and "faulty frames" may lie not only in better facts, but in *better frames*. As journalists engage in sensegiving during high-stakes news events, they offer frames that compete with those emerging organically or through manipulation. Recent research supports this approach, highlighting a strategy known as *bypassing*. Calabrese and Albarracín (2023) describe bypassing as redirecting attention away from misinformation by reinforcing existing beliefs or introducing new ones that support conclusions different than those implied by misinformation. Studies indicate that offering coherent interpretive structures through bypassing can be as effective (Calabrese and Albarracín, 2023), or even more effective (Granados Samayoa and Albarracín, 2025), than directly correcting misinformation.

Positioned this way, journalism's explanatory and framing function can play—and may already play—an important role in countering the spread of misinformation: not just as debunkers or fact-checkers, but as active participants in shaping how publics make sense of emergent, sensebreaking events. However, producing and sharing explanatory frames in real time depends on journalists' ability to navigate the same uncertainty, fragmentation, and rapidly evolving information flows as the publics they serve.

1.3 Truth-Seeking in Real Time

As journalists work to make sense of unfolding events, they rely on professionalized *truth-seeking* practices—routines grounded in sourcing, verification, independence, and a commitment to accuracy (Carlson, 2017; Gesualdo, Weber, and Yanovitzky, 2020). Truth-seeking in journalism is not necessarily about uncovering singular or immutable facts, but about engaging in a structured interpretive process—one that underpins journalism's authority in public life (Carlson, 2017).

To support this process, journalists draw on a range of sources: their own specialized knowledge (often developed through beat reporting), eyewitness accounts, government statements and data, documentary evidence, academic research, other journalistic work, historical context, and external expert perspectives (Magin and Maurer, 2019; Hertzum, 2022). Yet these sources vary widely in their explanatory power and—critically—their accessibility during fast-moving, high-stakes moments. Even seasoned reporters can struggle to access the right knowledge, at the right time, in the right form. This challenge is compounded by broader structural and industry pressures, including shrinking newsrooms and diminished institutional support (Abernathy, 2018; Mitchell, 2016).

This dissertation begins here with a central question: *What do journalists need to support their own interpretive work under time pressure—and, by extension, to help the public make sense of complex events as they unfold?*

The Dobbs draft opinion leak, one of many complex and high-stakes news events that break without warning, illustrates the nature of this challenge. Reporters had to break the story while simultaneously deciphering dense legal reasoning, historical precedent, and state-by-state policy implications. Doing so quickly required immediate access to credible context and trusted individuals—constitutional scholars, health policy specialists, legal historians, and practitioners—sources who could clarify nuances in real time.

As this dissertation will show, accessing expert sources during high-stakes moments is difficult to achieve—and even harder to sustain—at the speed journalism demands. While expert input is a valuable part of timely and credible reporting, connecting with the right expertise in real-time is not always possible. These breakdowns reveal structural gaps that challenge journalists' ability to perform their explanatory role to the public during high-stakes moments—and underscore the need to better understand and design for the conditions that make timely, expert-informed reporting possible.

1.4 Purpose and Research Questions

This dissertation investigates journalists' needs during high-stakes news moments and examines how they seek out, learn from, and exchange information with experts under pressure. It explores what these

practices reveal about the broader systems that support—or fail to support—journalistic sensemaking and sensegiving at speed.

The following research questions guide the project:

RQ1: What challenges do journalists face when reporting under high-stakes, misinformation-prone conditions, and what do they need to support more responsive reporting?

RQ2: What ethical, structural, and methodological tensions arise in time-sensitive, technology-mediated communication between journalists and researchers, and how do these tensions shape their ability to align goals and serve the public interest?

RQ3: How do socio-technical systems—including digital communication tools and the human systems that support them—shape journalist-expert interactions in high-stakes news moments, and what design-oriented adjustments could improve these systems for responsive public explanation?

1.5 What This Dissertation Offers

This dissertation examines how journalists and experts work together during high-stakes news moments, when public attention surges and institutions struggle to keep pace. It investigates how journalists seek out, learn from, and exchange information with experts under pressure, and what these practices reveal about the fragile systems that underpin real-time explanatory reporting. Across three qualitative studies, I show how journalists turn to experts not only to source stories but to check assumptions, clarify nuance, and build interpretive frames under intense time constraints.

For experts, participating in these moments feels like a civic responsibility—an effort to support public understanding by supporting journalists. Yet these interactions are shaped by institutional, ethical, and logistical tensions that make being "on call" for breaking news difficult and, at times, uncomfortable. My findings reveal that this work depends less on any single tool than on a fragile web of relationships, practices, and improvised workflows that help move knowledge into the public sphere—not just through journalists, but with them.

Finally, I offer a conceptual contribution by articulating journalist–expert networks as part of the broader public sensemaking process and as a form of infrastructure: fragile yet essential systems of relationships, tools, and routines that become visible in moments of strain—strain that emerges when high-stakes news events collide with the speed, uncertainty, and saturation of the networked information environment. This reframing offers both a conceptual shift and a normative claim: if journalists fulfill a civic role by helping the public interpret complex events at speed, then improving their access to expert insight during these moments deserves attention, resourcing, and intentional design—early provocations for which are offered as both a framework and a call to action in the final chapter of this dissertation.

1.6 Structure of this Dissertation

This dissertation is composed of eight chapters. It follows a multi-paper format, with three empirical studies embedded as standalone chapters, each accompanied by a preamble that ties them back to the overarching research questions and argument. It opens with foundational framing and concludes with a synthesis of cross-study insights, and finally, a return to the research questions.

Chapter 1: Introduction

This chapter establishes the stakes of real-time public explanation and the urgency of supporting journalism during fast-moving news moments. It outlines the dissertation's central concerns and presents the core research questions.

Chapter 2: Background

This chapter reviews research on misinformation, journalism's civic role, crisis information-seeking, and expert engagement. It builds the conceptual foundation by framing sensemaking during high-stakes events as a time-sensitive process. It explores the pressures journalists face in these moments, along with the opportunities and tensions that arise from turning to experts for support.

Chapter 3: Methodology

This chapter outlines the qualitative approach of this dissertation, drawing on ethnography and participant observation. It defines key terms—such as journalist, expert, and high-stakes news moment—and explains how real-time observation enabled a close look at sourcing practices. The chapter also includes a positionality statement reflecting my dual perspective as researcher and builder, and my view of journalism as a civic institution.

Chapter 4: Study 1 – Investigating the Misinformation Beat

This study examines how journalists covering misinformation and other complex topics navigate gaps in knowledge under time pressure. Based on interviews with twelve reporters, it surfaces the informal systems—expert contacts, digital tools, and improvised routines—used to learn and verify quickly. These findings primarily contribute to RQ1 and reveal early breakdowns in support for real-time explanatory reporting and journalists' desires for more timely, on-call access to expert sources.

Chapter 5: Study 2 – Expert Sourcing at Speed

This study analyzes thirty cases of journalist-researcher interaction during high-stakes events leading up to and through the 2020 U.S. Presidential Election, the 2021 January 6th Capitol Insurrection, and the early months of the COVID-19 pandemic. It identifies five recurring patterns of information exchange and surfaces key tensions—around ethics, timelines, and professional roles—that complicate fast, cross-domain collaboration. This study considers expert perspectives, highlighting their motivations, hesitations, and structural constraints in supporting journalists at speed. Addressing RQ2 and RQ3 reveals how current systems fall short in supporting expert-informed reporting under pressure.

Chapter 6: Study 3 – Infrastructuring a Temporary Helpdesk

The third study examines a structured, journalist-led helpdesk deployed during the 2024 U.S. presidential election, demonstrating how intentional design of expert support spaces can improve real-time sourcing while requiring sustained technical and custodial work. It contributes primarily to RQ3 and also informs RQ1 by revealing how journalists experienced and evaluated this model in contrast to their more fragmented sourcing routines.

Chapter 7: The Infrastructure of Real-Time Truth-Seeking

This essay synthesizes findings from all three studies. It offers a conceptual contribution by reframing journalist–expert networks as part of the broader public sensemaking process and as a form of infrastructure. These networks, tools, and routines—critical yet fragmented—become visible in moments of strain, especially when high-stakes news events outpace institutional response. This reframing offers both a conceptual shift and a normative claim: if journalists serve the public by providing interpretation at speed, then improving access to expert knowledge deserves deliberate design, resourcing, and support.

Chapter 8: Conclusion

The final chapter summarizes the conclusions of this dissertation.

1.7 Integration of prior work

Studies One and Two in this dissertation have been previously published in two peer-reviewed conferences (Haughey et al., 2020; Haughey, Povolo, and Starbird, 2022). Study Three is, as of writing in May 2025, under revision at a peer-reviewed conference, and its text in this dissertation has not been modified from the submission text.

I include a brief preamble before each study to connect its contributions to the broader context of this dissertation. Cited work is combined into a shared bibliography at the end of this dissertation.

Although each study was developed in collaboration with others, I am primarily responsible for conceptualizing, doing the research and analysis, and writing these papers. In the Methodology chapter, I use the first-person "I," although the selection of many methods stemmed from or benefited from discussions with my co-authors and colleagues. In the published works, I am the first author and am assumed to be the first author in the study in submission.

Chapter 2

Background

This chapter synthesizes scholarship across four key domains: modern misinformation dynamics, journalism's evolving civic role, information-seeking during crises, and expert engagement in the public sphere. Together, these literatures provide a conceptual foundation for the dissertation's central claim: that sensemaking in fast-moving moments is time-sensitive and that journalism's explanatory function, especially in high-stakes news moments, depends on systems of expert support that support journalists' own sensemaking and truth-seeking process.

2.1 Sensemaking and Misinformation in the Digital Era

This dissertation is situated in a time of profound information interconnectivity. Online social platforms are no longer just tools for individual expression; they constitute a vast, networked public sphere where information flows between individuals, institutions, and intermediaries alike. As boyd (2010) argues, networked publics are not simply digital audiences—they are shaped by the structural affordances of networked technologies, which reorganize how people interact with information and each other. Social media platforms like Facebook [1], X (formerly

[1] Facebook is a social media platform launched in 2004 that allows users to connect, share content, and communicate with friends, family, and communities online. It offers features like News Feed, groups, events, and messaging, and has played a central role in shaping digital communication and social networking globally.

Twitter)[2], TikTok [3], and YouTube [4] now function as news distributors, search engines, entertainment venues, and political arenas—hybrid institutions with immense power over information visibility and attention (Gillespie, 2018a).

As of 2024, over 54% of Americans use social media as a news source (St. Aubin and Liedke, 2024). Even those who don't use it directly are affected, as social media has grown to help shape what traditional outlets cover (Harder, Sevenans, and Van Aelst, 2017). These changes have created extraordinary opportunities for information sharing and access for both creators and consumers. In the wake of sensebreaking events (Giuliani, 2016)—ambiguous, disruptive moments that fracture shared understanding—this vulnerability becomes especially acute. Today, people are not only confused in isolation; they are confused together. As described in the introduction, these moments can escalate into widespread online public attention and collective sensemaking (Starbird et al., 2010; Mirbabaie, and Marx, 2020; Weick, 1995)— where the attentive and affected publics turn to one another in today's highly connected media environment, generating and sharing interpretations in real time.

2.1.1 Sensemaking's Time and Attention Limits

Widespread disruptions to everyday life have long spurred a collective hunger for information. In the past, people turned to trusted channels—newspapers during wartime, radio during natural disasters, or televised broadcasts during national emergencies—to make sense of unfolding events (Kovach and Rosenstiel, 2021).

[2]Twitter, now known as X, is a social networking service where users can share short text messages, images, and videos in posts, which were previously called "tweets" but are now referred to as "posts". It's a platform where users can follow each other, interact with content, and participate in real-time discussions

[3]TikTok is a short-form video platform launched globally in 2018 by the Chinese company ByteDance, known for its fast-paced, algorithmically driven feed of user-generated content. It allows users to create and discover videos set to music, voiceovers, or other sounds, and has rapidly grown into a cultural force, especially among younger audiences. Its popularity and data practices have sparked global debates about digital influence, youth mental health, and geopolitical privacy concerns.

[4]YouTube is a video-sharing platform launched in 2005 where users can upload, watch, and comment on videos spanning topics from entertainment and education to news and personal vlogs. Owned by Google, it has become a dominant source of online video content and a key driver of internet culture and creator economies. Its recommendation algorithm plays a significant role in shaping what users watch, which has raised both praise for its personalization and concern over its influence on public opinion and radicalization.

The process of *making sense* of such moments—known as *sensemaking*—has been explored across organizational and communication research. Weick (1995) describes it not as a passive reception of information, but as an interpretive act through which people construct meaning in the face of ambiguity. In crisis conditions, he argues that sensemaking is not about definitively determining what is true, but about developing a working understanding that feels coherent enough to guide perception and action. It is an iterative and retrospective process shaped by experience, data, and conversation where, as Weick, Sutcliffe, and Obstfeld (2005) put it in their book that revisited the concept, people "search for meaning, settle for plausibility, and move on."

Yet this “moving on” does not necessarily imply definitive resolution. Weick (1995) emphasizes that sensemaking is ongoing—it can quiet, resurface, or intensify in response to shifting cues. Though the process remains latent, ready to reactivate if the situation evolves, people tend to disengage from high-effort interpretive work once plausibility is achieved.

The principle of *bounded rationality* suggests that individuals have limited capacity to process and retain information at any given time (Wheeler, 2024). This constraint leads people to *satisfice*—to seek a resolution that is "good enough"—rather than exhaustively assess every possibility (Weick, Sutcliffe, and Obstfeld, 2005). As a result, plausible accounts are adopted and held until something significant disrupts them. This process is also shaped by proximity and perceived relevance: people more directly affected by a crisis or disruption may remain engaged in sensemaking longer and have a higher standard of what is plausible, while more distant observers may disengage once a lower level of coherence is reached (Silver, 2019).

Research by Silver (2019) supports this pattern. Their work shows that public attention during disasters tends to escalate in the early stages of uncertainty, where curiosity and confusion are highest, and then decline as understanding or fatigue sets in. Her conceptual model highlights how people encounter events both directly and vicariously and how those vicarious exposures shape how people filter, interpret, and prioritize the information they receive. Downs (1972)’s "issue-attention cycle" article also explains how collective focus on societal disruptions is often short-lived: a burst of attention and engagement followed by disinterest, regardless of whether the underlying issue is resolved.

My work attends to sensemaking's temporal shape and attention dynamics. Attention peaks early, when uncertainty is high and people are most engaged. The cues and interpretations circulating in those moments can shape how events are understood, before people settle on plausibility and shift their attention elsewhere.

2.1.2 Rumors, Frames, and the Dynamics of Online Sensemaking

Rumor has long been understood as a mechanism through which people interpret and respond to uncertainty (Stern, 1902; Knapp, 1944; Allport and Postman, 1945; Rosnow, 1991). Allport and Postman (1947) defined rumor as a "proposition or belief, passed along from person to person, usually by word of mouth, without secure standards of evidence being presented." Allport and Postman (1945)'s foundational work portrayed rumor as a dangerous distortion—an irrational process that spreads in the absence of reliable information and should be managed or suppressed. Their wartime studies reflected official anxieties that unfounded rumors could damage civilian morale, leading to efforts like WWII "rumor clinics" aimed at monitoring and dispelling damaging rumors (Ponti, 2017).

In contrast, sociologist Shibutani (1977), drawing on his experience of internment during World War II, framed rumors as a normal, collective response to ambiguity—a way communities "improvise news" when official information is lacking. Rather than viewing rumors as willfully fabricated lies, Shibutani saw them as improvised reports that help people cope with uncertainty. He emphasized that the spread of rumor is largely uncontrollable by authorities, as it naturally arises whenever conditions demand it. These perspectives are not mutually exclusive. Rumors can be both socially constructive and potentially harmful, depending on context.

These dynamics have taken on new forms in today's digital environment. Disruptive events now unfold in highly public digital spaces, where millions of people—from vastly different contexts—search for meaning, share observations, and debate interpretations in real time. In this dissertation, I use "the public" not as a singular audience but as a diffuse, dynamic network of individuals, communities, and institutions engaged in this process of real-time sensemaking. A growing body of research in crisis informatics and media studies has documented this shift, showing how

digital platforms enable rapid coordination, distributed participation, and improvised information-sharing during disruptive events (e.g. Bruns and Burgess (2014), Palen et al. (2007), Starbird and Palen (2011), Vieweg (2010), and Earle et al. (2010)).

Starbird (2023)'s writing on *collective sensemaking* connects the rumoring lineage to today's digital environments, considering their dynamics alongside Weick (1995)'s sensemaking work, other historical accounts and analysis of rumoring (e.g.(Rosnow, 1991)) and that of other scholars studying rumoring in online spaces after disruptive events (e.g. (Spiro et al., 2012)). She describes *collective sensemaking* as a process where people collaboratively interpret unfolding events *online* (Starbird, 2023) - a process where individual interpretations are influenced by others and shaped in response to shifting cues, available information, and existing mental models. This can produce valuable insights—but also confusion, rumors, and misleading *frames*.

In moments of uncertainty, people draw on familiar or emotionally resonant mental schemas—what Goffman (1974) called "frames"—to filter evidence and construct meaning. Additionally, many, if not most, people participating in sensemaking during widespread disruption events online are not directly impacted by the events themselves—they engage vicariously through videos, posts, and commentary produced by others (Hermida, 2010). This creates a sense of *ambient* awareness (Hermida, 2010), where participants who are not directly affected engage with unfolding events at a distance—perhaps without a clear drive toward accuracy or sustained attention.

Under the right conditions, what begins as a fragmented interpretation or "faulty" frame can harden into misinformation. In her analysis of "SharpieGate" during the 2020 U.S. election, Starbird (2023) shows how a localized, incorrect claim—that ballots marked with Sharpies would be invalidated—quickly escalated online. Although officials debunked the rumor, it resonated with pre-existing beliefs about election fraud and became part of broader, coordinated contestation of the election's legitimacy. The Sharpie claim persisted not because it was true, but because it fit—plausibly and emotionally—into an already active frame of institutional mistrust. In this way, fleeting rumors can transition into entrenched misinformation, extending their influence well beyond their original context.

These dynamics underscore the challenges journalists and institutions face when trying to intervene. Rumors can spread rapidly online, and frames

can shape public understanding, especially around complex or localized issues where audiences may lack the context or expertise to assess claims independently.

2.1.3 Platform and Crowd Dynamics

These challenges are compounded by the structural features of social platforms, where the visibility of information and news is shaped by algorithms (Diakopoulos, 2020; Cotter, 2019), crowd participation (Bakshy, Messing, and Adamic, 2015; Benkler, Faris, and Roberts, 2018; Rusdi and Rusdi, 2020), and amplification by platform elites (Kennedy et al., 2022; Gallagher et al., 2021). Vosoughi, Roy, and Aral (2018), in a study of news stories shared on Twitter between 2006 and 2017, showed that false information, which was typically emotionally charged and novel, spread much faster and more broadly than the truth in nearly all categories of information, sometimes outpacing efforts to counter it (Wardle and Derakhshan, 2017).

More recently, Starbird, Arif, and Wilson (2019) have argued that disinformation should be understood not just as malicious content injected into a system, but as a collaborative, distributed process in which people, algorithms, and institutions each play a role. They argue that rather than a singular act of deception, disinformation campaigns coalesce through the interplay of coordinated actors, emergent frames, and social engagement. These insights challenge individualistic models of responsibility and push us to consider the broader social and technical systems that allow misleading information to thrive.

These patterns underscore a central tension in this dissertation: falsehoods move quickly and collectively, shaping understanding faster than ever, supported by a more connected information environment and algorithmic amplification of falsehood. This dynamic poses risks not only for individuals or platforms but for society at large, particularly when public demand for information is high and meaning can coalesce rapidly.

2.1.4 A Recognized Societal Problem with Civic Consequences

The societal consequences of the fast spreading of "faulty frames" (Starbird, 2023) in today's networked information systems are impossible to

ignore. Misinformation about COVID-19 vaccines contributed to hesitancy, confusion, and preventable deaths (Conger, 2021). False claims about election fraud culminated in the January 6th insurrection (Merrill et al., 2022). Climate denialism and conspiracy theories hinder public understanding of urgent scientific issues (Pasquini et al., 2023). In response, scholars, journalists, and policymakers have increasingly argued that the spread of false or misleading information is a critical threat to our information environment and civil society (Benkelman, 2019; Mueller and Cat, 2019; Starbird, Arif, and Wilson, 2019; *Novel Coronavirus(2019-nCoV): Situation Report - 13* 2020; Vosoughi, Roy, and Aral, 2018). The Knight Commission (2009) added that *access to accurate information* is a public good on par with the need for clean air and safe streets. In this view, access to trustworthy knowledge is not simply a personal good but a collective necessity, essential for democratic participation and societal resilience.

Meeting the demand for trustworthy information in high-attention moments requires more than the correction of falsehoods; as Starbird (2023) argues, the solution to misinformation may not be "better facts" alone, but better frames—accessible, grounded interpretations that support public sensemaking. This raises important questions about who constructs those frames, and how.

2.2 Journalism, Authority, and the Tempo of Crisis

2.2.1 Journalism's Civic Ideals and Core Practices

Journalism has long held a central role in American civic life, anchored in the belief that informed citizens are the cornerstone of a functioning democracy. Kovach and Rosenstiel (2021) highlight in *The Elements of Journalism* that despite rapid change in how journalism has been done over time, journalists' perspectives on their professional purpose has stayed steadfast—as *a utility that empowers citizens with information to make the best possible decisions about their lives*.

Kovach and Rosenstiel (2021) highlight that these civic ideals are grounded in Enlightenment thought and the democratic vision of the United States' founders. They describe how early press advocates like Cato the Younger argued that *truth should be a defense against libel*, laying a philosophical foundation for press freedom. Benjamin Franklin reprinted Cato's letters,

and this ethos was later reflected in the Declaration of Independence and the First Amendment. Over time, this helped shape not only legal protections but also a cultural ideal of journalism as vital to democracy. As Hohenberg (1973) observed, *"the more democratic the society, the more news it produces."*

Publics have long sought out news as a form of purposive behavior—a way to access events, decisions, and expertise beyond their immediate reach (Kovach and Rosenstiel, 2021; Molotch and Lester, 1974). Kovach and Rosenstiel (2021) call this the "awareness instinct": a basic human impulse to understand what is happening in the world beyond what they have immediate access to. Journalism has historically fulfilled this need by serving as a proxy for the public, entering spaces of authority—courtrooms, war zones, scientific briefings, and more—and reporting back. Rosen (2013) describes this relationship as one of *"awayness"*: the journalist is there when the audience cannot be. The authority of journalism, he argues, lies in the claim, *"I'm there, you're not—let me tell you about it"*. In this way, journalism serves as both a messenger and a mediator, connecting individuals to the broader social world. This orientation has historically been enacted through connected core practices like gatekeeping, agenda-setting, and framing, which I detail below.

In the decades before the rise of the internet, journalism's civic role was closely tied to *gatekeeping*. The act of selecting which stories were worth telling —and which to leave untold—was shaped by a complex blend of normative ideals and structural limitations (Kovach and Rosenstiel, 2021). Journalists acted as curators of public knowledge. Idealistically, this responsibility reflected a commitment to public service and helping people get the information that was most important to them, but it was also bounded by institutional routines, audience expectations, and the physical constraints of broadcast time or printed pages. Scholars like Shoemaker and Vos (2009) have shown how editorial choices shape the boundaries of public discourse by determining what enters the public sphere—and what remains invisible. As Bruns (2003) and others have noted, legacy journalism operated within a scarcity model: space was finite, and hard choices had to be made. Analysis of the New York Times (NYT) 's enduring motto, *"All the news that's fit to print,"* has surfaced two different interpretations for 'fit to print'. Bruns (2003) on one hand, pointed to its hint at space limitations, meaning journalists had to carefully select what could "fit" on the physical pages, which also manifested into public discourse. In later years, the

NYT's public editor emphasized that *fit* meant truthful, non-sensational, and free of misinformation—implicitly drawing boundaries between journalism and entertainment, clickbait, or manipulation (Snyder, 2020). In this way, gatekeeping was both a logistical function and a normative one, defining not only what was visible but also what was deemed credible and worthy of public attention.

This process also enabled journalism's *agenda-setting* power. Classic agenda-setting theory McCombs and Shaw (1972) suggests that while journalism may not tell people *what to think*, it plays a powerful role in telling them *what to think about*. Gatekeeping, then, was the upstream practice through which journalism could influence. By selecting stories and placing them in public view, journalists shaped not only what was known but also what was considered socially and politically salient. And because journalists operated within a relatively centralized media environment, their agenda-setting power carried weight, particularly when multiple outlets reinforced the same information across print and broadcast platforms (Harder, Sevenans, and Van Aelst, 2017).

Framing—how stories are contextualized and structured—formed a third pillar of journalism's pre-digital authority. As mentioned in Chapter 1, journalists do not merely relay information; they provide context and emphasis to help the public interpret events. Drawing on Goffman's foundational concept of frames (Goffman, 1974), media scholars have shown how the presentation of facts—through language, placement, tone, and emphasis—shapes how issues are understood. Journalism is thus deeply engaged in the *production* of frames. As Entman (1993) argues, framing involves selecting certain elements of perceived reality and assembling them into a narrative that promotes a particular interpretation. Fully developed frames perform four key functions: they define problems, diagnose causes, make moral judgments, and suggest remedies. Whether implicitly or explicitly, the press plays a role in highlighting which issues are seen as problems, what or who is responsible, how audiences should feel, and what responses are considered appropriate. In this sense, journalism has always been both informational and interpretive: not just showing what happened, but clarifying why it matters.

Entman's work also connects framing to agenda setting: by choosing what to emphasize and how to present it, journalism influences not only what the public thinks about, but how they think about it—and with what emotional

or political resonance (Entman, 2007). Together, gatekeeping, agenda-setting, and framing played a major role in helping journalism uphold its authority in the pre-digital era (Carlson, 2017). They enabled journalism to act as both a proxy and a guide, connecting the public to distant events and offering a shared sense of relevance, urgency, and meaning. However, journalism has not always lived up to its civic ideals. Its history includes high-profile failures to represent marginalized communities, a pattern of sensationalism that has at times undermined trust, complicity in the spread of misinformation, and alignment with power rather than holding it to account (Ross Arguedas et al., 2023; Arana, 2018; Lane et al., 2020; Entman, 1994; Marwick and Lewis, 2017). These critiques serve as essential reminders not to over-romanticize journalism as we examine its civic role.

2.2.2 Journalistic Authority and Practice

To fulfill this role, journalism must not only report on events—it must do so with recognized authority. As Carlson (2017) argues, journalism's ability to serve the public depends on its ongoing capacity to claim authority in the public sphere. "In order to meet the highly regarded expectations of journalism as an institutional driver of democracy," he writes, "it must have authority."

When compared to other 'truth-seeking' professions in the U.S., like doctors, lawyers, and academics, journalism has a unique history. Prior to the Progressive Era, doctors were local and often predatory, lawyers and politicians were riddled with corruption, academic writing was published next to amateur opinions, and journalism came largely through staunchly partisan newspapers funded by political parties of the time (Holloran, Cocks, and Lessoff, 2009). The reformers of the Progressive Era constructed firm boundaries around many of these 'truth-seeking' professions, standardizing a set of esoteric knowledge as part of accreditation and creating ethics requirements like commitments to do good (Benkler, Faris, and Roberts, 2018). Journalism, uniquely, lacks such standardized mechanisms, such as credentialing and accreditation, for controlling entry or certifying expertise.

Carlson and others claim that journalism professionalized, instead, through practice and norms (Carlson, 2017; Lewis, 2012). *Journalistic authority* rests on a set of procedural commitments—most notably verification, sourcing, and framing—that are widely understood to reflect professional integrity and credibility. These practices do not guarantee neutrality or objectivity

in the personal sense, but they are built on objective methods: standardized *routines* intended to reduce individual bias and produce reliable accounts of public life (Kovach and Rosenstiel, 2021).

From a different perspective, Zelizer (1993) argues that journalism is better understood not as a profession but as an *interpretive community*—a group bound not by formal credentials or fixed jurisdiction but by shared discourses, norms, and interpretive practices. She discusses how journalists construct their collective identity through storytelling conventions, occupational rituals, and boundary work that signals who belongs and what values are upheld. From her perspective, journalism is in continual negotiation about what counts as legitimate reporting, credible evidence, and public interest.

Whether understood as a profession or an interpretive community, both perspectives point to a shared foundation of *practices*. Practices like the cultivation of sources, the triangulation of facts, and the adherence to verification procedures are not just tasks within journalism—*they are performances of journalistic identity and authority*.

2.2.3 Challenges to the Boundaries of Journalism

Because journalism is enacted rather than conferred, it remains uniquely *accessible* and *contestable* (Carlson, 2017). This openness means that a wide range of actors can claim the label of "journalist" or adopt the *aesthetics* of journalism to signal the credibility historically associated with newspaper design and reporting conventions (Barnhurst and Nerone, 2001). Such performances can challenge those located at the "center" of the interpretive community or profession of journalism, particularly in times of technological change.

The lowered cost of digital publishing has enabled a sharp rise in participatory information sharing online, including from those who identify as "citizen journalists" (Gillmor, 2004). As Gillmor notes, such actors may fill gaps left by mainstream outlets, offering eyewitness accounts or perspectives from underreported communities and uncovering things that professionals "miss." While some "alternative" media efforts extend journalism's public interest mission, many operate without editorial oversight or adherence to journalism practices. Others go further, leveraging the visual and

rhetorical aesthetics of news to project legitimacy while promoting hyper-partisan narratives, misleading claims, or outright falsehoods (Billard and Moran, 2023; Robertson and Mourão, 2020). In this increasingly saturated media landscape, cues of credibility are easily mimicked but not always substantiated, further destabilizing efforts to distinguish journalism from adjacent forms of content.

Importantly, such challenges are not unique to the digital era. Entertainment, spectacle, opinion, and rumor have long circulated alongside—or within—journalistic formats: like the sensationalism of "yellow journalism" in the late nineteenth century, the rise of political talk radio in the twentieth, and the tabloidization of television news (Smythe, 2003; Thussu, 2008; Hilmes, 2011; Wasserman, 2019). New media technologies have repeatedly prompted skepticism within the field, especially when they disrupted existing professional norms or business models (Lott, 1970). But over time, figures like Edward R. Murrow and Walter Cronkite earned legitimacy for radio and television journalism by adapting core journalistic practices—on-the-ground reporting, verification, and clear public explanation—to new formats (Cozma, 2010; Zurawik, 2019). Their work illustrated that legitimacy in emerging media did not come from adopting the form alone, but from reasserting journalism's foundational commitments within it. As Kovach and Rosenstiel (2021) argue, journalism's authority stems not from chasing the aesthetics or virality of other communication forms, but from consistently performing the work that sets it apart—even in new mediums.

This is why this dissertation focuses on *institutional newsrooms*—places where journalists operate under editorial oversight, work on deadline, and follow standards for sourcing and verification (see Chapter 3 for more). In these settings, truth-seeking is not just about informing the public—it's also how journalists assert their role and draw lines between their work and other forms of communication. This is not to say that institutional journalism is always "good" or that boundary-pushing forms are always flawed. While this study does not examine those outside formal newsrooms—such as partisan media or citizen journalists—it acknowledges their role in the ongoing contest over who gets to claim the label of journalist.

2.2.4 Journalism Resources Under Strain

Beyond contestation, the role of journalists has been tested—and in some cases destabilized—by the financial and attention changes of the digital

age. The rise of platforms, shifts in audience behavior, and the collapse of legacy revenue streams have not only altered the economic foundations of journalism but also challenged its professional norms and public authority.

The modern digital information environment has decimated journalism's traditional revenue models (Mitchell, 2016; Myllylahti, 2018). As public attention migrated to social platforms, so too did the advertising dollars that once sustained news organizations. Local outlets have shuttered, national ones have downsized, and many remaining newsrooms now operate with significantly reduced resources or under the control of private equity firms accused of squeezing them for profit (Susca, 2024)

At the same time, journalism has been swept into an information ecosystem increasingly governed by algorithmic distribution (Cetina Presuel and Sierra, 2019). While the blurring of lines between journalism and entertainment began decades earlier with the rise of 24-hour news and infotainment formats (Rosenberg and Feldman, 2008), algorithms have sharply accelerated this trend by rewarding content that is emotionally charged, polarizing, or visually arresting (Milli et al., 2023). To remain financially viable, news organizations have adapted to a platform-optimized environment, tailoring headlines, formats, and timing to algorithmic demands (Petre, 2021). Audience engagement is closely tracked through real-time analytics and performance metrics, contributing to the *datafication* of news (Petre, 2021)—a shift toward producing content designed not only to inform, but to perform.

These structural and algorithmic changes have also upended journalism's traditional gatekeeping function. In an environment of infinite space, journalists no longer control what enters public discourse. Instead, they increasingly engage in what Bruns (2003) calls *gatewatching*: surfacing, contextualizing, and making sense of content that is already in circulation.

This interpretive turn is also shaped by the dynamics of agenda-setting in a networked media environment. Editorial decisions are increasingly responsive to what is already gaining traction across platforms. The theory of *inter-media agenda-setting* referred initially to how media organizations influenced one another's coverage, particularly how faster digital outlets shaped the agendas of slower formats like print or broadcast (Harder, Sevenans, and Van Aelst, 2017). In the digital era, this concept has been extended to include social media platforms, where public discourse and virality contribute to what becomes newsworthy. Journalism organizations

now monitor trending topics, viral posts, and audience feedback to help determine when and how to enter a story (Petre, 2021). Whether motivated by civic responsibility, audience engagement, or platform visibility, journalists are increasingly operating in a hybrid space—one where agenda-setting is distributed, reactive, and shaped by dynamics beyond the newsroom.

Some have worried that the loss of gatekeeping and agenda-setting authority signals journalism's decline (Kovach and Rosenstiel, 2021). But as Kovach and Rosenstiel (2021) argue, this evolution opens up new roles. Journalists may no longer be the sole arbiters of what the public sees, but they can still shape how the public understands it. In an era defined by information abundance and velocity, journalism's civic value may lie less in controlling the flow of information and more in helping the public navigate it.

Doing this *explanatory* journalism—translating complexity, contextualizing breaking developments, and tracing connections between seemingly disparate events—has become a more important component of modern journalistic work (Carlson, 2017; Kovach and Rosenstiel, 2021). It is not merely a side effect of losing control over the news agenda, but a recognized strength of the profession. The Pulitzer Prize for Explanatory Reporting celebrates precisely this kind of work: journalism that "illuminates a significant and complex subject, demonstrating mastery of the subject, lucid writing, and clear presentation" (*Explanatory Reporting | The Pulitzer Prizes* n.d.). From climate coverage to election explainers, the field increasingly values journalists not only as reporters of fact but as sensemakers amid chaos.

Building on this interpretive role, *Network Agenda Setting (NAS)* theory offers a way to understand how journalists influence public understanding by shaping the relationships between issues, ideas, and actors. As Guo and McCombs (2016) explains, NAS extends beyond first-level (what to think about) and second-level (how to think about it) agenda-setting, focusing instead on how media coverage connects topics in meaningful ways. In today's networked media environment, where stories circulate across platforms —from social media to partisan blogs to legacy outlets —journalists help construct the conceptual scaffolding through which the public makes sense of events.

In this way, journalists continue to serve the public, not necessarily by filtering what people see, but by helping audiences *make sense of it*. They

remain essential guides in a crowded, contested media landscape.

2.2.5 A Beat and a Rolodex: Journalistic Practice in a Networked World

It's not just journalism's institutional role that has changed; the conditions under which *journalists themselves* do their work have shifted, too (Benkelman, 2019; Deuze and Bardoel, 2001). The economic and technological transformations outlined at the start of this chapter have placed new pressures on professional reporting routines that once anchored reporting. In what follows, I turn from the structural to the practical, examining how two foundational pillars of journalistic practice—beat specialization and source cultivation—are being challenged as a result.

A Beat: Specialization, Expertise, and Domain Knowledge

Beat specialization—developing subject-matter expertise within a particular domain—has long been a foundational structure in journalism (Magin and Maurer, 2019). Specialization supports not only efficiency but also credibility: beat reporters build institutional memory, develop trusted source relationships, and learn to recognize what counts as news within complex systems (Magin and Maurer, 2019). These processes enable journalists to ask sharper questions, detect inconsistencies, and translate complexity for the public.

Yet this system is increasingly under pressure. The industry's ongoing financial precarity has led to widespread newsroom layoffs and restructuring (Mitchell, 2016; Grieco, 2020), forcing many journalists to cover more beats than ever and rotate between assignment topics frequently (Murray, 2024), while producing stories at a higher frequency.

The erosion of beat specialization contributes to a larger negative feedback loop. As journalists leave the profession—either due to layoffs or burnout—the burden on remaining staff intensifies. A recent report found that over half of journalists considered leaving the profession in 2024 due to exhaustion or burnout (Murray, 2024). This attrition is especially risky in small and mid-market newsrooms, which serve as training grounds for early-career reporters (Higgins-Dobney, 2024). As these entry points shrink or disappear, the pipeline for cultivating community expertise and experienced journalists weakens.

While the weakening of beat specialization is primarily driven by resource constraints, its absence is most consequential during high-tempo, high-pressure news moments. When reporting must happen quickly, it is often a journalist's accumulated domain knowledge, intuition, and source relationships that enable them to respond with both speed and accuracy. In slower news cycles or on well-established beats, journalists also benefit from what Gandy (Gandy, 1982) called *information subsidies*—press releases, pre-vetted data, institutional reports, and other materials designed to ease the burden of news production. These resources can streamline reporting and reduce the need for original sourcing or framing. Yet during fast-moving or emergent stories, such subsidies may not exist, or are misaligned with the interpretive needs of the moment. In their absence, journalists must lean more heavily on their own judgment and relationships to construct timely, accurate accounts. In this sense, beat expertise is not simply a marker of specialization—it is what allows journalism to function at speed without sacrificing credibility.

A Rolodex: Source Cultivation and Information-Seeking

Journalists rely on sustained relationships with knowledgeable sources to support their reporting. The "Rolodex"—a longstanding metaphor in journalism—refers to the curated network of expert and institutional contacts that reporters return to for background, quotes, verification, and context (Perlman, 2020). These connections, built through repeated professional and social interactions, serve as critical channels for both access and understanding (Malling, 2024).

Journalists seek information not only to report accurately, but also to deepen their understanding of a topic, identify credible sources, and generate future story ideas (Hertzum, 2022). Trusted expert sources can support all three at once. Yet cultivating and maintaining these relationships requires time, access, and continuity on a beat. As beat specialization declines, journalists are increasingly asked to shift rapidly between topics (Murray, 2024), leaving less opportunity to build the sustained expertise and source familiarity that these networks rely on.

In high-tempo news moments, the impacts of a shallow or unreliable source pool are magnified. Journalists often fall back on known, responsive contacts whose reliability has already been tested (Hertzum, 2022; Meer et al., 2017). Hertzum (2022) discusses that though this supports speed and credibility, it

also narrows whose perspectives appear in coverage and reinforces existing inequities in source access.

The result is a sourcing system that works well when the right contacts are already in place—but falters when journalists need to locate new or unfamiliar expertise on short notice. These pressures are intensified as reporters shift between beats, juggle multiple topics, or move across newsrooms without time to cultivate deep source relationships. The gap that emerges under these conditions—between what journalists need and what current systems reliably provide—is one this dissertation attends to.

2.3 Sources as Gatekeepers, Guides, and Participants in Public Knowledge Work

Journalists do not—and cannot—report the news alone. To make sense of complex or fast-developing events, they rely on sources: individuals, documents, and data that provide information, interpretation, and legitimacy (Kovach and Rosenstiel, 2021). As Carlson (2009) notes, sourcing is not merely a step in fact-gathering—it is central to how news is constructed and contested. Sources shape not just what journalists know, but how they tell the story (Carlson, 2009; Kovach and Rosenstiel, 2021). The authority of journalism rests in part on these external actors, who help substantiate claims and clarify details (Kovach and Rosenstiel, 2021; Carlson, 2017; Carlson, 2009).

Journalist–source relationships are among the most extensively studied dynamics in journalism research (Carlson, 2009), and the reliance on official and routine sources is one of the most frequently reproduced findings (Hallin, Manoff, and Weddle, 1993). As Carlson (2017) explains, sourcing research typically falls into two strands: one examines the material practices of how journalists find and use sources; the other investigates the symbolic consequences of these practices—such as elite capture, representational bias, and slant. This dissertation focuses on the former: the practical, time-sensitive pressures journalists face when seeking and mobilizing expert input in high-stakes moments.

Journalists' sourcing routines are not ad hoc—they are structured by norms, constraints, and expectations. Though (Gans, 1979)'s ethnography *Deciding What's News*, he demonstrated that journalists prioritize sources who are not

only authoritative, but also trustworthy, articulate, and reliably available. He discusses how, especially under deadline pressure, sourcing becomes a matter of *efficiency*: journalists seek dependable inputs they can access quickly, reinforcing routines over novelty.

In practice, journalists draw on a wide range and combination of sources, including government officials, institutional spokespeople, public figures, and credentialed professionals in fields like law, medicine, and science (Zamith, 2022). They also include lived-experience sources (Benítez, 2021; Patel, 2022)—especially during community-centered or breaking stories—and occasionally rely on documents, press releases, and eyewitness accounts. Each type of source plays a distinct role: institutional actors offer access and authority; experts help translate complexity; and lived-experience sources localize or humanize events (Zamith, 2022). Journalists weigh perceived credibility, responsiveness, and availability when deciding whom to contact (Gans, 1979; Carlson, 2009).

In crisis coverage, journalists often turn first to nonofficial and technologically mediated sources—such as social media, blogs, or cell phone footage—because they are immediately available. As the story develops, they increasingly rely on official sources to verify facts and help construct a coherent story (Wigley and Fontenot, 2009). This shift reflects how sourcing is shaped not just by credibility, but by timing and accessibility.

These patterns are further shaped by the nature of the beat itself. Journalist–expert source relationships are not monolithic. As Carlson (2009) describes, they vary by beat and context: political reporters may engage in adversarial "duels," science reporters may "dance" in cooperative relationships, and reporters on deadline-driven beats rely on routinized interactions shaped by time and access constraints. In specialized domains like law, policy, or science, source authority is magnified by repetition across outlets, reinforcing their influence on how events are framed (Hanitzsch, 2004; Gans, 1979). Because of their perceived credibility, elite and institutional expert sources disproportionately shape these frames (Gitlin, 2024; Albæk, 2011).

2.3.1 The Case of Academia

The experts represented in this dissertation include academic researchers, legal professionals, data scientists, and subject-matter specialists from NGO

and will be further described in the Chapter 3. Here, I focus my related work on one subset of credentialed experts: academics. While they are just one part of the broader expert ecosystem, they offer a useful analytic lens for examining the constraints and enablers of the expert side of journalist–expert communication.

Academics offer a particularly rich case for analysis given their frequent presence in explanatory reporting and the heightened visibility of debates around public scholarship in recent years, which will be described in this section. This focus is especially salient in a moment when U.S. universities are under growing political and financial pressure (Blinder, 2025). Recent funding cuts (Palmer, 2025a; Palmer, 2025c), along with proposed reductions to agencies like the National Science Foundation and National Institutes of Health (Palmer, 2025b), have constrained research capacity. At the same time, academics are increasingly targeted and vilified by political actors, forcing them to not only defend their work but also publicly signal alignment with the public interest—a role that both motivates and complicates their participation in journalism.

The sections that follow examine why journalists turn to academics, how academics understand their role in public communication, and what frictions emerge when these groups interact—especially in crisis moments, when speed, uncertainty, and public demand for credible expertise collide.

2.3.2 Why Journalists Use Academic Expertise

Journalists turn to academic experts for both practical and performative reasons (Fleerackers, 2023). She argues that, *practically*, academics can help reporters interpret complex issues, provide depth and clarity, and introduce new angles or framings for developing stories. For example, Albæk (2011) found that journalists use expert conversations not just to confirm facts but to develop story ideas and sharpen editorial frames—what he described as "dynamic, sparring relationships" that help shape what becomes newsworthy (p. 344). Academics also offer an efficient package of information-seeking support: they can provide background context, verification, forward-looking insights, and even source referrals—all in a single conversation (Hertzum, 2022). For journalists, especially those on deadline or navigating unfamiliar topics, academics are particularly valuable interlocutors. The institutional affiliation of academics or nonprofit

professionals may signal public interest orientation, which can contribute to perceived credibility in time-sensitive reporting contexts.

At the same time, academic sources serve a *performative* function in journalistic practice (Fleerackers, 2023). As Carlson (2009) and Tuchman (2000) argue, citing an outside expert allows journalists to both signal objectivity and transfer the burden of accuracy. This is especially useful in contentious or ambiguous stories: attributing a claim to a known authority helps distance the journalist from potential error or controversy while preserving the appearance of truthfulness (Tuchman, 2000). These dynamics underscore the dual function of academic sources in journalism: as both contributors to knowledge and rhetorical tools for managing epistemic risk.

Crucially, access to that expert credibility is not evenly distributed. Journalists favor scholars with institutional prestige, prior media visibility, or a known willingness to engage. As many scholars found, those selected tend to be responsive, quotable, and perceived as trustworthy under deadline pressure (e.g. (Fleerackers, 2023; Carlson, 2017; Hertzum, 2022; Gans, 1979). This reinforces both efficiency logics—turning to those who are easiest to reach—and visibility biases, where a small group of academics repeatedly shape public discourse (Kruvand, 2012). This imbalance is not only a matter of equity and excluding broader perspectives but also concerns sustainability and efficiency. Over-reliance on a few "go-to" voices risks bottlenecking the flow of information—something I explore further in the context of high-stakes news moments in this dissertation.

2.3.3 Why Academics Engage with Journalists

Civic ideals, institutional expectations, and personal motivations shape academic engagement with journalists. Boyer (1996) argued that the academy must expand its definition of scholarly impact to include what he called the "scholarship of engagement," which emphasizes doing publicly relevant research and communication of that research to the public as legitimate—and necessary—dimensions of academic work. This orientation has been echoed in broader efforts to define engaged scholarship, including systematic reviews that emphasize the democratization of knowledge by sharing it with the public and aligning research efforts with public needs (Beaulieu, Breton, and Brousselle, 2018; Peters, 2013; Hurd, 2022). For many scholars, working with journalists offers a way to fulfill this ideal: translating their research and findings into public knowledge, with journalists serving

as intermediaries who interpret and communicate that work to broader audiences (Peters, 2013; Bucchi and Trench, 2016)

Faculty are increasingly encouraged—or even expected—to engage with journalists by universities, funders, and disciplinary peers (O'Meara and Jaeger, 2019). In some fields, public communication is now tied directly to funding requirements. For example, the National Science Foundation mandates that researchers articulate "broader impacts" aimed at extending the reach of their work beyond academia (*Broader Impacts | NSF* n.d.). While recent political shifts have prompted debates over how impact is defined (*Updates on NSF Priorities | NSF* n.d.), the emphasis on societal benefit and broader audience engagement remains central (*Broader Impacts | NSF* n.d.). These expectations help normalize public engagement and encourage scholars to "step out of the ivory tower" (Von Aulock et al., 2022).

The growing field of science communication further supports this shift. Once considered peripheral (Bucchi and Trench, 2016), science communication now benefits from its own journals, research centers, and training programs that frame public engagement as both a professional competency and an ethical obligation (Bucchi and Trench, 2016). The goal is to make research more accessible and legible, especially in areas such as climate, health, and technology, where public misunderstanding can have widespread consequences. In these domains, journalism can be a valuable conduit for bringing evidence into public view (Scheufele, 2014).

While journalism remains a key avenue for reaching the public, it is no longer the only one. Increasingly, academics use social platforms—such as Twitter, LinkedIn, Substack, and more recently, BlueSky —to communicate research findings, challenge misinformation, and speak directly to public audiences (Tsapali and Paes, 2018). For some, these platforms offer faster feedback, more control over framing, and the ability to cultivate a public voice about their research. But this visibility can also expose scholars to harassment or reputational risks, especially in politicized domains (Veletsianos, 2021; Marwick and Lewis, 2017).

Platforms like The Conversation, SciLine, The Journalist's Resource, and Rolli have also emerged to support academic knowledge sharing. These platforms help journalists identify relevant experts and provide academics with tools to communicate more clearly, quickly, and accessibly across media formats. Together, these developments reflect a growing movement to make accessing academic knowledge easier, directly or in collaboration with

journalists. However, the relationship between journalists and academics has historically been far from frictionless.

2.3.4 Barriers to Academic Engagement with the Media and the Public

The barriers that academics face to public engagement have been well-documented across multiple disciplines (Arthur et al., 2021; Calice et al., 2022; Ho, Looi, and Goh, 2020; Jay, 2023; Sdvizhkov et al., 2022). Many academics remain hesitant to engage with the press. These hesitations stem from fundamental differences between the professional logics of journalism and academia. The pace of journalistic inquiry differs from the deliberative nature of scholarly research (DiSalvo, 2011; Hertzum, 2022).

One common concern is the risk of oversimplification or misrepresentation (DiSalvo, 2011). Science communication scholars have documented recurring frustration among researchers who feel their comments are stripped of nuance, quoted out of context, or used to support conclusions they didn't intend (Fleerackers, 2023). Fleerackers describes how, in some cases, these concerns are amplified by sensationalistic headlines, where researchers feel that journalists may have misunderstood or misrepresented complex findings.

Beyond epistemic concerns, many academics face institutional disincentives. Media appearances and interviews are often not counted in tenure or promotion decisions, and some fields view public engagement as distracting from "serious" scholarship (Calice et al., 2022; Jay, 2023). Formal reward systems still tend to prioritize traditional outputs: peer-reviewed articles, grants, and citations. Calice et al. (2022) understanding faculty's lived experiences doing public engagement confirms that the expectations in the promotion process for tenure-track faculty remain the primary detractor. Although the university leadership may value a scholar's public contributions, the public engagement offices typically lack affiliation with departmental structures, where Jay contends true influence resides (Jay, 2023). Some scholars perceive public engagement as detracting from more professionally rewarding activities, but this is changing as graduate students and junior faculty members challenge the status quo (Calice et al., 2022).

These structural and practical barriers don't disappear in moments of crisis—in fact, they may become more consequential or take on different

forms, making them essential to examine more closely.

2.3.5 The Scholar in Public Crisis Moments

Academia emphasizes slow, methodical research validated through peer review and publication processes that can take months or years. Rapid information dissemination, by contrast, heightens the risks of research being taken out of context or weaponized, especially on contentious or political topics (Doerfler et al., 2021). Institutional support for academic engagement with the public during unfolding events is also limited, leaving scholars to navigate high stakes and politicized conversations without adequate resources or guidance (Doerfler et al., 2021).

Crisis events—such as the COVID-19 pandemic and the 2020 U.S. election—have highlighted this tension (Fraser et al., 2021; *COVID-19 Dashboard* n.d.; Andrew, 2020; *Election Integrity Partnership* n.d.). These events did more than demand quick interpretation—they challenged longstanding professional boundaries around what it means to do public scholarship. As journalists and the public sought timely context for rapidly evolving developments, scholars found themselves navigating new pressures to speak quickly, clearly, and sometimes without the benefit of scholarly consensus. Preprint platforms like medRxiv and bioRxiv surged in prominence as scholars and institutions raced to share early findings (Fraser et al., 2021). Universities also stepped in to help make evolving knowledge more accessible to the public. Johns Hopkins University's Center for Systems Science and Engineering launched a widely used global dashboard to track coronavirus cases as early as January 2020 (Andrew, 2020; *COVID-19 Dashboard* n.d.). Similarly, the University of Washington's Institute for Health Metrics and Evaluation (IHME) published daily forecasts of COVID-related deaths (*IHME | COVID-19 Projections* n.d.), which were widely covered in the media (e.g. (Airhart, 2020; Azad, 2020; Boyle, 2020; Bui et al., 2020; Reuters, 2021)), and some of which turned out to be wrong (Chin et al., 2020).

Outside of the public health domain, the Election Integrity Partnership (EIP) emerged as a cross-institutional effort to monitor and respond to election-related misinformation in real time during the 2020 U.S. election (*Election Integrity Partnership* n.d.). These examples illustrate how scholars, often in partnership with journalists or civic institutions, have responded to fast-moving events with an intent to guide and inform the public in the midst of uncertainty.

As previously mentioned, some academics have turned to informal communication platforms to engage with the public in real time. Twitter (now X), TikTok, LinkedIn, Substack, and other platforms enabled researchers to provide rapid interpretation and commentary, sometimes building large public followings (Tsapali and Paes, 2018). These spaces activated existing professional and social networks, demonstrating a willingness among scholars to speak directly to online publics.

However, these rapid-response efforts also drew criticism and, in some cases, are unsustainable. Preprint platforms were faulted for facilitating the dissemination of unvetted or preliminary research (Bagdasarian, Cross, and Fisher, 2020), and IHME faced scrutiny for producing overly optimistic projections of COVID mortality (Marchant et al., 2020; Piper, 2020). EIP and its leaders were later targeted by political actors who accused them of censorship and collusion with social platforms (DiResta, 2024). Researchers involved reported facing harassment and even legal threats (Menn et al., 2024). Beyond these reputational risks, public engagement also demands time and infrastructure. Building a sustained presence and following on social media—now a key vector for public-facing expertise—requires ongoing labor and communication skills (Tsapali and Paes, 2018). Yet the instability of these platforms, as seen in the decline of Twitter and the uncertain future of TikTok, makes them a precarious space for long-term engagement.

These moments laid bare a central tension: acting quickly to serve the public can run counter to academic norms of rigor, epistemic restraint, and timing. As IHME's director noted after being questioned about moving too fast, "Most academics want to hedge their bets and not be found to ever be wrong" (Cancryn, 2020).

2.3.6 When Showing Up Shapes Understanding

While this final section has focused on academics, they are just one of many types of sources journalists rely on during fast-moving or high-stakes events. Their case shows how professional values, institutional structures, and public visibility all shape whether, when, and how sources engage. Some constraints are not unique to academia and help surface broader frictions and asymmetries in the journalist–source relationship, especially under time pressure. When journalists are tasked with helping the public understand complex events as they unfold, the availability and responsiveness of sources

can impact what information reaches the public, and when. To know how journalists verify and understand information in these moments, we must also examine the conditions that shape whether sources can participate at speed. That is a core tension this dissertation takes up: not just how journalists work in crisis, but how that work depends on others, and what those others need to show up and respond.

Chapter 3

Research Context and Methods

In this chapter, I offer my orientation toward the research presented throughout this dissertation. I provide context on how I arrived at this area of study and how my situatedness in various fields contributed to my research orientation. I define key actors and concepts within the context of my studies, present an overarching synthesis of the qualitative research methods employed throughout the body of work presented, and describe how these studies collectively represent a broader action research cycle. Finally, I engage with some limitations of my methods and discuss my positionality as the researcher conducting this work.

3.1 Disciplinary Context and Research Trajectory

3.1.1 Misinformation, Disinformation and Rumoring

In 2017, I joined Kate Starbird's Emerging Capacities of Mass Participation (EmCOMP) lab at the University of Washington, driven by growing concerns about how misinformation spreads through online networks. Misinformation—false or misleading information shared without intent to deceive—and disinformation—false information deliberately spread to mislead—had become central concerns in public discourse following the 2016 U.S. presidential election, when Russia's Internet Research Agency was found to have orchestrated large-scale influence campaigns on social media platforms (Intelligence United States Senate, 2019). Starbird had recently begun writing more explicitly about these topics (e.g.(Hecht et al., 2017; Starbird, 2017)), although her research—and that of others at the University of Washington—on online rumors dated back to studies of the 2013 Boston Marathon bombing (Starbird et al., 2014) and the Deepwater Horizon oil spill (Spiro et al., 2012). Public interest in these issues surged in the post-election

years; by 2018, the year I joined the lab, "misinformation" had even been named 'word of the year' by (Dictionary.com, 2018).

Several labmates who had previously studied information flows during crisis events began applying those lenses to mis- and disinformation. Notably, they had just published some of the first CSCW papers on the topic—analyzing the Syrian civil war (Wilson, Zhou, and Starbird, 2018) and Russian state-sponsored participation in U.S.-based conversations around #BlackLivesMatter (Arif, Stewart, and Starbird, 2018).

My early thinking about mis- and disinformation—and how it spreads in today's media environment—was deeply shaped by the mentorship of Kate Starbird, Ahmer Arif, and Tom Wilson. Their work revealed that misinformation is not solely the product of malicious actors, but is co-produced—intentionally or inadvertently—by influencers, online communities, platforms, and algorithms (Starbird, Arif, and Wilson, 2019; Wilson, Zhou, and Starbird, 2018). This framing emphasized misinformation's participatory and networked nature and drew attention to how structural and technological factors shape what circulates. I was also influenced by scholars like Whitney Phillips and danah boyd, who explored journalism's fraught position in these dynamics. Their work highlighted how journalists can both debunk and unintentionally amplify falsehoods, and how gaps in timely, credible information can leave the public vulnerable to manipulation (boyd, 2018; Golebiewski and boyd, 2018; Phillips, 2018).

One of my first major projects, in 2018, contributed to our lab's research on Russian disinformation, focusing on the Internet Research Agency's campaign to spread divisive information during the 2016 election period (Starbird, 2018). Two aspects of this project were especially formative. First, its mixed-methods approach—combining large-scale data analysis with qualitative coding, close reading, and contextual research—instilled an appreciation for methodological hybridity. This practice of moving between scale and specificity became a defining feature of how I approached sociotechnical questions in my work.

The second formative lesson came from our conversations about the timeline of academic publishing of these findings. Peer-reviewed dissemination would take months or over a year, possibly beyond the next election. While my labmates tried to bridge this delay through blog posts (Starbird, 2018) and Starbird's commentary on Twitter (now X), the misalignment between

the urgency of the public moment and the slow pace of scholarly output sat with me.

Then, in the weeks and months following the sharing of that data, journalists published compelling and timely stories using a similar dataset (e.g. Timberg and Harris, 2018; Roeder, 2018; Calderwood, n.d.). Though these reports involved a different level of depth or methodological detail, they reached broad audiences. They helped shape public understanding in the moment. Seeing journalists' ability to respond and explain what had happened raised two powerful and lasting questions: *How do they do this kind of reporting? How can we help?*

My position within a lab and field focused on misinformation shaped my research orientation in three ways:

- **A Public Interest Problem Worth Solving**: Like many others, I came to see the spread of false and misleading information online as a serious threat to society. I was particularly drawn to the concept of *data voids*—moments when good or vetted information is absent, just as public interest spikes (Golebiewski and boyd, 2018). This concern grounded my work in a normative goal: to support the producers focused on *informing* the public.
- **Iterative, Multi-Method Qualitative Research**: The lab's work modeled how to move between levels of analysis—zooming out to identify infrastructural patterns in information flow, and zooming in to closely examine individual messages, actors, and interactions. While much of that work combined quantitative and qualitative methods, I adapted this sensibility within a qualitative frame, using methodological triangulation across interviews, observation, and artifact analysis (Carter et al., 2014). This flexibility—shifting perspectives to understand both structure and practice—became a core part of my methodological orientation.
- **Journalists as Complex Actors**: Reading in this area revealed the complex role journalists play in today's information environment—at times acting as fact-checkers (Stencel, Griffin, and Griffin, 2018), at other times inadvertently amplifying false content (Phillips, 2018) or unreliable sources (Donovan and Friedberg, 2019). Yet, in my own experience, I have also seen journalists serving as timely explainers, helping the public navigate confusing or rapidly evolving information.

This complexity motivated me to take a closer look at their role within this ecosystem.

3.1.2 Crisis Informatics and The Study of Moments

In addition to the misinformation-focused training that shaped my early research, my orientation was profoundly influenced by my lab's roots in the field of crisis informatics—a multidisciplinary domain that examines how people use digital platforms, tools, and infrastructures in moments of disruption and uncertainty (Soden and Palen, 2018; Palen and Anderson, 2016). Crisis informatics combines social science and technical perspectives to study information behaviors during natural disasters, mass emergencies, and rapidly unfolding public events.

Although not covered in this dissertation, my contributions to a study of adaptation during the 2021 Texas Power Crisis (Schlein, Alexa et al., 2024) and my participation in a directed research group examining rumors during Hurricane Harvey in Houston deepened my understanding of how people interpret and respond to crises in real-time. These experiences, especially as a native Texan, offered grounded insight into the local dynamics of public information needs during fast-moving events.

Crisis informatics shaped my research approach in three key ways:

- **Events as Units of Analysis**: The field treats time-bounded incidents as windows into sociotechnical breakdowns—moments when systems strain or falter, exposing public needs, infrastructural gaps, and emergent coordination (Finn, 2018; Crawford and Finn, 2015). This perspective shaped my decision to study what I came to call high-stakes news moments as concentrated points in time and space for examining information sharing.
- **Sensemaking in High-Pressure Information Environments**: Building on Weick's foundational theory of sensemaking under uncertainty (Weick, 1995), crisis informatics scholars have extended this concept to collective sensemaking—how people interpret ambiguous events together within digitally networked environments (Starbird, 2023; Vieweg, 2010; Heverin and Zach, 2012). This framing helped me see misinformation not merely as a failure of truth but as a byproduct of distributed meaning-making under pressure. It motivated me to

examine the elements that enable or constrain sensemaking for both the public and journalists.

- **Journalists as Improvisational Public Actors in Times of Crisis** My later research was shaped in part by Dharma Dailey's work with Starbird, which examined how journalists operate under pressure—navigating digital platforms, public expectations, and institutional constraints (Dailey and Starbird, 2014; Starbird et al., 2018; Dailey and Starbird, 2017; Dailey, 2020). Their findings, along with earlier work by Starbird and Palen (2013), helped me move beyond seeing journalists as mere intermediaries. Instead, I began to understand them as improvisational, innovative actors motivated by a civic commitment to inform and support the public during moments of uncertainty.

3.1.3 HCI and CSCW: Situation, Systems, Action

My approach to this research was also shaped by the fields of Human-Computer Interaction (HCI) and Computer-Supported Cooperative Work (CSCW)—interdisciplinary domains concerned with the relationship between technology and human practice. HCI encompasses a broad range of approaches to designing, evaluating, and studying interactive systems (Hartson, 1998), increasingly emphasizing how these systems are entangled with social, organizational, and cultural contexts (Rogers, 2012). CSCW, situated within the broader HCI tradition, focuses more specifically on the dynamics of collaborative work and how people coordinate and accomplish shared tasks through and around sociotechnical systems (Ackerman, 2000). Both traditions foreground the social, technical, and institutional arrangements shaping how work unfolds.

Several conceptual lenses from these fields shaped both my analysis and methodological choices:

- **Improvisation as Method, Not Failure**: The concept of situated action (Suchman, 1987) challenged the notion that behavior follows fixed plans, highlighting instead how people improvise in response to unfolding contexts. This perspective shaped my ethnographic approach, attuning me to how journalists and experts navigate uncertainty, pressure, and shifting demands. In fast-moving environments, actions were rarely linear—they emerged through

ongoing negotiation with norms, institutions, tools, and time constraints. What might appear as disorder was, in practice, a defining feature of the work.

- **The Sociotechnical Gap**: The sociotechnical gap, defined by Ackerman (2000), refers to the persistent misalignment between what systems are designed to support and the situated needs of their users. This concept helped me interpret the disconnects I observed between the social and institutional needs and the technical affordances available.
- **Sociotechnical Systems Thinking**: These fields have focused on how human activity is shaped by interdependent networks of people, tools, norms, and institutions (Star, 2002). This perspective pushed my analysis beyond individuals or interfaces to the broader infrastructures that support or constrain action. It led me to examine the routines, dependencies, and backstage work that sustain systems—even as they strain under pressure (Bowker and Star, 1999; Star and Ruhleder, 1996). CSCW's concept of *infrastructuring*—the ongoing adaptation and maintenance of systems in use—also helped me see how coordination, communication, and support are continuously revised and repaired on the ground (Pipek and Wulf, 2009). Building on Lee, Dourish, and Mark (2006), I came to see how people themselves can act as infrastructure, providing continuity, expertise, and responsiveness in moments of strain. These ideas recur throughout my analysis as I investigate how expert–journalist collaborations emerge within and are shaped by these layered systems.
- **Dourish's Descriptive Ethos**: (Dourish, 2006) shaped how I thought about scholarly contribution, especially early in this work. Rather than treating research primarily as a route to solutions, Dourish emphasizes the value of showing "how things are"—surfacing complexity rather than flattening it. This framing was especially influential in my first two studies, where I observed people working under strain. My intention was not to generate design implications, but to document the friction, improvisation, and emotional labor that can be hidden from view. Although I ultimately provided implications for design in this dissertation, my descriptive accounts became significant contributions.

Together, these concepts helped me treat information work not as isolated decision-making or tool use, but as embedded, situated, and collaborative practice. They pushed me to attend to the informal, the improvised, and the

infrastructural—surfacing the tensions, routines, and adaptations that define how work happens in complex, high-stakes environments.

3.1.4 A Period of Turbulence and Transformation: 2018–2025

The research presented in this dissertation spans a particularly turbulent period in U.S. digital and political life. When I began this work in 2018, my impression was that public concern about misinformation focused primarily on foreign actors, particularly from states like Russia and China. But rumors and misinformation leading up to the 2020 U.S. presidential election (Myre, 2020), persistent false claims of election fraud (*The Long Fuse* 2021), the January 6th Capitol insurrection (Joselow, 2022), and the spread of anti-vaccine narratives during the COVID-19 pandemic (Conger, 2021) exposed the domestic production and amplification of misinformation as an urgent and ongoing threat.

Several developments during this period directly shaped how I approached my research:

- **Reframing Misinformation as a Civic Crisis**: The shift from a foreign to domestic focus reframed misinformation as not only a geopolitical threat, but a civic and internal one. This challenged assumptions about where threats originate and how they spread within U.S. information systems.
- **Building Momentum through the Center for an Informed Public**: The launch of the Center for an Informed Public (CIP) in 2019 marked a turning point (Stiffler, 2019), as public and philanthropic funders began to recognize misinformation as a pressing societal concern. The center was created as part of a broader Knight Foundation initiative that invested fifty million dollars to support cross-disciplinary research on technology's impact on democracy (Knight Foundation, 2019). This national initiative seeded new research centers across the U.S., including CIP at the University of Washington, and catalyzed collaborations between computational, social, and information scientists. These new resources enabled sustained partnerships and dedicated data infrastructure. Collaborations with scholars in the CIP, like Rachel Moran and Kolina Koltai, broadened the methodological and conceptual grounding of my work.

- **Losing Access to Platforms and Data**: Early initiatives like Social Science One (*Social Science One: Our Facebook Partnership* 2020), along with tools like the Twitter API and CrowdTangle, once signaled growing transparency by giving researchers more data access. Over time, these efforts receded (Kupferschmidt, 2023; Ortutay, 2024; Timberg, 2021), culminating in sharp restrictions following Elon Musk's acquisition of Twitter (Conger and Hirsch, 2022). These changed what researchers could observe—and, by extension, what journalists could verify, narrowing the possibilities for both inquiry and accountability.
- **Navigating the Politics of Misinformation Research**: As the field became increasingly politicized, our lab and others faced mounting scrutiny and coordinated attacks aimed at discrediting the work (Shapiro, 2023; Walters, 2024). While core efforts continued, the climate introduced new constraints: public messaging required more caution, institutional partnerships were strained, and similar initiatives elsewhere were scaled back or dismantled (Stiffler, 2024; DiResta, 2024). This broader hostility added friction to an already high-stakes field.

Taken together, these conditions shaped not only what was possible but also what felt urgent, necessary, and worth pursuing. This dissertation is not just a product of my questions, but of the era in which I asked them.

3.2 Key Terms and Conceptual Clarifications

This dissertation spans multiple domains—including journalism, human-computer interaction, crisis informatics, and misinformation studies—each of which brings its own language and conceptual frameworks. While some terms may appear straightforward, their meanings can vary across contexts and communities of practice. In this section, I clarify how key terms are used within the scope of my research. These clarifications are not intended to offer universal definitions, but rather to establish how I operationalize these concepts throughout the dissertation. In doing so, I aim to reduce ambiguity, acknowledge disciplinary tensions, and support a more grounded and transparent reading of the work that follows.

3.2.1 The Journalists in This Work

As discussed in Chapter 2, the boundaries of journalism—who counts as a journalist—are contested. These boundaries are continuously negotiated through both professional practice and discourse (Carlson, 2016; Carlson, 2017; Zelizer, 1993). In this section, I provide clarity on the specific population of journalists at the center of this dissertation: those working within institutional newsrooms, producing explanatory coverage during high-stakes news moments, and adhering to traditional reporting, sourcing, and verification routines.

To situate the findings that follow, I summarize key characteristics of the participating journalists:

- **Institutionally affiliated**: All were employed by formal news organizations, including local, national, nonprofit, and digital-first outlets. None were independent, freelance-only, or self-identified "citizen journalists."
- **Operating under editorial oversight**: Participants worked within organizational structures that imposed professional risk for error and accountability for accuracy.
- **Motivated by public-interest reporting**: Most expressed alignment with the normative values of journalism as a public service, including ethical codes and a civic commitment to inform.
- **Following traditional journalistic routines**: Participants regularly sought out expert sources, conducted verification, and engaged in explanatory reporting as part of their day-to-day work.
- **Publishing across traditional and new digital formats**: Their stories appeared in digital, print, and audio formats—primarily as articles, and radio or podcast segments.

What follows elaborates on these characteristics through the lens of their professional identities, routines, and constraints.

Professional Identity and Practice

Participants were working journalists embedded in formal media institutions, ranging from metropolitan newspapers and national broadcasters to local television and digital-first newsrooms. This places

them within journalism's institutional core, where norms and accountability structures shape both practice and legitimacy (Carlson, 2016; Zelizer, 1993).

Their self-understanding aligned with Schudson's model of journalism as a public service constrained by verification and institutional conditions (Schudson and Anderson, 2009). Many referenced Kovach and Rosenstiel (2021)'s "discipline of verification", describing their work as motivated by civic responsibility and ethical commitments to public understanding.

Using Hanusch's typology of peripherality (Hanusch, and Löhmann, 2023), participants can be described across several dimensions:

- **Values & Identity**: Participants generally subscribed to core journalistic values and professional identity markers.
- **Training & Experience**: They varied in their experience levels, with differences in experience, particularly concerning digital or misinformation-adjacent beats, shaping their needs and approaches more than outlet size or geographic scale.
- **Competencies**: Their competencies tended to align with traditional reporting rather than highly specialized technical domains such as data journalism, photojournalism, or GIS-based reporting.
- **Format & Content**: Journalists published their work across a range of digital formats, most commonly as written articles, newsletters, or audio pieces on radio and podcasts. In terms of content, much of this reporting was explanatory or analytical, especially in response to complex or fast-moving events.
- **Transformative Practices**: Practices that challenge or redefine journalistic conventions were relatively rare in this sample. Most participants operated within traditional newsroom structures and routines, though a few adopted creative approaches to navigating digital complexity.
- **Autonomy**: All journalists worked within formal institutions, but many had latitude in choosing story angles or initiating coverage.

Variation and Limitations

Across the studies, participants ranged from seasoned national reporters to local journalists newly navigating online information environments.

Differences in their needs were shaped less by outlet type (e.g., local vs. national; nonprofit vs. legacy) and more by their experience and familiarity with their beats. Journalists who had worked in these domains longer were generally more fluent in the dynamics of digital information and quicker to identify what kinds of support or context they needed.

Despite variation in background and specialization, participants faced similar challenges in verifying and contextualizing information. The type of information they sought was broadly consistent across outlet types; what differed was the intensity of those needs. These differences were shaped by factors such as organizational capacity, deadline pressure, and proximity to the story. For example, a local reporter covering a contested ballot initiative may face tighter timelines and fewer internal resources than a national counterpart; however, both posed comparable questions about context and background to the experts.

Importantly, this dissertation does not include certain journalists who may face different challenges, such as photojournalists, visual editors, or freelance reporters not affiliated with formal outlets. The sample also does not represent hyper-partisan or advocacy media. As such, the findings are most applicable to journalists operating in institutional and public-service–oriented media environments.

3.2.2 The Experts in This Work

Definition and Pragmatic Approach

In this dissertation, I use the term "expert" to refer to individuals whom journalists identified as trusted sources of knowledge during fast-moving, high-stakes news events. Rather than defining expertise through formal credentials or disciplinary affiliation alone, I adopt a pragmatic orientation: experts are *those whom journalists turned to* for context, clarification, interpretation, or verification. This approach deliberately centers journalistic practice.

Institutional Background and Qualifications

The experts included in this research came from a range of institutional settings, including universities, nonprofit organizations, legal advocacy groups, and civic technology initiatives. Most were U.S.-based. Many held advanced degrees or had built domain-specific credibility in areas such as

election law, mis- or disinformation, digital security, or public policy. Their proximity and past experience working with journalists varied.

Selection and Institutional Context

Across the second and third studies, the inclusion of experts in journalistic work was shaped not just by what individuals knew, but by where they were situated. In Study Three's helpdesk environment, experts were explicitly invited and vetted by organizers, creating a formal gatekeeping process. In Study Two, my research lab at the University of Washington became a central point of contact for journalists due to its institutional visibility, public reputation, and responsiveness. Eyal (2019) similarly reminds us in *The Crisis of Expertise* that expert legitimacy is never purely epistemic; it is shaped by institutional commitments, normative assumptions, and public perception. These dynamics were present throughout the studies: experts were not simply identified by domain knowledge alone, but filtered through broader structures of visibility, trust, and alignment with journalistic norms.

Experts vs. Sources: Clarifying Terminology

In some instances, journalists referred to these individuals as "sources." But the term carries varied connotations—ranging from confidential informants to official spokespersons—and doesn't fully capture the nature of these interactions. In the moments I studied, experts were not providing scoops or inside information, but rather helping reporters build fluency in unfamiliar topics. They offered context, helped journalists verify or interpret claims, and sometimes were quoted in the final publication, though other times they weren't despite their contributions. As Schudson (2008) writes, and as I discussed in Chapter 2, journalism sometimes leans on expert authority during uncertain events to lend coherence and credibility. In these cases, the role of the expert was not just informational but also interpretive, which is why I prefer the term "expert" over "source" in this work.

Bias Toward Academic Experts

This dissertation is especially attuned to the role of academic experts in these interactions. Study Two focuses entirely on academics, while Study Three includes a broad expert pool in which academics made up a significant portion (45%). Across both, I examine how academic norms—such as publication timelines, caution around public commentary, and varied

institutional incentives for engagement—shaped expert participation in real time. These constraints reveal a mismatch between the rhythms of academic labor and the temporal demands of journalism, particularly during fast-evolving events. Though some expert-side findings from this research may generalize to other kinds of expertise, they are biased by what I learned in the academic-journalism connections.

For this reason, I use the term "expert" throughout the dissertation—rather than "academic" or "researcher"—to reflect both the practical role these individuals played and *the way they were seen by journalists*. The term 'expert' offers a more inclusive and flexible framing that captures how these individuals functioned within the information exchange. But in the moments captured in this research, their contributions were more often about making complexity legible, not about breaking new news.

On the Use of "Collaboration"

Throughout this dissertation, I use the term "collaboration" in the spirit of CSCW, where collaborative work is broadly understood as distributed, often asynchronous, and not always symmetrical. In this framing, collaboration does not require complete alignment of goals, methods, or timelines; rather, it denotes joint activity oriented toward a shared civic outcome, even if that outcome is interpreted differently by different participants.

Much of the work described in these studies can be understood as a form of distributed cooperative work, where journalists and experts (often academics) exchange knowledge, questions, and insights in time-sensitive moments to support public understanding. These interactions were frequently shaped by urgency, uneven access to tools or data, and differing professional expectations. Still, many participants across roles shared a commitment to accurate reporting, democratic participation, and public knowledge. In that sense, the collaborative ideal—mutual contribution toward a shared outcome—was present, even if unevenly enacted.

At the same time, I recognize that the term 'collaboration' carries distinct connotations across various fields. In journalism, where independence, autonomy, and editorial skepticism are core professional values, collaboration is typically reserved for joint editorial work, such as co-authoring a story or producing an investigation together from start to finish. When describing my research to journalists outside formal

interview settings, I encountered discomfort with applying this term to their interactions with academics or technologists. Even when journalists actively sought expert input or engaged in sustained exchanges, many hesitated to call it collaboration. This resistance was rooted in concerns about perception, specifically, whether using the term might suggest undue influence, editorial compromise, or a blurring of professional boundaries.

To reflect this complexity, I use the term collaboration with care throughout this dissertation, primarily drawing from its broader meaning in the CSCW tradition, where it refers to distributed work and cooperative activity rather than formal co-production. In many journalistic contexts, alternatives like "support," "information exchange," or "ad hoc coordination" more accurately describe the nature of the interaction. When possible, I rely on participants' own language to characterize their engagements, attending to how professional norms and values shape not only what journalists do but also how they describe and frame those relationships.

On the Use of "High-Stakes News Moments"

Throughout this dissertation, I use the phrase high-stakes news moments to describe events that place urgent demands on journalists and the sociotechnical systems that support them. As introduced in Chapter 1, these are times when the public is actively pulling for information, seeking clarity, context, and verification amid uncertainty, speculation, and partial or evolving facts. Journalists must respond in real time, making sense of events alongside their audiences while navigating fragmented, fast-moving information flows.

The events examined in this research span a range of domains and dynamics, including:

- The spread of the "Pizzagate" conspiracy and its escalation into real-world violence;
- Foreign interference in the 2016 U.S. presidential election;
- The early stages of the COVID-19 pandemic and the viral spread of the "Plandemic" video;
- The deplatforming of Donald Trump following the January 6 Capitol attack;

- Rumors about Dominion Voting Systems and persistent voter fraud narratives in 2020 and 2024;
- Misinformation following the murder of George Floyd and during nationwide protests;
- False claims and viral moments during U.S. presidential debates.

What unites these moments is not a specific topic or threat level, but the convergence of public urgency and issue complexity. These events draw intense, immediate attention and demand for information, before facts are fully known. The complexity—whether legal, scientific, technical, or political—slows down verification and complicates explanation. This temporal gap between demand and clarity creates a window in which misinformation, rumors, and misleading frames can quickly take hold. In this way, high-stakes news moments are marked not only by heightened pressure on journalists but also by collective vulnerability to confusion, rumor, and misinterpretation.

I do not present high-stakes news moments as a formal framework, but as a descriptive term that captures the common conditions across the events studied here. These are times when journalism must operate at speed and under pressure—and when the infrastructure for information exchange is most visibly strained. I thank Rachel Moran for first using this term in conversation; it helped crystallize my thinking and language for describing these critical junctures.

3.3 Methodological Framework and Research Design

This dissertation is grounded in an interpretive research tradition and primarily draws on qualitative methods to study sociotechnical work in context. While the methods vary across the three studies—including interviews, participant observation, digital ethnography, and survey work—the approach is united by a commitment to understanding how people make sense of and navigate complex systems in real-world settings. Ethnographic sensibilities guide much of the work, particularly in Studies Two and Three, where I was embedded in digital environments and ongoing collaborations. These methods helped surface the often-invisible routines,

breakdowns, and adaptations that shape how journalists and experts work under pressure.

The methods for each study are detailed in their respective chapters, but here I reflect on why I selected this combination of approaches and the kinds of insight they made possible. I also take up the fact that, while not initially framed as action research, the arc of this project reveals an iterative commitment to improving the very systems it set out to understand.

3.3.1 Studying Work in Practice: A Multi-Method Qualitative Approach

This dissertation employs a *multi-method qualitative approach* grounded in interpretive and ethnographic traditions. While not all methods used were ethnographic in the strictest sense, ethnographic inquiry played a central role, particularly in Studies 2 and 3, and shaped the overall orientation of the research. Ethnographic methods are well-suited to understanding how work unfolds in real time, under uncertainty, and in situated contexts (Blomberg and Karasti, 2013). They emphasize depth, contextual interpretation, and reflexive engagement with the world being studied (Blomberg and Burrell, 2012). In the CSCW tradition, ethnographic approaches have surfaced key concepts such as invisible labor, articulation work, and situated awareness—elements critical to understanding coordination in sociotechnical systems (Schmidt, 2011). My research aligns with this interpretive tradition, treating journalism and expert communication not as static workflows but as dynamic, relational, and continually evolving practices.

Ethnographic methods were especially important for examining how journalists and experts navigated time pressure, breakdowns, and improvisation in real-world settings. These approaches allowed me to surface the "invisible" work (Star and Strauss, 1999), routines, and infrastructural frictions that arise when knowledge must be shared and produced quickly and credibly. Rooted in key ethnographic principles—studying phenomena in natural settings, taking a holistic view, offering rich descriptive accounts, and centering members' perspectives (Blomberg and Burrell, 2012)—the following methods were tailored to the context of each study:

- **In-depth semi-structured interviews** played a central role across all three studies, offering a deeper look into members' perspectives and descriptive understanding (Charmaz, Belgrave, and others, 2012; Kimber and Dairon, 2023). In Study One, semi-structured interviews provided insight into how journalists on the misinformation beat interpreted their roles, navigated emerging practices, and responded to institutional pressures. In Studies Two and Three, I conducted ethnographic follow-up interviews to deepen the insights gained from digital observation. These conversations helped clarify observed practices, surface tacit knowledge, and triangulate trace data such as Slack threads and collaborative documents. Across all studies, interviews were the most important data source informing the analysis.

- **Digital ethnography** was additive to Studies Two and Three, where much of the observed activity took place in online environments. Ethnographic research traditionally centers on the selection of a field site—a bounded social setting where researchers engage over time to understand local practices. In CSCW, this concept has been extended to virtual spaces, giving rise to forms of digital ethnography that attend to interactional patterns, artifacts, and mediated practices (Friedberg, 2020). Across both studies, I examined digital materials—such as emails, Slack threads, collaborative documents, and shared logs—to understand how work was coordinated and to enrich the other qualitative data. In Study Two, my investigation spanned multiple platforms, reflecting the distributed nature of collaboration. In Study Three, the field site was more contained, consisting of a single, shared Slack workspace used by journalists and experts.

- **Participant observation** was a core method in Study Two, where I served as both facilitator and embedded observer in over two dozen real-time journalist–researcher interactions. This approach involves active engagement in the setting while documenting work as it unfolds (Blomberg and Karasti, 2013). My role as coordinator offered more than access—it was itself a form of articulation work. As Strauss and Suchman describe, articulation work refers to the invisible labor required to align people, tools, and tasks across discontinuities (Strauss, 1988; Suchman, 1996).

  By helping manage interactions across disciplinary and institutional boundaries, I participated in stitching together fragmented systems

into functioning configurations. (Suchman, 1995) emphasizes the importance of this ongoing labor: "the continuous efforts required in order to bring together discontinuous elements-of organizations, of professional practices, of technologies-into working configurations". This dual role—coordinating and observing—allowed me to witness and *feel* the visible and backstage dynamics of collaboration, including how relationships formed, norms negotiated, and uncertainty navigated in real time. These insights would have been challenging to surface through interviews or observation alone.

- **A Survey** was added in Study Three to complement qualitative methods. This offered both quantitative insights and short-form qualitative reflections for participants beyond whom I was able to interview. It added breadth and enabled a broader picture of participant experience, particularly useful in a many-to-many environment where not all interactions or perceived values could be observed or captured through interviews.

Taken together, these methods offered complementary vantage points. This layered approach enabled a richer understanding of sociotechnical coordination, drawing insights from multiple sources and surfacing routine practices, as well as moments of friction, improvisation, and breakdown. Triangulation refers to using various methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999). This dissertation employs methodological triangulation (i.e., combining interviews, participant observation, and surveys) and data triangulation (drawing on digital materials, retrospective accounts, and real-time interactions) to enhance analytic depth. As Carter et al. (2014) notes, these are two of the four common forms of triangulation originally outlined by Denzin and Patton—approaches that aim not only to validate findings, but to illuminate complexity from multiple perspectives.

3.3.2 Grounded Theory and Iterative Analysis

Across all three studies, I employed grounded theory methods to support emergent, situated analysis of the data I collected (Charmaz, Belgrave, and others, 2012; Glaser and Strauss, 1967). My approach aligns with constructivist grounded theory (Charmaz, Belgrave, and others, 2012), which views analysis as an interpretive, flexible process in which categories and meanings are constructed through ongoing engagement with the

data, rather than objectively discovered. This orientation was especially well-suited to studying fast-changing sociotechnical systems, where fixed codebooks would have obscured the evolving nature of the work. It also complemented my ethnographic methods by allowing me to trace meaning as participants defined it, for example, following how journalists described and differentiated types of experts.

In practice, I used grounded theory coding techniques throughout each study:

- **Initial coding**, where my collaborators and I broke down transcripts, memos, and digital artifacts into short, descriptive codes that stayed close to participants' language.
- **Focused coding**, where we clustered and synthesized emergent patterns. For example, in Study Two, we cataloged the language journalists used to describe their needs and questions in live help sessions. These codes later crystallized into my typology of collaboration types and the articulation of persistent frictions—analytical constructs developed inductively from the data.
- **Memoing**, where I developed higher-order conceptual insights to explain patterns and tensions across cases and time. This was employed most in Study One and in the final synthesis essay of the dissertation.

This flexible, iterative approach supported my goal of generating both theoretically grounded insights and practice-relevant reflections. Grounded theory helped me stay close to the data without becoming overwhelmed by its volume. It enabled me to surface patterns that remained anchored in the real-world dynamics this dissertation seeks to illuminate.

3.3.3 An Emergent Action Research Cycle

Action research (AR) in CSCW and HCI involves iterative cycles of inquiry, intervention, and reflection, conducted in close collaboration with those embedded in practice (Blomberg and Karasti, 2013; Hayes, 2011; Karasti, 2001). While this dissertation was not initially designed as a formal AR project, its trajectory came to reflect core principles of action-oriented inquiry: sustained engagement with a real-world sociotechnical problem,

iterative development of solutions in context, and reflexive learning across phases of work.

Across three studies, this project progressed from exploratory diagnosis to intentional system design, and then to embedded observation and evaluation. While it shares affinities with participatory and user-centered design—particularly in its responsiveness to user needs and iterative refinement—its primary goal was the production of situated, transferable knowledge. As Hayes notes, this is a key distinction: "the end product of AR is learning and scholarly knowledge," not just systems or tools (Hayes, 2011). Throughout this cycle, I also drew on what Karasti describes as the integration of systemic analysis and appreciative intervention—attending to sociotechnical breakdowns while respecting and building on existing work practices (Karasti, 2001).

- **Study 1** began as an exploratory investigation into how journalists report on digital misinformation. Through interviews with reporters on the "misinformation beat," I surfaced recurring challenges in sourcing, verification, and interpretive work under pressure. A key finding was the difficulty journalists faced in quickly reaching academic experts, highlighting a gap in real-time support. While several needs emerged, this was one I was well-positioned to address, laying the foundation for subsequent intervention.
- **Study 2** was a direct response to those identified needs. During the 2020 U.S. election, I helped establish an informal, researcher-run support hub for journalists. This was a structured and intentional design effort: I developed outreach materials, established internal coordination routines, and created systems to match journalists with experts in real-time. As a participant-observer, I facilitated interactions while documenting the system's evolution, breakdowns, and opportunities for redesign. While the intervention incorporated methods aligned with participatory design, its deeper aim reflected the logic of action research: to generate both practical solutions and analytical insight from within unfolding practice.
- **Study 3** returned to an observational mode, but within a more mature and robust version of the model. I did not design the 2024 Election Helpdesk, but it reflected many of the practices and values I had studied and written about. When I learned of its development, I abandoned my own plans to build a new iteration of a support

system for the election and instead joined as an embedded digital ethnographer, recognizing that this journalist-led effort was innovative and deserved study. The helpdesk, designed by a journalist who deeply understood newsroom workflows and expert engagement, surpassed my prior designs. This phase offered a valuable form of analytic distance—what Karasti describes as a reflective stance that renders work both familiar and strange—allowing me to observe how the model had evolved, identify persistent tensions, and learn from innovations that extended the original concept (Karasti, 2001). It also demonstrated how practitioners can bridge disciplinary gaps, operating fluidly between the roles of designer, user, and system builder.

Taken together, these three studies form an emergent cycle of action research. The progression illustrates a recursive mode of inquiry common in CSCW and infrastructuring work (Pipek and Wulf, 2009; Dantec and DiSalvo, 2013). My goal was not to generalize findings in a statistical sense, but to produce what Hayes calls *transcontextual credibility*—insights that resonate across similar high-pressure information environments while remaining grounded in local realities (Hayes, 2011). This work also embodies what Karasti (2001) refers to as situated generalizations: design-relevant insights that emerge from lived work experience and become meaningful when considered across related sociotechnical contexts. It is through viewing these studies as a connected, iterative process that the design implications presented in Chapter 7 take shape, emerging not from any single study, but from patterns and insights that accumulated across the whole research cycle.

3.3.4 Limitations

The following limitations reflect the scope, design, and epistemological commitments of the research and point to areas where further work is needed. They represent the boundaries and constraints I was able to identify; others may emerge through different perspectives, methodologies, or applications of this work.

Contextual and Structural Boundaries The empirical studies are situated within the U.S. media ecosystem from 2018 to 2025— a period, as mentioned at the beginning of this chapter, marked by political turmoil and rapid change. These dynamics shaped both the urgency and design of the

expert–journalist infrastructures examined. As such, the infrastructures and communication patterns described here are specific to high-pressure conditions and may not reflect workflows during more stable or routine reporting cycles. Additionally, while these infrastructures were often used by or in service to local journalists, the issues at hand—elections, public health, misinformation—were national or global in scope. This research did not examine hyperlocal or purely local news events, and further work would be needed to assess whether the observed dynamics translate to local-only crises or differently resourced newsrooms.

Researcher Embeddedness and Role Fluidity My role in Study Two included both facilitation and observation. This contributed to rich access and situated insight, but also shaped the system under study. This is a known feature of action-oriented and infrastructuring research, where the researcher is positioned not as a neutral observer, but as an engaged participant (Karasti, 2001). I also made design decisions informed by my own understanding of journalistic workflows and expert accessibility, which influenced what was foregrounded or resourced. While I worked to reflect critically on these choices, my presence and professional perspective inevitably influenced the system's development and outcomes.

Partial and Situated Access As a qualitative researcher, my access was shaped by the relationships and institutional affiliations that enabled this research. I did not have access to private editorial conversations, legal deliberations, or internal newsroom and lab dynamics. Nor could I observe every interaction between journalists and experts, particularly those conducted through some direct messages, phone calls, or face-to-face conversations. Much of my analysis draws from visible collaboration spaces, interviews, and observable interactions, which provide a partial view of the broader information ecosystem. I also relied on participants' own accounts of their motivations and interpretations. While valuable, these perspectives may not fully capture alternate influences or unspoken rationales behind decisions.

Selective Sampling and Definitions of Journalism This research focused primarily on journalists affiliated with established institutions, newsrooms, or professional reporting organizations. As such, it did not include other actors who might reasonably be considered journalists in today's media

landscape, such as independent newsletter writers, civic fact-checkers, or creators working outside of legacy institutions. Their needs may be different.

Expert Representation and Knowledge Domains The expert voices represented in this dissertation are primarily academic researchers, especially in Studies One and Two. Study Three included a broader range of participants—including experts from civil society and nonprofit sectors—but I did not study other expert domains in depth, such as law, technology, or policy advocacy. A holistic understanding of systems that support journalists' sensemaking in these moments will require future work that incorporates a wider range of expert roles, tensions, and knowledge practices.

Language and Cultural Scope All three studies were conducted in English and situated in U.S.-based contexts. The findings reflect dynamics present within this specific linguistic, cultural, and institutional environment. They do not account for variations in journalistic infrastructure, public trust, academic accessibility, or expert–media relationships that may exist in other geopolitical or media systems. Future work could examine how similar challenges and infrastructures appear in different national or multilingual settings.

Platform Dependencies and Sociotechnical Change This research took place during a period of rapid technological and platform transformation. Shifts in ownership and moderation policies—such as the acquisition of Twitter/X by Elon Musk—directly influenced where and how journalists and experts communicated. These transitions had observable effects on sourcing routines, collaboration spaces, and especially the helpdesk infrastructure. If new platforms that connect these professionals in an online "public" emerge or older ones are re-legitimized, the needs that gave rise to these support systems may evolve. Still, I argue that the designs observed here offer meaningful insights for how to support journalists—particularly those without large personal followings or institutional infrastructure—in moments of uncertainty.

Epistemic and Disciplinary Commitments Like all interpretive research, this work reflects the researcher's positionality. While I made efforts to remain reflexive and transparent, my background, training, and

commitments shaped how I understood and analyzed the data. I bring a predisposition to view journalism as a civic good and expert–journalist collaboration as a meaningful intervention in public discourse. These values guided the framing of problems and the kinds of solutions I considered viable. Feminist and critical scholars have shown that knowledge is situated, shaped by the social, political, and institutional contexts in which it is produced (e.g. (Harding, 1987; Haraway, 2013)). In that spirit, I offer the following personal statement to reflect more directly on how my position and perspective shaped the research.

3.4 A Reflexive Account

Professional and Disciplinary Background

I entered this research with a background in engineering and software development, which instilled in me a systems-oriented, solution-driven mindset. My training in Human Centered Design & Engineering taught me to ask what people need, how systems can better support them, and what possibilities emerge when we question the assumptions and structures that shape those systems. That mindset shaped how I approached journalism research: I was attuned not only to how things worked, but to how they *could* work better—what infrastructure might support them, how systems might be re-imagined, and what barriers stood in the way.

This orientation informed both my questions and the methods I used. While I grounded my ethnographic work in participants' lived experiences, I often appended future-facing prompts—*What would have made this easier? What do you wish existed?*—that reflected my builder's impulse to surface gaps and opportunities. This disposition helped me identify the infrastructural and relational challenges that became central to this dissertation. It also shaped the arc of inquiry: each study flowed from the tensions and insights of the one before it, propelled by a desire to understand not only what is, but what could be.

Respect for Journalism and Its Influence

Despite my distance from the field of journalism, with a background as an engineer and technologist, I approached this research with deep respect for journalism as a civic institution. I've long viewed journalism as a public good

and was raised to value its role in democratic life. My grandmother, to whom this dissertation is dedicated, was a public high school journalism teacher. I have long been a regular reader of institutional and traditional news outlets and have held the profession in high regard.

I also hold this respect alongside an awareness of journalism's contradictions. It is not a neutral institution. Newsrooms have operated within market logics that reward attention, controversy, and scale, often at the expense of nuance or equity. Journalism has sometimes aligned with powerful interests, overlooked marginalized communities, or upheld narratives that harm. These are not just historical failings; they are ongoing structural tensions, complicated further by platform incentives and the growing precarity of the industry.

Social Positioning and Place-Based Perspective

My position as a U.S. citizen, a white woman, and a researcher affiliated with a well-resourced public university also shaped the contours of this work. I grew up in an upper-middle-class household outside of Houston, Texas, where education was strongly supported. However, it was framed more as a path to economic stability than as a form of civic engagement or public service. These are forms of privilege that afforded me access, safety, and credibility in ways not equally distributed. I could move through institutional and professional spaces with relative ease. I was unlikely to be questioned or dismissed at the door. These positional advantages—combined with the visibility of the lab I was part of—likely influenced who was willing to participate, how they responded, and what information they chose to share.

After earning my engineering degree at Texas A&M, I spent several years living and working in Washington, D.C., including at a national security agency. That experience gave me a firsthand view of how information flows shape not just public understanding, but strategic decision-making. I became attuned to how misinformation and influence operations were beginning to challenge long-held assumptions about trust, institutional stability, and civic resilience. My time in D.C.—sandwiched between Texas and Washington State—added another layer to my understanding of how different geographic and political environments frame questions of truth, authority, and national interest.

My later move to Seattle for graduate school deepened this comparative awareness. The contrast—between Houston and Seattle, between Texas A&M and the University of Washington—offered an embodied understanding of how political values, media trust, and civic practices vary across regions. I became increasingly aware of how social location and cultural context shape the way people interpret information and assign credibility.

I also came of age during a period of rapid technological and media transformation. Graduating high school in 2011, I witnessed the shift from broadcast news and local papers to participatory digital platforms—first as a user, then increasingly as a concerned observer. Social platforms have become the infrastructure through which people learn, debate, and mobilize. However, they also fractured shared realities, making it harder to discern what was true, what was trusted, and who was behind the information we saw. That backdrop shaped both my sense of urgency regarding misinformation and my interest in how people navigate contested knowledge in real-time.

My proximity to multiple perspectives—conservative, moderate, and progressive; governmental and academic—helped me understand how people interpret the same events, systems, or stories in different ways. That awareness became a driving force behind this research and a constant reminder that the questions I asked—and the people I asked them of—were always situated within broader social, political, and historical dynamics.

Closing Reflection

In summary, I approached this work from a position shaped by technical training, interdisciplinary movement, and a deep commitment to public knowledge. I recognize that this work cannot be separated from my position within it. The questions I asked, the relationships I built, and the choices I made were all shaped by who I am, where I come from, and how I moved through the worlds of journalism, academia, and technology. This reflection is an attempt to account for those entanglements—not to resolve them, but to acknowledge them as part of the knowledge this work produces.

Chapter 4

Study 1: Understanding the Work of Investigative Journalists Reporting on Problematic Information Online

Preamble

This study (Haughey et al., 2020) emerged from a curiosity inside our lab at the University of Washington, as described in Chapter 3. I entered the project with a builder's mindset, shaped by my background in engineering and my interest in the growing field of *Computational Journalism*—which focused on developing digital tools and services to support journalistic work (Cohen, Hamilton, and Turner, 2011; Diakopoulos, 2016). At the time, social platforms were under heightened scrutiny, and there was increasing pressure to provide data access and transparency to researchers and journalists. I saw this as a design opportunity: What could be built to help? How could data or training be made more accessible to those reporting on misinformation?

What I found surprised me. Journalists weren't looking for dashboards or automated data pipelines. In fact, many were skeptical of tools that distanced them from raw material. Verification—seeing and vetting the data firsthand—was non-negotiable. What they wanted most was access to expertise and time to learn, especially when covering unfamiliar topics like platform dynamics or foreign interference. Many described informal exchanges with researchers as helpful, but noted recurring barriers, including slow academic timelines, limited responsiveness, and unclear methodological alignment. These early reflections hinted at deeper professional and epistemological tensions—ones that would later shape the dissertation's broader research arc.

This study directly supports **RQ1** by surfacing the professional, technical, and ethical challenges journalists face when covering high-stakes, misinformation-prone topics. Participants described the difficulty of managing vast amounts of information, accessing platform data, and using tools that failed to meet their time-sensitive needs. They reflected on the ethical complexity of reporting misinformation responsibly and the challenges of making academic work legible to news audiences. While many wanted more training and data literacy, one of their most salient desires was the ability to work more closely and quickly with academic researchers. This theme directly inspired the subsequent design-oriented studies.

It also contributed to **RQ2** and **RQ3** by revealing the systemic frictions and infrastructural constraints that shape expert–journalist interactions. Journalists voiced skepticism toward some "experts"—including certain academics, self-identified analysts, and individuals from NGOs or advocacy groups—particularly when methods were unclear or claims lacked context. In fast-moving situations, they had to assess both the credibility of the person and the soundness of their methods. Sometimes this meant finding and reaching out to another trusted source, such as another academic, to verify the information, adding time and uncertainty to the process.

While academic researchers were seen as valuable collaborators, misaligned timelines, differing standards of evidence, and unclear communication often made collaboration difficult. The study also highlighted how journalists adapted when systems failed—building workarounds, relying on familiar tools, and collaborating through informal networks. These adaptations revealed a broader design imperative: to create sociotechnical systems that are fast, familiar, and aligned with journalistic values. These insights informed the approach and focus of Study 2 (Chapter 5), which asked what it might look like to intentionally structure responsive, real-time support for journalists under pressure.

In hindsight, I see this study as a launching point. While the misinformation beat does not represent all journalistic work, it offered a sharp view into how sourcing, learning, and verification unfold under pressure, especially in fast-changing and expertise-dependent domains. The challenges reporters described—navigating unfamiliar systems, accessing timely insight, and translating complex knowledge for the public—appear increasingly relevant across beats. This is partly due to persistent resource constraints and the growing influence of digital platforms and networked information dynamics on political, scientific, and civic reporting. As these forces reshape how stories emerge and circulate, journalists across domains are contending with new pressures on their sourcing routines and interpretive responsibilities. These insights directly informed the design of Study 2 (Chapter 5), which explored what it might look like to intentionally structure responsive, real-time support for journalists operating under similar conditions but with a slightly different topical focus: elections. This domain had also become a central site of misinformation and public contestation.

On the Misinformation Beat: Understanding the Work of Investigative Journalists Reporting on Problematic Information Online

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4.1 Abstract

Journalists are increasingly investigating and reporting on problematic online content such as misinformation, disinformation, and conspiracy theories, leading to the creation of a new misinformation beat. The process of collecting, analyzing, and reporting on this kind of data is complex and nuanced. It is especially challenging as online actors attempt to undermine their work. Through in-depth interviews with twelve journalists, we explore how they investigate and report on online misinformation and disinformation. Our findings reveal some of the unique challenges of reporting on this beat, as well as the ways in which reporters overcome those challenges. We highlight and discuss how journalistic values could be better embedded into the design of tools to support their work, the power dynamics between social media companies and journalists, and the promise of collaborations as a way to support and educate journalists on this beat. This work provides contextual knowledge to researchers looking to better support investigative journalists — on the misinformation beat and beyond — as their work becomes more entangled in sociotechnical systems.

4.1.1 Author Keywords

social media; journalism; misinformation; disinformation; media manipulation; sensemaking

4.1.2 ACM Classification Keywords

• Human-centered computing → Empirical studies in collaborative and social computing

4.2 Introduction

Citizens are increasingly turning to online social platforms to seek and share information, including news (Shearer, 2018). This dynamic has enabled information to quickly propagate to large and diverse audiences, spreading within and between online networks in near real-time. In some cases, this information-sharing is problematic — e.g. with the pervasive spread of mis- and disinformation. CSCW researchers have been covering these topics at a growing rate, for example documenting cases where online platforms have facilitated harassment (Vitak et al., 2017; Guberman, Schmitz, and Hemphill, 2016), election interference (Arif, Stewart, and Starbird, 2018), and the spread of conspiracy theories during an epidemic (Kou et al., 2017).

Journalists, too, are increasingly reporting on problematic information in online environments. Experienced internet, social media, and national security reporters, among others, are starting to cover this new "beat" full time, focusing on issues of "fake news" (Silverman, 2016), misinformation (e.g. (Samuels and Kelly, 2020; Roose, 2018)), disinformation (e.g. (Frenkel, 2018; Lytvynenko and Silverman, 2020)), conspiracy theories (e.g. (Zadronzny and Collins, 2018; Lytvynenko, Broderick, and Silverman, 2020)), and harassment (e.g. (Guberman, Schmitz, and Hemphill, 2016; Vitak et al., 2017)). In doing this work, journalists aim to inform readers about what is happening online, investigate and debunk false claims, and hold social media companies accountable for the problematic information that spreads on their platforms. Compared to researchers, journalists are often exploring these phenomena on truncated timelines and with fewer resources, yet they rely on some of the same kinds of data and analysis techniques.

Reporting on online activity is complicated, as there are technical, methodological and professional hurdles to navigate. The "online misinformation beat" makes this even more complex. This beat covers both mis- and disinformation. For the sake of definitions here, misinformation is false information that is not necessarily purposefully false, and disinformation is false or misleading information that is intentionally produced and/or spread with an objective (Jack, 2017; Starbird, Arif, and Wilson, 2019). Pervasive mis- and disinformation have been recognized as critical problems by CSCW researchers (Starbird, Arif, and Wilson, 2019; Jiang and Wilson, 2018) and journalists alike (Warzel, 2019; Benkelman, 2019).

Though misinformation, disinformation, and conspiracy theories are not new, journalists reporting on this beat face new challenges in this era of "fake news". For one, the information ecosystems that they exist and compete within contain large numbers of low-quality "news" sites — including clickbait sites and hyper-partisan news sites (Hasell and Weeks, 2016) — that do not attempt to follow professional standards of journalism. Additionally, the "fake news" term has been turned into an attack on professional journalism, attempting to foment distrust in the fourth estate (boyd, 2018). Stories on misinformation, disinformation, conspiracy theories, radicalization, etc. have an inherent relationship to conflicting claims about "truth", rendering solid analysis and accuracy even more important. In this work, journalists cannot afford to make mistakes. Furthermore, there are people and organizations — e.g. those that manipulate online spaces for political and/or financial gain — who actively endeavor to trip up these reporters. They stand ready to seize upon mistakes made by the journalists trying to hold them to account and use those mistakes to undermine the journalists' work (Donovan and Friedberg, 2019)

In this paper, we explore the emerging "online misinformation beat" to understand the challenges that journalists face as they attempt to adapt their work practices to this new kind of work. We document the evolving environment of journalism in studying online social data, the ways in which journalists use their expertise to investigate online social spaces, and the tensions that come from doing this kind of reporting. We interviewed twelve journalists who are writing or contributing to stories that focus on misinformation, disinformation, and other forms of problematic information online. Several of these interviewees are ground-breakers of this new journalistic form. Through one-hour interviews, we asked them to situate themselves within the larger organization or newsroom, and then walk us through the lifecycle of one of their recent reports, among other things. This gave us a glimpse into their world as they navigate this complex work. Using an inductive analytical approach, we surfaced a range of salient themes across the interviews.

The findings suggest that use of computational tools alone in studying online information is insufficient; subject matter expertise, contextual knowledge, and access to data are essential pieces in making sense of these complex topics. Journalists overcome some of these challenges by using unique processes and tools in their investigations and by seeking help from experts.

We also found that power dynamics between journalists and social media platforms complicate their efforts. Understanding these dynamics, and how they interplay with traditional journalistic values, is important as we think about the future of this kind of work. Our findings have implications at the intersection of future research and practice — e.g. designing tools to support these emerging data-based, story-telling practices and exploring collaborations between academic researchers and journalists.

4.3 Background

In this literature review, we first discuss how journalists are adapting their practices to changes in online behavior, economic models, and public trust in journalism. We then note how researchers and newsrooms themselves have been thinking about how to support journalists in light of these changes. We highlight how tools have been seen as one solution, and share areas where researchers are building them for this purpose. Finally, we discuss how online misinformation and disinformation have complicated the work of journalists and how this has led to a new reporting beat — one that CSCW research can contribute to understanding and supporting.

4.3.1 Changing Journalism Work Practices

Disrupted by the growing reliance on internet technology, traditional journalistic work practices — and the conditions under which that work is done — are changing (Deuze and Bardoel, 2001), in part due to the shift in advertising revenues to the internet-based social media platforms (Mitchell, 2016; Myllylahti, 2018). This shift has resulted in a loss of local journalism, under-resourced newsrooms, and the requirement for some professionals to move to remote work (Grieco, 2020; Abernathy, 2018). A decrease in newspaper sales and loss in traditional advertising revenue has forced news organizations to adapt and be creative with how to fund their journalism (*Newspapers Fact Sheet* 2019). They have had to reduce staff (Grieco, 2020), decide how to implement paywalls (Ananny and Bighash, 2016), and set up social media presence to stay relevant in the attention economy (Myllylahti, 2018).

These pressures are further complicated by an increase in citizen reporting (Gillmor, 2004) and the related displacement of traditional journalists as gatekeepers. Working outside of the constraints of traditional journalism,

citizen reporters are often able to move faster than professional journalists. While this enables coverage of local topics and breaking news (Agapie, Teevan, and Monroy-Hernández, 2015), it may reduce the quality of information — as these citizen reporters do not have to adhere to traditional journalistic standards like accuracy and verification. Professional journalists must now compete with these citizen journalists for public attention online. This puts pressure on professional journalists to "keep up" or be irrelevant, which can in turn lead to poor reporting or accidental missteps. And these errors can then reduce public trust, especially when the topics covered are controversial.

With the growing salience of online platforms and fewer resources to track down sources in person, journalists are increasingly looking to online social spaces for leads, statements from public officials, and investigations (Doubek, 2017; Kata, 2010; Shane, 2017). Additionally, as platforms such as YouTube, Twitter, and Facebook have become modern society's 'keepers of cultural discussion' (Gillespie, 2010), journalists are now investigating incidents of online participation as "the story" itself. Navigating these online platforms to search for sources and investigate stories requires a new way of working, and that, in turn, requires journalists to learn and adopt new skills. It also impacts the role that they play within the environment. For example, Hermida (2010) suggests that in the age of ambient journalism on Twitter, journalists may need to start helping the public process and make sense of the flow of information. Dailey and Starbird (2014) examined how journalists are adapting in the context of crisis events, finding that journalists serve the public in these events by stitching social media information together for their readers. Graves (2016) wrote about the rise of fact-checking as its own kind of story and how in hyper-partisan times, this role can challenge the traditional role of journalists as objective observers. More recently, Coddington (2020) studied the practice of news aggregation stories and noted that journalists must manage a greater amount of uncertainty when aggregating information for readers since they are not in direct contact with sources. He acknowledged that the degree of separation from the original source does, somewhat problematically, "pass the uncertainty on to a distrustful public." These new roles, prompted by the increased public use of social media, have come with new needs and added pressures for journalists.

Acknowledging these pressures of changing conditions and changing practices, researchers — and newsrooms themselves — have been thinking

about how to support these journalists by creating tools to help them with their work (Diakopoulos, 2016).

4.3.2 Computational Tools for Modern Journalism

As early as 2000, the HCI community was thinking about how to better empower journalists with computational tools — e.g. mobile tools for reporters on the ground to help them keep up with news while on the go (Fagrell et al., 2000). Since then, researchers have continued to help newsrooms innovate as the internet became more ubiquitous, for example by creating flexible systems that allow them to begin publishing their stories online (Min-Che Ho and Tsai-Yen Li, 2005). As data became more accessible, Cohen, Hamilton, and Turner (2011) drew attention to the emerging field of computational journalism and suggested that data tools designed for journalists would enhance and enable new kinds of reporting in the future.

Researchers have continued to design systems to both support journalists as they adapt to technology-driven changes in their work and to study how those systems are used in practice. For example, Diakopolous and collaborators created tools to help journalists pull out important pieces of social media data, such as potential eyewitnesses and newsworthy tweets, from the firehose of social information (Diakopoulos, Naaman, and Kivran-Swaine, 2010; Diakopoulos, De Choudhury, and Naaman, 2012). Two other tools, GroundTruth and DejaVu, help journalists with image verification. GroundTruth (Venkatagiri et al., 2019) was designed to augment and accelerate journalists' work by connecting them with crowdworkers who could quickly geolocate images for verification. Matatov et al. (2019) created DejaVu to help journalists identify manipulated images online and work collaboratively with other journalists to fight misinformation. Matatov et al. presented DejaVu at the annual Computation + Journalism Symposium, where new tools to help journalists navigate social media and other kinds of data are regularly showcased e.g (Bajak et al., 2019; Robertson and Wilson, 2020; Choi et al., 2020).

Researchers have also studied how journalists adopt and use data tools in the newsroom. Though many newsrooms have been able to use tools that aggregate data from social media to understand their audience and track story performance (Lamot and Paulussen, 2020), they have been slower to incorporate social media data into the stories themselves. Appelgren and Nygren (2014) studied editors' perceptions of data journalism and its

corresponding methods, finding that the interest in data journalism was growing but hindered by a lack of time and resources to learn how to handle large data sets. Focusing on social media verification strategies, Brands, Graham, and Broersma (2018) conducted an interview study to understand the practices of journalists in Europe. They concluded that journalists use a combination of traditional methods and online tools, like reverse image searches, to verify images and video on social media. However, they acknowledged that most journalists do not have the skills, knowledge, or access to perform independent and timely assessment of online content. Though there have been meaningful strides in designing for journalists and understanding their needs, the challenges involved in using social media data suggest that there is more to learn. Watkins and Anderson (n.d.) suggests that with the right approach newsrooms can innovate and overcome inherent challenges of technology adoption. Our work examines the tools and processes of a unique and emerging beat in journalism, offering another perspective of modern newsroom challenges and needs.

4.3.3 The Challenge of Reporting on Misinformation and Disinformation

In particular, this research seeks to understand the emergent practices, skills, and needs of journalists whose work focuses specifically on online misinformation and disinformation — information toxicities that are increasingly recognized by scholars (e.g. (Starbird, Arif, and Wilson, 2019; Wardle, 2019; Vosoughi, Roy, and Aral, 2018)) and the broader public (e.g. (*Infodemic* 2021; Mueller and Cat, 2019; Benkelman, 2019)) as critical societal problems. A small, but growing, group of journalists has begun to identify with what we are calling the "misinformation beat," though they use a range of different terms for themselves.

As journalists break ground on this new beat, they are learning to recognize and cope with their roles as both reporters and as participants in problematic information flows. These dual roles become particularly salient in the context of disinformation. As mentioned above, misinformation is false information that may or may not be intentional — e.g. a rumor that turns out not to be true. And disinformation is false or misleading information produced and spread for a political, financial, or other objective. Starbird, Arif, and Wilson (2019) advise that it can be useful to think of disinformation not as a piece of content, but as a campaign. Disinformation campaigns often

attempt to obscure the origins and purpose of their actions with the goal of manipulating perceptions of reality in a target population.

Our current understanding of disinformation can trace some of its roots back to Soviet active measures. Bittman (1985), a disinformation practitioner who defected and became a researcher, stressed how Soviet "active measures" specifically targeted journalists — e.g. luring them into spreading disinformation through the prospect of getting a "scoop". He described how disinformation operators attempted to manipulate journalists into serving as "unwitting agents" in their campaigns. Relaying a quote attributed to another Soviet military officer, Bittman wrote: "Sometimes I am amazed how easy it is to play these games, if they did not have press freedom, we would have to invent it for them."

Bittman defected in the 1970s and so we can expect that tactics have evolved considerably since his practitioner days, but modern disinformation campaigns have continued to use journalists to achieve their aims. For example, many journalists played a (likely unwitting) role in Russia's efforts to interfere with the 2016 U.S. presidential election by publishing emails that had been hacked by Russian agents and released through Wikileaks (Sullivan, 2020). More recently, journalists and media organizations helped to amplify several high-profile, false narratives, including a recorded confrontation between a teenager wearing a "Make America Great Again" hat and a Native American activist (Corasaniti, 2020) and a heavily altered video of Joe Biden appearing to make overtly racist statements (Zadrozny, 2019). In many cases, individuals and organizations pretended to be someone who they were not — a form of inauthenticity — to seed problematic content that was then picked up and amplified by others, including seemingly well-meaning journalists.

One theory about the long-term consequences (and perhaps objectives) of disinformation on democratic societies is that it functions to confuse and disorient citizens (Pomerantsev and Weiss, 2014) in a way that makes it difficult to come together to govern themselves (Farrell and Schneier, 2018). In this perspective, disinformation is, in part, an attack on our ability to find information that we can trust. When journalists get "caught" spreading misinformation, this can serve to advance the overall goals of some disinformation actors — i.e. diminishing trust in information providers. Journalists on the misinformation and disinformation beat have begun to understand these dynamics, but they continue to struggle with their

own role in these campaigns — and to make decisions about when to publish and what to publish. Even in seemingly cut-and-dry situations, there are concerns that journalists may be amplifying mis- and disinformation through their efforts to debunk it (Phillips, 2018).

Researchers have talked about this sort of exploitation of journalists as a form of "media manipulation" and found that it has contributed to decreased trust in mainstream media (Marwick and Lewis, 2017). And recently, there have also been efforts to develop recommendations (Phillips, 2018) and resources (Victoria Kwan, Claire Wardle, and Madelyn Webb, 2020) for journalists to help them navigate questions of when and what to publish when investigating stories of online harassment, radicalization, and disinformation. However, the "best practices" for journalists on this new beat are still evolving.

This paper explores the work of a unique group of journalists who are trying to investigate and report on the data-intensive and geopolitically-loaded beats of misinformation and disinformation. We aim to enhance our understanding of their evolving practices, the tools they choose to use, and the collaborations that they seek, with the goal of providing insights into how to support these specialized journalists as they become more entangled in these sociotechnical systems.

4.4 Methods

Adopting an interpretive and inductive approach, informed by Charmaz and Strauss (Charmaz, Belgrave, and others, 2012; Glaser and Strauss, 1967), we conducted and analyzed twelve semi-structured interviews with journalists from large newspapers focusing on national and international news.

4.4.1 Semi-Structured Qualitative Interviews

The interviews were designed to gather expert insights on current practices of news reporting using online social data and the difficulty of covering topics like misinformation and disinformation. The interview protocol and practices were reviewed and approved by the University of Washington Institutional Review Board.

We interviewed twelve participants from news media organizations in the United States, Canada, United Kingdom, and Australia. Most were

journalists working on the misinformation, disinformation, or conspiracy theory beat for their respective organization. Two worked on peripheral beats but had significant experience using social media data for their journalistic work. Their titles ranged from investigative journalist, to social media reporter, to director for newsroom engineering.

All of the journalists were identified based on recently published work on misinformation, disinformation, or other problematic information online. The journalists we interviewed were all employed by well-known news organizations — including local outlets from large metropolitan cities as well as national and international outlets. To gather as diverse a sample as possible, we initially aimed to have only one participant from any given organization. However, through internal recommendations (an interviewee telling us we also needed to talk to another individual in their organization), we had two participants each from the same two parent organizations, but these individuals worked in different areas of reporting. Three participants were recruited based on having a prior relationship — via social media interactions or as a source for a story — with the emCOMP Lab. To recruit the other participants, we sent interview request emails to twenty journalists who fit the target description — i.e. having authored an article about online misinformation or disinformation. From those requests, we gathered nine additional participants.

We have anonymized those participants in this paper, but we include Table 4.1 with general information about each one.

Due to the niche nature of this emerging specialization, the potential pool of interviewees was small. This limited the number of participants we were able to recruit. Though additional interviewees may have led to additional insights, the twelve interviews we conducted allowed us to achieve sufficient data saturation (Guest, Bunce, and Johnson, 2006; Weller et al., 2018) for the themes presented here. However, there are likely additional themes that are relevant to this conversation, but which will have to be left for future work.

Nine interviews were conducted via video conferencing and three via phone. Interviews lasted an average of one hour. In most of the interviews, there was one primary interviewer and a note taker. With the permission of the participants, the interviews were recorded.

The interview structure was designed so that we could first get a sense of the role and organization of the journalist. We then asked questions about

Participant	Role/Title	Type of Organization
P1	Foreign News Editor	Australian National News
P2	U.S. City Bureau Chief	U.S. Popular Culture Magazine
P3	National Security Reporter	Large U.S. City News 1
P4	Reporter	U.S. Internet Media Company 1
P5	Data Visualization Editor	Large U.S. City News 2
P6	Writer	Large U.S. City News 2
P7	Reporter	U.S. Television News
P8	Reporter	U.S. Internet Media Company 2
P9	Reporter	Fact Checking News
P10	Reporter	Canadian National News
P11	Reporter	U.K. National News
P12	Engineering Director	Large U.S. City News 1

TABLE 4.1: Participant details

their process of writing stories using online data, encouraging them to take on a storytelling format and take us through a particular case study in their work. Hearing the process of investigating and writing about online activity afforded us the opportunity to ask follow-up questions about their workflows, tools, pain points, and wishes for the future. We ended the interviews asking specifically about their perception as a journalist of coping with media manipulation, as well as any safety concerns they had in doing their work.

4.4.2 Analysis

We conducted a grounded, inductive analysis of the interviews. This approach allowed for insights from the interviews to emerge from the data. Initially, a small team of researchers participated in a collaborative clustering activity. The interviews were transcribed and atomized into individual cards. Over the course of multiple sessions, co-located researchers clustered related comments from the different interviews, identified salient themes from the clusters themselves as well as from connections between clusters, and recorded insights (how themes fit together) that emerged from the analysis. After the initial clustering activity, a subset of researchers returned to the original interviews, continuing to refine and distill the emergent themes. These themes and analysis will be more broadly discussed in the findings section.

4.5 Findings

Through analysis of the interviews a number of themes emerged. We focus on four main insights. First (1), we discuss the unique challenges to reporting on problematic information online, and to social data more broadly, to highlight the difficulty of reporting on these beats in the evolving journalism environment. Next, we explain how to overcome these challenges, reporters both (2) rely on their own subject matter expertise and close interaction with the data; and (3) reach out to internal and external experts to empower their work. Finally (4), we describe participants' perceptions of what solutions would help them do their job more reliably and efficiently.

4.5.1 Reporting on problematic information online presents unique challenges in journalism

The participants in this study face unique challenges in their work due to the online context. When reporting on vast and rapidly changing online environments, nine of the participants highlighted their struggle to keep up. And these challenges become even more acute when reporting on misinformation, disinformation, and other related phenomena where perceived "bad actors" are actively manipulating the systems.

> I feel like.. I'm coming with a knife to a gunfight in terms of reporting on bad actors who are trying to spread misinformation and disinformation on social media. I'm coming to an increasing realization of the sophisticated tools and notions of social engineering that these seemingly bad actors have, and I have excel spreadsheets and TweetDeck. - P2

P2 feels overwhelmed and outmatched — that they are ill-equipped in the effort to report on problematic information on social platforms. They feel that the techniques of bad actors are becoming more sophisticated, making their disinformation campaigns harder to unpack. We found that these challenges are exacerbated by a lack of communication with technology companies, tools that do not always meet their needs, and ethical considerations around publishing on these topics, which we discuss here.

Constantly changing environments and structure means that a method that works one day could be gone the next

Though change is not new to journalists, the rapid evolution of online environments and social media platforms challenges reporters to constantly update tools, investigative strategies, and navigation practices across numerous platforms. With the common software development practice of continuous delivery (*Rapid release at massive scale* n.d.) continuously impacting the affordances of platform interfaces, a strategy that participants use to monitor information one day could be unusable the next.

Challenges with changing interfaces extend beyond the platforms themselves to the digital tools that journalists use to analyze online information. One participant pointed out that digital analysis tools — e.g. ones that show trending topics on social media platforms — are often run by third parties. It can be difficult to find these and learn how to use them, but even more vexing when those tools change or disappear underneath them, disrupting their work practices. Additionally, the tools can become obsolete due to a lack of reliable maintenance as platform outputs change or disappear.

> [Access to tools] always changes because the platforms have made it harder and harder for journalists to investigate them, especially in a network capacity. So, for example, we've lost our API access to Instagram that has prohibited research. [...] Because old tools become obsolete really quickly, we've got to find new ones. - P4

Because of this, journalists must continuously update their approaches and tactics. Unexpected changes to third-party tools can profoundly impact ongoing investigations and instantaneously change what is possible in performing this kind of work.

Lack of action and cooperation with data owners hinders journalism practices

This difficulty of working in a continuously updating environment is exacerbated by a lack of cooperation and communication with data owners: the social media companies. Nearly every participant — without prompting— discussed their attitudes about their relationships with social media platforms. Six participants spent a significant amount of interview time talking about this. They feel that they, as reporters, are being

increasingly denied access to information. One participant mentioned that it is especially frustrating knowing that in some cases platforms are giving data access to researchers but not to journalists.

> It hurts the journalism field that they're locking us out of their data. [...] I can't stress enough how damaging it is for our reporting. [...] the things that we'd been able to do two years ago, we just cannot fathom doing anymore and that's been really discouraging—and it's not just Facebook. - P4

> [Mentioning our role in academia:] At least y'all get access to the firehose. At least you can conceivably do [investigation] if the need was high. I basically sat in on a conversation at [previous employer] where we realized that even if we wanted to do this in a real way, we couldn't do this. I can't do it. - P12

These quotes demonstrate increasing frustration about limited — and diminishing — access to data from the social media platforms and the real impact that this was having on what kinds of stories the journalists could cover. Our participants repeatedly stressed a desire for more cooperation from the platforms. Because there is no legal requirement for platforms to share data, the reporters feel that they are at the mercy of large social media companies, who have seemingly few motivations to share. From the perspective of the journalists, being denied access to data hinders their ability to do work even when the goal is not to criticize the company who holds the information. However, our interviews suggested that the journalists perceived a significant reason for why they were being denied access was because these companies feared public criticism of their platforms.

> There have been instances in the past where I have approached some of the big social media companies — not even to confront them with any story that would embarrass them or expose any wrongdoing on their behalf — for stories where I just had a tip-off and I wanted to see whether they knew anything about it. I have always found closed doors. There is always the assumption that you are out to get them. - P11

> ...we're just at the mercy of tech companies right now and that is something that frustrates me endlessly... having that lack of visibility. And there's not really a lot we can do about it because we report so aggressively on those companies. [...] I would say this — there is a relatively poisonous incentive there on their behalf — which is the self-preservation in saying that they lock down access, and then the result

> is that we can't do a broad base of reporting, even though they are only really upset about a small number of things. - P12

These quotes highlight an obvious tension: the news organizations that the participants work for are aggressively reporting on the same social media companies from which the journalists want more data.

Participants also feel that, currently, the social media companies are not adequately identifying and handling problematic information on their platforms, increasing the need for journalists to step in and report. P6, in describing their goals around platform accountability, says "*[the] misinformation ecosystem is very nuanced and the content moderation policies of the social networks are incredibly blunt tools that aren't keeping up.*" This perceived gap motivated several of the journalists we interviewed to continue to do work on this beat.

However, one important area that they continue to struggle with — in part due to lack of communication with platforms — is understanding the magnitude or impact of certain information operations online. This issue is not unique to journalists; researchers are also struggling to measure the impacts of problematic information (Starbird, Arif, and Wilson, 2019). Barriers to understanding the reach or impact of problematic information online make it difficult for journalists to make decisions about when to publish or stand down.

Lack of reliable reach data complicates decisions on what — and what not to — report

The issue of media manipulation (Marwick and Lewis, 2017) — i.e. efforts to exploit the media to produce or amplify problematic information — has caused journalists covering this beat to think twice about when and what they publish. Some researchers recommend that journalists sometimes consider not publishing at all. Research and media advocacy organizations (Phillips, 2018; Starbird, 2018) are working to produce and update recommendations for professionals working on this beat. P9 discussed how they are trying to encourage their own organization and others to take these publishing considerations seriously.

> I'm super concerned about [media manipulation]. I'm trying to change the way that [my organization] frames things or pursues story ideas.

> I've also told other news organizations, 'Hey, maybe don't cover Q-Anon so fucking much.' If something doesn't have hundreds of shares — but even more than 700, 800 shares or 1,000 shares — then I'm probably not even going to [publish] it. - P9

This quote reveals some of P9's process for deciding whether or not to cover a controversial topic — weighing the risk of amplifying a marginal and problematic narrative into the mainstream against the danger of ignoring it. In general, the participants we spoke to felt more comfortable publishing a story when they knew that the magnitude and reach of the problematic information was already large, although this standard did vary by organization. In this way, they felt that their role was to share what was happening online alongside doing the work of debunking false or misleading narratives.

However, without a clear understanding of the magnitude and reach of the problematic information, the journalists seemed unsure if they were reporting on a fringe topic that would serve to amplify the intent of malicious actors. P8 discussed how perceived reach can be manipulated and misleading to journalists. They described a case where they were about to publish a story on individuals who appeared to have a massive following on Twitter, but stopped when those accounts were suddenly banned for buying fake followers. They have noticed magnitude measurement issues elsewhere, saying "*In the same way [it happens] on 4chan. I can go in and just open eight different tabs and then interact with myself on 4chan, you know that is the issue you deal with bots of any kind*." Without reliable information about the reach of the problematic information, decisions on when to publish this unique kind of investigative reporting can be difficult to make.

4.5.2 Journalists embed themselves in online environments, rely on their subject matter expertise, and use ubiquitous tools to overcome these challenges

Because the journalists working on social data are often either the only or one of very few assigned to their specific beat in their newsroom, they often work independently to locate leads that they would like to pursue. Ten of the participants talked about embedding themselves within social media environments to look for interesting stories and suspicious activities online.

> And oftentimes, I mean, really a lot of this story ideas that I get either come from something that pops across the feed, and then I go in and sort of, you know, dive deeper. Or it's something where I can sort of see something happen over a period of weeks or months — like one or two or three or four times. Then by the fourth time, you know, I realized that seems to be a trend. - P6

The process described by P6 is common to what we call passive monitoring, which often takes the form of simply scrolling through their personal news feeds. Similar processes of embedding themselves in a variety of environments were described by many of our participants.

> That's what I do on a daily basis — basically lurk Facebook and Instagram. - P9

> I literally just go to the websites [4Chan and 8Chan] and read what they say. Yeah it's all manual. Especially because, even our in-house data engineers are like how can we automate this. Unfortunately, there's just no way to automate it. A lot of it is just human judgement. - P4

Along with scrolling through feeds, five participants also use a more organized form of monitoring, in which they specifically search for certain topics or visit particular websites or groups where they know suspicious behavior is likely to take place. This can take the form of visiting problematic Facebook groups, hyper-partisan news sites, Discord chats, and places like 4-Chan and 8-Chan. This is what we refer to as active monitoring.

> I have a bookmark tab of thirty [problematic] websites that once a day I'll open them all up and go through the websites. - P8

Passive and active monitoring were common ways to become familiar with the platforms that they studied. However, the journalists we interviewed suggested that their ability to recognize suspicious activity (that might be worth further investigation) was not easy or innate, but something that they have learned — and are still learning — through their experience working this new beat.

How journalists identify suspicious activity

One reason that disinformation campaigns are effective is that it is difficult for people — including researchers, journalists, and the platforms themselves — to distinguish between authentic and inauthentic activity in online spaces. The journalists we talked to, emerging experts on this new

"beat", described how they relied heavily upon their own intuition and accumulating experience to determine whether an account was who it said it was or whether a network of accounts was acting in suspiciously coordinated ways. P1 referred to their reliance on their "human faculties, intuition, expertise." Similarly, others described relying on hunches, which are a kind of information hypothesis. We repeatedly heard journalists describe how these hunches inform their reporting and direction of investigation and that they typically derived not from a specific tool, but from the journalist's embeddedness in the online environment.

> [In talking about why they monitors manually]: I feel like computational solutions ignore the fact that real people fall for it and we gotta look for why the real people fall for it. Unfortunately, computers are not capable of telling you that. - P4

> There's no one tool, there's no magic wand, it was really applying old school strategies of journalists to new media. - P7

This expertise was often operationalized through *rules of thumb* that journalists developed for identifying suspicious behavior. For example, when it comes to verifying online identities, P11 explained that a newly made profile can be an indicator of a fake account. In the case of older accounts, P7 scrolls down their timeline in order to check consistency. And when it comes to the behavior of the accounts in question, P2 uses spreadsheets to gather suspicious interactions and identify patterns.

Many of these heuristics are also used by researchers to study these online activities, prompting us to think about ways to better share these methods across individuals and professions. Because many of these rules exist in the minds of these reporters, "*there's a really high barrier to entry, especially for any older reporter or newer reporter who might not understand the complex environment*" (P4). Some places, like Bellingcat (*Bellingcat* n.d.) and the Digital Forensics Research Lab (*Digital Forensic Research Lab* n.d.) have already started sharing tactics through resources and training, and five participants spoke about looking to those groups for assistance.

Journalists primarily rely on ubiquitous tools to do this work

In developing and evaluating their hunches and investigating their stories, participants exhibited a wide range of data processing and analysis skills. For example, P2 and P11 mentioned projects where they spent hours manually

copying and pasting content into spreadsheets to create an environment in which they could analyze the content. In contrast, P12 (who runs an engineering group that supports other journalists at their organization) had extremely advanced data collection skills like the ability to query APIs themselves. Somewhere in the middle of these two extremes were participants who did not have advanced coding skills, but had some expertise with specific tools that they used when investigating stories with online social data.

These tools varied somewhat. However, most participants shared that they primarily relied on ubiquitous tools like Google search, TweetDeck, in-platform search functionality, and reverse image search websites. The following two quotes highlight the use of spreadsheets.

> [we] literally just had a big spreadsheet and went through site by site and checked every single one and typed it in the spreadsheet if it was there. So sometimes the old fashioned way works as well. - P10

> We're not usually dealing with massive, massive, massive datasets, so honestly, they'll go with Excel, and Google Drive, and that kind of thing for making rough charts, sketching out shapes... is sufficient for a lot of this work. - P5

These quotes demonstrate reporters on this beat are not heavily relying on advanced analytical tools to do their work. P10 pointed out that they, "*get this feeling that, you know, each sort of type of group that looks at this stuff — there's academics and research, there's journalists, there's law enforcement — everyone thinks that the other group have a special tool that we don't have, and that's usually not the case. [...] a lot of the work we're all doing is the same, just reading and talking to people, chasing down leads, Googling a lot of this stuff.*" P10 acknowledges that although some professionals might think that others covering mis- and disinformation are using special tools to do their work, they are actually relying on their manual labor and ubiquitous tools to investigate these stories. P12, who designs tools for journalists in their newsroom, has recognized this and has pivoted to providing helpful features within tools that journalists already use (like Slack, email, and text messages), instead of creating new tools for their colleagues.

One exception to this is CrowdTangle, a tool acquired and now provided by Facebook that serves as a "content discovery and social monitoring platform tool for publishers and brands"(*CrowdTangle* n.d.). The tool allows exploration of trends on multiple social media platforms, including data

from Facebook that is otherwise inaccessible. Five participants specifically mentioned using CrowdTangle for tasks like monitoring crowd 'signals' and statements by world leaders. However, the platform is not available to everyone. Limited access to the tool brings up questions about who has access to data, and the inherent power relationship between providers and requesters. This idea will be explored in the discussion.

4.5.3 Journalists utilize experts for help gathering, analyzing, and contextualizing online information

We explored participants' collaborations with others as a method of investigating problematic information. Our research revealed that journalists are adapting to evolving data needs by making use of both external and, when available, internal (within their organization) experts for help gathering evidence for their reporting. The participants seemed eager to supplement their subject matter expertise with data by partnering with academics, industry professionals and researchers, peer journalists, government entities and even amateurs for help collecting, analyzing and contextualizing online information. In some cases, journalists and their organizations also establish formal, direct, and mutually beneficial partnerships with the platforms themselves in order to identify problematic information.

Despite the advantages of these partnerships, mismatches in goals between the journalists and experts (both internal and external) can also present challenges to these collaborations. This section of findings will discuss the nature of these collaborations and what elements, in the opinion of the participants, lead to success or fracture.

External resources are valuable but have shortcomings

Nine participants noted that they reach out to external experts for help — e.g. when they want to discuss online activity that they cannot understand or to solicit help with data crunching when they do not have the skills to do the work themselves. The need to form these partnerships comes from the evolving nature of the field and the unique challenges that come with it. Not surprisingly, P2 noted that this type of external collaboration has *"been happening more lately''*.

> I find it very very useful to go to experts outside the organization and get their input on the story that I am working on, either in terms of techniques to crunch data or techniques to get to the bottom line of my investigation. [...] to help me verify and guarantee that I have a solid story on my hands. - P11

For P11 and other journalists, these external experts are a helpful resource for verification, techniques, and help with the technical side of reporting, such as onboarding new tools and dealing with complex data sets.

Trust in collaborators' methods is important. We also explored who the participants chose to reach out to and found that trust in the external resource's methods was a determining factor. It is important to remember that the public nature and need to maintain their professional reputation makes these journalists sensitive to whom they choose to accept information and insight. P7 felt that some academics and other researchers working in this space have not followed strong methodologies noting that "*there has been some terrible reporting based on some really terrible research over the past 24 months*". P8 felt similarly, sharing that they think those who look at these issues from a data perspective are quick to say that far-right activity is coming from bots, but in their experience it is real people. This makes these journalists cautious to work with outside experts who do not deeply understand this context.

> You're just at the mercy, without a data journalist, to kind of go through [an outside expert's] methodology. [...] And I think that's one of the biggest pitfalls — is having on the research end, somebody you can trust with that. - P6

> And so even in the academic field in very top notch universities we've seen methodologies that would really be up for questioning, if more people were up for questioning in this field. - P4

These quotes reveal significant unease by some of the journalists toward outside methodologies, including those from published research and high-profile researchers in this space.

Challenges in academic partnerships. Through our interview protocol, we specifically discussed partnerships with academic researchers at universities. In seeing our participants' perspectives on these collaborations, academics looking to work with journalists on data intensive topics can

carefully consider their methods of interacting with and empowering such professionals.

Participants who have worked with researchers at universities on investigating problematic content online described a wide variety of benefits for collaboration; such as lead generation for their beat, data collection and analysis of information trajectories online, advice on where to look for problematic pieces of information, and contextualization of problematic activity. P6 notes that their "*thinking changes as a result of speaking to people like yourself who are coming from an academic perspective on a lot of this stuff. There's just historical perspective that I don't have as much of, and I think that that's really helpful.*" Three journalists also listed a desire to have more collaboration with academic researchers in the future, something we discuss further in the final findings section.

Those who had experience working with academic researchers on these topics did highlight significant challenges, primarily around timing and motive. Though they recognized the value of in-depth research and peer review, the participants felt like the timelines of academia are generally too slow in helping to meet reporting deadlines and make a meaningful impact in exposing problematic information online. P12 notes that journalists at their organization may be at fault here for this too, noting that journalists typically reach out to academics too late in the story building process for it to be helpful. They say, "*it is better [to get them] involved in those stories early*."

Motive differences also appeared in some interviews as an issue when working with academics. P6 spoke about a desire to work more with academia but suggested that it can be difficult when academics and journalists have different priorities. In their opinion, while academics may want to watch a bad actor or suspicious narrative online to better understand its tactics, journalists may want to publish information quicker to put public pressure on platforms to make a change. In addition, journalists may not be aware of the kinds of privacy concerns that limit how academics can share data about individuals. These tensions suggest challenges for future collaborations between journalists and academic researchers.

Internal resources empower data journalism but are limited

Because the participants in this study worked at large reporting organizations with national and international audiences, some had access

to internal resources to help them gather and analyze data. However, it is important to stress that not all organizations have these kinds of resources. P3, who came from an organization with many resources, noted that it "*is unusual in the resources that [P3's Organization] devotes to research staff within the newsroom. So, I'm surrounded — and sit next to — a full-time dedicated researcher who exists there to do deep research work on the reporting targets that we generate*". This impacts the generalizability of this piece of the findings, because journalists from smaller organizations who may be working on this same beat are likely to not have the same kinds of resources. However, our research provides insight into the kinds of resources that may be needed to do this kind of journalism well.

Reporters working at organizations that have internal resources like data journalists and data engineers tend to turn to them for data collection. Instances included scraping data from pdfs online (P5), collecting tweets of politicians (P12), automating online processes like clicking on links to look for dark patterns (P6), and writing short programs to automate looking at Facebook ads spending of politicians (P7).

Beyond providing technical assistance, these research staff members can also provide important, immediate feedback to journalists on what is possible to do with data, which can empower journalists and greatly impact the direction of their stories:

> In talking to our data engineer, I'll ask if it is possible to pull or see what time everybody tweeted this hashtag just by pulling from the API or something like that, he can tell me, because I don't know what's available in there, and how easy or hard it is to process that data. - P10

> We have in-house data engineers and data reporters who we can sort of pick up the phone and call and say, "Hey, we have this idea... is it doable or not?" And then we team up across newsroom to do this. [...] My coding skills are very barebones, but for example my [colleagues] can help us do this type of work. They understand the environment a lot better. - P4

Not all internal data teams serve the needs of the participants we spoke to. Some teams are more experienced with traditional data sets, such as census and financial disclosures, rather than social media data (P7, P12). This means that they may not be skilled at collecting and interpreting the social media data needed for investigations into problematic information online.

For example, P7 notes how nuanced analyzing social media data can be by saying, "*We have a data team that is very good on sort of the more traditional data sets [...] But we don't really have a team in place that can creatively query social APIs and then also run analysis on those.*"

There are clear benefits to having access to internal and external resources so long as they are trustworthy, accessible, and can move on a deadline favorable to journalists. The interview discussions about tools, collaborations, and training naturally led to conversations around what journalists want, but do not yet have. The final section of the findings outlines potential solutions that the participants think would positively impact their ability to report on online social data.

4.5.4 Journalists desire better tools, collaborations, and training to enhance their journalistic skills and avoid media manipulation

Across all twelve interviews, we repeatedly heard about the increasing need for participants to access and analyze social data for their work. The journalists without strong data science skill sets, internal support, and effective tools for analyzing those data felt disadvantaged in achieving their reporting goals. This section highlights specific wants and needs as presented by the participants.

Data Journalism skills could bring independence

The desire for self improvement around data collection and data analysis repeatedly came up in the interviews.

> Every time I have worked with people who knew how to use those tools, I felt very jealous because I wish I could also map those networks of disinformation, misinformation, and to really find a way to easily understand some stories circulate online and where they come from, and where they go and who are the people pushing them out. - P11

The data collection desires tended to focus on the need to create or find the right data set to use for their investigation. P9 discussed a case in which they attempted to fact check a spreading claim online about crime rates for Black Americans but struggled to even find a dataset to recreate the claim, making it difficult to know if the information was problematic. They discussed their desire for more data journalism skills because it would allow them to "*quickly*

and efficiently locat[e] data that [they] need for a story." P10 also discussed the desire to be able to scrape data themselves to create datasets to look at. Others mentioned that they wanted to be able to interact with social media APIs themselves.

We also saw a desire for data analysis skills, which would allow the participants to look for interesting trends in existing data sets or on websites in an automated way. In some cases, a lack of these analysis skills and experiences made it hard for them to understand the value in published work. P7 said, "*We see a lot of graphs where data scientists will group accounts together in networks. [...] It can be very difficult to see what is going on, or in my case, to build a narrative to turn into a story. But that might just be something I need to work more on.*"

In the same vein, P12, who had experience building tools for journalists in their newsroom, discussed the importance of contextualizing leads and suspicious activities for journalists. It is not enough to simply provide a set of anomalous activity. There needs to be contextualization and analysis to understand why specific activity may be an anomaly and what they would expect to see in a normal scenario. They explained that the data-plus-context approach has been successful in their own newsroom and has the potential to lower the barriers of entry to studying this type of information, allowing new journalists to investigate these stories and learn analysis skills through doing.

Training on media manipulation can benefit journalism industry

The journalists we talked to expressed concern about media manipulation in their field writ large. They felt that they, as experts working on this beat, are more aware — compared to those not working on this beat or working for less resourced news organizations — of the risks and ethical considerations associated with reporting on problematic information.

> We know that one of the biggest sharers [of misinformation] is local news and radio stations, mostly radio actually. And we know from a recent study that only 18 percent of newsrooms have been trained for looking for media manipulation which is a pretty low number considering the shitstorm that we're in right now . - P4

Because of these concerns, they expressed a want for more training around mis- and disinformation, as well as general online activity, for their peers and

for other newsrooms around the nation. In talking about a local newsroom who shared an inauthentic picture, P11 felt like the local journalist could have "*debunk[ed information] very simply, by just doing a bit of Googling, and having a little bit of a critical spirit.*" This suggests that journalists on this beat desire for their peers to not only be trained on tools but also the methods and mindset of exploring online information with a critical eye.

4.6 Discussion

In this paper, we have explored how journalists whose work focuses on online mis- and disinformation investigate and report on these challenging topics. We described how their efforts are enabled and shaped by skills, computational tools, intuitions, and collaborations. We found that the constantly changing nature of social data and the lack of cooperation with social media companies are unique challenges for journalists trying to make sense of this space. We also learned that journalists primarily rely on their own expertise and ubiquitous tools (such as spreadsheets and platform search capabilities) to identify and investigate suspicious online behavior. Increasingly, they are reaching out to internal (within their organization) and external experts for help with data collection and analysis. Lastly, they shared a desire to improve their own data skills and provide more training to journalists writ large to prevent media manipulation.

Through this work, we have come to see important elements to effectively supporting the practices of this type of journalist. In the process of investigating how reporters on the problematic content beat do what they do, we uncovered more about the data ecosystem in which they work, including their professional values, the challenging power dynamics with platforms, and their desires for the future. The following sections explore these elements in more depth.

4.6.1 Supporting Journalistic Values with Computational Tools

Researchers often think about supporting journalists with data-intensive beats by giving them advanced analytical tools (e.g. (Diakopoulos, De Choudhury, and Naaman, 2012; Matatov et al., 2019; Reilly, 2017)). Our interviews reinforce that effectively supporting these professionals requires aligning with their current practices while being sensitive to their values.

Our findings highlight values specific to journalists investigating and reporting on misinformation, disinformation and other kinds of problematic content online. And we suggest that HCI and CSCW designers be sensitive to these values — for example, by following processes suggested by Friedman and colleagues (Friedman, 1996) — as we design tools for these unique "expert" users.

The journalists we interviewed revealed that proximity to social data — and embeddedness within the online communities that create that data — is critical to identifying problematic information and suspicious activity. Bad actors often portray real people, and they can evade being noticed in aggregation tools. Journalists tend to rely upon their own expertise and manual labor, closely reading and following the activity in these groups, to detect irregularity and identify and understand problematic information. In practice, this kind of work involved scrolling through Twitter feeds, becoming part of Discord chats, routinely visiting problematic sites, and even manually investigating suspicious Facebook accounts. Tools built to serve those who investigate this type of online activity should enhance journalistic inquiry methods, such as being close to the content, instead of solely providing aggregate numerical data and visualizations. These suggestions align with work by Rotman et al. (Rotman et al., 2012) who encouraged researchers of online environments to go beyond high level views of the data, which were inherently limited. When thinking about supporting journalists, we likely need to be designing to support what Rotman and colleagues termed "extreme ethnography."

Our findings also suggest that effective tools need to understand and account for journalistic values and practices in order for journalists to trust them and rely on them for reporting. One important dimension of this centers around verifying sources. Traditional investigative journalists question, verify, and cross-examine human sources themselves, using well-established processes (Rosenstiel, Kovach, and Dean, n.d.). These practices are disrupted when journalists shift from using people as their sources to using social media data as their source. Instead of relying on traditional practices of verification, journalists looking at online data have to develop means of establishing the credibility of their data — how it was collected, processed, and analyzed — before they can be comfortable using it in reporting. But vetting social media data, which is known to be fallible (Baym, 2013), as a source can be difficult, especially when the data was collected by others or through systems

that are not fully transparent. Doing this verification also requires a level of methodological expertise. Software tools and other solutions designed for journalists investigating online data should support their efforts to establish the credibility of the source data, for example by enabling them to explore the data in ways that reveal the data's contours and by making data collection and data transformations transparent. Though all journalists data intensive beats need to trust their data, this is especially important in the context of reporting on disinformation and other types of problematic information, because a misstep or misinterpretation can be seized upon by the groups they are studying and exploited to undermine their work (Marwick and Lewis, 2017).

Another set of values to consider are magnitude and relevance, noted by Harcup and O'Neal (Harcup and O'neill, 2001) as guiding journalists' decisions about what is newsworthy. These are especially relevant in the context of disinformation reporting, because they can be key to deciding what to investigate and when to publish. To guide those decisions, researchers and media advocacy groups have produced recommendations for journalists on this beat (Phillips, 2018; Victoria Kwan, Claire Wardle, and Madelyn Webb, 2020). For example, Phillips suggested that, to avoid becoming unwitting agents in disinformation campaigns and doing the bad actors' work of amplification for them, journalists should publish stories about problematic information only when it has already reached widespread audiences (Phillips, 2018). However, our interviews revealed that journalists struggle to assess the magnitude or reach of an existing piece of problematic information, and consequently to make decisions about when to publish — and when not to.

4.6.2 Platforms and Power Dynamics

Another challenge for journalists on this beat was navigating relationships with the social media platforms that they often needed to rely upon for data. These relationships were inherently imbalanced, with the social media platforms having considerable power over who gets to report on — and perhaps what gets reported from — their data. Gillespie (Gillespie, 2010; Gillespie, 2018b) suggests that even the use of the word "platform" is political. The word is used to blend the line between commercially created and user-generated content and this blending is one factor in why problematic content thrives in online spaces. For example, a disinformation

campaign designed to garner support for alternative medical treatments may be commercial in nature, but they can claim to be user-generated or "free speech" when their content is threatened or taken down. Because these platforms are the "keepers of cultural discussion" (Gillespie, 2010), yet provide little transparency to those on the outside, they have become a powerful gatekeeper. And journalists currently have to work with them, or within their terms of service, to do their reporting.

The journalists we spoke to noted that it was challenging to get representatives of the companies to speak to them about content or activity taking place on the platforms — e.g. a disinformation campaign or harassment incident. They reflected upon a somewhat antagonistic relationship between their broader news organizations and the platforms, where as they are trying to gain information about a particular story of problematic information, a colleague might be developing a story critiquing the platforms about privacy infringement or content censorship. Many of our interviewees communicated that they recognized the platforms were navigating challenging terrain. Yet, they still felt frustrated that there was no clear way to move beyond the gate and have their questions answered, even when their goal was not to specifically criticize the company they were reaching out to. The participants feel that there is a critical societal need to understand, analyze, and share what is happening on social media platforms, especially as they increasingly serve as a centerpiece of culture, but that much of the information and the power to do that lie behind the platform walls.

In some cases, platforms are starting to slightly open their gates by providing certain individuals — including journalists and academic researchers — with data. For example, Twitter has created new opportunities to access certain data, like a massive sample of tweets related to Covid-19, through an application process (Tornes, 2020). Similarly, in partnership with the Social Science One initiation (*Social Science One: Our Facebook Partnership* 2020), Facebook has made data available — after a rough and at times contentious process (Pasternack, 2019)— to a select group of researchers through data grants awarded through a competitive grant process. Facebook has also opened up tools like CrowdTangle for use by researchers and journalists. CrowdTangle was used by a number of participants in our study, and follow-up conversations with some interviewees reveal that they are relying more and more on this platform for their reporting.

However, in each of these cases, individual platforms are opening up the

gate to specific people, not all people, based on personal connections or application processes. In our own experience, the platforms' rationale for this selectivity is to ensure that the data are being analyzed in methodologically sound ways, by experts who understand the contextual and ethical complexities. Their stated aim is to limit misreporting which could contribute to the misinformation problem. However, these selective access programs highlight the persistent position of power that social media companies maintain. Just as boyd and Crawford (boyd and Crawford, 2011) wrote about a data divide for academics, we see this extending to journalists who are trying to investigate problematic content online. Those who have the relationships are able to investigate (with the permission of the platforms) and those who do not are left out. This power imbalance can be coercive, as journalists with data privileges may feel compelled — in order to retain their access — to portray the platforms themselves in a more positive light.

4.6.3 Future Work: Collaborations between Researchers and Journalists

Practices of understanding and reporting on online misinformation, disinformation, and other forms of problematic information continue to evolve. Researchers and journalists have acknowledged how complex this work is and are starting to work together to understand and combat the spread of this type of content. These collaborations include education (e.g. (*MediaWell: Resources* n.d.; *Reporter Resource Hub* 2020)), skillsharing (e.g. (*The International Fact-Checking Network* 2015)), and collaborative investigation (e.g. (Alba, 2020; Samuels and Kelly, 2020)). We now discuss the benefits and challenges of this type of collaboration, and suggest future work.

When the journalists we spoke to first started covering this beat, they primarily had to learn how to navigate and investigate online spaces themselves. Recently, training provided by organizations and researchers on the topics of content verification (*Verification Handbook* n.d.; *Training: Verification Course* 2021) and data analysis (*Data Journalism Bootcamp* n.d.; *Training: Data Journalism* n.d.) are available to them. The growing availability of these types of training for journalists mirrors what we found; that these journalists are eager to learn more about how to investigate problematic information online themselves. They also noted that taking time away from their work for these training sessions is difficult and suggested that they have

filled their own knowledge gaps by collaborating with data experts inside their organizations and researchers studying the same topics.

Participants mentioned that they are increasingly reaching out to researchers, primarily for help collecting and analyzing online activity data. By working together, journalists can receive meaningful data to inform their work and researchers can help combat problematic information on a timeline that is faster than the typical peer review process. We can currently see this happening in coverage of mis- and disinformation related to Covid-19 (Alba, 2020; Samuels and Kelly, 2020).

Though these informal collaborations can be mutually beneficial, our findings suggest that mismatches in methods, timelines, and policies can strain these partnerships. Journalists working on this beat described needing more transparency from their collaborators, especially when it comes to methods. They do not see all researchers as reliable on this topic, so they want to understand researchers' processes before attaching their reputation to the findings. Researchers should enable journalists to be closer to the instruments and the data so they can not only use the findings of their investigations, but also to improve their own skills by learning to do the collection and analysis themselves. The journalists we spoke to want to become the analysts and be able to more independently explore and report on this beat. Researchers can help them with this in the short term, both through collaborations and training them to do this work on their own.

There is also opportunity to study these collaborations as they take shape and evolve. Future work should explore these collaborations in action and ask critical questions about the nature, structure, and particularly the ethical challenges they entail. The CSCW community is well-positioned to do this kind of research, and this future work could further inform how we can design to support such collaborations — addressing journalists' current challenges and navigating inherent infrastructural and organizational tensions.

4.7 Conclusion

Online platforms have become increasingly salient in breaking news events, culture, and politics. Consequently, journalists are looking to these spaces for stories and investigations. This research provides a window into the practices of journalists who are investigating their stories on and through

social media. In particular, we focus on journalists working an emergent new beat of online mis- and disinformation. We find that journalists overcome the unique technical, methodological, ethical challenges of this work by embedding themselves in online communities, working with experts, and improving their own data skills. Situating the findings within literature about changing journalism practices, computational tools designed to support modern journalists, and the complexities of online disinformation, we contribute insight into how to better support these kinds of journalists in the future. We suggest that designers of data tools for journalists pay special attention to the traditional values held by those in the journalism field. We discuss the power dynamics that exist between journalists and platforms, and we suggest that future work involves studying the informal collaborations between journalists and researchers that are already taking place. We foresee this "beat" will grow to include more journalists, including those looking specifically at online mis- and disinformation as well as adjacent topics such as bullying, harassment, and radicalization, and we see supporting these emerging experts as an opportunity for future CSCW research.

4.8 Acknowledgments

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Chapter 5

Study 2: Insights from Journalist-Researcher Collaborations at Speed

5.1 Preamble

This chapter presents the second empirical study in this dissertation, building directly on the needs surfaced in Study 1 (Chapter 4). After interviewing misinformation-focused journalists, it was clear they faced significant structural challenges in reporting on fast-moving stories with complex online dynamics, and many pointed to their relationships with researchers as essential, if imperfect, workarounds. Journalists described wanting to reach out to experts for rapid context, guidance, or feedback. Still, they lamented that researchers weren't fast enough, accessible enough, or responsive in the ways their timelines required.

With the 2020 U.S. election approaching, I saw an opportunity to explore what would happen if researchers were available or "on-call" in real time. My team at the Center for an Informed Public (CIP) had begun offering rapid-response support to journalists on questions related to mis- and disinformation—an effort that grew organically from our public-facing work and the high visibility of our lab and its founders. Journalists were already coming to us with questions, and we were increasingly part of a broader election-related ecosystem, including the Election Integrity Partnership (EIP) (*Election Integrity Partnership* n.d.).

I originally conceived this study as a way to support journalists with data access and technical analysis, especially when stories relied on information held by private tech companies or tied to fast-moving online activity. But as the project unfolded, it became clear that the support journalists needed extended beyond data. To better understand these needs, I systematically tracked the interactions between journalists and academic participants across email, Slack, and collaborative documents, with the goal

of understanding not only what was exchanged but what made these time-sensitive collaborations work—or not work—in practice.

This study deepened my understanding of the structural barriers journalists face when reporting in high-stakes news moments (**RQ1**). Unlike more established domains, such as war or climate change, digitally driven topics often lacked in-house expertise or professional peer support for framing and verification. Researchers filled important gaps in subject matter knowledge and methodological reasoning, especially when stories hinged on inaccessible or rapidly changing digital data—data that could not be obtained through the Freedom of Information Act (FOIA) or conventional reporting routines. Importantly, they also noted that online information dynamics now affect nearly every beat, highlighting a growing need for expert input across domains, which later led to my shift away from using the term "misinformation beat."

The study's primary contribution was to **RQ2**, illuminating the ethical, professional, and logistical tensions that arise in tech-enabled, time-sensitive collaborations. The success of these collaborations was defined differently by each group. For journalists, it meant gaining clarity or refining their thinking, even if the story didn't run or the expert wasn't quoted. For researchers, success was more ambiguous. When their input was uncredited or unused, the labor could feel invisible or undervalued. While many were driven by civic responsibility and a commitment to public knowledge, they described these interactions as difficult to sustain alongside other demands.

Repeated "onboarding" and alignment work emerged as one of the most significant points of friction. Researchers frequently had to re-explain methods, contextualize datasets, and translate journalists' broad questions into answerable ones, often across multiple, one-off conversations. Journalists sometimes lacked specificity in early outreach or requested interpretation without providing enough background. Some researchers hesitated to engage without knowing the story's angle; others raised concerns when journalists lacked cultural or community-specific knowledge, especially for stories involving identity-based misinformation.

Practices like sending quotes back for review or conducting a gut-check on interpretations helped build trust, but they also extended the time investment. Some experts reflected that with repetition, these collaborations improved: journalists asked better questions, and both parties learned how to communicate more effectively. However, that growth required time, relationship-building, and uneven access to resources across institutions and professions.

While **RQ3** was not the central focus of this study, it surfaced critical infrastructural needs for supporting and scaling these collaborations. The constant burden of explaining the same concepts indicated a need for reusable scaffolding—resources or workflows that could reduce repetition without reducing nuance. It also suggested the value of early conversations about expectations: story purpose, credit, availability, and baseline

knowledge. As these interactions become more frequent and necessary, lightweight norms and ethical guidelines will be crucial in reducing misalignment and making collaboration more sustainable.

This study also shifted my understanding of the role of experts. They were not static authorities dispensing knowledge but responsive, fallible, and often overextended participants in the larger information ecosystem. While not always visible, credited, or directly quoted, their contributions helped support journalists' sensemaking process and learning at speed. It also motivated the final study, which explores new systems for making that labor more visible, scalable, and equitable under the demands of high-stakes news moments.

Bridging Contextual and Methodological Gaps on the "Misinformation Beat" : Insights from Journalist-Researcher Collaborations at Speed

CHI '22: Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems

Authors: Melinda McClure Haughey, Martina Povolo & Kate Starbird

5.2 Abstract

As misinformation, disinformation, and conspiracy theories increase online, so does journalism coverage of these topics. This reporting is challenging, and journalists fill gaps in their expertise by utilizing external resources, including academic researchers. This paper discusses how journalists work with researchers to report on online misinformation. Through an ethnographic study of thirty collaborations, including participant-observation and interviews with journalists and researchers, we identify five types of collaborations and describe what motivates journalists to reach out to researchers — from a lack of access to data to support for understanding misinformation context. We highlight challenges within these collaborations, including misalignment in professional work practices, ethical guidelines, and reward structures. We end with a call to action for CHI researchers to attend to this intersection, develop ethical guidelines around supporting journalists with data at speed, and offer practical approaches for researchers filling a "data mediator" role between social media and journalists.

5.2.1 Author Keywords

social media; journalism; misinformation; disinformation

5.2.2 ACM Classification Keywords

• Human-centered computing → Empirical studies in collaborative and social computing

5.3 Introduction

In the United States, the year 2020 saw increased levels of misinformation, disinformation, and conspiracy theories — especially online (Kranhold,

2020; Mitchell et al., 2020; Lytvynenko, 2020). The Covid-19 pandemic sparked what some referred to as an "infodemic" (*Infodemic* 2021; Ball and Maxmen, 2020); a time of widespread medical misinformation leading to adverse health impacts. With more people at home due to the pandemic, Americans spent more time on social media (Debra Aho Williamson, 2020), allowing for more encounters with misinformation and disinformation. For example, following the murder of George Floyd, Black Lives Matter protests broke out across the country, spurring disinformation aimed at labeling the organization as deceptive and trying to align it with other movements that provide vectors for right-wing criticism, including Antifa (Sylvanna Falcón et al., 2021). Later, the U.S. election process was also plagued with disinformation surrounding mail-in-ballots and later wider voter fraud narratives, including false assertions that the voting machine company, Dominion, was changing votes — which played a role in motivating some of those who participated in the January 6th Capitol insurrection attempt (Pérez-Curiel, Domínguez-García, and Jiménez-Marín, 2021; *The Long Fuse* 2021). Other debunked conspiracy theories gained traction throughout the year as well, like the QAnon canon (Alex Goldenberg et al., 2020) and Wayfair conspiracy theory (Ej Dickson, 2020; Angie Drobnic Holan, 2020).

As public interest in the topic grew, so did the news coverage from those on the so-called "misinformation beat" (Daniel Funke, 2018; Haughey et al., 2020) — an area of journalistic coverage (a 'beat') (Magin and Maurer, 2020) focusing on 'fake news', misinformation, disinformation, conspiracy theories and harassment (Haughey et al., 2020). Journalists who work on the 'misinformation beat' aim to inform readers about online activity, investigate and debunk false claims, and hold social media companies accountable for problematic information on their platforms (Haughey et al., 2020). Those who were already covering the topic grew in popularity (e.g. Donie at CNN — who has been on this beat for years — went viral while reporting on misinformation at the post-election Trump rally that spiraled into the U.S. Capitol Insurrection (Mastrangelo, 2021; Shane O'Brien, 2021)), and many more, including local journalists (e.g.(Mulcahy, 2020; Nerbovig, 2020)), ventured onto the beat for the first time.

The rapid increase of this beat came with more journalists facing known challenges of doing this work. Previous work has established that the misinformation beat — which relies heavily on digital trace data due to the outsized role of online platforms — is uniquely challenging due to

constantly changing tools, lack of data access, and risks of providing public access to harmful content (Haughey et al., 2020; Catipon, 2021). Researchers noticed an opportunity to help these journalists get up to speed by bridging gaps in their contextual understanding (of mis- and disinformation) and methodological expertise (for using digital trace data as a "source"). Organizations like First Draft news, the Harvard Shorenstein Center, Poynter, and others offered training and tip sheets for journalists throughout this period, especially focusing on COVID-19 coverage, combatting vaccine misinformation, and election coverage (Lytvynenko, 2020; Brendan Nyhan, 2012; Claire Wardle and Laura Garcia, 2020; Joan Donovan, n.d.; *MediaWise Certificate* 2020).

Even before this period, the co-production of journalism by journalists and researchers had been increasing, according to a scoping review by MacGregor et al. (MacGregor et al., 2020). This trend continued in 2020. For reasons that are discussed in this paper, journalists new and old to the misinformation beat leaned heavily on researchers for support (e.g. (Barnes, 2021; Zadrozny, 2019; Parks, 2021; Elizabeth Dwoskin, 2021). Researchers took up roles beyond those of a traditional interview source (for background information or an expert quote), increasingly taking on the labor of education, ad-hoc analysis, and helping journalists ethically approach stories. Journalists who regularly turned to misinformation researchers for a quote now turned to these researchers to collaborate.

University researchers, too, were eager to get their early misinformation analyses to journalists. They learned during the 2016 presidential election and other elections around the world how viral misinformation can emerge before, during, and after an election; and responding on a typical peer-review timeline can miss the mark on having a timely, positive, and broad impact on the public. A conglomerate of misinformation research teams even set up a rapid-response framework for academic researchers to quickly share analyses of misinformation with journalists leading up to and during the 2020 presidential election (*The Long Fuse* 2021). Starting in 2021, these informal collaborations have begun to formalize, as the Harvard Shorenstein center has hired some of the most knowledgeable journalists on this beat (Zadrozny, 2019; The Shorenstein Center, 2021) and U.S. national newsrooms have started hiring researchers and data scientists to help with misinformation related investigations. All provide evidence of the current journalist-researcher codependence in tackling the challenges of

misinformation journalism.

Stepping back — in 2019, we began planning journalist-researcher collaborations to learn how to better serve and support journalists covering this challenging beat. As the unprecedented activities of 2020 and early 2021 unfolded, our research team received more data requests than they could have ever imagined. Our cross-disciplinary team spanned multiple departments at the University of Washington. We both participated in and studied these collaborations simultaneously, taking an ethnographic approach. This piece outlines the findings from thirty researcher-journalist collaborations on misinformation topics and semi-structured debrief interviews with both journalists and researchers.

The findings begin with a typology of five motivations for collaboration on this beat. The frequency of these needs and findings from interviews suggest that researchers fill a necessary gap for journalists on this beat. From education to data access to 'gut-checking', researchers have become an essential part of the ability to do misinformation journalism well, especially for those new to the beat. Yet both journalists and researchers highlight ethical and professional challenges in this newfound closeness, which will be discussed in both the findings and the discussion. Finally, the process of translating journalism questions (like "what impact does misinformation have on the voters?") to ones that can begin to be answered using data inquiry was laborious, and researchers said that the education work required to get newer journalists 'up to speed' was unsustainable.

These findings help us see these collaborations with more sensitivity and examine some of the socio-technical challenges involved in this work. Our discussion: 1) highlights the value of this situated perspective on the role of academic researchers as data mediators; 2) calls for digital social data researchers to develop ethical guidelines on data sharing and privacy with journalists; and 3) provides practical guidance for researchers managing these relationships.

5.4 Background and Related Work

In this literature review, we first discuss the process of specialization journalism which — with ubiquitous technology in the profession — requires both technical and contextual expertise. We will discuss this process of specialization, and touch on ways that the Human-Computer

Interaction (CHI) community has tended to the technical learning and needs of journalists. Next, we introduce the need — necessitated by the events of 2020 — for journalists to rapidly specialize on misinformation, and the tools, stop-gaps, and collaborations put in place to meet this need. Finally, we introduce collaboration on this beat as a site of learning about the socio-technical challenges that exist between journalists and researchers working to meet evolving public interest needs at speed.

5.4.1 Beat Specialization in the Online Environment

Online journalism has changed the role of all modern journalists, especially specialists— or beat journalists (Magin and Maurer, 2019). A "beat" refers to a thematic specialization in journalism (Magin and Maurer, 2019). Reporters cover one or a few beats, allowing them to use their expertise to reliably report on relevant news to the beat. As more information has become available to the masses (the 'new media environment' (Naughton, 2018)), expectations from the audience of beat journalists have moved beyond those of a *disseminator or storyteller* to roles that involve even deeper expertise like *analyst, detective, and educator* (Fahy and Nisbet, 2011; Hanitzsch and Vos, 2018). These beat reporters are expected to not only have access to the information but to be able to curate and contextualize it for the public in a responsible and meaningful way.

The journalism workforce, according to Marchetti (2005), is structured around the poles of generalists and specialists. The process of specialization — or developing this subject matter knowledge — for technology-heavy beats involves both methodological and contextual learning. To the former, researchers have studied the ways that computational tools and algorithms have impacted and shaped the production and dissemination of the news (Diakopoulos, 2019; Karlsen and Stavelin, 2014; Flew et al., 2012). For example, one well-established development is through the emergence of Computer-Assisted Reporting (CAR) (Coddington, 2015; Houston, 2014), which requires helpful, reliable tools.

Specifically, within the CHI community, scholars have been eager to prototype and learn from tools that help journalists more quickly understand computational activity and the use of computation-enabled resources like crowdsourcing and big data (Venkatagiri et al., 2019; Tolmie et al., 2017). CHI researchers have also explored how practitioners support (or impede) journalists through conference workshops (Aitamurto et al., 2019), exploring

innovative news processes (Diakopoulos, De Choudhury, and Naaman, 2012; Maiden et al., 2018), and centering needs of journalists in the digital age (Garbett et al., 2014; Smith et al., 2018).

Yet tools and data are hardly enough to do this kind of work. CAR and data journalism practices are still in service to professional journalistic norms and expertise (Coddington, 2015; Loosen, Reimer, and De Silva-Schmidt, 2020). The second element of the specialization process — contextual, cultural learning — comes through time-consuming news gathering, analysis, and verification related to the area of specialization (Magin and Maurer, 2019; Lewis and Westlund, 2015). Especially for specialization in the online space, journalists must learn over time what kind of information to trust (often posted anonymously or by people who are difficult to interact with) and what meaning should be ascribed to it. One way to do this is by cultivating a network of expertise across disciples that helps them assess — and sometimes outsource (Lawson, 2021)— credibility (Marchetti, 2005; Fishman, 1980). Doing this specialization at speed, necessitated by the temporal challenges of news-making (Carlson and Lewis, 2019; Zelizer, 2018), is challenging and risky. In a recent op-ed, Ivan Oransky (2020) discussed the challenges of moving onto the health beat as COVID-19 grew globally.

5.4.2 Rise and Challenges of the Misinformation Beat

The norms and practices of beat reporting vary wildly between media organizations and specializations (Reich, 2012), necessitating analysis of various beats and associated needs individually. Reporters working on the "misinformation beat" must navigate the complexity of the technical infrastructure underpinning misinformation, in addition to the cultural and ethical challenges, this kind of problematic content creates. Research conducted before 2020 highlights a dearth of resources to meet these needs, in particular a struggle to access appropriate, well-maintained technical tools to track and understand their subject matter (Haughey et al., 2020). Reporting on big data involves technical, methodological, and ethical challenges (boyd and Crawford, 2011). There's also deep contextual knowledge needed to understand how and why misinformation spread online and the role of social media platforms — and their algorithmic recommendation systems — in shaping those flows.

To grow this knowledge, journalists have embedded themselves in online spaces and reached out to experts, like industry and university researchers, for assistance (Haughey et al., 2020). When health, policy, and election misinformation flourished throughout 2020, researchers and tools, like Crowdtangle, became an essential piece of doing this work (*Coronavirus: Tools and guides for journalists* 2020; *CrowdTangle* n.d.). Those who were new to the beat — or transferred from peripheral beats — had to get up to speed quickly to serve as trusted knowledge brokers (Haas, 2015) on a beat with such high stakes. Getting it wrong could mean falling victim to 'source hacking' (Donovan and Friedberg, 2019), accidentally amplifying harmful information (Phillips, 2018), and other forms of media manipulation (Waters, Tindall, and Morton, 2010).

Starting in 2016 and increasing in 2020, online tip-sheets and training emerged during this period in an attempt to meet these needs (Clark Merrefield, 2020; Brendan Nyhan, 2012; *MediaWise Certificate* 2020). These resources were made publicly available as journalists did work to self-educate both themselves and their newsrooms on how to cover topics like medical misinformation, anti-mask rallies, and claims of voter fraud. However, these stop-gap resources alone may not provide the individualized or in-depth contextual knowledge, or the technical expertise needed to report on misinformation as breaking news. Accordingly, reporters look to build relationships with academic and industry experts to build sustainable reporting habits. The relationships themselves contain complexities because of differing publication timelines and working pace, differing incentives, and public orientations (MacGregor et al., 2020).

5.4.3 How Collaborations and Ethnography Set the Stage for Design

This highlights the need to examine the driving forces behind the motivations to initiate and maintain journalist-researcher relationships on this challenging beat. The growing prevalence of these kinds of technical, contextual collaborations around misinformation suggests the existence of socio-technical challenges that hinder journalists from meeting the analysis needs of this beat individually or internally within their newsroom.

Ethnographic approaches help center members' perspectives and needs in collaborations (Dourish, 2006) and developing of empathy (Johnson et al.,

2012). Studies using participant observation — an approach to ethnography derived from cultural anthropology (Atkinson et al., 2001) — have been used by CHI researchers to understand the socio-technical challenges (e.g. (Carmien and Fischer, 2008; Jordan, 1996; Kientz and Abowd, 2008). Ethnographic approaches, like participant observation, are essential first steps in deepening understanding (Dourish, 2006). This kind of work can serve as a foundation for future design provocations and implications.

Collaborations, too, serve a unique role in the Computer Supported Cooperative Work (CSCW) space informing the design of useful systems and solutions (Schmidt and Bannon, 1992). CSCW scholars have recently studied collaborations between fact-checkers and journalists in Bangladesh, highlighting communication challenges between the professions that lead to misaligned understanding toward professional roles in the media ecosystem and urging the further study of these dynamics in developing contexts (Haque et al., 2020). Our ethnographic approach to collaborations and subsequent analysis surfaces a better understanding of journalists' and researchers' both computer-supported and collaborative work together to fulfill growing public interest and concerns about misinformation.

5.5 Method

Adopting an interpretive and inductive approach informed by Charmaz (Charmaz and Belgrave, 2007) and Strauss (Glaser and Strauss, 1967), the authors analyzed 30 collaborations between (the largely U.S. centric) journalists and members of the authors' research team (described in the appendix) on misinformation-related investigations, including 14 interviews with researchers and journalists who participated in these collaborations. There were three parts to the method: 1) the collaboration activities, where the first author took an ethnographic approach to data collection as a participant-observer, 2) semi-structured qualitative interviews of both researchers and journalists who participated in these collaborations, and 3) integrated data analysis of the collaborations and interviews.

5.5.1 Step 1: Collaboration Initiation and Advertising

The collaborations were positioned as a way of meeting the needs of the journalists working on misinformation and disinformation-related stories. Recruitment started with members of the research team who advertised

their availability for collaborations through tweets and blogs. Adjacent team efforts included rapid response research — e.g., publishing blogs and social media posts highlighting election and vaccine misinformation — that also helped make public our willingness to engage with journalists for their investigations. To be considered a collaboration, the request needed to have a data element — quantitative or qualitative — or hint to the need for data or analysis to further develop their story.

The collaborations began when journalists reached out to the team (usually via email) with misinformation beat questions that fell into one or more of the following categories:

- Investigative story about a case, narrative, or spreader of misinformation, disinformation, or conspiracy theories.

- Story covering breaking news events with a misinformation, disinformation, or conspiracy theory element.

- Voting or election-related investigation.

- COVID-19 related investigation.

These requests were sparse at the beginning of 2020 but picked up heavily starting in August 2020 (leading up to the U.S. presidential election), extended through November 2020, and surged again in January 2021 (following the U.S. Capitol Siege). These requests typically went to the inbox of a PI or the team communications director. The request would then be forwarded to an appropriate researcher on the team and the first author would coordinate the start of the ethnographic research component (studying the collaboration).

5.5.2 Step 2: Participant-Observation and Ethnography of Collaborations

Once a researcher had volunteered to help with the journalist's request, the journalists and researcher(s) would then go back and forth for anywhere from two days to a month exchanging questions and data. These communications and data exchanges happened virtually due to the ongoing COVID-19 pandemic.

The first author performed as both a researcher and ethnographer for most of these collaborations. They took ethnographic notes throughout the

Collab Number	News Org Type	Media Org	Journalist	Researcher	Outcome
C101	Academic News Organization	M1	J1	R2, R3	Article
C102	Digital First Outlet	M2	J2	R5	None
C103	International Newspaper	M3	J3	R1	Article
C104	International TV	M4	J4	R1	TV Segment
C105	International News Agency	M5	J5A,J5B	R4	In Progress
C106	Niche Newspaper	M6	J6	R4	Article
C107	Niche Newspaper	M7	J7	R6	Article
C108	Niche, Non-Profit Newsroom	M8	J8	R4, R2	Podcast
C109	Niche, Non-Profit Newsroom	M9	J9	R4	None
C110	U.S. Local Newspaper	M10	J10A	S2, R4	Article
C111	U.S. Local Newspaper	M10	J10B	R2	Article
C112	U.S. Local Newspaper	M11	J11A	R4, R1	Article
C113	U.S. Local Newspaper	M11	J11B	R1	Article
C114	U.S. Local Radio	M12	J12	R3	None
C115	U.S. Local Radio	M13	J13	R6	Radio Segment
C116	U.S. National Newspaper	M14	J14A	R3, R4, S1	Article
C117	U.S. National Newspaper	M14	J14A	R6	Article
C118	U.S. National Newspaper	M14	J14A	R3	Article
C119	U.S. National Newspaper	M14	J14A	R4	Article
C120	U.S. National Newspaper	M14	J14B	R3	Article
C121	U.S. National Newspaper	M15	J15A	R4, R1	Article
C122	U.S. National Newspaper	M15	J15B	R2	Article
C123	U.S. National Newspaper	M15	J15C	R1	Article
C124	U.S. National Newspaper	M16	J16	R7	Article
C125	U.S. National Newspaper	M17	J17A	R4	None
C126	U.S. National Newspaper	M17	J17B	R2,R6	None
C127	U.S. National Radio	M18	J18	R5	Radio Segment
C128	U.S. National Radio	M19	J19	R3,R4	Radio Segment
C129	U.S. National TV	M20	J20A	R4, R7	Article
C130	U.S. National TV	M20	J20B	R2, R4	None

TABLE 5.1: Participant details

collaborations; paying close attention to (1) the communications between the journalists and the researchers, (2) data, and artifacts (like Google Docs) that were exchanged, (3) challenges to data access and sharing, and (4) outcomes of these collaborations. Within the role as a participant-observer — as has been described by Johnson et al. (2012) — the first author was able to grow close to the participants' (journalists') experiences to better understand and empathize with their needs. This resulted in rich data about the context from which the journalists were coming and the tensions that they experienced both within their newsrooms and working with collaborators and data along the way.

Table 5.1 summarizes the 30 collaborations analyzed for these findings. They involved 20 different media organizations, 28 different journalists, and 9 participating research team members.

5.5.3 Step 3: Semi-Structured Qualitative Interviews

After the collaborations ended, the first author reached out to both the journalist and the researcher team members to set up individual, semi-structured interviews to debrief. The interviews were conducted over video conference. Table 5.2 lists the journalists and researchers who participated in the interviews.

During the semi-structured interviews, the first author first asked the participants about their experiences working with the researchers or journalists (whichever was appropriate) before 2020. They then asked the participant to walk through — start to finish — the experiences of the collaborations that they participated in. The interviewer asked probing questions about the participants' expectations of the collaborations and their opinions on the outcomes, among other things. The interview protocol and consent practices were reviewed and approved by the authors' University Institutional Review Board.

The participant interviews added color to the ethnographic findings and filled important information gaps about collaborations where the first author was not about to closely observe. These interviews were unique in that they allowed the researchers to learn about a few, in-depth collaborations from both the journalist and source perspective — empirical studies that consider both of these perspectives are rare, according to Magin and Maurer (2019).

Interview Participant Number	Short Participant Description
R1	Researcher is a PhD candidate
R2	Researcher is a PhD student
R3	Researcher is an associate professor
R4	Researcher is a PhD candidate
R5	Researcher is a postdoctoral fellow
R6	Researcher is a postdoctoral fellow
R7	Researcher is a postdoctoral researcher
R8	Research team member is a data engineer[b]
R9	Research team member is a communications director[b]
J10A	Journalist covers misinformation for an international news agency
J14A	Journalist covers business and misinformation for a digital first outlet
J15A	Journalist covers technology for an international TV outlet
J18	Journalist produces general content with a focus on disinformation for a radio show
J20A	Journalist covers misinformation for a U.S. national TV outlet

TABLE 5.2: List of researchers and journalists interviewed post-collaboration

[b] Two staff members who were involved with the research team were interviewed for this piece

5.5.4 Step 4: Qualitative Analysis

The first, and most significant step of the qualitative analysis was reviewing the ethnographic notes, memos, and artifacts from step one of the collaborations. The first author regularly discussed notes and findings throughout the collaborations with the other authors during weekly 1:1 meetings. The second author, too, reviewed notes and memos before doing collaborative analysis.

Once the final collaboration was complete, the authors gathered and placed the most salient ethnographic notes and memos onto a collaborative Miro board. They talked through the observational notes for each collaboration and the authors were able to identify five key collaboration types and associated motivations.

Next, the interviews were transcribed, atomized, and placed on the same collaborative Miro board (see Figure 5.1). The first author led an exercise of sorting the 500 atomized quotes and notes from the 14 interviews into themes. As mentioned, the themes from ethnographic notes and memos were also displayed on the board, providing an initial, yet flexible structure for card categories. Many of the interview cards did align to existing ethnographic themes, but other, new findings emerged from the card sort as well. After discussing and refining the groupings, the authors identified the most salient findings to discuss in this paper.

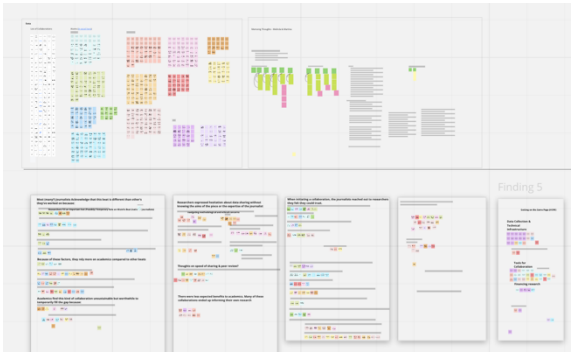

FIGURE 5.1: Screenshot of Collaborative Miro Board.

5.6 Findings

The findings offer four primary insights: First (1), we offer a typology of motivations for journalist-researcher data and information sharing. Next, we expand on the ethnographic findings with interview insights to (2) discuss why journalists are relying more on researchers (compared to other beats) for help getting up to speed, accessing data, and 'gut checking' stories on misinformation; and (3) discuss challenges and professional tensions that emerged from these collaborations. Finally (4), we lean back into the ethnographic findings to describe the challenge of "getting on the same page" — the translational work of turning journalistic questions into data inquiry questions, and the shared understandings needed to get to a productive starting point for the collaborations.

5.6.1 Typology of Journalist-Researcher Collaborations

Drawing on ethnographic notes and memos from thirty different collaborations throughout one year, the authors identified five categories of motivations for journalists relying on researchers as they developed misinformation journalism. These collaborations involved journalists from a range of organizations: including many well-known, national U.S. outlets, a few international journalists, as well as local print and radio reporters. Because the journalist collaborators were in various cities, all communications were done virtually through e-mail, Slack, phone calls, and video calls.

Some of these collaborations were short — e.g., just one or two emails exchanged to answer a quick question or a few days to investigate the origins of a viral misinformation meme. Some went much longer, spanning dozens of interactions including email exchanges, phone conversations, and the use of collaborative artifacts like Google Docs or data visualizations. These extended collaborations tended to involve the co-creation of journalism between the journalist and the researcher, where the data questions and conversations guided the reporting. Some collaboration structures were innovative and experimental for both the researcher and the journalists. For example, some were done "live", where researchers and journalists co-worked (virtually, in a chat and video environment) during high visibility events like election debates and on election day — giving tips, journalists asking questions, researchers sharing quick analyses.

Many, though not all, of these collaborative efforts, contributed to published pieces. In some cases, the collaboration informed and guided the final piece. In others, the findings — even though they took ample research and journalistic effort — simply did not turn out to be newsworthy enough for publication. In these cases, either a piece wasn't published at all, or the journalists included a piece of the analyses as supporting data for an adjacent story.

Through an ethnographic analysis of these interactions, we identified five distinct types of collaborations — each revealing a different aspect of journalists' needs (generally) or goals for working with researchers on the "misinformation beat". Table 5.3 enumerates these different collaboration types, providing some details on how they were initiated and unfolded, and serving as a reference point throughout the remaining findings and discussion section.

5.6.2 Researchers fill an essential — but possibly temporary — expertise gap for journalists working on the misinformation stories

Our interviews revealed that these collaborations were part of a larger trend: journalists are leaning on external researchers for their contextual and methodological expertise in helping develop reporting on the misinformation beat. Journalists, themselves, discussed this dynamic:

> "Academics are such a large part of what I do. without that, I could not do this job" - J20A

> "On this misinformation beat you are heavily dependent on relationships with researchers, I think probably more than most beats" - J14A

This section provides color on *why* journalists are more reliant on the researchers for this beat and *why* researchers struggle to keep up with those needs.

Journalists lean into researchers to fill three main newsroom gaps.

J18 said explicitly, "since misinfo is a new topic for newsrooms, there is a lot less internal expertise and infrastructure" on this beat. This statement was confirmed through the ethnographic findings and interviews. The

Type	Short Description	Associated Collaborations	Details
1 – Follow Up Piece	Journalists follow up on a piece of public scholarship (like a tweet or blog post) and want to write a story featuring the research team's analysis.	C102 C113 C122 C124	In these cases, public scholarship (e.g., a blog or tweet about a finding from the rapid analysis work) drove interest in the team's research and the establishment of collaborations. These collaborations were typically initiated on Twitter or via email and involved follow-up conversations describing the underlying data of what the researchers had reported and providing additional context (and sometimes data) for the story.
2 – Specific Data Question	Journalists have a specific data question for a story they are already working on.	C103 C105 C106 C108 C112 C114 C120 C121 C128 C129	In these cases, journalists typically had a story in progress and wanted primarily quantitative data (though occasionally qualitative artifacts were enough) to advance their piece. Answering these questions was possible due to the team's data collection capabilities, access to tools, and robust data storage. Some of the collaborations that began as 2s, also evolved into 3s.
3 – Research "Take"	Journalists have a story they are working on, and they want to talk about the research team's analysis or "take" on the topic.	C104 C107 C110 C111 C115	Many of these calls included "gut checking"—a need described in the findings. Journalists would either share data, a story, or findings from an interview and get the researchers' take on it. Put simply, asking "am I approaching this right?". Often these ended with quotes from the researcher to help put this finding in perspective for the readers.
4 – Education	Journalists have a story they are working on, and they want contextual (background) information, data, and misinformation education to help tell the story.	C102 C117 C127	These were important for journalists new to the beat or covering topics that were new to them. Researchers would provide background knowledge about a topic and guide the journalist in how to approach the topic. Sometimes they would provide direction of where to look for specific pieces of information online or help with the framing and approach to the story. These were especially prevalent with stories about vaccine misinformation, especially as many journalists were writing about online anti-vaccination groups online for the first time.
5 – Open Ended Collaborations	Journalists have an open-ended question or a general topic for an investigative story and want to work with researchers to shape and gather data for the piece.	C109 C116 C118 C123 C125 C126 C130	These collaborations started, often, with an open-ended question. The researcher and journalist worked together to refine the questions and went back and forth with the data many times. These collaborations were the most challenging and time-consuming, yet some of the most rewarding for researchers.

TABLE 5.3: Typology of Collaboration Types

lack of contextual and methodological expertise with social trace data pushes journalists to look externally for needs that are typically met with internal experts — like gut checking and data access and/or analysis. Each of these is explored in this section. Meeting these needs requires that journalists build closer, and more collaborative, relationships with researchers. These close relationships also exist in a grey area where researchers sit somewhere between a source and a collaborator — leading to relationship and independence challenges that will be discussed in future sections.

1. ***Gut Checking.***

Each journalist and researcher interviewed for this piece mentioned the concept of reaching out to researchers to "*gut check*" their stories, data, or framing; something that — according to J18 — is more accessible internally for other beats. The concept of 'gut checking' isn't new to journalists. Schultz (2007) writes that the journalistic gut feeling associated with determining newsworthiness is something that accrues with experience. Though journalists were doing newsworthiness gut-checking throughout the collaborations (in some cases they walked us through this process), they were primarily turning to researchers for a different kind of gut checking; one more aligned with the process of beat specialization and ensuring that they were properly discussing the complexities of the online environment. For example, J18 went on to give an example: when covering a story about armed conflict, they can go to a coworker with experience on that beat and talk through their story, approach, framing, and information with them. But on the topic of misinformation, this doesn't yet exist. Researchers, too, noticed this need adding that journalists would reach out "*want[ing] validation that they weren't crazy in the way that they were thinking about this" (R1)* and to "*confirm their suspicion or the hypothesis that they're putting forward or because there's so much uncertainty around like the aspects of the beat" (R9).*

The ethnographic findings revealed that throughout these collaborations, researchers helped check journalists' findings and guide them on approaching challenging stories. After discussing the process of asking a researcher on our team for help with story framing, J18 was quick to add, *"I would be careful to asterisk that we don't ever really run scripts by researchers"*. This practice of looking externally for "gut checks" can contribute to an environment where researchers are contributing to the presentation of the

story, moving beyond the traditional role of a source — and creating tension for journalists for whom this may violate professional standards.

2. ***Data Access and Analysis.***

As was shown in the typology, many of the collaborations also involved a specific data or data analysis request from the journalists. Journalists discussed two reasons why existing internal newsroom approaches to data don't currently meet the needs of misinformation journalists: the data is private and the existing data journalists lack experience analyzing social media trace data.

> To the former challenge, J14A mentioned the fact that accessing social media data — held exclusively by private companies — is unlike the data access process for other beats they had worked on.
>
> "In other beats, you rely a lot on public information, like things you can [FOIA request]. In this beat, everything comes from those private companies" - J14A

Data access, then, is mediated by the social platforms themselves who are hesitant — and in many cases entirely unwilling — to share data with journalists looking into misinformation concerns on their platform. These social media organizations cite privacy concerns in this kind of data sharing, while journalists tended to suggest that these decisions were more about these organizations' self-preservation interests.

Researchers, though, have unique infrastructure that enables data collection and analysis of social media data. In some cases, this includes privileged access to data from social platforms through partnerships. In other cases, researchers don't have "special" access, per se, but they do have the funding and infrastructure to enable data collection at a meaningful scale. This valuable data was available for the journalists who participated in these collaborations. *Specific Data Requests* (Table 5.3, Type 2) collaborations, the research team's data collection capabilities filled the newsroom data needs gap.

When it comes to the second need, data analysis, many newsrooms lack resources for internal expertise and tools. Though data journalism is an increasingly important part of newsroom activity, formal data journalism training is largely introductory, often focusing on older, traditional data types (Heravi, 2019). The social media trace data collected in these collaborations

is known for having unique challenges requiring both methodological and contextual expertise to properly analyze (Jimenez-Marquez et al., 2019). The ethnographic notes from these collaborations — and the authors' previous relationships with journalists — suggest that many newsrooms' data journalists do not have the training or experience to collect, maintain, and analyze this kind of data.

Researchers are eager to help journalists on this time-sensitive and impactful beat, but these collaborations feel unwieldy and unsustainable.

Universities and funders (including the National Science Foundation) have been encouraging researchers to attend to the broader impacts of their work — including through public scholarship. By working with journalists, university researchers, too, feel like their work can have more of an impact on the public discourse; possibly slowing the spread of misinformation, impacting national and platform policy, and bringing the danger of misinformation more into the public conscience at the right time. Collaborations with journalists on this beat fulfill this public scholarship goal.

> "'So, I kind of see journalists as a potential conduit for our research to the broader public" - R3

> "And I feel incredible whenever I get a [journalist] request. [...] I can help not only inform their story but hopefully better inform the public generally" - R6

Yet these collaborations take a lot of researcher time — not just to answer the questions or do the data queries — but to play a role in educating journalists who are new to the beat about this work. In some cases, the education calls lasted over two hours.

> J10A spoke fondly of these education calls: "every time I talked to [a researcher], I would learn more about this topic. And then I would form a much more nuanced, like vision of it"

R6 spoke about this process as being a part of the broader impacts of being a researcher: "I want everyone to be really good — at covering this beat. And to do that, it does require a little bit of education. And then that's like one of the responsibilities I guess, being an academic."

Though these efforts feel worthwhile to researchers amid mass online misinformation — educating journalists about the field improves coverage and mitigates amplification risk overall — it also takes away from time that the researcher could have been spending on tasks that are more traditionally rewarded by academia, like writing peer-reviewed papers. This setup felt unsustainable to many of the researchers interviewed. There are also ethical questions surrounding this practice for the long term — e.g., about collaborating too closely with a small number of journalists, feeling pressure to publicize findings before they are peer-reviewed, and taking opportunities from other researchers to receive visibility. Researchers are currently pondering how to maintain the rigor traditionally required of the field while also moving at a pace that can have an impact on this fast-moving phenomenon. Collaborating with journalists brings these tensions to the surface.

5.6.3 Navigating ethical and professional differences in these collaborations: perspectives on data sharing, newsworthiness, and innovation.

Researchers and journalists both conceptualize themselves as knowledge brokers and in service to the public. Yet the way that these roles are enacted differ — like the speed of publication, sourcing practices, and epistemologies. This section discusses a few of the salient tensions: (1) researchers' concerns about the speed and nature of data sharing and (2) journalists' professional commitment to newsworthiness and meeting the public with stories of interest.

Sharing data at speed: researchers' hesitations.

Researchers are keenly aware of how incomplete and unofficial the social media data they collect, and share, are; the data are often grabbed from public APIs, based on certain keywords, or provided directly by platforms and subject to scrutiny. Researchers are still grappling with ethical quandaries around reporting on these public social data. Sharing the data with reporters is even trickier. Researchers cited two primary hesitations to data sharing: (1) not knowing where the journalists' piece was heading and (2) feeling like the speed did not allow for enough "double-checking".

1. ***Story Direction.***

Researchers expressed hesitation in sharing data especially when the researcher didn't know the aim of the piece or what argument the data would be used to support. R2 put this explicitly, stating *"I felt weird about sharing data so openly with [this journalist], on this topic. Especially without knowing what "the person's angle is"*. In one case, this concern developed through experience: a researcher reflected on sharing since-deleted tweet data from an inauthentic account with a journalist without much thought to how it would be used:

"When I was giving him information on these people, I didn't know what the story was about, which is, in hindsight, probably not the best thing. I probably should have been like, why do you need this data?' But I was just like, 'you're [a big national news organization], you're fine.'" - R4

In the interview, this researcher reflected that they felt uneasy about how they handled the data sharing. Though the published story accurately covered the data, the researcher wasn't aware that the data would be used to confront the account owner — whom the journalist had identified through an external tip — in person. Moving forward, the researcher was set on understanding the aims of the story and the use case for the data before sharing.

Yet some journalists are still developing the direction of the piece before contacting researchers for help (Table 5.3, Type 5). In a few cases, this created a stalemate, where the researcher wanted to know more about the story before sharing data, but the journalist wanted to see data analysis to help determine the direction of their story.

2. ***Data Sharing at Speed.***

The speed of publication in the newsroom is much faster than that of academia. Though the researchers we interviewed suggested that peer review, too, is a flawed process, they said it does require them to validate their methods in a much more rigorous manner before publication. Researchers spoke about occasionally feeling uncomfortable moving at the journalists' pace during these collaborations.

> "Moving at a rapid scale (esp. <24 hrs.) is challenging and vulnerable for us because we want to make sure things are exactly right. And a lot of things can go wrong, there might be an error in your data you didn't see, or you miscoded something in the script." - R3

> Another researcher said if the same work was for academia: *"I would need to do a lot more work than I did to validate my measures"* - R1

Multiple researchers spoke to the fact that sharing data outside of peer-review — where methods are scrutinized — felt uncomfortable and risky, especially on a topic of great public interest. The risk of putting out an incomplete data set or having a journalist misrepresent information to the public is a fear that brought tensions to some collaborations. One researcher, R2, didn't even think of the fact they had shared an analysis outside of peer review until people started asking for their paper on it when the article came out. R2 felt uncomfortable saying that no paper had yet been written on the topic.

The comfort levels can also vary by the kinds of data or methods required to answer the data query. R2 said they felt comfortable sharing some kinds of data publicly and with journalists because they were confident in it and, in other cases where there was more uncertainty (or were using a new method), they would want it to be reviewed. This was sometimes hard for the team to convey to journalists: why, in one collaboration, the journalists received a straightforward data response and in another, they received a long email explaining the challenges of collecting and sharing a kind of data or analysis.

As researchers have adapted to collaborating, so have journalists. The first author noted in their memos that journalists recognized researchers' discomfort around data sharing at speed. Because it is often in journalists' best interest to establish trust and make researchers feel comfortable sharing data, seasoned journalists on this beat tried to add appropriate context to build up this trust, either by running the text back by the researcher or taking the time to fully understand and contextualize the data themselves.

> "I think we reporters have all been in a sort of situation where [a researcher] has rightly been mad [at us] getting something wrong. We want it to be right. But sometimes there's something lost in translation. I always try, especially with academics, to say, 'this is what I think I hear you saying'. Sometimes they reply with 'not quite', then we'll like to massage it to a place that's true" -J20A

The journalists that help researchers feel comfortable sharing data — by working together to frame findings and provide ample context — are the ones that benefited more frequently from the knowledge of the research

team in these collaborations. These trust-building practices brought certain, privileged journalists and researchers even closer together.

Newsworthiness and what is interesting

When collaborating with researchers, the journalist participants also had their professional intentions and priorities to consider. Among other things, journalists are eager to write engaging content that will attract readers, educate them, and that subscribers would find valuable. The journalists interviewed talked about how they would break down the dense misinformation research and make it more digestible and relatable for the public.

> "I have to balance the vegetables [info about misinformation] with what they're interested in. If I can't get them to like, read it, then it feels a little bit less impactful." - J10A

> J20A, too, talked about doing this by putting more data substance in the middle of the article and making the piece interesting by having the beginning and ends be more engaging. This skill, of course, is what makes sharing research with journalists beneficial to the public — there's little value if nobody reads the piece.

In some of the collaborations, however, journalists and researchers had a hard time finding harmony between meeting the needs of the business of journalism and using the data output from the collaboration. Sometimes, the analysis findings just simply weren't that interesting or newsworthy to the journalists (though the researcher sometimes disagreed). Choosing not to run a story or include a quote or finding from the researcher who worked on gathering the data was common (e.g., C103, C109, C114, C118).

> "The stuff that we ended up finding ended up being not that newsworthy. And at the end of the day, I have to use my news judgment." - J14A

> Sometimes this led researchers to feel like they had wasted time.

> "So, I did all this work. And I did data, I even roped in another researcher to do all of this. And then I gave [the journalist] feedback. Like, why I think this is happening. Here's a deeper analysis of my expertise in the space. and nothing happened" - R6

This highlights an interesting tension for the journalist — balancing the need to meet the public with interesting, informative content with the need to maintain a positive relationship with researchers — especially as the misinformation beat continues to change and comes with ample journalistic capital (Magin and Maurer, 2019).

Despite challenges, these collaborations can lead to innovative research and journalism practices.

For the reasons described above, not all collaboration efforts resulted in publications — despite many of them consuming researchers' and journalists' time. However, in the post-collaboration interviews, researchers and journalists reflected on ways that even unpublished efforts ended up contributing to their work, though many of them didn't realize the contributions until later. In their interviews, researchers noted that these collaborations led to innovative methods development (R1, R2, R8) and powerful case studies for presentations and forthcoming papers (R2, R4). Journalists who participated in Open-Ended Collaborations (Table 5.3, Type 5), noted how working closely with researchers on co-production activities furthered their understanding of how data analysis works and the difficulty of gathering, cleaning, and making sense of social media information. Even when these collaborations were seemingly unsuccessful (i.e., no story was published) they had the potential to inspire thoughtful conversations and new ways of thinking about misinformation online.

5.6.4 Getting on the same page: translational work from journalism questions to data questions

So far, we've discussed the necessity of these kinds of work on rapid timelines and the ethical and normative roles of both reporting and academia's role in this beat. This section centers the practical; the *how*. How do these challenges manifest and what design provocations might this open for researchers and designers in the CHI community?

One major procedural challenge to the *'how'* of academic-journalist collaborations on this beat was persistent: getting on the same page. Specifically, aligning journalism questions with data questions that were actionable with the infrastructure and expertise that the research organization had. Two elements of this "getting on the same page" process

are discussed: 1) scoping the journalism question to one that could be answered using the data and capabilities at hand (i.e., addressing the challenge of broad questions) and 2) having the right contextual expertise to accurately guide and understand the implications of those findings (the challenge of making sense of the data).

Question translation: from journalism question to data inquiry.

One of the most salient and challenging issues the researchers discussed was the process of tackling big, bold questions from journalists. An example might be: "how much misinformation is on Twitter now compared to before the 2020 election?". From the perspective of the researchers, properly answering this question would require a minimum: a definition of what constitutes misinformation, access to all tweets in a period before and after the election, and the ability to process and find tweets that meet the misinformation criteria.

Receiving questions like this, over time, became burdensome for researchers for a few reasons: These kinds of questions elicited conversations about data access, data analysis, and data assumptions — as well as education on why these kinds of questions can't easily be answered.

R9 reflected that, "[Some journalists have] a misconception that we have this big thing of data, [and] we can just press a couple of buttons and have all your answers like, 'here's your disinformation campaigns'. It was hard to explain to those journalists that's not necessarily how it works"

These kinds of questions also prompted educational conversations about the definition of misinformation, the role that public accounts play in the ecosystem of mis/disinformation, and more. In short, these broad questions often necessitated a great deal of methodological and contextual "onboarding".

As we've discussed in previous findings, researchers were eager to help with this, but over time the education work started feeling unsustainable.

> "It felt a little bit like helping to educate [them] on a bunch of different fronts, which you know, has value, I guess, if [they're] gonna go on and write about these, about these things, but it did feel a little bit scattered" -R3

The researcher and journalist would then enter a scoping phase, where those broad questions were refined into ones that could be answered using our data infrastructure and expertise. For example, the "how much misinformation is on Twitter now compared to before the 2020 election?" question might become "how much voting misinformation did these specific accounts share in the months leading up to the 2016 election vs the 2020 election?" In this case, scoping to a topic, accounts of interest and a time frame helped shape a data question that was answerable to our researchers. They could then use qualitative and/or quantitative methods to begin an analysis.

Over time, some journalists improved the way they asked questions, making them more actionable for the research team. Researchers, then, were more eager to tend to these well-scoped questions and prioritize these requests — hinting at challenges of equity in doing this work. Through this back and forth, both researchers and journalists learned how to translate these bold journalistic questions into actionable data queries.

Contextual, cultural expertise is necessary.

The activities of 2020 reveal that the "misinformation beat", in addition to a beat of its own, spans across numerous other beats. And expertise on those intersecting beats — like health, armed conflict, vaccine science, politics, and elections — was essential for success in analyzing and covering the misinformation emerging from those topics. In many cases, researchers — unfamiliar with the context in question — probed the journalists for example artifacts, hashtags, or other evidence of misinformation that could serve as a starting point for a data-led investigation (as suggested in investigative digital ethnography (Friedberg, 2020). It became clear, in a two difficult cases, that journalists knew very little about the communities they were investigating, which made data analysis harder, less valuable, and put them at risk of manipulation (Waters, Tindall, and Morton, 2010).

> "We were hoping that we could work together to get better questions. And if they don't understand the context well enough, then that that doesn't really work."-R3

Even when questions *were* scoped to actionable data requests, we found that without contextual, cultural expertise — either from the journalist or the researcher — it was challenging to make sense of the data. For example, when a journalist who formerly covered education began asking

questions about voter fraud narratives, the researcher team encountered two challenges: 1) There were hours of contextual and methodological onboarding work to get them up to speed on misinformation and data collection capabilities; and 2) the researcher working with this journalist felt like the journalist couldn't assess the value of the data to a potential story. After going through a long scoping phase and then doing an in-depth data analysis, the researcher — who did have contextual expertise in the topic — felt like their insights had produced meaningful content for the journalist. The researcher later reflected that other journalists *with* contextual expertise would have considered these findings be interesting and newsworthy. Yet, P4 said, *"They kept wanting more and more. And from our perspective, we were like 'the story is right here!'" -R4*

Working with researchers without deep specialization also made some researchers feel 'cagey' — or reluctant to share information — especially when a historically marginalized group was involved. In reflecting on one collaboration, researchers spoke about hesitations working on a data collaboration with a journalist investigating possible inauthentic activity on discourse about a minoritized community in the US. Both the researchers and the journalists had very little knowledge about the community and didn't consider themselves to be part of it.

> "The stakes are high, you're dealing with the marginalized community, I didn't have background in it. All those things, I think made me cagey early on and just make me cagey re-reading [the conversation with the journalist]" -R2

When dealing with marginalized communities, there are added stakes to the conversation — getting it wrong can mean further marginalization or discounting authentic community organizing.

In contrast, the researchers felt that successful collaborations were ones where journalists did understand the context and did come with specific data questions. For example, a reporter on war and government asked about a piece of misinformation spreading about President Biden related to international conflict. The journalist provided a few online artifacts as a starting point. The researcher was able to use internal and external data tools to trace the provenance of that data and then share the findings with the journalist. Because the journalist was well versed in reporting on armed conflict, they were able to find value in the shared data and incorporate it into their story.

5.7 Discussion

In our role as participant-observer researchers in these collaborations, we assist the broader research community in seeing these types of collaborations on the 'misinformation beat' with more sensitivity, taking a "this is what happens" Dourish (2006) approach. We share insights and a situated perspective on a unique type of collaboration happening at the intersection of social media data and journalism. This all serves to highlight issues at this boundary and give a rich sense of this site of phenomenological interaction (Harrison and Sengers, 2007).

In this discussion, we (1) highlight the most salient tensions in these collaborations and provide practical guidance for social data researchers engaging with journalists; (2) discuss the growing role of researchers as data mediators; and finally, (3) call for digital social data researchers to develop ethical guidelines on data sharing and privacy with journalists.

5.7.1 A Situated Perspective on the Role of Academic Researchers as Data Mediators

As discussed in the background, the HCI community has explored tactical ways to equip journalists with tools, data skills, and online crowds to support their work (Diakopoulos, De Choudhury, and Naaman, 2012; Venkatagiri et al., 2019; Wang and Diakopoulos, 2021; Aitamurto et al., 2019). In this paper, we build upon those insights to offer a situated, ethnographic perspective on the collaboration needs of journalists who are reporting on the "misinformation beat" — a role uniquely challenging due to the accessibility of data, analysis, and the possibility of amplifying the very information that they are trying to mitigate.

Drawing attention to this intersection is important as the role of academic researchers as data mediators increases. This role is becoming more prominent, both as it is enacted through these collaborations, but also as it becomes institutionalized through data transparency initiatives. For example, in November 2021, the Aspen Commission on Information Disorder (*Aspen Commission* 2021) called for (1) legal protections for both journalists and researchers who violate platforms terms of service in efforts to write about matters of public concern; and (2) platforms to disclose public interest data to qualified researchers, creating a "safe harbor" to analyze how information spreads on social media. Similarly, Senators Coons, Portman,

and Klobuchar recently announced legislation that would grant qualified researchers access to social media data if/when their proposals were approved by the U.S. National Science Foundation (Persily, 2021; Coons, 2021). Each of these recommendations positions academic researchers in positions of specialized access to social media data for the public interest — reifying their role as data mediators. However, as we demonstrate here, for researchers of online mis- and disinformation, that role is unstable and often fraught, due to pressure to move at the pace of these unfolding phenomena.

5.7.2 Call to Action: Developing Ethical Guidelines for Data Sharing with Journalists

As requests for collaborations around these data will persist, researchers (and the research community at large) will continually be put in the position of making rapid ethical judgments on what data and insights to share with journalists. We know from boyd and Crawford (2011)'s work that researchers have a role in the culture of big data — what it means, who gets access, how it is shared, and to what ends. The researchers participating in these collaborations were faced with these culture decisions largely alone and at speed: e.g. churning out analysis; determining which journalists to partner with; making quick user data privacy decisions; and worrying if their work would be properly contextualized in the final piece. The interviews revealed that the weight of this work and the need for quick decision-making was heavy — especially since many of these researchers were keenly aware of the harm that can come from revealing personal data or from getting a misinformation analysis wrong in the public eye.

Our work finds that the researcher's role as data mediator on misinformation work comes without guidance, like tactical and ethical frameworks for data sharing, which can lead to uncertainty, vulnerability, and potentially high-profile mistakes at speed. The most common gray areas that our researchers faced centered on the speed of publishing, the robustness of analysis, and user anonymization. **We call for social computing researchers, within the CHI community and beyond, to develop ethical frameworks that consider these grey areas of misinformation work, including the need to work at speed and nuances around user privacy.**

Ensuring methodological soundness.

We know that moving too fast and making methodological or analysis mistakes can hurt the public too. Disinformation purveyors actively look for these cases to undermine trust in trusted knowledge brokers (Phillips, 2018). Thus, working on a framework to help researchers decide what kinds of questions can be done at speed and what kind of analysis they should feel comfortable publishing without traditional peer review is important.

These determinations will likely involve several interacting dimensions, including complexity, researcher expertise, and the potential damage of being wrong. For example, simply sharing recent tweets from a public figure or a list of the most-engaged-with Facebook pages may be straightforward and uncomplicated, assuming the methods for calculating or finding the data is clear. More complicated analyses — for example, network graphs that can both reveal and mislead — may need to be treated with more care. A central question could be: Has this research team previously published a peer-reviewed paper featuring a similar type of analysis? And even in those cases, we likely want to develop other practices to ensure validity.

Alternatives to peer review at speed

When it comes to reporting on misinformation, researchers and journalists feel pressure to move quickly — moving too slow to analyze and report on a viral misinformation campaign can allow it to thrive and harm the public. The peer-review process plays an important role in gatekeeping and validating researchers before it goes public, yet the pace is too slow to keep up with evolving threats.

One potential route is to build up a network of trusted researchers and to encourage parallel analysis of specific data or online phenomena that warrant a fast-paced response. In the aftermath of the 2020 U.S. Election, the Center for an Informed Public (CIP) researchers were able to point to similar findings from the Social Technologies Lab at Cornell Tech, who were also publishing not-yet-peer reviewed data and findings on election misinformation (Abilov et al., 2020). The CIP researchers used the work of the Social Technologies Lab to support a decision to publish a list of "repeat spreaders" of misleading claims. Though redundancy can feel like a waste of resources and may reduce the rewards (of seeing one's research featured in an article), the benefits of independent research teams converging on

similar conclusions are likely worth the trade-off. Some journalists from the cohort discussed in this paper pursued this kind of triangulation in their data collaborations — reaching out to multiple research teams to confirm findings. Aligning our recommendations with that practice, we encourage journalists, researchers, and even funders to support this kind of triangulation.

Developing nuanced guidelines around anonymization.

Existing research provides some ethical guidance on using social media user data in research and protecting user privacy. Fiesler and Proferes (2018), for example, present considerations in using social data in published research, focusing on considering users' preferences in the absence of traditional academic processes of consent. They make recommendations such as anonymizing tweets and avoiding using deleted content, among others. Yet in the context of online misinformation, the operators of accounts that play a large — and even intentional role — in the spread of harmful misinformation may not want their activities analyzed and made public, even though it may serve the public interest to do so. Determining if/when it is ethical or not to anonymize their data can be challenging.

Academic researchers make careful commitments to mitigate potential harms to participants (and social media users become participants in our work, often without consenting). Journalists have a different set of commitments, often working — ostensibly in the public interest — to expose 'bad actors'. The tensions between these two sets of competing commitments are especially salient in the domain of online misinformation, where there are recognized harms to public health, democracy, and vulnerable groups (*Aspen Commission* 2021), but also where, even for intentional disinformation campaigns, the majority of participating accounts are "unwitting agents" (Bittman, 1985). Unfortunately, it is often difficult to distinguish between a "bad actor" and a "sincere believer".

Our research community will need to come together to surface and navigate through these tensions, building off existing privacy research (e.g. (Badillo, 2019; Fiesler and Hallinan, 2018; McDonald et al., 2020)) to develop nuanced guidelines for how/when to protect the identities of accounts and account owners — and how/when to specifically call out bad actors. Relatedly, as we build tools for exporting data (including network visualizations), we may want to develop (and enact as default display options) criteria for

anonymizing accounts — for example, that are private, unverified, or under a certain threshold of friends or followers.

5.7.3 Practical Guidance for Researchers Working with Journalists on Social Data

Finally, this work reveals some of the reasons why journalists are increasingly seeking support from academic researchers, describing how researchers are creating a (perhaps temporary) bridge for those journalists, helping to fill institutional gaps in contextual and methodological know-how for investigations into an online phenomenon. Our collaborations and subsequent analysis also surface some of the professional challenges that journalists and researchers face in working together to fulfill public interest goals at speed.

Collaborations with the most tension usually exhibited one or more of the following: (1) ample back-and-forth time spent molding journalism questions into actionable entries for data investigations; (2) lack of contextual expertise; and (3) lack of clarity around how the work would be credited. These were discussed in previous findings.

Drawing inspiration from the process of Investigative Digital Ethnography (Friedberg, 2020), we suggest a light framework for researchers to keep in mind during the initiation of these kinds of collaborations. These can help to save time, set expectations, and mitigate professional tensions.

Establish a Focus: Upon receiving a data request, the researcher would benefit from asking the journalists to clarify the focus of the inquiry, which can be done by asking for 1-2 explicit research questions. This task can help researchers ideate the possible methods available to answer the questions at hand and establish a focus for the investigation. The questions will likely be tweaked through the life of the collaboration, yet clarity upfront can help with getting on the same page quicker.

Probe for Prior Knowledge: Finding 4.4.2 highlighted tensions where journalists or researchers lacked contextual expertise about the topic being researched, making data analysis time-consuming and challenging. Asking questions of both the requesting journalist and the research team can help researchers assess if this investigation has the potential to be fruitful and ethical — e.g. doing data research without knowing about the community can lead to marginalization and put both parties at risk of manipulation

(Marwick and Lewis, 2017). Questions may include: What do you already know about the impacted parties? Where are you in your current story/research?

Roles and Credit: Finally asking explicitly: 'How do you envision us helping with this investigation?' can force articulation of expectations and help researchers identify the collaboration type. Researchers may also probe for what kind of credit the journalist usually gives for this kind of contribution and provide journalists with a sense of how much time this work takes.

5.8 Conclusion and Limitations

In this paper, we have framed the intersection of social data researchers and journalism as a site of interest. We have discussed tensions, mismatches in expectations, and ethical challenges that can occur during collaborations between these professionals. Better understanding this work will help construct frameworks for more productive collaborations as researchers increasingly serve as data mediators between social platforms and journalists. There is a pressing need for the development of an ethical framework to guide this work. This research is limited by the fact that most of the journalist collaborations were U.S.-centric and took place during a time of civil and political unrest. We acknowledge that journalism is contextual and cultural. More research is needed to understand how collaborations may differ in non-U.S.-centric contexts.

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Chapter 6

Study 3: Experts on Call: Infrastructuring Temporary Collaboration Spaces to Support Journalists

6.1 Preamble

This chapter presents the final empirical study in the dissertation and reflects the most ambitious attempt to date to address the sociotechnical challenges surfaced in the first two studies. While Study 1 highlighted the structural and epistemic barriers journalists face when reporting on misinformation-rich topics, and Study 2 documented the tensions and limits of one-to-one journalist–expert collaborations during election season, this third study analyzes an experimental, many-to-many support space that came together in real time during the 2024 U.S. presidential election.

The origins of this study were not rooted in a formal research design, but in opportunity. In the lead-up to the election, Jessica Huseman of Votebeat helped organize a Slack workspace to connect journalists covering the election with trusted experts in election law, voting technology, mis- and disinformation, and policy. When we (embedded as researchers at the Center for an Informed Public) were invited to participate as experts, I immediately saw it as an opportunity to observe a promising iteration of the kinds of systems I had studied before. Based on my prior research into expert–journalist interactions during the 2020 election, I had a hunch that this model could work.

For the month surrounding the 2024 election, I observed the Slack environment daily, documenting its dynamics, interactions, and rhythms. I also occasionally acted as a light facilitator—connecting a journalist's question to someone in our lab when I believed it would help. After

the election, Rachel Moran and I conducted 21 interviews with journalists, experts, and organizers, and fielded a survey with 37 journalists. These methods enabled us to examine both how the space functioned and how the participants experienced it.

The biggest throughline was how well the space worked for journalists. They described it as fast, trustworthy, and deeply helpful. Experts were unusually responsive, offering real-time legal context, narrative framing support, and "gut checks" on emerging rumors. Organizers played an active but often invisible role—managing membership, setting tone, clarifying norms, and routing questions to the right people. The system functioned with a rare blend of speed, generosity, and trust.

While this study speaks most directly to **RQ3**, it also reaffirmed and extended findings from the earlier studies. In terms of **RQ1**, it underscored the persistent need journalists have for interpretive support—not just quotes, but conversation, clarification, and quick learning. It also revealed how fragile their existing routines were at speed as they compared the helpdesk to their other routines. Cold emailing, scanning Google Scholar, and calling out on social platforms like Twitter/X were unreliable or increasingly untenable. The helpdesk improved not just speed and credibility, but also surfaced a rarely acknowledged dimension: community. Journalists described the space as one where they could source niche or jurisdiction-specific expertise, be surrounded by peers under similar pressure, and discover new, diverse voices—needs that had not been as visible in earlier studies.

This study also offered new insights into **RQ2**, particularly around the ethics, incentives, and sustainability of expert participation. Experts were primarily motivated by civic duty, but many noted that recurring, unpaid requests would be difficult to sustain over more extended periods. The time-bounded nature of the helpdesk made it feasible, but long-term models would require institutional or financial support. Some experts appreciated the visibility that came with being quoted, while others felt that such engagement had little career impact and was instead motivated by democratic values. They also expressed concern about over-reliance on the same responsive voices, echoing broader concerns around diversity and representational imbalance in expert sourcing. Additionally, they emphasized the importance of acknowledgment—whether or not they were quoted or the story published—highlighting how journalistic norms of closure matter for sustaining expert engagement.

The heart of this study lies in its contribution to **RQ3**. It demonstrated that journalist–expert collaboration at speed depends not just on access, but on the systems and social infrastructure that make access scalable and meaningful. A key insight was the role of intermediaries—trusted facilitators who helped match journalists with the right experts, often through tagging, triage, or outreach. In this realization, I came to see my own role—especially in Study 2—as infrastructural, not incidental. The Slack space also relied on known tools and explicit norms: public Q&A, on-the-record expectations,

and transparent roles all reduced ambiguity and enabled efficient, low-friction exchanges.

Design features mattered. Journalists valued the space's responsiveness and many-to-many structure, which, in their words, outpaced traditional sourcing methods. Experts appreciated the written format, which allowed for more control and reduced the risk of misquotation. The presence of multiple researchers provided a form of ambient peer review, and tools like Unthread helped manage the volume. Perhaps most importantly, the visibility of questions enabled scalable learning: journalists could observe others' interactions and refine their inquiries, while experts gained awareness of emerging needs before stories broke. These interactions functioned as a kind of ambient *information subsidy*—not prepackaged or strategic (Gandy, 1982), but still effective in reducing the effort required to make sense of fast-moving developments.

This study revealed how infrastructure (tools, roles, routines) and infrastructuring (the ongoing work of connecting, tagging, routing, and maintaining participation) are necessary to support the kinds of journalist-expert sourcing systems I had been studying at speed. The better the system functioned, the more it exposed what journalists usually lack: fast access to expertise, shared learning, and a sense of peer community. It addressed a set of tensions I had long observed into a visible, tractable system—one that showed what's possible when these systems are intentionally designed and built on existing networks of trust. Yet important questions remain about the durability and reach of this model—whether it can scale to other beats, maintain expert participation over time, or operate beyond the specific networks and political context that enabled it.

Experts on Call: Infrastructuring Temporary Collaboration Spaces to Support Journalists

In Submission

Authors: Melinda McClure Haughey, Rachel Moran, Jessica Huseman & Kate Starbird

6.2 Abstract

High-stakes events like the U.S. presidential election create intense, time-sensitive information demands. Journalists must verify and contextualize complex, decentralized processes—like state-specific election laws—under tight deadlines. Traditional expert sourcing often proves too slow, and with declining utility on platforms like X (formerly Twitter), quick access to trusted expertise remains a primary challenge. This study examines the Votebeat Expert Helpdesk, a real-time online collaboration space that connected journalists and experts during the 2024 election. Through 21 interviews, a digital ethnography, and a survey, we analyze how the helpdesk's sociotechnical infrastructure accelerated expert access, streamlined communication, and enabled structured knowledge exchange. While sustainability and expert recognition remain open questions, our findings show that many-to-many collaboration spaces offer a promising model for journalist-expert engagement during fast-moving, high-pressure moments. This paper contributes to CSCW, journalism studies, and misinformation research by providing an empirical case of infrastructuring temporary, high-intensity collaborations. We close with design implications and future directions for extending this model to reporting beyond elections.

6.3 Introduction

The 2024 U.S. presidential election was one of the most closely watched and scrutinized elections in recent history (Semyon, 2023; Bond, 2024). Persistent, though debunked, claims of widespread voter fraud from 2020, combined with the lasting impact of the January 6th Capitol insurrection, fueled ongoing skepticism about election integrity. As in previous elections, national attention focused on battleground states that were both crucial for winning and challenging to predict, given the tight polling and the dynamics

of the Electoral College system. Pennsylvania, one of these states, emerged as a focal point for pre-election day scrutiny (Davis Jr, 2024).

On October 25, 2024, just weeks before Election Day and after mail-in ballots had already started being returned, officials from Lancaster County, Pennsylvania, announced that they had flagged an unusual number of last-minute registration applications, triggering a review process to verify their legitimacy (Lisi, 2025; Walker, 2024). However, before election administrators could issue a formal explanation, the story took on a life online, where both sides of the political spectrum framed the event through partisan narratives (Center for an Informed Public Researchers, 2024). Some left-leaning voices focused on a Republican-affiliated voter registration group, raising concerns about possible misconduct. Meanwhile, right-wing influencers and the Republican presidential candidate amplified the event as evidence of voter fraud, falsely alleging that fraudulent ballots had also been discovered (White, 2024).

What is notable here is how rapidly these competing frames emerged and solidified before official information was released or verified. After the initial announcement, county officials provided little additional information about the case or the investigation's outcome (Lisi, 2024). In this information vacuum, the public engaged in *collective sensemaking* (Starbird, 2023), attempting to interpret events based on fragmentary information, speculation, and partisan cues.

Journalists also engage in professionalized sensemaking and information-seeking during these moments. However, unlike the general public, they are expected to balance speed with accuracy by seeking expert perspectives, official confirmation, and independent verification before publishing (Porlezza, 2019; Diekerhof, 2023). In the hours and days following a major election-related announcement, such as the one in Lancaster County, journalists were concurrently trying to identify the right experts, secure responses, validate sources, and provide essential context for their reporting. Today, journalists covering highly politicized topics—such as elections, public health crises, and national security incidents—often find themselves at a disadvantage, navigating structural barriers to expertise, slow institutional responses, and the source verification process, while misinformation and rumors spread nearly instantaneously online.

Even journalists with strong professional networks and well-established expert sources face challenges when reporting complex, highly specialized,

or hyperlocal election issues (Ludwig, Reuter, and Pipek, 2013; Hertzum, 2022). Existing relationships serve them well in routine reporting, but often fall short in fast-moving, high-stakes public-interest moments that require niche expertise in legal, procedural, or technical aspects of election administration. This is especially true as election periods increasingly feature targeted lawsuits, which introduce legal uncertainty and heighten the demand for timely, authoritative legal analysis (Election Law at Ohio State, 2025). In previous elections, X (formerly Twitter) acted as a "bat signal" for journalists seeking experts quickly, enabling them to publicly request sources and connect with the right voices in real-time (Molyneux and McGregor, 2021; Hernández-Fuentes, and Monnier, 2022). However, with X's decline as a journalistic tool (Ng and Ray, 2025; Claesson, 2024), many journalists lost a vital mechanism for rapid expert sourcing. As reporters face growing demands to produce news quickly while ensuring accuracy, new forms of structured collaboration are necessary to facilitate real-time identification and access to expertise in fast-paced news situations and environments.

6.3.1 Investigating an Election-Focused Online Collaboration Space

This paper examines the Votebeat Expert Helpdesk (hereafter referred to as the helpdesk), an online collaboration space (OCS) hosted on Slack[1] to connect journalists with pre-vetted experts on niche topics (Company, 2024). The helpdesk sought to expedite access to expertise, facilitate real-time verification, and lower barriers to sourcing accurate information in the fast-paced news environment during the month leading up to the 2024 U.S. presidential election and continuing through the concession of the losing candidate. Through an analysis of 21 in-depth interviews with helpdesk participants, a digital ethnography of 1,500 Slack messages, and a survey of journalist participants, this study explores:

1: What professional and contextual needs motivated the use of an OCS for real-time journalist-expert collaboration, and what were its perceived benefits and drawbacks?

2: How did the structure and affordances of the environment facilitate or hinder expert sourcing and information-seeking?

[1]Slack is a group messaging application designed for teams to facilitate communication and collaboration online, especially when spread geographically.

Our study surfaced three core findings about engagement in the helpdesk: mutual value exchange drove participation, infrastructural design shaped collaboration, and social norms sustained ongoing use. The helpdesk as a sociotechnical tool improved the speed and structure of information sharing between journalists and experts, suggesting a scalable model for real-time support in high-intensity news environments.

This study contributes to CSCW, journalism studies, and misinformation research by illustrating how temporary, high-intensity collaboration spaces can facilitate rapid, cross-domain knowledge exchange and function as journalistic infrastructure. By highlighting the role of socio-technical design in enabling real-time access to expert knowledge, these findings suggest a promising path forward for strengthening journalist-expert collaborations. The success of the helpdesk in an election setting points to opportunities for integrating similar models into newsroom workflows, expanding structured expert access beyond crisis moments, and fostering more resilient information ecosystems. With continued refinement and institutional support, these spaces have the potential to become a sustainable and scalable tool for improving reporting in fast-moving, high-stakes contexts.

6.4 Background

This literature review begins with the challenges journalists face in information seeking, defined by D. Wilson (2000) as the intentional pursuit of information for a specific goal. Here, that goal centers on investigative reporting under fast-moving, high-pressure conditions. We then examine the rise of collaborative work in journalism, its benefits, and ongoing tensions. Next, we introduce infrastructure and infrastructuring as lenses for understanding how such collaborations are built and sustained. Finally, we consider online collaborative systems (OCS) as infrastructural resources supporting journalism and crisis response.

6.4.1 The challenges of rapid information-seeking in journalism.

Today, audiences expect near-instant access to information as breaking news unfolds in real-time across social media and messaging apps. This immediacy allows the public to begin interpreting events as they happen—a dynamic that, as Starbird (2023) notes, can gives rise to rumors. While

journalists have traditionally acted as gatekeepers during such moments (Meer et al., 2017; Olsen, Solvoll, and Futsæter, 2022), their role has been increasingly challenged by these decentralized information flows (Müller, and Wiik, 2023; Bhagwat, 2023). Still, research shows that journalists — particularly those on television (Austin, Fisher Liu, and Jin, 2012) — continue to play a central role in shaping public understanding during crises and unfolding events. Yet the journalistic process takes time. This delay can create what has been termed a "data void" (Golebiewski and boyd, 2018; Mannino et al., 2024), leaving space for speculation and misinformation to spread before verified reporting can catch up.

A core journalistic practice is consulting external sources as part of the reporting process—not just for quotes but for learning, contextualizing complex topics, and generating story ideas (Hertzum, 2022). Digital search tools, networking platforms, and expert databases have streamlined this process. Resources like Help a Reporter Out (HARO), SciLine, and Rolli connect journalists with experts (Waters, Tindall, and Morton, 2010). However, these resources do not solve the issue of expert responsiveness (Waters, Tindall, and Morton, 2011). No matter how quickly journalists identify an expert, their reporting depends on that expert responding in time—an issue that becomes critical in fast-moving, high-intensity moments.

Under deadline pressure, journalists default to trusted sources—those who are available, responsive, and perceived as credible (Hertzum, 2022). While this ensures speed, it reinforces reliance on a small, elite group of experts, often academics, business leaders, or officials, limiting source diversity (Mathisen, 2023). Expanding beyond established contacts is risky, as tight timelines increase vulnerability to media manipulation (Marwick and Lewis, 2017), source hacking (Donovan and Friedberg, 2019), and mistaking advocates for experts (Laursen and Trapp, 2021). Addressing these challenges while supporting journalists' information-seeking needs in crisis and breaking news moments is essential—improving reporting speed and ensuring vetted, credible information reaches the public quickly.

6.4.2 Collaborative Work in Journalism

Journalism is both a collaborative and competitive profession (MacGregor et al., 2020; Jenkins and Graves, 2024). The industry's entrepreneurial dimensions (Deuze and Bardoel, 2001) drive journalists to compete for scoops, exclusive stories they can publish first — within and with external

newsrooms. Famous rivalries such as The Washington Post vs. The New York Times in the 1970s (battling over the Pentagon Papers) illustrate how deeply ingrained the competitive "scoop" culture has been. In recent years, however, industry constraints, like declining revenues and resources, have pushed news organizations to engage in more collaborative efforts (Stonbely and Siemaszko, 2022) with other newsrooms, external experts, and the public, and digitization has made this more possible (Leihs, 2019).

Cross-Newsroom Collaboration: High-profile projects like the Panama Papers — which mobilized hundreds of reporters across media outlets - demonstrate the power of collaborative reporting in tackling large-scale investigations. Still, cross-newsroom competition remains a lingering barrier to collaboration, as many journalists hesitate to share leads or sources with other outlets, as collaboration can feel like an "anathema" to those raised in a culture driven by scoops (Stonbely and Siemaszko, 2022). However, Jenkins and Graves (2024)'s analysis of three successful local journalism collaborations found that the collaborating newsrooms were rarely direct competitors and catered to different niches or markets, suggesting that these structures can be fruitful when the target audiences for the different journalists does not overlap. They found that articulating shared editorial goals, thinking strategically about the timeframe of the collaboration, having a non-profit coordinate the collaboration, and having data access are some ways that have successfully mitigated competitive tensions between local newsrooms in collaboration.

External Collaborations: Journalists also increasingly engage in formal collaborations with civil society organizations—including universities, think tanks, and NGOs—in what is known as "cross-field collaborations" to co-create journalism, often centered on specific investigative topics (Stonbely and Siemaszko, 2022; Murray, 2024). Research by Stonbely and Siemaszko (2022) identifies three primary drivers behind these collaborations over the past decade: (1) a desire to expand the reach of investigative outputs, (2) resource constraints faced by newsrooms, which necessitate access to specialized skills and supplemental human power, and (3) an increasing emphasis on ensuring investigative journalism has a broader societal impact, which these collaborations help facilitate. Investigations like the *Predator Files*, in which Amnesty International, European Investigative Collaborations (EIC), Mediapart and Der Spiegel worked together to expose global spyware abuses, demonstrate the potential impact of these collaborations when

successful (*Global* 2023). However, sustaining such collaborations presents challenges, including misaligned timelines, funder influence (Stonbely and Siemaszko, 2022), and differing work rhythms between journalists and experts (Haughey, Povolo, and Starbird, 2022; Stonbely and Siemaszko, 2022).

Collaboration with the Public: Collaboration in journalism isn't limited to formal newsroom partnerships. Today, it involves a growing reliance on loosely coordinated public—activists, citizen documentarians, open-source sleuths, and online volunteers—whose collective efforts become vital in times of crisis. For example, newsrooms have leveraged digital volunteers, fact-checkers, and citizen networks to manage overwhelming information flows (Dailey and Starbird, 2014; Starbird et al., 2018; Yoon et al., 2025). During Hurricane Irene, journalists coordinated crowdsourced intelligence via a "human-powered mesh network" (Dailey and Starbird, 2014), and similar collaborations have emerged in public health crises and elections to debunk misinformation (Yoon et al., 2025; Westlund et al., 2024). These examples demonstrate journalists' adaptability in urgent moments and highlight how shifting power dynamics and informal labor structures reshape the nature of collaborative work, an inquiry central to this study.

6.4.3 Online Collaborative Systems as Socio-Technical Infrastructure

Dailey and Starbird (2014)'s work on a journalist-public socio-technical coordination during Hurricane Irene utilized Star and Ruhleder (1996)'s concept of infrastructure along with Lee et al.'s extension (Lee, Dourish, and Mark, 2006), which includes the idea of human infrastructure. Here we do the same, as these frameworks provide a valuable lens for examining the technical systems underpinning collaboration and the human processes that build, structure and sustain them.

Star and Ruhleder (1996) conceptualized infrastructure not as a fixed or visible system, but as something relational and embedded, made real through use and shaped by context. Lee, Dourish, and Mark (2006) extended this view by introducing human infrastructure, highlighting the roles of people and their relationships in sustaining sociotechnical systems. Together, these perspectives have been central to the development of *infrastructuring* as a concept—the ongoing, adaptive work of building, maintaining, and

evolving infrastructure over time. CSCW researchers have extended this lens to digital environments, particularly in high-intensity, time-sensitive contexts. Work by Dailey and Starbird (2017) and Starbird and Palen (2013) explores how digital volunteers and emergent groups mobilize and structure information-sharing systems during crises. Related CSCW studies examine infrastructuring in mobile knowledge work (Erickson and Jarrahi, 2016), medical prescription workflows (Bossen and Markussen, 2010), community efforts to find pets after hurricane sandy (White, Palen, and Anderson, 2014), the creation and maintenance of temporary mobile networks by a hacker community (Wagenknecht and Korn, 2016), and grassroots efforts to secure COVID-19 vaccines for vulnerable groups amid disrupted public systems (Ankenbauer and Lu, 2021), highlighting how users adapt to, maintain, and reimagine infrastructures in practice. Pipek and Wulf (2009) in their study of IT systems in organizations further argued that infrastructuring is embedded in the everyday creative work of users, particularly in software-based systems where the boundaries between use, maintenance, and design become blurred. This perspective is critical to understanding the technical design of collaborative spaces and the human labor required to sustain them. Collectively, these studies show that infrastructuring is not merely technical; situated practices, time pressures, and evolving roles among participants shape it.

This is a valuable lens because our study site is an online collaborative space (OCS) where technical affordances and human choices shape infrastructure. OCS platforms like Slack and Microsoft Teams have become standard in distributed work, enabling teams to coordinate, share files, and engage in persistent group chats (Wang et al., 2022; Azarova, Hazoglou, and Aronoff-Spencer, 2022). In journalism, these platforms serve as virtual workspaces for reporters to coordinate stories, brainstorm ideas, and share real-time updates (Bunce, Wright, and Scott, 2018). These environments are highly flexible but not inherently structured for cross-organizational work—human intervention is often needed to configure channels, shape norms, and extend functionality through platform affordances and external plugins.

OCS platforms have reshaped journalistic workflows by enabling geographically dispersed newsrooms to coordinate, refine story angles, and share knowledge in ways traditional workflows do not allow (McGregor, Watkins, and Caine, 2017). Some newsrooms have even opened their Slack spaces to the public to foster trust, though these efforts highlight tensions

between transparency and the need for private, professional discussions (Moran, 2021).

Beyond journalism, OCS platforms have proven essential in crisis response, facilitating real-time coordination for emergency teams and volunteers (Norris, Voida, and Voida, 2022; Soden and Owen, 2021; Haesler et al., 2021b; Haesler et al., 2021a). During the 2021 Afghanistan evacuation (Ullrich, 2022), for example, a grassroots relief group used Slack to triage cases and organize legal aid, demonstrating the scalability of these tools for fast-moving, high-stakes collaboration. However, questions remain about how OCS affordances function—or could be structured—to support temporary, high-speed, and inherently competitive environments.

6.4.4 The Votebeat Election Helpdesk Structure

To better understand how OCS platforms can support journalist-expert collaboration in high-speed, high-stakes reporting environments, we examine the Votebeat Expert Helpdesk, a structured online collaboration space designed for the 2024 U.S. presidential election.

Votebeat is a nonprofit news organization dedicated to local election administration and voting access, operating under Civic News Company. The organization receives funding from organizations such as the Knight Foundation, which has supported various election-related journalism initiatives. Ahead of the 2024 election, Votebeat launched the Expert Helpdesk as part of a broader effort to support journalists covering election processes, legal challenges, and misinformation (Company, 2024).

Designed as an Online Collaborative Space (OCS) on Slack, the helpdesk was a real-time centralized platform where journalists could connect with pre-vetted experts. It provided a structured environment to facilitate rapid knowledge exchange, source verification, and expert consultation, helping journalists navigate the complexities of election reporting under deadline pressure.

The organizers conducted a vetting process before admitting participants to the space. Journalists were required to demonstrate affiliation with a newsroom or an established journalistic outlet, and 437 applicants were ultimately approved to join. Only five applicants were rejected outright due to clear signs of entrenched partisan bias. Of the journalists accepted, only one was later removed after concerns arose about the partisan

tone of their personal website. Experts were similarly vetted based on professional credentials and domain expertise, including election law, voting technology, disinformation research, and political science. After acceptance, all participants agreed to a code of conduct that outlined expectations around engagement, attribution, and ethical participation in the space, including provisions that all conversations in main channels would be on the record.

Launched on October 15, 2024, just 21 days before Election Day, the helpdesk became a hub for election coverage. It engaged 437 journalists and 96 experts across a range of sectors and publication types, shown in Figure 6.1. Journalists represented national, regional, affinity-based, student, and international outlets, with most publishing across both digital and print platforms. Experts included non-profit election organizations, academic researchers, election law practitioners, advocacy groups, and private sector election security specialists. Over 2,000 total messages were exchanged in public channels during the helpdesk's active period, including more than 300 messages in the main #helpdesk channel on Election Day (November 5, 2024). Hundreds of articles ultimately cited helpdesk experts or drew on information shared within the collaborative space.

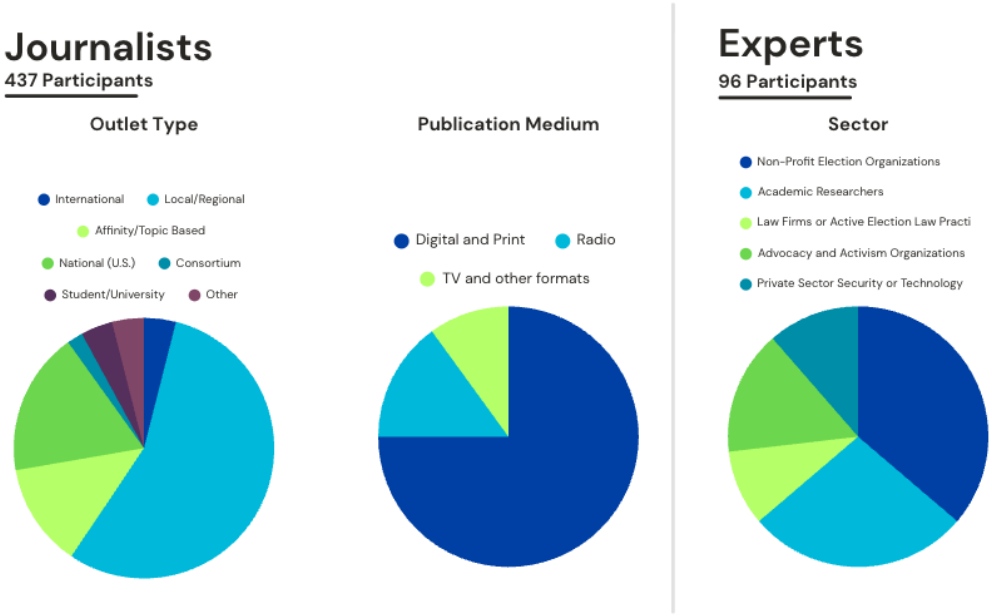

FIGURE 6.1: Composition of journalists (n=437) and experts (n=96) who participated in the 2024 election helpdesk. Journalists represented a range of outlet types and publication mediums, while experts came from non-profit election organizations, academia, law, advocacy groups, and private sector election security.

The helpdesk ultimately operated through seven dedicated Slack channels: #helpdesk, #sharestories, #shareotherstories, #reportersonly, #expertsonly, #watercooler, and #votebeatreporters. While the initial structure was different, it was adjusted after the first week to better meet the needs of both journalists and experts—a shift discussed further in the findings section. The primary channel was the helpdesk, where journalists would post their questions. After a question was posted, a thread — or side chat — would start branching off their post. In that thread, the organizers and experts would respond by tagging the appropriate experts (using the '@' sign and then their username) and addressing the questions posed. Sometimes, experts would answer the question right there; there were usually between two and fifteen responses from various experts on any given question. Experts would also offer to discuss elsewhere — via email, direct messages, or text.

The organizers would visually mark the questions with a green checkmark if they were completed. Other channels were used for sharing articles written from the expertise gathered in this group (#sharestories), sharing webinars and other new publications (#shareottherstories), camaraderie (#expertsonly, #reportersonly, #watercooler), and for offering a more protected space for the journalists from the host organization to ask experts questions (#votebeatreporters). However, the #helpdesk channel was by far the most active and is the central focus of this study.

6.5 Methods

The University-based authors of this study first learned about the helpdesk after being identified as potential expert participants. After gaining approval from the Votebeat team and getting approval from [anonymized]'s internal review board, they joined the space as participant observers. They were granted permission to observe and document findings in the space, in some cases, participated as experts, and could solicit participant feedback via interviews and surveys.

6.5.1 Digital Ethnography and Survey

This study drew on digital ethnographic and survey methods to investigate participation and collaboration within the OCS environment. The digital ethnography included over 1,500 messages from public channels, capturing

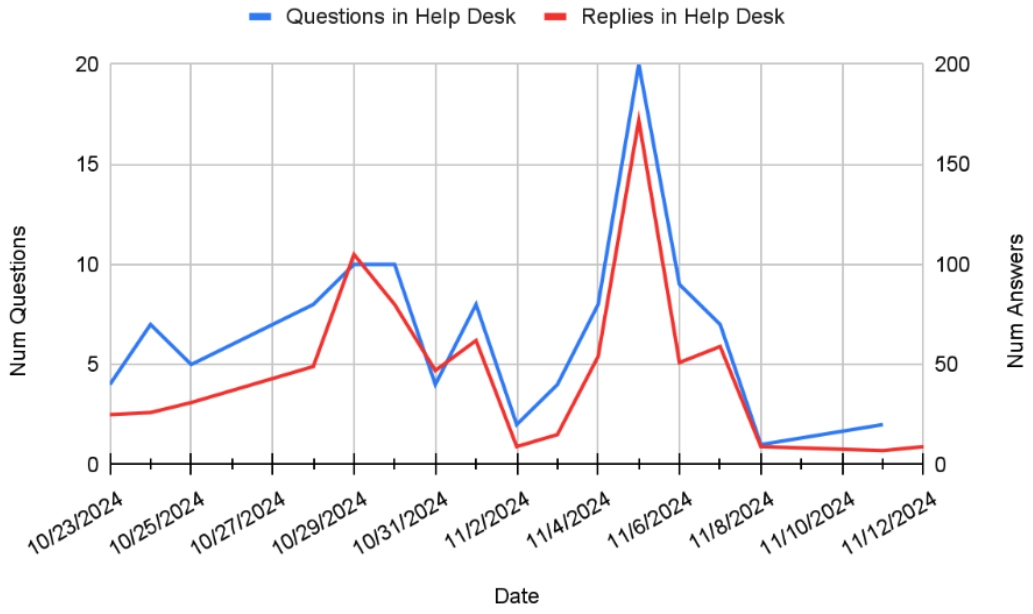

FIGURE 6.2: Activity Chart Over Participation Period on #helpdesk Channel

real-time interactions. The first author periodically reviewed the messages and responses, reflecting on the nature of the questions and responses. The volume was highest on weekdays, Election Day, and when major news broke, like the voter registration issue illustrated in the introduction. The volume died significantly following Kamala Harris's concession. These messages revealed information-seeking behaviors, expert responses, engagement patterns, and thematic trends, and helped identify frequent contributors and illustrative cases for follow-up interviews.

To complement this, a survey was electronically distributed to all journalist participants gathering insights into their motivations, perceived benefits, and challenges, and the impact of their participation. Thirty-seven journalists responded, including four who were also interviewed. The survey examined whether the helpdesk enhanced reporting quality, resulted in published articles or expert citations, and identified the features that supported or hindered their work. Quantitative data revealed trends in satisfaction and use, while qualitative responses helped triangulate and enrich the interview findings.

6.5.2 In-Depth Interviews

The first two authors conducted 21 interviews via videoconferencing, ranging from 25 minutes to nearly an hour. The interview sample was purposively selected (see Table 6.1), drawing from the ethnographic data, to ensure representation across different roles, levels of engagement, and perspectives within the helpdesk. The semi-structured nature of the interviews allowed participants to elaborate on their experiences, challenges, and insights regarding real-time collaboration in a digital space.

Journalists were asked how they navigated the helpdesk's many-to-many chat environment, selected experts to engage with, and managed the volume of responses. Specific questions focused on their criteria for choosing which experts to engage with, the effectiveness of shared resources, and how the helpdesk compared to traditional methods of sourcing information.

Experts and researchers were interviewed about their decision-making processes when responding to journalist inquiries, how they managed multiple threads and requests, and whether the helpdesk was an effective medium for engagement. They discussed the challenges of balancing responsiveness with depth, how they prioritized urgent requests, and how it compared to previous methods of collaborating with journalists. Questions also probed their perceptions of the impact of their contributions and their recommendations for improving such collaborative spaces in the future.

FIGURE 6.3: Collaborative Coding Board

Participant Number	Role	Type of Organization
O1	Organizer	Civic news organization
O2	Organizer	Civic news organization
J1	Journalist	National media organization
J2	Journalist	National media organization
J3	Journalist	National media organization
J4	Journalist	Local television news
J5	Journalist	Local news
J6	Journalist	National media organization
J7	Journalist	Student news organization
J8	Journalist	Local journalism organization
J9	Journalist	International media organization
E1	Elections Expert	Election integrity organization
E2	Elections Expert	Election support organization
E3	Elections Expert	Election support organization
E4	Elections Expert	Voting-focused organization
E5	Academic Researcher (Expert)	Private academic institution
E6	Elections Expert	Civic organization
E7	Academic Researcher (Expert)	Private academic institution
E8	Academic Researcher (Expert)	Public academic institution
E9	Elections Expert	Election support organization
E10	Elections Expert	National campaign organization

TABLE 6.1: Participant Types and References

6.5.3 Interview Data Analysis

All interviews were transcribed and reviewed for accuracy before being thematically coded using the qualitative coding software Atlas.ti. The first two authors individually conducted the initial coding process and assigned relevant codes to sections of all 21 transcripts, resulting in 866 codes.

These codes were then collaboratively reviewed and refined in two two-hour sessions. Using an interactive digital board (Miro), the authors organized the codes thematically, identifying recurring patterns and emergent insights through discussion and consolidation. Approximately 90 themes were generated and organized into three overarching temporal categories: Before, During, and After participation in the space. Each of these categories encompasses multiple themes and sub-themes. For example:

- **Before** participation, codes focused on Existing Norms and Challenges (e.g., reflections on prior relationships with journalists or experts), Discovery of the Channel, and Trust and Vetting (e.g., how participants determined trustworthiness or evaluated the vetting process).

- **During** the experience, themes included Value (e.g., sense of duty to inform, the role of speed), Engagement Processes (e.g., tagging dynamics, moving conversations to DMs), and both Technical and Non-Technical Infrastructure.
- **After**, codes centered on Critical Reflections and Future Hopes for similar spaces.

This mixed-methods approach—integrating interviews, digital ethnography, and survey data—allowed for a comprehensive examination of how journalists and experts engaged in collaborative, real-time information exchange. While the survey and ethnography provided broader contextualization, the in-depth interviews ultimately formed the foundation of the study. This triangulation allowed us to identify the three overarching themes that warrant further discussion and analysis below.

6.6 Findings

Analysis of interviews, supported by ethnographic and survey data, revealed three core themes. First, we examine the concept of value exchange between journalists and experts, focusing on participants' perceptions of the value exchanged and their motivations for engaging within the collaborative environment. Second, we explore the role of technical infrastructure in shaping participants' collaborative experiences. Third, we analyze the non-technical, human infrastructure that upheld system norms and sustained effective interaction. Figure X illustrates how these social and technical structures fostered value exchanges and supported collaboration within the helpdesk environment.

6.6.1 Value Exchange: How Journalists and Experts Benefited From Collaboration

The OCS environment examined in this piece evolved into a dynamic arena for value exchange in the month leading up to the 2024 U.S. presidential election. Both journalists and experts overwhelmingly described the experience as positive and expressed interest in participating again. In post-election interviews, 20 out of 21 participants expressed favorable opinions about the space. Survey responses echoed this sentiment: when asked, "*On*

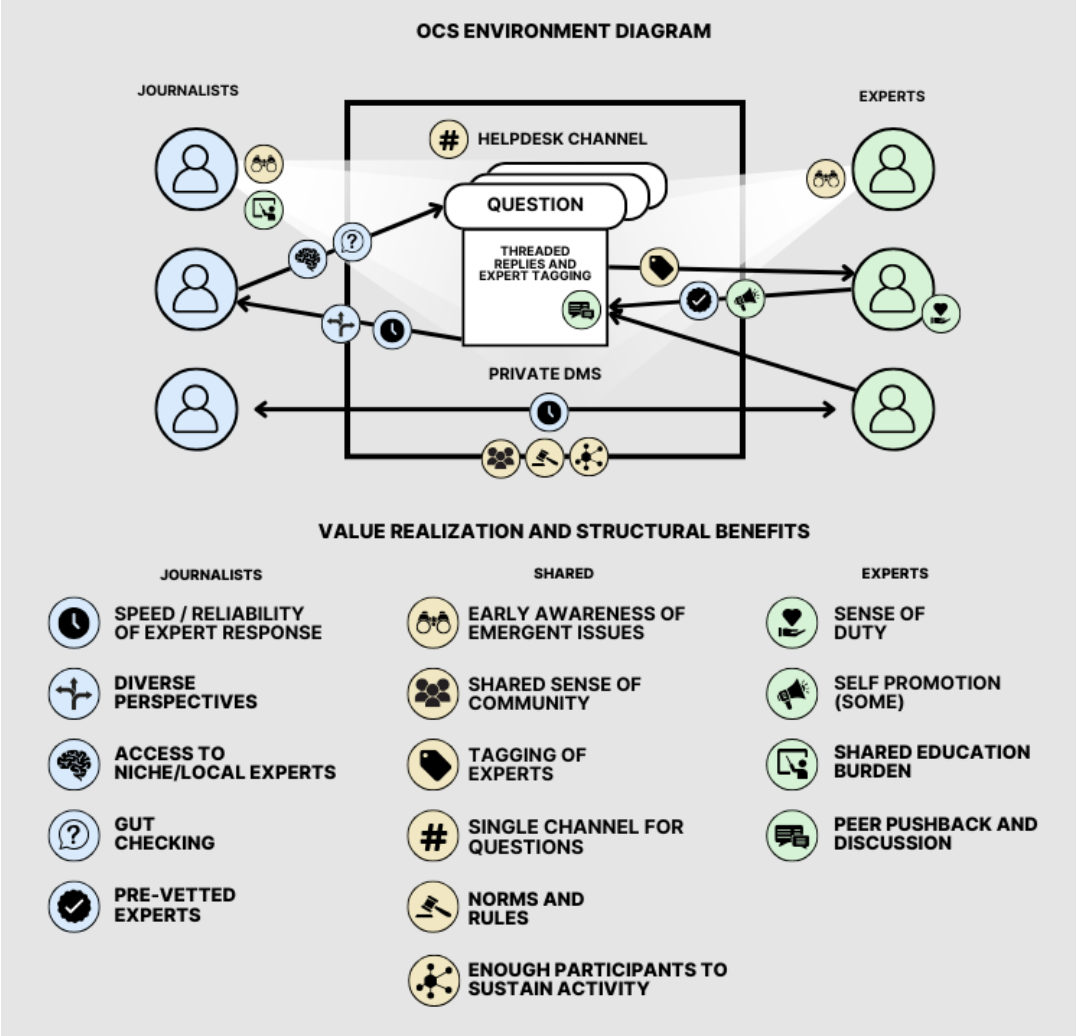

FIGURE 6.4: Diagram illustrating how social and technical structures in the helpdesk fostered value exchanges between journalists and experts

a scale of 0 to 10, how likely would you be to recommend the Votebeat Election Desk to others?", participants gave the space an average score of 8.8 out of 10.

One expert, a former journalist with 50 years of experience who participated extensively, noted:

> "As I say, I've been in journalism for almost 50 years. I have never seen a resource like this on any story I ever covered that there would be so many experts available to journalists on, you know, sort of an on-call basis to answer these questions, and it's great."
> -E2

Journalist Perceptions: Speed, Trust, and Knowledge Expansion

For journalists, this helpdesk offered rapid access to experts, trusted sources, and niche knowledge, creating an environment that supported fast-paced reporting, learning, and gut-checking.

Speed and Reliability of Response. Journalists highlighted the quick and dependable expert responses as a significant advantage of this space compared to their usual methods. Typically, journalists reach out to familiar contacts or send cold emails for expert inquiries, which can take hours to days to receive a response or may go unanswered. In comparison, experts in this environment typically responded within minutes or hours.

> "It definitely sped things up. [...] I think most of us were sending out a query in the [helpdesk], and then also had maybe a few experts who we also emailed directly. [...] I got responses more quickly in the [helpdesk] channel, because especially ahead of the election and on election day, people were very responsive, very engaged" -J6

Gathering expert input and quotes faster allowed journalists to report quickly, especially in fast-moving or crisis moments. O1 highlighted the speed of connection as a key motivator in creating this space, noting that *"what they are struggling with is getting access to good information and to sources that respond quickly enough that it is useful for them in this media environment."* Most of the journalists interviewed noted that it helped them report and find experts faster.

> "The immediacy of it was a huge boon to my workflow, because an unbelievable amount of my day is spent coldcalling people and leaving messages and never getting phone calls back and hoping someone calls me back by deadline, and so not having that worry [was good]. [...] I was able to accomplish so much and cover so many stories on so many days because I wasn't waiting for someone to call me back by deadline."-J4

Access to Diverse Perspectives. Seven interviewed journalists and 17 survey respondents cited access to trusted experts as a key reason for participating in the helpdesk, desiring access to sources with proven expertise and established credibility. They turned to the helpdesk when

their usual sources were unavailable or when they wanted to diversify expert perspectives in their reporting.

> "Sometimes the usual suspects are not available [...] or for operational reasons, can't comment. [...] I have a fair amount of contacts, but you're always looking to expand this, [...] get some new voices in." – J9

While this accessibility was largely beneficial, several interviewees noted that they saw the same select group of experts responding to most queries, raising concerns, most directly from two experts, about whether "frequent responders" were always the most qualified to answer, or whether they were just the most present. However, one organizer pushed back on this idea:

> "Perfect is the enemy of good, and people needed a source to publish their story." – O2

Access to Local and Niche Knowledge. Journalists valued this space as a way to access hard-to-find local and niche insights, especially during elections, where laws and procedures are highly technical and localized. 23 of the 37 survey respondents put this as the primary value they got from the space. Without access to local officials, journalists often struggled to find answers. As one organizer put it:

> "If I'm in Johnson County, Tennessee, and I have a question about how they transport ballots from A to B, and I can't ask the election administrator—who the hell am I supposed to ask?" – O1

Journalists used the help-desk channel to get these specific questions answered:

> "If I was fact-checking something in particular, I might put the exact issue out there. [...] Like, could you walk into the polls with a MAGA tattoo on your face? That was so random." – J1

> "I had a question about [U.S. State] election procedures, and the former Secretary of State answered it. [...] To have the person who literally implemented the mail-in ballot system in 2019 there for me to ask questions to when there were lawsuits challenging aspects of the mail in balloting was just unreal. I can't begin to express how incredible of a resource she was, and many of the other experts I spoke to as well." –J4

One issue that caused significant speculation and rumors during the 2024 Presidential Election was the controversy over thousands of questionable registrations in Lancaster County (Lisi, 2024). One journalist reflected:

> "We really had a hard time understanding what the process was for reviewing those registrations and what the outcome was. [...] having someone—not just a lawyer who knows the election code, but actual professionals or retired professionals who could explain what happens—was beneficial." - J8

Local expertise wasn't just useful for regional reporters—national journalists also sought detailed, often geographically specific, election administration knowledge. Although one organizer initially hesitated to include more well-resourced national newsrooms, the helpdesk ultimately expanded access to them. O1 reflected on the shift, acknowledging, "[Journalists from large national newspapers] were asking really, really specific election administration questions. [...] Even if you're with [large national newspaper], you may not know who can answer a question about the functionality of e-poll books."

This help desk became particularly timely for meeting a critical resource gap in finding these experts as journalists have started using it less (Ng and Ray, 2025). Several participants noted the shift:

> "Old Twitter was hopping on and saying, 'I need to talk to someone who has tried a landlord-tenant case in Pennsylvania,' and within hours, someone would respond." – J4

> "[This environment] is trying to replace the functionality some people used Twitter for, but now that's gotten really problematic." – E5

Gut-Checking. Beyond accessing expertise, journalists valued the helpdesk for accelerating their learning and validating their reporting instincts. This "gut-checking" process helped confirm whether their framing, sources, or approaches were on the right track before publishing.

> "I put together a 'what to expect on election day' piece and put out a 'hey, if anyone has suggestions.' [...] There was a ton of feedback, and it was nice because at least half of the links people suggested were already incorporated in my piece. [...] It was

> still really helpful to validate that the ways I was thinking about informing my readers were backed up." – J4

Journalists also used the helpdesk to ensure they asked the right questions and contacted the right sources.

> "In a couple instances, it was validating to put a request into the help desk. [...] The response was, 'Well, have you reached out to these folks locally?' And I was like, yes. Or I asked, 'I'm reporting on this—am I taking the right approach?' And they were like, 'Yeah, you're on the right track.' [...] So that was validating." -J5

In turn, experts saw providing this type of validation as a key part of their role.

> "And I think part of it is just confirming for folks that, like, yes, you're on the right track. [...] I don't know the exact answer, but I do know that this is important." – E10

Expert Perceptions: Navigating Duty, Reputation, and Impact

For experts, this space offered a way to share knowledge with journalists—and, by extension, the public—and in some cases, to raise the visibility of their own work. The level of participation among nearly 100 experts surprised organizers; overall, experts felt it was a valuable use of their time.

Reflections on Duty. All experts we interviewed saw participation as a kind of civic duty, emphasizing their commitment to democracy and the supporting role of journalism in democratic elections. Accordingly, they believed accurate reporting and combating misinformation were critical.

> "The big motivation for me was saving democracy. [...] The proliferation of misinformation and flat-out lies has created widespread public distrust. [...] Reporters are just so central to this whole process that I feel obligated to engage with them." – E5

This sense of duty manifested itself in several ways: helping journalists avoid misleading or incomplete reporting, sharing expertise with a broader audience, and making themselves more available during a crucial period.

> "It's part of my responsibility as a professor of voting rights. [...] This field affects everybody, and being at a public university, I feel it's my responsibility to help the media explain these vital issues." – E8

> "I wanted to be helpful and useful, and if I could prevent an incomplete story from being printed, I would chime in." – E9

Experts also noted that this commitment was manageable because it was temporary, limited to one month during the election season. However, they raised concerns about its sustainability over a long term.

> "I was happy to do this temporarily, knowing my expertise could be helpful in this short time. But what about a more permanent model? [...] If there were an incentive, like being a paid expert, I'd be more willing to put in time and resources." – E8

Self-promotion, or not? Experts shared a range of perspectives on the value of being quoted in articles, shaped largely by their career stage and institutional context. For some, especially tenured professors or leaders of established election-support organizations, media engagement held limited professional value. They participated out of a sense of civic duty, not visibility, and while they appreciated follow-up from journalists, citations in stories were not a priority.

Early-career academics and professionals from emerging organizations, in particular, viewed media visibility as an important way to build public credibility and advance their careers. Being quoted could support tenure cases or elevate their organization's profile.

> "When you go up for tenure [...] you write that public-facing work. [...] Being in the media—doing interviews and things like that—are counted towards your public-facing work and scholarship." – E8

Still, not all academics agreed on its value. Some noted that traditional tenure systems often continue to prioritize peer-reviewed publications over public scholarship, limiting the relative professional value of contributing to efforts like this.

A recurring concern was the lack of reliable notification when experts were cited. Some only found out through personal alerts or the #sharestories

channel, as journalists didn't consistently follow up. This made it difficult to track contributions—cited or not—for professional recognition or institutional reporting. This highlights a need for a systematic process for notifying them when their input appeared in stories.

Shared Value Creation: Building Networks and Awareness

Beyond individual benefits, both experts and journalists reflected on the cooperation, community, and awareness fostered in this high-intensity environment.

Collaborative Journalism Defies Industry Norms Because journalism is a traditionally competitive profession, one organizer (O1) worried whether journalists would feel comfortable publicly posting their questions on the #helpdesk channel, especially given that the environment was an "on the record" space in which all information was visible and open for all reporters. Two journalists discussed how they were initially skeptical, they ended up embracing it.

> "I didn't give a crap at all about competition. Everyone's welcome to know what I'm working on. I just accepted that. I don't normally do that, but you know, in this case, you just had to do it -J3

Journalists cited several factors that made them comfortable: established norms (others were doing it), the speed of response (meaning the benefits outweighed any risks), and the unique nature of crisis reporting, where election-related issues unfolded in real time with no real opportunity to land a "scoop."

> I think that's the nature of, like, election day reporting, right? Like the way, like everyone sort of finds out about the problems at the same time. On election day, no one's gonna get a scoop. - J5

This collaborative approach fostered learning across experience levels. Even experienced reporters found it valuable, given the technical and local nature of topics like election procedures, disinformation patterns, and platform policies, which often require specialized knowledge. Newer reporters, including students, benefited from observing veteran journalists' question structuring, source engagement, and navigation of unfamiliar terrain.

> It was also a good, like, training opportunity for our [newer] writers to sort of see how you're supposed to, like, handle yourself when you're talking to sources.- J7

> "I noticed several instances where journalists helped each other with answers. [...] The field is generally competitive, but in this case, we had to help each other explain difficult issues and concepts." – E2

Ultimately, the helpdesk became a community built on trust and shared public-interest goals. Some participants even saw it as a necessary shift for the industry.

> "As [...] people like myself are eased out, young journalists running newsrooms will need to collaborate even more." – J8.

In the trenches: shared space for engagement. Experts and journalists appreciated the sense of community fostered by collaborating with others who were addressing the same issues, despite their diverse professional backgrounds and geographical locations. Many participants were the only ones in their workplaces and newsrooms focusing on election administration or rumors, making this shared space particularly meaningful. J4 described being in this space as a "warm blanket, an extra layer of support" for doing this work.

> "It was an extraordinary resource. [...] Also, just having a place to go and freak out with other journalists going through the same thing. [...] When you're the only one neck-deep in lunatics saying crazy shit on Telegram, you can feel like you're on an island. [...] But here, we were all out here trying to make sure the truth matters." – E11

For some, this experience evolved into networking, leading to potential future collaborations.

> "It was helpful for informing interests and partnerships. [...] That was an unintentional but valuable benefit." – E1

Early Awareness and "Lurking" Benefited All. Beyond direct participation, both journalists and experts found significant value in simply observing discussions. "Lurking"—reading but not actively

engaging—became a key way to stay informed about emerging election-related events. By tracking what other journalists were reporting on and what experts were concerned about, participants gained early awareness of trends, an information-seeking practice documented in newsroom workflows (Hertzum, 2022).

> "Lurking definitely helps. People posting links to, again, like stories or reports that they're flagging up certainly helps when you're thinking about how to approach it." – J9

For journalists, lurking provided a strategic advantage. It allowed them to see which topics were gaining traction, how peers framed key election issues, and what sources were being consulted. This passive engagement provided them with a broader situational awareness, which helped shape their reporting.

Similarly, election experts often read journalists' work to stay informed about public discourse around elections. Being part of this space gave them early insight into how key issues were unfolding in real time—and how misinformation or procedural confusion might soon surface in news coverage.

> "I think there's a benefit for us and people who do our type of work in that we're able to see the types of things that folks are talking about, see how in some ways, they're talking about it, kind of have an aggregated space to be able to review that." – E1

> "I read every story that was shared for sure. So that helped, just in, like, knowing what was happening." – E9

This dynamic highlighted the helpdesk's role—not merely as a source for answers but as an ecosystem for intelligence sharing. Passive observation of emerging narratives provided journalists and experts with an information advantage. This space enabled collaboration and fostered a knowledge-sharing ecosystem where real-time engagement and cross-professional insights enhanced journalism and expert discourse.

6.6.2 Technical Design Elements

Slack's structure and features shaped the pace, reach, and effectiveness of collaborations. Organizers chose Slack because many journalists were already familiar with it—a decision validated by the fact that

every interviewed journalist had used it professionally. This minimized onboarding time and enabled quick engagement. The only notable technical hurdle was connecting Slack accounts via Slack Connect, which occasionally required IT approval.

Experts were less accustomed to Slack. While all 96 experts reported some familiarity in the pre-election survey and none requested onboarding, prior experience varied. Most adapted, but Slack didn't fit as smoothly into their workflows. Several preferred email, some were unaware of the desktop app, others found notifications overwhelming, and a few struggled with the discussion volume. Still, even those who had difficulties acknowledged Slack was the right choice given journalist needs.

The next section explores Slack's technical affordances—many of which are common across other OCS platforms—that both support and constrain collaboration.

Channels and Consolidation

Initially, the space was organized thematically with channels such as #legal, #mis-and-disinfo, and #vote-by-mail, where journalists were encouraged to post questions in the most relevant topic channel. However, this structure led to confusion as journalists were unsure where to post overlapping topics, and experts had to sift through multiple channels to find relevant questions. Additionally, a mix of questions, resource links, and general conversation cluttered discussions, making participation challenging.

> "I had a hard time understanding where to see anything calling me out specifically. [...] It was a little chaotic." – E3

> "I found it vaguely annoying that people were clogging up the [various channels] with 'I have a webinar coming' and 'Here's my latest thing.' [...] We weren't there to chitter-chatter." – E4

After about a week, O2, who had extensive experience in structuring information-seeking environments and processes streamlined the channels based on information type, consolidating them into #helpdesk for questions, #sharestories for articles, #shareotherlinks for resources, and separate spaces for casual conversations (#watercooler, #experts-only, #journalists-only).

The restructuring was widely appreciated. Having all questions in one place simplified workflows, making it easier for experts to scan #helpdesk for

relevant queries. One organizer noted that, in hindsight, even fewer channels would have been preferable.

> "The reorganization made a lot of sense, and usage increased once it was more functional." – J3

Despite improvements, many experts still found the volume of activity in the helpdesk overwhelming.

> "I would get on there like, holy shit, every thread has activity, and sometimes I couldn't keep up. But that's good." – E5

Some experts suggested additional ways to refine the system, such as quickly implementing thematic filters or tags to locate relevant questions, especially by geographic region. Some noted previous Slack workspaces included state-specific channels, which they found helpful for knowing where to look.

While the consolidated structure improved usability, these findings indicate that further enhancements—like improved search functionality and thematic tagging—could boost the search and discoverability process. However, it's unclear if a feature like this is available in the current version of Slack.

Notifications and Tagging: Keeping Pace or Falling Behind

As activity surged—particularly in the days before the election—participants had to adapt their work habits to keep up. Some adjusted; others struggled to keep up.

> "You had to be [...] full-time on it if you wanted to make sure that you didn't miss anything. Definitely a high-alert environment—very highly responsive and interactive." – E7

> "Sometimes there was just a lot of information happening in the channels, which was overwhelming, but I'm not sure that's really something that can be addressed by the nature of it." - Journalist Survey Respondent

Tagging and notifications were essential in managing the fast-paced environment — helping direct journalists to the right experts and ensured experts were aware when their input was needed. When a journalist posed a question, a thread was created, and organizers or other specialists tagged experts to prompt their engagement. Tagged users received desktop alerts, Activity tab updates, and email notifications. This became a primary way for

experts to track where they were needed, helping them stay engaged despite the high volume of discussions.

> "[Organizer] was really good at tagging people that might have been good leads for things. [...] That would just pop up on my screen, and I'd go check it out." – E9

Others relied on email for notifications but found Slack's batching system caused delays—sometimes hours—meaning they missed real-time conversations and opportunities to contribute.

> "I recall getting emails at the end of the day—'Someone mentioned you on Slack'—but by then, I had likely already seen it." – E8

Tagging and notifications were essential in keeping experts engaged, but this also highlighted a need for better prioritization. Refining notification settings to minimize irrelevant alerts and ensuring instant email notifications for tagged messages could improve expert participation without overwhelming them.

Limitations in search and expert identification

When an expert didn't respond—or when no one was tagged—journalists had to search for the right expert using Slack's built-in tools. Two main issues contributed to this difficulty: first, Slack's search only supported usernames and emails, not expertise or affiliations. Second, many experts had incomplete profiles in the helpdesk, making it difficult for journalists to locate the right sources or know how to contact them. Even when experts were identified, varying communication preferences added complexity.

> "One thing that I think would have been nice is when an expert replied and said, 'I can help with that,' if you clicked on their profile and it had information like the best way to contact me. [...] For each of them, it was an extra step of, 'How do you want me to reach out?'" – J5

Organizers shared a live spreadsheet containing expert information, including areas of expertise and preferred modes of communication. Journalists could filter and search the spreadsheet to find the right contact, but integrating this information into the helpdesk would have streamlined the process and usefulness of this information.

Task Management Plug-Ins helped organizers keep organized

Organizers integrated *Unthread*, a Slack plug-in that helps admins track conversations in user-facing channels to manage inquiries. It helped monitor open questions, assign experts, and mark issues as "done." The system helped visualize outstanding requests and automate responses, improving efficiency in triaging inquiries. Organizers noted that similar plug-ins could enhance Slack's functionality with features like thematic tagging or additional automation for quicker navigation during high-volume periods.

6.6.3 Social and Organizational Structures

Beyond the technical design, analysis highlighted the importance of social infrastructure— namely, trust-building, community norms, and custodial roles—in fostering collaboration within the helpdesk.

Trust and Vetting

Organizers emphasized that pre-vetting journalists and experts before admission to the helpdesk was essential to maintaining a collaborative environment and establishing early norms.According to O1, vetting was time-consuming but critical to maintaining the helpdesk's integrity.

For journalists, the pre-vetted nature of the experts was a significant value-add, as it allowed them to move more quickly through their usual verification process.

> "I think the vetting process is important because any reporter joining this is going to feel as though those experts [...] were not necessarily infallible in their credentials but were vetted and bona fide, for lack of a better word." -E3

A key factor in the success of the vetting process was the trust participants had in the primary organizer, who had a decade of experience in the field. Many interviewees noted that their confidence in this resource stemmed from the vetting and their trust in the organizer's judgment. Seeing familiar and reputable professionals further reinforced this sense of credibility.

> "It seemed like a really well-curated list of folks. [...] It felt like all of the usual suspects, plus some." – E1

> "Just from the organizations I saw posted and the experts and journalists working in this space from a variety of news organizations, nothing really gave me pause." – J9

The vetting process built trust and ensured quality, but may have imposed limits by primarily including experts and journalists within existing networks, reinforcing biases in expertise and language.

Building a Two-Sided Space: The Cold-Start Problem

The organizers needed to establish a critical mass of journalists and experts to create a self-sustaining space. In the startups, this challenge is known as *The Cold Start Problem* (Chen, n.d.)—the difficulty of generating initial engagement in a new two-sided network. Journalists engaged only if enough experts were present, and experts needed consistent journalist queries to justify participating.

Several organizational decisions helped overcome this challenge. The primary organizer leveraged an extensive professional network, personally reaching out to journalists and experts and using their credibility to vouch for the initiative. Many participants joined because they trusted the organizer and committed to supporting the effort.

> "I've known [organizer] for eight years. [...] She's guest lectured in my class a couple times. [...] She emailed me and said, 'Hey, will you do this?' [...] I approached it entirely as 'I want to help [organizer] out, and I think this is a great endeavor.'" – E8

> "[Organizer] reached out and asked if I wanted to be involved this time around. And my answer is always yes." – E3

Organizers pre-vetted and recruited participants before officially launching the helpdesk. While some interview and survey participants said they wished it had opened earlier, the delay likely helped build a critical mass. This early momentum may have been key to its success, ensuring immediate engagement and preventing the space from feeling empty or underused.

The Code of Conduct and Maintenance of Community Norms

All participants agreed to a formal code of conduct during onboarding, outlining expectations for professionalism and ensuring that all public channel discussions were on the record. Journalists appreciated this clarity,

and most experts found it acceptable. If needed, participants used direct messages (DMs) or private channels for off-the-record conversations.

> "Your ability to sort of individually contact experts is, I think, important for, you know, wanting to be part of a collaborative environment like that." – O1

However, when asked about it later, some experts were surprised to learn everything was on the record, admitting they hadn't thoroughly read the code of conduct. Despite this, they generally acted as if on the record, so the oversight was not concerning.

> "I don't even remember [the code of conduct], because I feel like I'm always on the record. [...] If I don't want something attributed, I'll say it's off the record. But in general, I want people to record the conversations to make sure they're accurate." – E3

Other rules structured participation, including where to ask questions and conditions for removal. In one instance, an organizer removed a participant for violating community norms. Organizers played a key role in reinforcing the code of conduct. They regularly sent direct messages to participants, reminding them where to post, requesting journalists rephrase or remove off-topic questions, moving misplaced resources, and ensuring conversations stayed in threads.

> "I had one slip-up [...] I pressed the wrong button and sent a plea for help in #watercooler. Then I got this message that was like, 'Wrong channel.'" – J7

Transactive Expertise: Experts as Key Connectors

One of the most impactful social dynamics enabling journalists to reach the right experts quickly was the role of organizers—and later, participants—as connectors. While we previously discussed the technical mechanism of tagging in the OCS, the social aspect of connection-building was just as crucial in accelerating information exchange.

> "I think [the organizer] serves as kind of a conductor, orchestrator, gatekeeper. [...] It was really smart to have somebody serving as that conduit [for connecting], because the experts couldn't always see everything that was happening. [...] I think it was good to have somebody like that." – E3

During working hours, an organizer would tag experts within minutes of a question being posted, relying either on personal knowledge of expertise or the expert spreadsheet. Tagging alerted experts and lent credibility, easing the awkwardness of cold outreach. One journalist noted that an expert who had ignored their email inquiry responded immediately when tagged in the helpdesk, highlighting the value of trusted intermediaries.

> "I mean, it was like, timely. [...] She knew the list even better than I would just by reading it, and so it was a great matching service. [...] Having that intermediary and the tagging, it felt like I wasn't being annoying to the individual people." – J3

> "By the time I was using it, it seemed like they had it down to a science, like they were flagging experts." – J6

Beyond immediate responses, tagging often led to further connections. Many experts saw their role as answering questions and directing journalists to additional, even more specialized sources—within and beyond the helpdesk. This transactive process significantly improved journalists' ability to find the right people quickly. Some experts prioritized tagging diverse voices, ensuring broader representation.

> "It was great that reporters could just say, 'I'm looking for somebody to answer this,' and be immediately connected—either with someone in the channel or someone who had connections externally. [...] It was such a quick way to facilitate expertise on really niche issues, and that is incredibly valuable." – E8

> "I tried very, very hard to make sure I had a range of demographic expertise. [...] I wasn't only pushing up white men, who were the majority of the experts. I really looked through the list and made sure I was tagging in other people." – O2

This social norm—reinforced by technical affordances and trust—was a key contributor to the speed and effectiveness of information exchange. Structured tagging, responsiveness, and connection-building created a valuable space for collaboration.

6.7 Discussion

6.7.1 How the helpdesk mitigated previously identified tensions in journalist-expert collaborations

This section outlines key challenges identified in prior work. It examines how the helpdesk addressed many of them, though not all, and highlights how many of these improvements were shaped by elements of temporality.

How journalists' challenges were mitigated

Identifying and Contacting the Right Expert Quickly. Despite digital tools and resources, journalists face challenges in quickly locating and connecting with timely, niche expertise. The helpdesk mitigated this challenge by providing a centralized yet specialized collection of pre-vetted experts on all election-related topics, accessible via direct message or public tagging. Rather than waiting for individual email responses, journalists could post a question once and receive multiple expert responses or referrals simultaneously.

Chat-like Communication Speed. Even after identifying an expert, communication speed remains a bottleneck to journalists' reporting process. Email remains a dominant mode of external communication in journalism and academia, but it introduces latency. Phone calls, while faster, also require time to negotiate availability. The helpdesk's chat-based structure reduced these inefficiencies by enabling synchronous, low-friction interactions. Journalists could pose follow-up questions instantly, clarify uncertainties, and refine their inquiries without the inherent delays of email or phone exchanges.

Vetted Experts. Source vetting is a critical step in journalistic practice, ensuring credibility and appropriateness for citation. Failure in this process can result in media manipulation (Marwick and Lewis, 2017) and source hacking (Donovan and Friedberg, 2019). The helpdesk's pre-vetted expert pool accelerated verification, allowing journalists to bypass or streamline independent vetting. However, feedback indicated that presenting evidence of suitability—such as organizations and areas of expertise—more directly in the OCS environment could have better supported journalists in conducting a secondary check of each expert.

Learning at Speed. Journalists covering unfamiliar beats (Magin and Maurer, 2019) must rapidly acquire expertise (Haughey, Povolo, and Starbird, 2022), often under severe time constraints. Previous research highlights that journalists seek quotes and background knowledge through expert engagement (Hertzum, 2022; Haughey, Povolo, and Starbird, 2022). The helpdesk reinforced this by exposing journalists to ongoing expert discussions, enabling passive learning. This allowed them to absorb insights, refine their understanding, and identify new angles over time. Unlike traditional one-off expert interviews, this model fostered a layered, sustained knowledge acquisition process, significantly benefiting journalists who had never covered national or local elections.

Gathering Story Ideas and Maintaining Awareness. Journalists rely on peer reporting to stay informed (Hertzum, 2022). The helpdesk provided even earlier visibility into emerging stories that could otherwise be available, functioning as a real-time discovery tool. Two key mechanisms supported this. The #helpdesk channel exposed journalists to pre-publication expert discussions, offering early signals of developing news. The #sharestories channel allowed journalists to post recently published articles, creating a curated, journalist-driven feed of relevant reporting. These features helped journalists contextualize unfolding election events earlier in the news cycle.

How experts' challenges were mitigated.

Attribution and On-the-Record Expectations. Experts, especially academics (DiSalvo, 2011; Weir, 2014), are often concerned about how journalists use their statements. Our observations suggest that the structure of the helpdesk addressed this in two ways. First, the written, chat-based format allowed experts to articulate their thoughts deliberately, reducing the risk of misquotation and lowering the risk of participation. Second, a clear code of conduct established that all public discussions were on the record unless explicitly moved to private messages, eliminating ambiguity. These measures streamlined attribution expectations, likely increasing expert confidence in quickly engaging with journalists.

Reducing Repetitive Education and Scoping Burdens. Experts, particularly academics, often see themselves as educators and are motivated to share knowledge, especially in public-interest moments. However, prior research highlights that repeatedly explaining the same concepts

to journalists and helping them scope their questions into something answerable can become burdensome (Haughey, Povolo, and Starbird, 2022). The helpdesk's structured environment mitigated this issue in two key ways. First, its threaded structure allowed experts to reference previous responses rather than reiterate foundational explanations, reducing workload. Second, as journalists, especially those new to the beat or journalism work, observed expert discussions and learned from past exchanges, their inquiries became increasingly precise and well-informed.

Concerns about Unreviewed Data and Perspectives. Academic researchers sometimes hesitate to engage during fast-moving news moments, wary of sharing preliminary insights or unreviewed data (Haughey, Povolo, and Starbird, 2022)—especially those steeped in peer review as a credibility safeguard. The helpdesk's public threads, however, enabled informal peer validation and pushback, distributing verification across multiple experts. This dynamic likely encouraged participation by allowing real-time clarification and refinement.

The unresolved challenge of duty and the expert digital volunteer.

Although the experts were volunteers, their participation met journalists' demands and exceeded organizers' expectations. They were primarily driven by a strong sense of civic duty and commitment to supporting democracy. Whether this model is sustainable over time remains unclear. While duty can motivate short-term involvement, long-term participation without compensation, institutional support, or formal incentives is uncertain.

This aligns with research on digital volunteerism, which finds expert engagement spikes during high-stakes moments but fades when urgency wanes (Starbird and Palen, 2011; Starbird, 2012; White, Palen, and Anderson, 2014) and, even for those responding to high-engagement events, can be difficult to sustain over time (Starbird and Palen, 2013). In the helpdesk's case, participation declined post-election, suggesting motivation was situational rather than ongoing. Future models that look to bring experts in on a recurring basis or employ a longer engagement period must reduce long-term participation costs and increase benefits—via institutional recognition, funding, and a commitment to feedback from journalists on the impact of their help in their reporting, even if the expert isn't directly quoted.

6.7.2 Infrastructure and Infrastructuring: Technology and Human Work in Sustaining Collaboration

Building on Star and Ruhleder (1996) and Lee, Dourish, and Mark (2006)'s work, we understand infrastructure as a dynamic, relational, and human-supported system sustained through technical design and ongoing social practices. We use this lens to examine how *infrastructuring* this helpdesk supported the time-bound, high-intensity collaboration, highlighting the visible coordination and the often-overlooked labor that made the helpdesk effective— labor that aligns with longstanding CSCW research into the maintenance, repair, and adaptation of sociotechnical systems (e.g. (Jackson, Pompe, and Krieshok, 2012; Hellmann, Maitland, and Tapia, 2016; Rosner and Ames, 2014; Birnholtz and Ibara, 2012; Bietz, Ferro, and Lee, 2012)).

Upfront Structuring: Designing for Trust in an inherently competitive space

A critical infrastructuring process in this collaboration was the intentional design of trust-building mechanisms, shaping who participated and how they engaged. In the helpdesk, trust was supported through pre-vetting participants, implementing an explicit on-the-record code of conduct, and selecting Slack as the platform, which offered visible user lists and persistent conversations.

While these mechanisms were important, trust was not constructed solely within the helpdesk itself. Drawing on Suchman, Dourish, and Greenberg's view of context as dynamic and emergent (Suchman, 1987; Dourish, 2004; Greenberg, 2001) and Chalmers (2004)'s argument that past experiences shape present contexts, we find that participants' recognition of familiar names and prior professional relationships seeded a foundational layer of trust. The organizer's reputation attracted many participants, while the presence of known colleagues further reduced perceived risks. As one journalist described, visibility in the space helped them "let their guard down," signaling a shift from caution to collaboration even before direct interaction occurred.

This case shows that context for trust is not only dynamically constructed during interaction but also carried into new spaces through participants' histories—extending existing CSCW understandings of relational and human-powered infrastructures (Lee, Dourish, and Mark, 2006). However,

in competitive, professional environments—where participants face pressures to protect scoops, manage reputations, and, particularly between journalists and academic researchers, navigate a history of mistrust over concerns like misquotation (Weir, 2014; DiSalvo, 2011)—trust cannot be assumed. We find that trust must be actively infrastructured: specifically, through controlled access to the space, visible participant activity, and formalized communication norms such as an explicit on-the-record policy. The written nature of Slack communications further supported trust by reducing fears of misrepresentation, allowing participants to choose words carefully and preserving a persistent record of exchanges. These deliberate infrastructuring practices were essential to overcoming barriers to participation and enabling sustained engagement throughout the high-pressure collaboration. In this way, we extend CSCW models of infrastructuring to account for settings where trust must be strategically and systematically built against competitive pressures and historical patterns of professional mistrust.

Iteration and Adaptation: Infrastructure as a Process

The success of the helpdesk also depended on the continuous adaptation to participant needs. For example, early challenges arose regarding channel structure and information navigation. With channels organized thematically (e.g., #misinfo, #mail-in-ballots, #legal), journalists struggled to determine where to post inquiries, and experts posted adjacent information, like blog posts, into various channels. This led to redundant questions, hesitancy to post in the correct location, and "clogged" channels with numerous external links. To improve the technical structure, the organizers swiftly restructured the space within five days, simplifying it to have just one #helpdesk channel and a few others with targeted uses—a change that was appreciated by nearly every person interviewed.

This move toward simplicity reflects the findings of Azarova et al., who emphasized the importance of simplicity in information structure (Azarova, Hazoglou, and Aronoff-Spencer, 2022). This also aligns with broader CSCW findings that underscore the need for iterative infrastructuring and maintenance even in short-term or time-bound work (Dailey and Starbird, 2017; Starbird and Palen, 2013; Wagenknecht and Korn, 2016). This dynamic adjustment reflects a broader insight from Bietz, Ferro, and Lee (2012), who emphasizes that sustaining infrastructure requires designing for flexibility

rather than rigid adherence to initial plans. Just as cyberinfrastructure maintenance involves responding to continual environmental and relational changes, the helpdesk's responsiveness to emergent participant needs was a key factor in its sustained usability.

Social adaptation also played a key role. Organizers modeled effective participation behaviors like quickly tagging relevant experts in response to journalists' questions, which not only increased expert responsiveness (they would get a notification when tagged and know where to go) but also set norms for how others could respond or help in a thread, even when they weren't the perfect person to answer. Journalists and experts began replicating these behaviors, demonstrating how infrastructuring can happen through informal practices rather than formalized system rules—a point well established in prior CSCW work, particularly in Star and Ruhleder (1996)'s framing of infrastructure as relational and emergent in practice, and echoed by Pipek and Wulf (2009)'s notion of design-in-use.

Custodianship and the Ongoing Maintenance

Beyond technical structuring, sustaining collaboration in high-tempo environments requires continual redevelopment work. As studies of cyberinfrastructure and CSCW maintenance have shown (Bietz, Ferro, and Lee, 2012; Jackson, Pompe, and Krieshok, 2012; Pipek and Wulf, 2009), sustaining systems requires ongoing adaptation to users, technologies, and relationships, not merely preserving a static form. Infrastructure maintenance is inseparable from innovation: continual adjustments, triaging, and relational work by organizers were not just upkeep but active redesign in response to evolving demands. Designing for flexibility—rather than rigid workflows—enabled the helpdesk to remain responsive without collapsing under information overload.

Organizers engaged in real-time repair and informal infrastructuring to sustain collaboration under intense informational pressure. They anticipated challenges, restructuring workflows and reinforcing participation norms to prevent overload—efforts critical to maintaining usability in high-volume moments. Our interviews and interaction analysis revealed that two dedicated organizers performed essential custodial work, keeping the space structured, efficient, and responsive throughout the election period. Without this active maintenance, participants would have faced overwhelming volumes of content, discouraging engagement.

Much of this custodianship took the form of invisible coordination labor, a phenomenon well documented in CSCW research on infrastructure maintenance (Star and Strauss, 1999; Suchman, 1995). Behind-the-scenes work like thread management, expert tagging, and redirecting posts sustained usability without disrupting workflows. As Matias (2019) observed in the context of online moderation, civic maintenance efforts are often critical for sustaining public-interest spaces but are typically undervalued. Proactive maintenance was foundational to the helpdesk's real-time effectiveness—a pattern similarly observed in disaster response and Wikipedia maintenance (Dailey and Starbird, 2014; Geiger and Ribes, 2010).

By making this labor visible, we highlight the critical role of custodianship for future high-intensity collaborations. Future implementations must explicitly plan for maintenance roles, including supporting organizers (financially or otherwise) and designing infrastructures that enable sustained engagement.

Future Directions and Limitations

The helpdesk model proved effective, but scaling it presents challenges of equity, sustainability, and adaptability. While curation was essential for maintaining speed and quality, it also reinforced reliance on a narrow group of experts—typically academics and non-profit leaders—which may have limited the diversity of perspectives (Mathisen, 2023). Credibility and institutional power heavily shape who is deemed a legitimate source during high-stakes events (Meer et al., 2017), often privileging those already positioned within dominant networks. Additionally, the primary use of English and the focus on English-language news outlets (with some exceptions) risked perpetuating what Finn (2018) describes as "infrastructure orphans"—communities underserved by crisis information infrastructure. In the U.S., where nearly one in five people speak a language other than English at home (Dietrich and Hernandez, 2022), future helpdesk models must broaden participation and design for greater linguistic and infrastructural inclusivity.

In the helpdesk setting, credibility was often performed through affiliation, prior relationships, and the organizers' endorsement, transferring trust to participants. While this structure enabled rapid response, it also risked entrenching existing hierarchies, as a small number of contributors became

go-to sources. Concerns from experts about the repeated visibility of a small number of contributors further highlight this tension: while quick answers signal value to journalists, over-reliance on familiar voices may discourage broader participation over time. Future designs must balance the need for responsiveness with deliberate strategies to surface and support a wider range of expert perspectives.

Questions also remain about platform suitability. Slack addressed the temporary needs of the election, but other tools may better support long-term or recurring collaborations. Even with equitable design, adoption may lag if new infrastructures are not embedded in newsroom or expert workflows. Additionally, this study was situated within a U.S. election context, where infrastructural assumptions, cultural norms around elections, and professional networks are relatively established; adaptation to other national contexts may require different strategies for building trust, sourcing expertise, and facilitating participation.

Finally, while the helpdesk model offers promise beyond elections, elections are a distinct case. They combine predictable timelines with unpredictable information environments, enabling a degree of pre-planning that is often not possible for other high-attention events. Some events, like major Supreme Court decisions, share a partial predictability—journalists know a decision is forthcoming within a general window but cannot anticipate the exact timing or outcome. Other events, such as mass protests or natural disasters, unfold with even less warning and evolve rapidly. Future work should explore adapting infrastructures to these temporal patterns, operating as 'pop-up' systems: dormant during routine periods but quickly activated during unfolding events. The virtual "disaster desk" studied by Starbird and Palen (2013), offers a useful precedent for sustaining episodic, volunteer-powered collaboration to create public information goods during high-stakes events. Designing for rapid, flexible activation—without sacrificing trust or responsiveness—will be critical as journalism continues to navigate unpredictable public interest flashpoints.

6.8 Conclusion

This study explored the perceived benefits and limitations of using an OCS to support real-time journalist-expert collaboration during a high-stakes election. It examined how the structure and affordances of the

environment shaped expert sourcing and information-seeking practices. Findings suggest that while the OCS met journalists' needs and exceeded expectations for responsiveness and quality, its success relied heavily on behind-the-scenes maintenance, curated participation, and a shared sense of civic duty among contributors. These results underscore the potential of structured, responsive coordination spaces to improve the speed and credibility of journalism in critical moments. However, they also raise important design and sustainability questions about inclusivity, expert labor, and long-term engagement.

Future work should build on this foundation to develop and test additional infrastructures for expert-journalist exchange at speed, adapting this model beyond elections, across beats, and into diverse institutional settings. With thoughtful design and support, this approach offers a promising path toward more resilient public-interest journalism and an informed public.

Chapter 7

The Infrastructure of Real-Time Truth-Seeking

I now turn to this dissertation's culminating essay—a conceptual synthesis built from an analysis of empirical findings and disciplinary literature explored in the preceding chapters, as well as from my own experience in this field, where I observed how journalists and experts navigated high-stakes information challenges.

This chapter is structured not as a report of findings, but as a reflective essay—an argument that aims to re-frame how we think about journalistic truth-seeking during fast-moving moments of uncertainty. The goal is to make visible a layered system that this research has brought into focus—one that situates my work within the broader sociotechnical landscape of crisis moments, misinformation, rumoring, and journalism.

Much of what I describe here—the tensions, challenges, and breakdowns in this system—will be familiar to journalists, who experience its limits most acutely during high-stakes news moments. This essay is for those positioned just outside of journalism—researchers, technologists, funders, institutional leaders, and system designers—who want to support journalism's role in informing the public at speed, but may not fully see the infrastructure it depends on or the temporal sensitivities that shape this work.

The argument I make is captured succinctly by Jessica Huseman, a journalist I worked closely with in the final year of this project, who said: *"In times of crisis, [...] truth-telling is an increasingly shared enterprise."*. This reflects what I came to understand in my own way—that journalism's truth-seeking work is increasingly dependent on a network of others, particularly experts, whose accessibility and responsiveness can shape the speed of reporting. Just as my

labmates have argued that disinformation is collaborative work (Starbird, Arif, and Wilson, 2019), I argue here that truth-seeking is, too.

To make this argument, I begin by situating journalists' and experts' work within a broader public-facing sensemaking process—emphasizing how, during high-stakes news moments, the speed and uncertainty of unfolding information create acute temporal pressures. I then argue that the routines and systems journalists rely on to identify, connect with, and learn from experts function as infrastructure. I describe how this infrastructure operates, where it breaks down, and why naming it as such is a normative move that surfaces its value and makes visible what must be sustained. Finally, I offer design provocations and a future agenda grounded in the needs of both journalists and experts, focused on strengthening existing expert-seeking routines, imagining new ones, and prioritizing the development of responsive networks over standalone tools.

This essay is an invitation to think differently and use new language to describe how journalists learn, explain, and inform under pressure. It describes how that work depends not only on their own professionalized skills, routines, and access to resources, but also on the sociotechnical systems that make real-time expertise accessible and efficient.

7.1 A Race to Meaning

One of the strongest throughlines of this dissertation—echoed in journalists' own words—is the role experts play in helping them *make sense* of unfolding events during moments of high uncertainty and ambiguity. Experts, in turn, often saw themselves as providers of context: supporting journalists not just for the sake of the profession, but with the recognition that journalism plays a critical role in informing the public.

What started as a question of how journalists access and work with experts became a deeper inquiry into the role experts play in the interpretive process. This shift led me to frame journalism not just as information-gathering, but as real-time sensemaking, often supported by others. Karl Weick's concept of *sensemaking* (Weick, 1988; Weick, 1995; Weick, Sutcliffe, and Obstfeld, 2005) offered a useful framework for connecting the interactions I studied to broader literature about the public's effort to sensemake after disruption and how this interpretive process is sensitive to *time*.

Sensemaking, as described by Weick (1995) and previously discussed in Chapter 2, is the process through which people interpret and give meaning to unfolding situations, particularly under conditions of uncertainty. It involves taking action, noticing and selecting cues from the environment, and applying interpretive frames to make those cues meaningful. Sensemaking is retrospective, social, and grounded in *plausibility* rather than accuracy, focused on constructing a version of events that is good enough to guide action. The public engages in this process collectively, especially during moments of disruption, when people turn to one another and to information systems to figure out what's happening and what it means. These processes unfold over time, and an individual's level of attention to the sensemaking varies, shaped by the intensity of the event, the availability of cues, and the perceived urgency to act. Sensemaking is often triggered by ambiguity, surprise, or the collapse of prior understanding—moments when people are forced to revise what they thought they knew.

In my research, these moments have included the 2020 U.S. presidential election and its aftermath, including the January 6 Capitol attack; the suspension of President Trump's Twitter account; and the widespread circulation of videos promoting COVID-19 misinformation. Each of these events demanded rapid interpretation under conditions of uncertainty, making visible the pressures and stakes of real-time sensemaking. As I noted in the introduction, the leak of the Dobbs decision is another powerful example—when deeply held ideas about precedent, privacy, and institutional trust were suddenly thrown into question.

Historically, journalists acted as gatekeepers of information (Carlson, 2017)—shaping public understanding in a competitive race against other newsrooms, not against an instantaneous, interconnected public. They could tell audiences "what's going on over there" with more time, access, and editorial distance. But in today's networked environment, journalists often learn about unfolding events at the same time the public does — initiating what I describe as a *race to sensemake*.

The use of competitive language, a race, emerged through the language and lived experiences of participants. One of the first journalists I interviewed described their efforts to combat misinformation online as "bringing a knife to a gunfight"—capturing the adversarial and uneven terrain they were working within. In my final study, six years later, experts still described

their motivation to support journalists in terms of urgency and competition against the spread of falsehoods:

> "The big motivation for me was saving democracy. [...] The proliferation of misinformation and flat-out lies has created widespread public distrust. [...] Reporters are just so central to this whole process that I feel obligated to engage with them." – E5

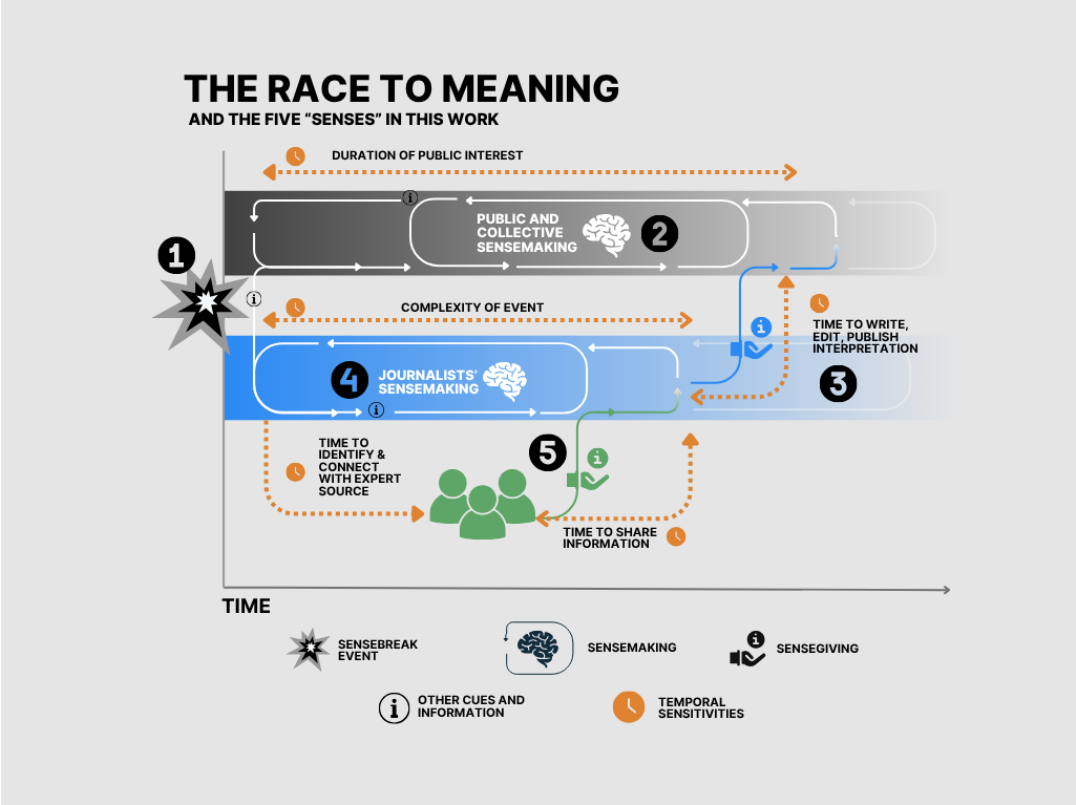

FIGURE 7.1: The Race to Meaning: The Five Senses in This Work.

If this is a race, then we need to understand what it looks like—who is 'running', how knowledge is exchanged, and where timing matters. In what follows, I offer a conceptual description of that race, structured around five interrelated "senses" that shape high-stakes reporting and the collaborative processes that support it. These are not new concepts individually—each has been observed and written about across journalism, communication, and crisis studies. What I contribute here is a connection between them and a focus on their temporal dependencies: how each stage builds on or overlaps with the next, and where speed, responsiveness, and timing become critical to informing the public.

Figure 7.1 illustrates this framework with corresponding numbers. In the following section, I describe each stage in more detail and highlight the temporal sensitivities I observed throughout the process.

1. **Sensebreak** — when expected meanings fall apart;
2. **Public sensemaking** — as distributed interpretation begins;
3. **Journalistic sensegiving** — as journalists publish interpretations to the public awareness.;
4. **Journalistic sensemaking** — as reporters construct coherence from publicly available information, their own expertise, and their expert sources.
5. **Expert sensegiving** — as interpretive support is offered to journalists.

7.1.1 Sensebreak and (Collective) Sensemaking

The first two "senses" are the initial sensebreak and the immediate start of the affected and attentive public's collective sensemaking process.

Sensebreak occurs, in Weick's words, when people are forced to "look again" because the world no longer makes sense (Weick, 1995). These moments can be triggered by various forms of media: an image or video that spreads rapidly online, a "breaking news" chyron flashing across a television screen, or a text from a friend asking, "Did you see this?" Not all news disrupts people's sense of the world—but when it does, especially when core assumptions or expectations are challenged, public sensemaking begins.

In describing collective sensemaking, Starbird examines how people come together online to interpret unfolding events—a process that can give rise to rumors and misleading frames (Starbird, 2023). Drawing on Goffman's concept of frames (Goffman, 1974), she shows how people collaboratively construct meaning in real time, particularly under conditions of uncertainty. Frames help people select and interpret cues—pieces of information or evidence that feel meaningful in the moment. In the early stages of sensemaking, this can involve activating familiar frames already circulating in the broader cultural or media environment. When events disrupt existing understandings, the frames people reach for—and the interpretations they construct—are shaped by the information available to them, which may be limited and skewed. Starbird writes that perhaps "the solution to pervasive misinformation is not better facts, but better frames."

This raises a central question for my work:

*How much **time** is there to introduce more grounded frames and cues into the public conversation—frames that might help guide sensemaking before others become entrenched?*

This question hints at the first temporal sensitivity in this race: the time the public (sometimes varying groups within a public) are in the sensemaking process before they move on.

As discussed in Chapter 2, how long people remain attuned to an event depends on the magnitude of the sensebreak and the ambiguity it generates. That window of attention shapes whether more grounded frames—those informed by context or expertise—have a meaningful chance to be seen, shared, or considered. Sensemaking, as Weick reminds us, tends to end not with accuracy, but with plausibility (Weick, 1995; Weick, Sutcliffe, and Obstfeld, 2005). People settle on explanations that feel coherent and sufficient, and move on—sometimes before more complete or accurate information can shape how events are understood. When that happens, re-engaging the public in sensemaking with new or more grounded information can be difficult—especially once attention fades or the issue feels less personally relevant.

Klein's data-frame theory of sensemaking helps illuminate this process as a dynamic interaction between evidence, the interpretive frames people bring to that evidence, and the meanings they construct in response (Klein et al., 2007). In fast-moving, networked environments, the effectiveness of grounded frames depends not only on their presence but on their timing. This is not just a matter of what frames are available, but *when they arrive*.

Then, who offers those "better" frames in this race?

Journalists are one source. In the pages that follow, I walk backward from the point where journalists sensegive to the public—offering interpretive frames through their reporting—through their own sensemaking processes, and finally to the expert sensegiving that supports them.

7.1.2 Journalists as Sensegivers to the Public

Journalists, when intervening with reporting that offers clarity, verification, or explanatory framing, contribute cues and interpretations into an unfolding process of public understanding—offering structured alternatives

for consideration. This reflects what Karl Weick and others describe as sensegiving: the act of shaping how others understand a situation by offering interpretations that reduce ambiguity and introduce coherent frames (Weick, 1995). Unlike sensemaking, which is internally focused on constructing meaning, sensegiving is outward-facing—intended to influence how others make sense of uncertain or contested events. In this way, journalists act as sensegivers by helping the public contextualize fragmented information and guiding collective understanding. This role aligns closely with media framing theory, which emphasizes how the selection, emphasis, and omission of information shape public perception (Entman, 1993). It also resonates with journalism's evolving explanatory function described in Chapter 2—especially in today's networked environment, where journalists help audiences interpret complex or fast-moving developments amid a flood of information.

In my interviews, journalists described their role in terms of helping the public understand—not just reporting facts, but connecting disparate elements into coherent, newsworthy narratives. Experts, too, saw journalists as key interpreters of complex events and described their motivation to work with journalists as rooted in a desire to support public understanding. Several participants framed their engagement with journalists as a civic act, part of a shared effort to help the public make sense of uncertain or contested situations through journalists. These perspectives position journalists as an important node in the broader sensemaking network: not only generating frames, but transmitting and legitimizing them, with implications for how the public navigates unfolding complexity.

The second temporal sensitivity that was revealed—though not a focus of this dissertation—is the timeline of journalistic production itself. Writing, editing, fact-checking, and publishing all take time and thus introduce lags between when journalists make sense of an event and when they can share that interpretation with the public. Future work might consider how these production timelines impact the availability and uptake of journalistic frames within the broader context of the race to make meaning.

A journalist's ability to sensegive, however, depends on the resolution of their own sensemaking process.

7.1.3 Journalists as Professional Sensemakers: Routines in the Truth-Seeking Process

Before journalists can offer coherent interpretations to the public, they must construct meaning from incomplete, evolving, and sometimes conflicting information themselves—engaging in their own process of sensemaking — the fourth "sense" in this race. Unlike the public, however, this process is both professionalized and routine.

Journalistic sensemaking maps closely to what Carlson (2017) describes as "truth-seeking": a defining feature of journalistic authority, enacted through sourcing, verification, and story construction. These routines do more than gather facts—they form a structured interpretive process through which journalists make sense of uncertainty and produce credible, publicly available accounts. In this way, truth-seeking functions as a performance of authority, signaling professionalism, trustworthiness, and independence (Carlson, 2017). A key insight from Study One was that journalists emphasize staying close to the data—conducting their own investigations, interviews, and verification—as essential to their practice. This work is not optional; it constitutes journalism's epistemic identity. And yet, it is also what takes time.

Even under intense pressure to publish quickly, this process cannot be bypassed in the race to make sense of unfolding events. For journalists—especially those working within institutional settings with editorial oversight—the threshold for what counts as plausible or publishable is significantly higher than for the general public. Meeting this threshold requires rigorous sourcing, verification, and alignment with professional standards—not only to ensure accuracy, but to protect personal and organizational credibility. Journalists must engage in a grounded, professionalized sensemaking process before offering interpretation to the public. This is not just a matter of best practice; it is part of what sustains journalism's epistemic authority.

This process is also routinized. In journalism, disruption is the norm. News is driven by novelty, uncertainty, and deviation from expectations. As Patriotta and Gruber (2015) observe, "news workers expect the unexpected," relying on expectancy frameworks and typifications to rapidly absorb disruption into familiar newsroom routines. These routines allow journalists to address unfolding events while maintaining continuity and stability in

their professional practice. My findings from Study One and Study Three support this view, showing how journalists' sensemaking is a repeatable, professionalized process of absorbing surprise, interpreting it quickly, and producing public-facing coherence.

How long, then, does their sensemaking process take?

The duration of journalists' sensemaking is shaped by the complexity of the event and the availability of verifiable information. As I observed in my work, this process depends on timely access to credible sources and the ability to vet and verify evolving details. This introduces the third temporal sensitivity in the "race": how long it takes journalists to make sense of events and arrive at an interpretation ready for publication.

As discussed in Chapter 2 and explored in depth in study three, many of the sources journalists typically rely on—such as peers, officials, or other authoritative voices—may be unavailable, delayed, or unresponsive in the immediate aftermath of a sensebreaking event. In these moments, journalists become even more reliant on their own interpretive capacities: beat expertise, institutional memory, peer knowledge, and, when accessible, expert input. These factors collectively shape both the speed and substance of the interpretive accounts that can ultimately reach the public.

7.1.4 Experts as Efficent Sensegivers

The fifth "sense" that emerged is how experts serve as sensegivers to journalists. As previously described, journalists consider many informational sources in their sensemaking process; what my work consistently showed, however, was that experts were a particularly *efficient* input in that process, reaffirming findings like that from Gans (1979), but seeing that efficiency as even more vital today as journalists work to meet speed of our current information environment.

Journalists in this work described how experts offered explanatory context, clarified distinctions, identified framing options, and helped journalists avoid overreach or error, sometimes in a single phone call or brief back-and-forth. When a connection was made, journalists described these moments as being incredibly helpful to their process in supporting their thinking. These momentary connections—what Nardi, Whittaker, and Schwarz (2002) calls *intensional networks*—create informal, brief, voluntary ties that enable high-quality, high-value information sharing across professions. In journalists'

words in Study Two, they were valuable in that they could quickly learn more and "form a much more nuanced vision of" the unfolding topic. However, this does not mean the expert's labor always made it into the final piece—a tension I return to later.

Experts did not simply provide journalists with quotes to pass along to the public. Instead, they helped journalists understand how different parts of a fast-moving story connected, offering context, clarification, or correction that informed the journalist's broader interpretive work. This understanding shaped not just the factual content of stories, but how those stories were told: which anecdotes to surface, what stakes to emphasize, and how to make complex issues readable and relevant to a broader audience. In this way, journalists served as mediators—not just conveyors of expertise, but translators who could transform technical or abstract insight into public knowledge people would actually read and understand. For one expert, this role was especially meaningful; they had previously tried to reach the public directly through social platforms, but as those channels became less stable and less reliable for sustained engagement, working with journalists felt like a possible path to supporting public understanding in a more lasting way.

However, journalists' ability to identify, access, and engage with these sensegivers, as seen in my work on high-stakes news moments, is challenging and time-consuming and influenced by two additional temporal sensitivities: the time required to identify and connect with the right expert and the speed at which communication and information exchange occur.

7.1.5 Bringing the Five Senses Together

Framing the interpretive "race" through sensebreaking, sensemaking, and sensegiving offers a way to trace how the processes I studied—between journalists and experts—both unfold in real time and intersect with the public's efforts to make sense of high-stakes news moments. This framing emerged as a way to describe patterns of meaning and practice expressed by participants themselves. It surfaces the *temporal sensitivities* that shape how information is interpreted, framed, and shared under pressure. While many other forces influence interpretation—platform dynamics, peer-to-peer meaning-making, strategic actors, and other sensegivers—this essay focuses on the journalist–expert connection because it reflects the situated, relational, and infrastructural dynamics I was best positioned to observe and analyze through this work.

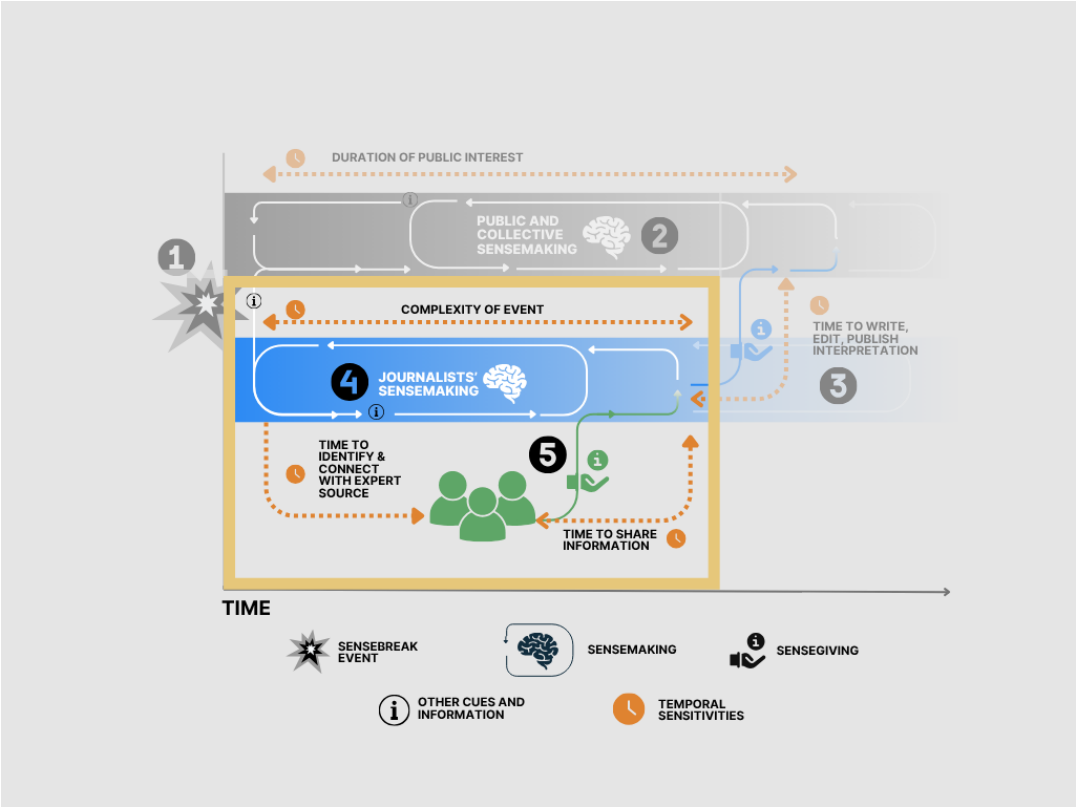

FIGURE 7.2: Focus area and situation of my work in the five senses diagram.

Figure 7.2 highlights the part of the interpretive chain at the center of this dissertation: journalists seeking out sensegivers, the time that process requires, and how those sensegivers provide information or cues that journalists actively incorporate into their own time-sensitive sensemaking. My research shows how the practices within this window rely on social and technical systems that enable connection, interpretation, and responsiveness. In the next section, I describe these systems more directly and examine where they fall short.

Seeing this moment not in isolation but as part of a broader, interconnected process makes visible the stakes of timing, access, and alignment—and motivates deeper attention to the systems and sensitivities that shape how meaning moves as public understanding is still forming. I argue that while this framing highlights where timely, expert-informed interpretations can intervene, it also requires acknowledging the limits of speed alone. Just because grounded interpretations can be produced and shared more quickly doesn't mean journalists and experts will necessarily "win" the race against misinformation. But improving the speed, coordination, and accessibility

of this work increases the likelihood that credible, grounded interpretations are available in time to contest those already circulating—ideally while the window of public attention is still open.

7.2 Sensing Infrastructure

After learning in Study One about the important and efficient role experts play in supporting journalists' sensemaking—a finding reaffirmed across subsequent studies—the next question became one of *access* and *interaction*:

> *If expert input is so meaningful, how are these connections made, and what happens once they are?*

As discussed earlier, journalists' ability to identify and engage with sensegivers is shaped by multiple temporal sensitivities, particularly the time it takes to find the right expert and the pace at which communication unfolds. This section examines the infrastructures that mediate these interactions—an important focus, given their role in the interpretive race described above.

To understand the expert–journalist connection as a system, I adopt a grounded and descriptive approach. This section begins by outlining the common pathways journalists use to locate, access, and engage with experts under time pressure. It then surfaces recurring breakdowns in those pathways—failures that emerge most acutely when information must move at speed—and describes where they manifest within the journalistic process. This section highlights these routines. By tracing both the functions and failures of this system, I aim to make its shape and stakes visible—both as a contribution to understanding journalist–expert coordination, and as a foundation for future design and support. If we care about journalists' role in the interpretive race, and about experts' ability to contribute meaningfully in public crises, we must better attend to the conditions that enable those contributions to move at speed.

The following sections explore this system in detail, beginning with the most common entry points journalists use to access expertise, followed by the recurring breakdowns I observed, and concluding with how these patterns, taken together, reflect an infrastructure that I argue warrants closer attention.

7.2.1 Routines for Accessing Expertise

Through my interviews in Study Three, where journalists compared the helpdesk to their "usual" process, and through my embeddedness and reading of the space, I came to see the most common pathways journalists use to try to connect with expert sources in high-stakes news moments.

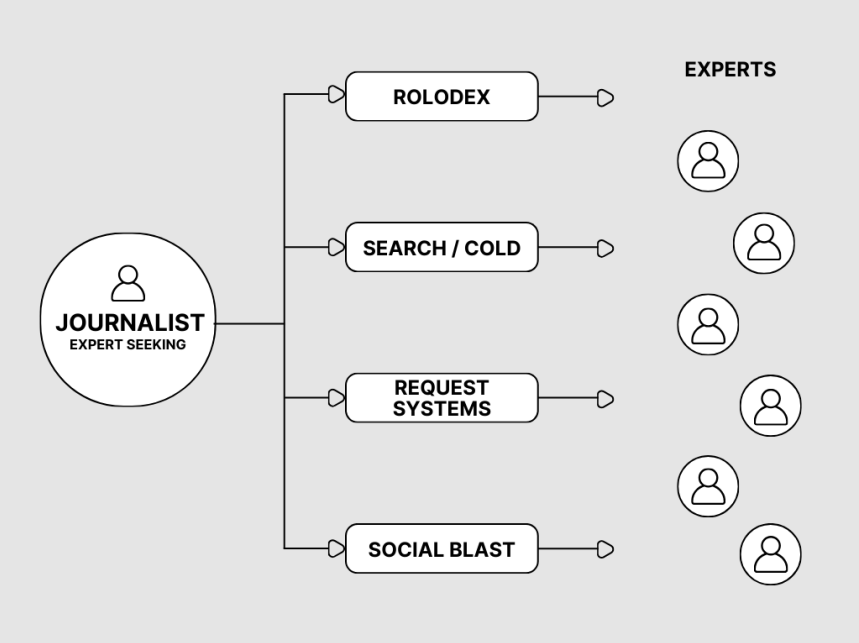

FIGURE 7.3: Flow Diagram of Ways Journalists Search for and Find Experts.

Below, I highlight and describe the four common pathways (seen in Figure 7.3) for expert sourcing, along with some notes about the structure and underlying elements of each:

Existing Networks / Rolodexes Journalists' best sources are those they already know—experts they've spoken with before, have relationships with, met at events, or were referred to by colleagues (Hertzum, 2022). These relationships are maintained through email, text, or social media direct messages (DMs), and can be activated quickly.

These connections are valuable because, as journalists described in interviews, known contacts are more likely to respond. Even if the expert can't or won't speak on a topic, the outreach helps maintain the relationship and may lead to a referral to someone more appropriate. For this reason, this pathway remains central to journalistic sourcing—and likely explains why the concept of the "Rolodex" persists in the field. Here, the journalist's

individual network, their ability to build and maintain it, and even their network's network are key to the viability of this path.

But in today's media environment—where reporters juggle multiple beats and work with shrinking newsroom staffs—maintaining a robust network of expert sources is increasingly difficult amid limited time and resources. As Nardi, Whittaker, and Schwarz (2002) remind us, networking is *work*.

Search and Cold Outreach When personal networks fall short or lack relevant expertise, journalists in this work described how they use tools like Google, Google Scholar, LinkedIn, academic databases, or past news coverage to identify, vet, and attempt to contact appropriate experts.

An expert's online visibility mediates this process, whether through high search rankings, a professional webpage, or recent quotes in reputable outlets.

Contact is typically initiated via email, often requiring multiple outreach attempts in hopes of a timely reply. Journalists revealed in interviews that they sometimes send five to ten emails before receiving a single response, particularly when contacting unfamiliar or highly specialized fields.

Request Platforms and Intermediaries Services like SciLine, Rolli, and university communications offices help journalists connect with field-specific experts by offering curated suggestions or facilitating introductions. While this pathway was the least discussed in my interviews, it surfaced frequently in my broader observations and remains an important mechanism for expanding beyond personal networks.

A recent study showed that journalists generally view SciLine as a trusted resource, with high ratings for usefulness (Dudo, Anderson, and Bunshee, 2024). In the report, speed received the lowest (though still positive) score among the evaluated dimensions. This suggests that while such systems show strong promise, there is still room for improvement when it comes to timely connection. Rolli, a searchable expert directory (Rolli, n.d.), requires experts to pay for inclusion. While this lowers access barriers for journalists, it introduces questions about visibility and motivation, as participation is shaped by experts' willingness and ability to invest in media exposure. University communications offices also play a key connector role, though adding another layer of communication between journalists and experts.

This route includes an additional step that assumes intermediaries—whether platforms or press offices—have the necessary contextual understanding to route requests effectively and connect journalists with the right source within tight timelines.

Social Platforms Social media—especially Twitter/X, LinkedIn, and more recently BlueSky—has served as a public-facing sourcing tool for journalists. This practice came up in several interviews, where journalists described using platforms to identify or reach out to experts. This was also reflected in Study Two, where many of the experts who initially connected with our team reached out or were identified through these channels. Journalists can post open calls for help, tag disciplinary communities with hashtags, or respond to posts experts have already shared on a topic.

These interactions are shaped by multiple layers of mediation: platform algorithms, the presence of relevant experts on the platform, and the journalist's own reach and visibility. Early-career journalists, freelancers, or those at smaller outlets may struggle to have their posts asking for support seen or shared by the right networks.

Several reporters interviewed in Study Three noted that sourcing through social media has become more difficult in recent years, especially as expert communities have shifted away from X. A few described the ability to send out a "bat signal" and get connected with the right expert—either through a direct response or a tag from someone else—as an *efficient* method during fast-moving events, and lamented its decline.

Having outlined the pathways journalists use to access expertise, I now turn to the common breakdowns I observed across these processes. I list these breakdowns first, then map them onto specific routines to show where and how they emerged.

7.2.2 Patterns of Breakdown in Speed and Reliability

Building on the previous section, which outlined common expert access pathways, I now focus on where those pathways break down. My analysis in Studies Two and Three paid particular attention to the tensions between journalists' ability to access expertise and experts' ability—or willingness—to respond. In this section, I highlight six recurring breakdowns that emerged

across my studies, each of which impacts the *timeliness* and *reliability* of expert response.

Digital Coordination Speed Nearly all communication between experts and journalists today is mediated via digital platforms. Journalists primarily use email to contact experts, though in some cases—including the helpdesk—more chat-like platforms are used. Study Two, in particular, revealed the extent of alignment and back-and-forth required between journalists and experts as they clarified questions, negotiated on- or off-record rules, coordinated schedules, or followed up after a call. The nature of the digital communication platforms used shapes the speed of these exchanges. In many cases observed in this study and through my embeddedness in the space, email was perceived as too slow for high-tempo moments.

Hit-or-Miss Outreach To journalists, outreach to experts—whether within their network or through cold calls—can feel like "source roulette." Even when a strong expert is identified, there's no guarantee they'll respond in time or at all. This creates friction in the form of uncertainty and delay. The lack of response reliability, combined with the time required to compose and track multiple inquiries, slows down the sourcing process and limits journalists' ability to move quickly during fast-moving events.

Distribution Imbalance A small number of highly visible experts receive the bulk of journalist outreach (Kruvand, 2012), while others with relevant expertise remain underused or unseen. This distribution imbalance is shaped by structural visibility—search rankings, prior citations, and media familiarity—creating a compounding and self-reinforcing effect. Journalists often contact the same high-profile experts, either because algorithms surface them first or because they're already embedded in professional networks. This can concentrate requests among a few individuals, sometimes prompting them to prioritize responses to national outlets or well-known reporters—reinforcing hierarchies of access even as equally qualified voices are overlooked. Being embedded as a participant observer in Study Two offered a view into what the receiving end of this looks like, as our team—visible and known—fielded multiple overlapping requests during high-attention moments.

Some experts I spoke to in Study Three—those who journalists frequently contact—were aware of this imbalance and say that they actively try to offset it. A few described referring journalists to lesser-known colleagues to raise their visibility or prioritizing support for local outlets when receiving multiple simultaneous requests. While it is unclear how widespread this behavior is, it highlights the potential role of experts as connectors, too, helping expand the network of trusted sources available to journalists. This dynamic was also evident in the Slack space observed in Study Three, where expert participants helped route inquiries to others with relevant expertise.

Redundant Effort In Study Three, journalists described sending nearly identical inquiries to multiple experts, repeating the same context and questions across multiple emails. On the other side, experts who rank highly in search results or have existing relationships with journalists often respond individually to multiple similar requests, as seen in Study Two. This repetitive effort on both sides consumes valuable time and creates inefficiencies during moments when speed matters.

Pre-Existing Network Dependence Journalists with the time and resources to cultivate deep, varied source networks are better equipped to respond to complex or fast-moving stories. But not all reporters have that depth or the time to develop it, as they are squeezed to do more with less. When news is non-routine or falls outside their usual beat, those without a broad Rolodex or a strong social media following can face delays and greater difficulty in finding reliable expertise.

Recognition Gaps While experts in this work overwhelmingly see supporting journalists as part of their public duty, this work can be undervalued within their professional reward systems. For example, some academics noted that media engagement rarely "counts" in tenure or promotion, and few institutions provide time, credit, or formal incentives for participating in public communication. This challenge also extends to other kinds of experts, who must balance their primary job responsibilities with the time and effort required to respond to reporters. Without recognition—institutionally or publicly—supporting journalism can become an act of unpaid labor that some experts must evaluate how to prioritize. As a result, this may lead to slower response times—or no response at all—when journalists reach out.

7.2.3 Connecting the Breakdowns to Routines

Next, I map these breakdowns onto the pathways journalists use to source expertise. I do this for two reasons: first, to contribute to the field by describing the specific ways these pathways broke down—both technically and socially—in my research; and second, to offer a starting point for thinking about how to improve existing routines for expert–journalist connection and envision new ones. To support this analysis, I present both a table (Table 7.1) and a diagram (Figure 7.4) that visualize how these breakdowns intersect with key sourcing routines. Together, they make visible the cumulative friction points in the process and help clarify where future interventions might be most impactful.

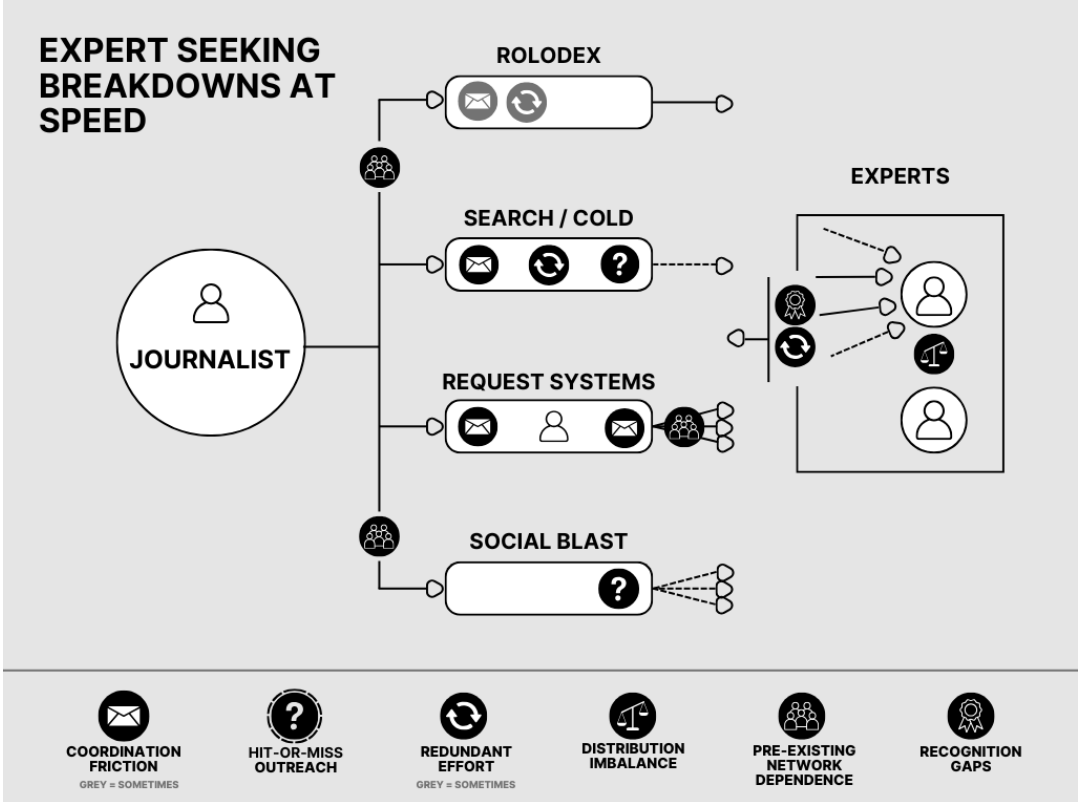

FIGURE 7.4: Flow Diagram of Ways Journalists Search for and Find Experts with Breakdowns.

These challenges are not just isolated points of friction—they reveal how the system that supports journalistic interpretation breaks down under time pressure. By consolidating these patterns across pathways and across my research, I aim to surface shared vulnerabilities and working constraints within journalists' sourcing routines. In doing so, I offer concrete sites for reflection and potential intervention.

Route	**Breakdown Type**	**Comment**
Rolodex / Personal Network	Pre-Existing Network Dependence	Not all journalists, especially generalists or those newer to a beat, have this depth of sourcing.
	Redundant Effort (Sometimes)	Journalists sometimes send similar messages to several personal contacts at once, repeating themselves in parallel threads.
	Coordination Friction (Sometimes)	Depending on the channel, the exchange may still be slow—for example, an email might go unseen for hours or require extended back-and-forth. This reflects one of the central technical challenges within the second temporal sensitivity of the sensemaking "race."
Search / Cold Outreach	Redundant Effort	Journalists have to look up, vet, and reach out to multiple experts without central coordination.
	Hit-or-Miss Outreach	Journalists don't know who will respond—outreach becomes *source roulette*, especially under deadline.
	Coordination Friction	Cold emails and asynchronous communication mediums, usually email, introduce delays.
Expert Request Platforms	Coordination Friction	While request systems help with matchmaking, they can also introduce a second layer of mediation and coordination via digital platforms like email.
	Pre-Existing Network Dependence	Relies on a platform or staff's existing network and ability to correctly match journalist needs with expert availability.
Social Media Broadcasts	Pre-Existing Network Dependence	The visibility of these posts is shaped by the journalist's network, who sees the call and who feels authorized to respond.
	Hit-or-Miss Outreach	Posts can go unanswered or attract irrelevant replies. Platform volatility—especially with X—makes this method less reliable.
Expert Response	Distribution Imbalance	The most highly visible experts can receive the majority of outreach. Others with relevant knowledge are never contacted because they aren't discoverable or lack social or institutional visibility.
	Recognition Gaps	Supporting journalists is less recognized within academic or institutional reward systems. Experts may want to help, but without professional credit, time allocation, or the assurance they'll be quoted — and thus receive "evidence" of that work, engagement becomes harder to prioritize amid competing tasks.
	Redundant Effort	Experts who are contacted by multiple journalists respond to similar questions one by one. Without shared systems or coordination, they repeat themselves across threads. As shown in study 2, this exhausted some researchers over time.

TABLE 7.1: Observed breakdowns in journalist–expert sourcing routines, grouped by access route.

7.2.4 Seeing These Routines and Breakdowns as Infrastructure

Taken together, these sourcing routines and their recurring points of failure began to appear not just as disconnected practices, but as components of a larger system. It was as I was working on studying the structure and dynamics of the Votebeat helpdesk in Study Three that I stepped back and had a realization to see and name this whole sourcing practice — and the routines, technologies, and human networks that journalists use to find and connect to experts — as a kind of infrastructure.

This shift in perspective arrived similarly to how Star (1999) came to see infrastructure in her work studying nursing classification systems. She, like me, started by studying tools and workflows but gradually, through embeddedness in her field and seeing (and feeling) breakdowns, she saw, instead, the underlying system that supported the classification practices as an infrastructure.

Drawing on my methods and CSCW orientation, and inspired by Lee, Dourish, and Mark (2006)'s concept of *human infrastructure*, I began to understand the routines of expert access as something maintained through networks, mediated by tools, and shaped by institutional prestige and norms on both sides of the exchange. It was by observing the frictions and failures in these routines that their infrastructural character became most visible.

This perspective was sharpened through a return to Star and Ruhleder (1996)'s descriptions of what "makes" infrastructure: it is embedded, learned as part of membership, shaped by practice, often invisible, and revealed most clearly when it breaks. These features align with how journalists come to understand and navigate expert networks through experience, professional norms, and beat specialization. My work studying journalists and experts during high-stakes news moments offered a particular vantage point on this infrastructure because I was observing it during strain, when journalists need expertise quickly and the system isn't able to meet that demand. Journalists covering routine stories or developing scoops may still be under a deadline, but have more time to navigate this infrastructure, build relationships, or research a topic independently. It is under strain—when public demand for information is high and journalists are working rapidly—that the cracks in these pathways to expertise become most visible, as revealed in my second and third studies.

This insight also aligns with Finn (2018)'s work on public information infrastructures in crisis moments, where she describes how information orders—or systems through which knowledge becomes available or not—are shaped by time, access, geography, and institutional arrangements. The pathways highlighted in this section exhibit many of the same dynamics and reflect Finn's discussion about how access to information is often driven by power and prestige, leaving those with fewer resources disadvantaged. In journalism, this can mean that reporters in local or under-resourced newsrooms have less access to expertise—and therefore to sensemaking—which may impact both their abilities and timeliness in informing their audiences.

Recognizing this system of expert access as infrastructure allowed me to see more clearly the specific components of the sensemaking process I investigated across the studies. Viewing it through this lens opens new possibilities for understanding how to address and design for its breakdowns—breakdowns I outline in the next section.

7.2.5 Naming and Describing as a Normative Move

Naming this system as infrastructure and describing its contours is not just an analytic move—it is a normative one. As Bowker and Star (1999) remind us, recognizing something as infrastructure signals that we believe it essential. What we name as infrastructure, we are more likely to design for, invest in, and maintain. I argue that the journalist–expert connection and coordination is one such system. It is longstanding but often built through individual effort, shaped by uneven access, time constraints, and communication challenges. Yet when it functions well—even briefly—it can support timely, high-quality interpretation during high-stakes news moments. From the perspectives of the participants in this research, as well as my own orientation, this system helps journalists make sense, and helps the public make sense through them. I name it here because I believe it is worth taking seriously: to understand where it breaks down, to invest in making it more reliable and equitable, and to design for the conditions that can support the pace and demands of the sensemaking race. I call for recognizing this system as one form of sensemaking infrastructure that deserves attention, support, and thoughtful design.

7.3 Designing with and for Journalism

Finally, I offer a perspective on design as a way to improve—and, in some cases, accelerate—the journalist–expert sensemaking infrastructure examined throughout this research and consolidated in this essay. I do so for several reasons. First, I am personally oriented toward design, as discussed in Chapter 3. I'm often drawn to imagining how things could work better. While I intentionally paused that instinct to first understand the professionals I studied on their own terms, the impulse remains central to how I approach this work. Additionally, Aitamurto, Borges-Rey, and Diakopoulos (2023) recently issued a manifesto urging those at the intersection of journalism and technology to take design seriously—as a lens, a method, and a contribution. By including this section, I aim to respond to that call.

The expert helpdesk in Study Three showed how intentional design choices *can* address many of the frictions discussed throughout this work. As one of the participants said:

> "I've been in journalism for almost 50 years. I have never seen a resource like this on any story I ever covered that there would be so many experts available to journalists on, you know, sort of an on-call basis to answer these questions, and it's great."

The helpdesk offered a glimpse of what's possible when infrastructures are thoughtfully designed and maintained in partnership with journalists. Finally, across my studies, I also saw how willing journalists are to experiment with new tools and systems—quick to pivot when things break, open to new sourcing routines, and ready to adapt despite constraints.

In what follows, I outline six areas where design can support and strengthen journalist–expert coordination during high-stakes news moments. I group these into two categories. The first focuses on revising and rethinking routines—practical opportunities to improve the workflows journalists already use or to imagine new ones better suited to today's fast-moving information environment. To support this, I include a design table that maps key user needs to breakdowns and possible digital features. The second category outlines guiding design principles that emerged from this research. Together, these recommendations offer a grounded and forward-looking agenda for designing with and for journalism.

7.3.1 Revising and Rethinking Routines

First, I highlight two related design opportunities: improving current routines by attending to known breakdowns, and envisioning new ones that better align with emerging needs. The design table (Table 7.2) offers early insight to support both aims. It draws from the common breakdowns discussed in the previous section and suggests possible digital interventions to support faster, more reliable sourcing. These interventions are not intended as a comprehensive list, but rather as provocations—starting points for thinking through where design might reduce friction. Additionally, I discuss the value of the two paths briefly below.

Designing for existing access routines: My research indicates that addressing the temporal sensitivities and breakdowns identified in the sensing infrastructure could be a valuable path forward. By focusing on individual pieces and areas of breakdown, design can help understand why these breakdowns occur and explore new methods to improve their speed and efficiency. The second study in this dissertation was of that nature, explicitly trying to address or rectify expert responsiveness when requests came through both existing networks and through cold calls. It was through this work that we identified and ideated on how to address new tensions.

Envisioning and prototyping new access routines: My research also highlights the potential for designers, researchers, and newsrooms to collaborate on exploring innovative methods and technologies that support interaction between journalists and experts. These interventions might include experimenting with hybrid platforms, alternative communication channels, or entirely new processes for real-time coordination, drawing on speculative design, rapid prototyping, and research-informed experimentation. The third study in this work exemplified this approach.

7.3.2 Key Design Considerations for Systemic Support

While improving and reimagining routines is an important part of the design agenda, it is not sufficient on its own. The effectiveness of any new system or workflow depends not only on technical features but also on the broader context in which it is embedded. In this next section, I outline four key design considerations that emerged across the studies. I describe each and offer a question for further consideration.

User Type	**Breakdown/User Need**	**Possible Designs to Consider**
Journalist	Rapid access to vetted experts	Curated expert directories with short summaries of areas of expertise and prior media citations; integration with platforms like Google Scholar or ORCID to surface related concepts, translate academic language, and show expert availability; curated topic-focused Slack/Discord groups for public journalist questions; "starter sets" of trusted experts by beat for fast access in breaking news.
Journalist	Efficient coordination	Integrated calendar and scheduling tools to reduce back-and-forth; structured Q&A tools that can be reused across stories; temporary chat spaces initiated via email with optional expiration to improve synchronicity; expert-set and initiated office hour systems that vetted or invited journalists can join directly after moments of crisis related to their expertise.
Journalist	Reduced redundancy in outreach	Shared expert-response platforms with searchable past answers; semi-automated outreach tools with templates and status indicators; reusable and shareable expert query templates that allow experts to see and build on prior responses.
Journalist	Reliable responsiveness	Opt-in "on-call" rosters for experts during high-tempo news cycles; scheduled rapid rooms with expert cohorts available for real-time response; structured notification systems with urgency levels to quickly reach available experts.
Journalist	Maintaining and expanding personal networks	Lightweight network management tools for journalists with tagging, notes, and reminders; optional network-sharing features with permissions for colleagues or editors; network-aware suggestions based on prior contacts or colleagues' recent sources.
Expert	Reduced redundant effort	FAQ repositories that are fast to set up, easy to maintain, and tagged by topic; expert cohorts in chat-like spaces for shared real-time response; localized knowledge-sharing systems within distributed journalism organizations or consortia to reduce duplication across desks.
Expert	Equitable visibility and distribution	Rotating expert spotlights tied to current beats or events; lightweight tools for experts to forward journalists' requests to qualified peers with opt-in.
Journalist & Expert	Pre-built expert networks	Topic-based expert-community platforms that enable ongoing engagement; pre-crisis network cultivation through events, communities, or newsletters to build readiness and trust; persistent group channels for real-time activation with clear roles and lightweight moderation.

TABLE 7.2: User Needs and Early Design Ideas Table

Design for Connection, Not Aggregation In fast-paced reporting environments, my research suggests that digital tools can be more effective when they facilitate direct connections, rather than serve solely as intermediaries for information. A key lesson from Study One is that journalists value speed in finding and contacting the right source, but they do not want platforms to interpret, summarize, or package information on their behalf. When tools mediate too heavily between journalists and sources—by curating answers, filtering responses, or aggregating content without transparency, they can disrupt the journalists' process and erode trust.

My research suggests that journalists benefit most when systems focus on facilitating direct connections to experts—then get out of the way. Tools that enable fast, low-friction communication—and make it easy to follow up, clarify, and build trust over time—appear to better support journalistic work. Features that overstructure these exchanges, such as routing all questions through intermediaries or replacing conversations with summaries, can unintentionally disrupt verification and obscure critical nuances. Designing for connection, responsiveness, and dialogue better supports the interpretive work at the heart of journalism.

How can we design systems that accelerate connection—but disappear once the conversation begins? What does it mean to support sensemaking without trying to do it for them?

Designing for Networks First Across this research, one pattern consistently emerged: effective coordination between journalists and experts depends far more on the strength of existing networks than on the tools themselves. In Study Three, the success of the expert helpdesk hinged not just on the features of Slack, but on the organizers' ability to draw from a pre-existing, trusted network of experts—people who had been vetted, invited, and primed to respond. This example highlights a core lesson for future design: tools function best when built on top of already-strong systems of trust, shared purpose, and responsive communication.

While technical improvements and platform design can play a role in supporting the infrastructure I've described, my research points to the importance of also prioritizing the cultivation and maintenance of expert networks. This includes organizing topical cohorts, clarifying expectations around responsiveness, and sustaining lightweight coordination, even

outside breaking news cycles. These practices make it more likely that networks can mobilize quickly when needed. In contrast to the ad-hoc, individual outreach that often characterizes high-stakes reporting, journalists benefit from having responsive, pre-structured expert networks ready to engage in real-time.

What system of relationships does this tool depend on? What networks is it trying to extend, activate, or support?

Design for Institutional Support and Expert Responsiveness Expert participation in high-tempo reporting is often voluntary. While many experts are motivated by a sense of civic duty—as seen in Studies Two and Three—this motivation may not be sufficient on its own to sustain timely responsiveness, especially when it competes with other professional demands. Across my research, experts described a willingness to contribute in the moment but faced barriers, including a lack of time, unclear expectations, and minimal recognition for their efforts.

Institutional change, particularly within academia, is important to supporting expert engagement at speed. Researchers noted the limited (if any) formal incentives for responding to journalists or contributing public-facing expertise quickly. Addressing these barriers means supporting systems that reward real-time, emergent public engagement, not just after peer-reviewed publication. This could include tenure and promotion recognition, protected time for responding to media, or designated public scholarship credits. Similar inquiry is needed to understand and address barriers faced by experts in other professional domains, such as law, government, or public health—domains that also play key roles during high-stakes events.

From a design perspective, this principle points beyond individual tools to the systems and structures that enable people to participate meaningfully under pressure. Designing for expert responsiveness requires alignment between technical solutions and institutional support mechanisms.

If we expect experts to engage in real time, what systems must change to make that possible, prioritized, and sustainable?

Expertise as a Shared Resource in Journalism While individual reporting remains central to journalism, moments of high public uncertainty—such as elections or major court rulings—highlight the value of shared access to

expert insight within the journalism field. No single newsroom can meet the public's informational needs alone, and no one story can fully counter fast-moving rumors or confusion. In Study Three, when uncertainty and demand spiked, journalists demonstrated a willingness to engage in shared workflows—asking questions in open channels, reusing expert responses, and surfacing information that others could build on. This reflects a form of inter-journalist collective sensemaking—distinct from the public's interpretive processes—and reveals how, in moments of uncertainty, expert insight becomes a shared resource that strengthens the field as a whole.

Designing for this process means enabling expert knowledge to move quickly and reach a wide audience. This could take the form of shared Q&A spaces, pooled expert responses, real-time briefings, or rapid publishing of expert analysis. The Center for an Informed Public, for example, has hosted expert calls and produced fast-turnaround explainers aimed at supporting the field as a whole. Other initiatives, such as The Conversation, seek to expedite the dissemination of researchers' perspectives to journalists. Funders like Press Forward are also starting to invest in the infrastructure that supports journalism's core practices.

Design can help make this kind of exchange not just possible, but routine. As the Votebeat helpdesk demonstrated, even in competitive environments, cross-organizational collaboration can emerge when public need is high and journalistic purpose is shared. Supporting shared expert access is about raising the baseline. When journalists are better informed, they're collectively better able to serve their audiences and the public.

How can design help journalism act as a rising tide—one that lifts not just the best-resourced newsrooms, but the capacity of the field to respond and make sense of high-stakes news moments collectively?

7.4 Final Thoughts

This essay has advanced:

- **A conceptual argument** about the sensemaking and sensegiving that occurs between journalists and experts following a sensebreak, grounding it in the broader literature on sensemaking and collective interpretation. It reaffirms the efficient and valuable role experts can

play in supporting journalists' interpretive work at speed, something consistently demonstrated across my studies.

- **A normative claim** that the systems through which journalists access and interact with experts should be understood as infrastructure. I have mapped the most common routines that comprise this infrastructure and identified key points of breakdown.
- **A set of design provocations**, including user needs, early solutions, and a call to support both existing routines and new models for real-time expert access.

While I have outlined possible paths forward for designing and supporting this space, future work must also grapple with its limits and risks. What happens when these routines scale and journalists gain massive access to experts? Who decides what counts as credible expertise—and what happens when journalists aren't the ones drawing that line? If expert participation becomes formalized, what new pressures or exclusions might follow? And what happens when the connective infrastructures I've named become paywalled, surveilled, or shaped by opaque platform incentives? These are, as Beth Kolko puts it, *dystopian musings*—but they are structural risks worth considering as we continue to invest in and institutionalize these systems.

At its core, this work is about strengthening the conditions under which the public can access timely, credible, and contextualized information, especially in moments of collective uncertainty. That requires more than speed. It requires trust, responsiveness, and the infrastructure to support both. Designing for this reality means attending to the systems that connect journalists and experts, reducing friction and breakdowns where we can, and ensuring systems are designed and built *not just for the few, but for the field*. In these moments, truth-seeking is not an individual act—it is collaborative work, distributed across people, practices, and platforms that need to perform under pressure.

Chapter 8

Conclusion

This chapter brings together the contributions of this dissertation and offers some concluding reflections.

8.1 Summary and Contributions

This dissertation examined journalists' needs during high-stakes news moments, as well as the dynamics of communication, connection, and collaboration between experts and journalists in these situations. Drawing on three empirical studies and grounded in interpretive, inductive methods, this work explored how journalists and experts navigate time-sensitive information exchange, the barriers that shape their interactions, and the infrastructures—technical, institutional, and human—that support or constrain their ability to make sense of unfolding events in a shared effort to inform the public.

Together, these studies make several contributions across empirical, conceptual, and practical domains:

- **Empirical Contribution:** This dissertation offers insight into how journalists report on emergent misinformation and election-related topics and the support they need. It also describes how experts contribute interpretive support in those moments, and how the dynamics of these interactions unfold under deadline pressure, as well as how intentional design can mitigate some of the tensions between professionals.
- **Conceptual Contribution:** This work encourages a reconsideration of journalistic truth-seeking as a distributed and professionalized form of sensemaking, influenced by the availability of expert

insights. Drawing from sensemaking theories and infrastructural thinking, it presents a five-part model of "senses" that influence real-time public knowledge production: sensebreaking, public sensemaking, journalistic sensemaking, expert sensegiving, and journalistic sensegiving. These processes are shown to be temporally sensitive and interconnected. By analyzing these dynamics, the dissertation highlights the human and technical frameworks that enable explanatory reporting in challenging conditions, advocating for their acknowledgment as a type of infrastructure.

- **Practical Contribution:** This work offers practical insights for supporting real-time journalist–expert interaction. The empirical chapters surface actionable guidance grounded in observed routines. At the same time, the final discussion proposes early design provocations, emphasizing both the refinement of existing sourcing practices and the creation of new, experimental routines and design considerations as people continue to support this system.

8.2 Revisiting the Research Questions

RQ1: What challenges do journalists face when reporting under high-stakes, misinformation-prone conditions, and what do they need to support more responsive reporting?

This dissertation started by examining the difficulties journalists encounter while reporting on topics related to misinformation—often characterized by rapid developments, significant risks, and the influence of online audiences in shaping perceptions and rumors surrounding these issues. Across all three studies, time pressure, isolation in doing this kind of work, and limited access to credible, timely sources and data emerged as central challenges.

Study One surfaced how journalists covering events like Pizzagate and the January 6th insurrection operated with limited tools, high reputational risk, and few institutional supports. Even in well-resourced newsrooms, data teams were siloed, and reporters relied on improvised workflows—spreadsheets, screenshots, personal contacts—to track and verify fast-moving claims. They expressed a desire for more data access from platforms and more reliable access to academic researchers to help make

sense of that data in context and gut-check their intuitions around framing the story.

Studies Two and Three reaffirmed the findings that experts can play an essential role in supporting journalists' sensemaking process during complex, emergent news events. This need was especially visible when reporting on phenomena that weren't FOIA-able, such as platform activity or algorithmic visibility, where traditional sourcing practices broke down. While some journalists had strong peer support on beats like war or health, those covering misinformation or online dynamics often worked in isolation, without the institutional knowledge that journalists covering other beats typically rely on.

Study Three highlighted an additional need for faster, more reliable connections to experts, especially with Twitter's decline as a sourcing tool. The expert helpdesk pilot revealed two further needs: equitable access to a more diverse expert pool and a stronger sense of professional community. Journalists working alone on complex topics valued the shared space not only for quick answers but also for the solidarity, validation, and shared learning it enabled.

RQ2: What ethical, structural, and methodological tensions arise in tech-enabled, time-sensitive communication between journalists and researchers, and how do these tensions impact their ability to align professional goals and disseminate knowledge for the public interest?

This research reveals that while overlapping public interest goals often drive journalists and researchers, their ability to collaborate under time pressure is influenced by ethical, methodological, and structural tensions. These tensions stem from distinct professional norms, timelines, and reward systems, and they often surface during efforts to communicate across these boundaries in real-time.

Ethical tensions included researchers' worry about being misquoted or asked to validate conclusions that hadn't been peer reviewed. At the same time, journalists were occasionally cautious about appearing too closely aligned with outside experts. Tensions also emerged around attribution and credit—some researchers felt their contributions were invisible if

not quoted, even when they had shaped the story. The idea of what a "successful" collaboration looked like differed between the two sides. Disagreements arose over what to share: researchers were more cautious about disclosing the names of non-public individuals or raw data, whereas journalists sometimes sought to publish the names of online personas for clarity and accountability. Additionally, both groups wrestled with the ethics of amplification, debating when reporting on false or harmful online information might inadvertently legitimize or spread it. These ethical decisions were rarely straightforward, especially when there were no shared norms or insufficient time to deliberate.

Methodological tensions centered on epistemic differences in how knowledge is produced and validated. Journalists often needed quick, clear takeaways, while researchers preferred to share cautiously vetted findings. This mismatch created friction, especially when experts were uncomfortable offering premature conclusions or when journalists lacked foundational context. Despite this, many journalists demonstrated strong learning instincts—asking follow-up questions, clarifying methods, and seeking accuracy even under deadline pressure. But the speed of news cycles often made iterative exchange difficult.

Structural tensions revealed the institutional misalignment between fields. Journalists are rewarded for speed and audience relevance; researchers for rigor and long-term credibility. These opposing incentives shape responsiveness and perceptions of value. Journalists admitted to sometimes initiating contact with experts too late in their process, while researchers struggled to assess whether contributing would be worth the time. These frictions were heightened when stories were pulled or went uncredited—outcomes that are routine in journalism but could be frustrating to experts, especially when they spent ample time supporting journalists' understanding.

Study 3 offered a glimpse of how better-aligned and thoughtfully designed systems could mitigate these challenges. The Slack-based helpdesk reduced cold outreach, created ambient visibility, and enabled both parties to participate in lower-friction, time-bounded interactions. Journalists reported faster, more effective sourcing; researchers appreciated the transparency and control. Still, some frictions remained, including concerns about sustainability and recognition.

Ultimately, this research shows that truth-seeking under pressure depends on bridging—not erasing—professional differences. Ethical caution, epistemic uncertainty, and institutional constraints are not barriers to collaboration; they are defining features that any support infrastructure must work with, not around. Aligning journalism and research in the public interest requires intentional systems that accommodate asymmetry while enabling timely, reciprocal, and trust-based knowledge exchange.

RQ3: How do sociotechnical systems—including This dissertation investigated how different configurations of sociotechnical systems shaped the speed, quality, and sustainability of expert support during high-stakes public interest reporting.

This dissertation examined how different configurations of sociotechnical systems shaped the speed, quality, and sustainability of expert support during high-stakes public interest reporting. Studies Two and Three compared one-to-one interactions—primarily email-based outreach—with a many-to-many shared Slack workspace. While both systems connected journalists to expertise, their affordances and coordination structures produced very different outcomes in terms of responsiveness, efficiency, and learning.

In Study 2, interactions were initiated mainly through email or individual outreach, with researchers making themselves "on-call" to answer journalists' questions in a timely way. While many of these connections produced valuable insights for journalists, the system revealed key inefficiencies. Experts spent considerable time repeating the same background context across different journalists, and there was substantial onboarding and alignment work, which, when mediated by email, often took too long for the pace of journalism. The one-to-one model, reliant on asynchronous tools like email, resulted in delays, duplicative labor, and sometimes unrewarded effort, especially when stories were dropped or timelines moved on.

Study 3 offered a contrasting model: a many-to-many, shared Slack workspace where journalists and experts interacted within visible, searchable channels. This system improved responsiveness and coordination by allowing participants to observe ongoing conversations, learn ambiently,

and reuse previously shared answers. Questions were asked publicly, responses built on each other, and multiple participants contributed to shared understanding. Journalists described this structure as a "huge boon" to their workflow, cutting down delays and enabling faster, more confident reporting. The synchronicity of the communication, as well as a shared educational and on-call burden, supported a more resilient system.

A key infrastructural insight across this work was the role of intermediaries—people who curated participation, routed questions, and maintained trust. Although not the focus of Study Two, I informally played that connector role; in Study Three, it was intentionally built into the helpdesk. This human infrastructure, supported by tagging, triage, and the trusted network of the organizer, helped "infrastructure" trust into the space, revealing that networks themselves are one of the most important infrastructural elements to support new designs and tools. Additionally, these spaces depended on ongoing maintenance from a librarian, facilitators, and expert and journalist volunteers who tagged posts, answered questions, and reinforced shared norms. Structured cues like a code of conduct, on-the-record defaults, and visible roles clarified expectations and built trust quickly, critical given the newness of many expert–journalist relationships in the space.

Taken together, these findings suggest that improving journalist–expert interaction is not merely a matter of better tools, but of building sociotechnical systems that can meet the pressures, timelines, and information demands of high-tempo public interest reporting. These systems must structure communication efficiently, enabling prioritization, supporting ambient learning, and routing requests effectively. Features like tagging expertise, indicating urgency, and surfacing relevant past conversations help ensure that the right people are connected at the right time, without overwhelming participants or duplicating labor.

Ultimately, the journalist–expert connection is not an isolated exchange—it is a vital part of the distributed information infrastructure that underpins real-time public sensemaking. Supporting that infrastructure means strengthening the public's ability to understand fast-moving, complex events through credible, contextualized reporting. Doing so requires more than reactive fixes—it calls for an intentional commitment to sustaining and evolving the routines that already enable these connections, while designing new ones with care, coordination, and an attention to trust.

8.3 Synthesis and Broader Implications

Across the three studies in this dissertation, a central insight has emerged: journalist-expert information exchange during high-stakes news moments is infrastructural in nature. Journalists' ability to verify and contextualize complex, fast-moving stories is not simply about finding the right source or getting the right quote. It depends on a fragile system of relationships, communication channels, professional norms, social trust, and available time. Though often backgrounded, this sociotechnical infrastructure can impact the speed, quality, and framing of the information that reaches the public when it matters most.

Rather than positioning expertise as something journalists "extract" from researchers, this dissertation highlights how journalists and experts co-produce public knowledge in uncertainty and under time pressure. These interactions—whether fleeting or sustained—are shaped by the tools that mediate them, the norms that govern them, and the histories of trust and credibility that precede them. The resulting information is not produced in a vacuum, but emerges through infrastructural conditions that either enable or constrain the journalistic mission to inform the public in moments of urgency.

This argument is informed by and extends crisis informatics research, which has shown how publics seek and interpret information during moments of disruption. My work brings this lens to journalism, showing how journalists themselves act as crisis responders—engaging in rapid sensemaking not just for themselves, but on behalf of the public. The temporal pressure of this role requires more than just access to knowledge; it requires infrastructure that supports fast learning, framing, and verification under deadline constraints.

One contribution of this work is to bring a situated perspective to the role of expert labor in high-tempo journalism. While journalists' truth-seeking and work is well-studied, the interpretive and relational labor of expert responsiveness, especially academics operating at speed, outside of typical peer review timelines, has received less focused attention. This dissertation makes visible that labor, not just as a knowledge resource, but as an active, time-sensitive contribution to the public's understanding. Naming this system as infrastructure is a normative move: one that asks institutions, funders, and technologists to see this responsiveness and on-call work as worthy of support, resourcing, and innovation.

Ultimately, this dissertation affirms the value of interdisciplinary action research in serving public interest goals. My approach has been shaped by multi-method qualitative research, systems thinking, and deep engagement with journalists, researchers, and intermediaries, as well as a commitment to producing knowledge that informs both scholarship and practice. It offers conceptual clarity and design provocations for those invested in strengthening information exchange in times of collective need.

The stakes of this work are high, not just for journalism or academia but also for the public, who rely on timely, credible, and contextualized information to make sense of uncertainty. If truth-seeking is to remain a viable civic function in our networked, high-velocity information environment, we must support not just the professionals who do it but also the infrastructures that make it possible.

8.4 Final Reflections and Future Work

This dissertation was born in a moment of national uncertainty and concludes in one. When I began this work in 2018, I was driven by concerns about foreign interference, online misinformation, and declining trust in democratic institutions. What has changed since then is not only the scale of these challenges, but the ways they have evolved. The crises of recent years—from pandemic misinformation to election denialism to the collapse of once-central platforms like Twitter—have made it impossible to treat misinformation as a simple content problem or a one-time threat. Instead, they reveal the fragility of networked tools and the need to attend to how we support truth-seeking during high-stakes moments.

To build civic resilience, we must look beyond fact-checks and moderation and toward the systems that allow knowledge to travel, adapt, and meet the public where they are. For journalism, resilience might mean having pathways to contextual expertise in moments of ambiguity. For academia, it might mean creating incentives and roles that support public engagement as part of scholarly practice. For civic life, it means understanding that misinformation isn't just a threat to be stamped out, but a signal of systemic breakdowns in how knowledge is produced, validated, and shared.

The infrastructure we need cannot be built by one group alone. It will require cross-sector efforts—between journalists, researchers, technologists, educators, and funders—to create systems that are fast without being

reckless, open without being extractive, and collaborative without collapsing professional values.

Much work remains. The future of this research lies in expanding beyond misinformation and elections to new domains—such as public health, immigration, and education—where complexity and contestation similarly converge but may have different contours. It also involves scaling and sustaining promising experiments, like the helpdesk examined in Chapter 6, and designing new information and network support formats. I remain curious about how we can create responsive, values-aligned spaces for expertise to flow when it is needed most.

In the words of the American Press Institute, *journalism exists to help people make the best decisions about their lives*. And in today's media environment, those decisions are being made quickly, amid noise, uncertainty, and competing claims. I want grounded interpretations and guidance to be readily available when the public needs them. And I like the people who produce that information—journalists, researchers, and others committed to public understanding—to be better supported in doing so. This dissertation is one step toward that goal—and a commitment to keep working toward an information ecosystem that better serves and informs the public.

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