## “Journalism’s New Approach to Knowledge”

## Chapter 7, excerpted from:

## *The Social Fact: News and Knowledge in a Networked World*

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# Chapter 7: Journalism’s New Approach to Knowledge

Journalism must become much smarter. In a world dominated by social media—a world seemingly inundated by frothy, viral content—this can seem almost counterintuitive. But a greater embrace of knowledge is essen- tial if journalism is to retain its value, both socially and economically. To embrace this new knowledge-driven mentality, though, journalism needs to get past some enduring tensions between informing and engaging. These tensions are generally framed by what is called the *Lippmann-Dewey debate*. Almost precisely one hundred years ago, Walter Lippmann, America’s most influential early media critic and political journalist, penned a series of bleak, powerful essays that he assembled in a volume called *Liberty and the News*. For the previous five years, Lippmann noted, over the course of World War I and its aftermath, societies had been mobilized toward a central, all-consuming cause, one that had suppressed truth in the service of victory and “conscripted” public opinion. The wholesale distortion of truth, the retreat from a commitment to veracity and the headlong plunge into propaganda on all sides, had had damaging consequences. “The work of reporters has thus become confused with the work of preachers, reviv- alists, prophets and agitators,” Lippmann, who as a young political and military aide had helped fuel the propaganda efforts, wrote.1 And without a “steady supply of trustworthy and relevant news,” the survival of govern-

ment by consent was in grave doubt.2

That was the world as he saw it in 1920. Lippmann was not alone among intellectuals in noting that a new mode of operation and a reorientation toward an increasingly industrial world was, at that moment, becoming vitally necessary across many domains. The wrenching shock of that global war—the millions it killed between 1914 and 1917, the religious and moral

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crisis it provoked, and the destruction of civilizations that had existed for centuries—prompted artists and writers to invent new forms of expression, embodied in the modernist movement that flourished in novels, poetry, music, and painting. The creative arts had to find a new vocabulary to artic- ulate the overwhelming confusion and complexity of this new, fragmented reality. A new basis for understanding the world was required.

Likewise, in the realm of public affairs, Lippmann noted, questions of policy, regulation, and governance had become so dizzying, so exten- sive and baffling, that they were no longer intelligible to average citizens. “Everywhere to-day men are conscious,” he wrote, “that somehow they must deal with questions more intricate than any that church or school had prepared them to understand.” Thus, journalism must reorient itself and build a new foundation for popular governance, for “in an exact sense the present crisis of Western democracy is a crisis in journalism.”3 The world was becoming complex, and journalism was in the hands of persons who were not up to the task of covering the world. It was very much a “factual recession,” with parallels to our own moment of crisis.

Over the next decade, both Lippmann and Dewey, his famous counter- part and America’s most prominent philosopher at the time, would publish profound books concerning the idea of a “public” in crisis: Lippmann’s *Public Opinion* (1922) and *The Phantom Public* (1925), Dewey’s *The Public and Its Problems* (1927). Through the years, Lippmann has been cast as the pro- ponent of a top-down approach to informing of the public, whereas Dewey has been extolled as the champion of more bottom-up modes of gener- ating public knowledge. Their ideas remain touchstones concerning the relationship between news and democracy, and in many ways we remain in the grip of their ideas and frameworks. From that period of crisis were born many of the central questions with which communication scholars and journalists still grapple: To what extent is journalism responsible for informing a citizenry? How much should the citizenry actively participate in setting the media agenda or guiding attention?

Binary frameworks ultimately prove brittle and overly crude, especially when reduced to clichéd abstractions such as “elites” versus “masses,” experts versus the wisdom of crowds. Michael Schudson argues that, in fact, the characterization of the Lippmann-Dewey “debate,” which frequently identifies the “elitist” view with Lippmann and his emphasis on the need for expertise in a complex society, rests on a misguided reading of *Public*

*Opinion* (1922) and *The Phantom Public* (1925).4 “The intellectual challenge is not to invent a democracy without experts, but to seek a way to harness experts to a legitimately democratic function,” Schudson notes. “In fact, that is exactly what Walter Lippmann intended.”5

From that so-called Lippmann-Dewey debate in the 1920s that catalyzed these competing notions all the way to the present, this framework has implicitly continued to color and influence media and communications discourse. It is our intellectual inheritance in journalism, and it remains the framework for contemporary debates in this space.6 The rise of the blogo- sphere and social media platforms has added fuel and complexity to the debate. Is journalism about engaging citizens or informing them? Might citizens, now endowed with individual broadcast power, just perform this function themselves and jettison the intermediary?

For too long, the perceived conflict has likely been overstated. In his original review of *Public Opinion*, Dewey praises Lippmann’s “brilliancy,” although he suggests that “Mr. Lippmann seems to surrender the case for the press too readily—to assume too easily that what the press is it must con- tinue to be.”7 Lippmann’s chief target was the political party machines that were threatening to overwhelm public interest and reformist efforts of that era. It was not that Lippmann opposed citizen involvement in democracy.

It is a lesson worth remembering. There is always another zone of power that should be watched, by whatever means, with greater suspicion than the power of the ostensibly gatekeeping press: the organized groups both political and corporate that are battling for influence and attention. After our recent decades of fierce debate over how much professional journalism should be given over to crowdsourced, citizen-centric journalism, the 2016 election and its aftermath have awakened many observers to the fact that the elites versus masses debate in media needs updating. The dangers to democracy are deeper than media, although media are deeply implicated in both problems and solutions.

The implicit argument in this book is that we have reached a moment when the elite-populist dichotomy is no longer useful in helping us think about the future of journalism. Such binary terms obscure the key emerging opportunity for journalists in the digital era. We are seeing the extraordi- nary and simultaneous transformation of two important and interrelated spheres: the democratization of media power and the democratization of knowledge. It is now possible to conceive of a journalism that is actively

engaged with citizens on digital platforms—one that even consciously facilitates the formation of online publics—*and* a journalism that sees its primary value as connecting citizens to wider pools of knowledge, whether research, public records, or systematic data. However, the ability to engage constructively, to choose between the myriad options, perspectives, and opportunities in the online infosphere, itself requires greater knowledge on the part of journalists. The sine qua non, then, of effective networked journalism is knowledge, without which journalism is destined to make the mistakes of the past.

The debate over journalism’s future is increasingly not necessarily a matter of engaging (populist) versus informing (elitist). Journalism in the era of expansive digital connectivity has the potential to create a kind of “virtuous circle” involving journalism and democratic citizenship, fueled and framed by knowledge. Both Lippmann and Dewey saw knowledge as the key. Dewey said the future of democracy depended on the “spread of the scientific attitude,” particularly as a bulwark against propaganda.8 Lippmann also located the solution to democracy’s ills in the creation of more social-science-oriented institutions.

The linchpin in this philosophical turn is a much stronger journalistic grasp of issues. Theorists of what has been called *deliberative democracy* stip- ulate that decision-making is legitimated when citizens give morally justi- fiable reasons for their views, fostering an iterative process of exchange.9 In this context, James Ettema has noted that journalism “must itself be a reasoning institution that aggressively pursues, rigorously tests, and compellingly renders reasons that satisfy the key criterion of deliberative democracy.”10 Without this new commitment to the aggressive application of knowledge and reason in the public sphere, journalism risks replicating old patterns (e.g., “he said, she said” stories), even if dressed up in more populist and engaged form.

To organize action on issues of increasing complexity, citizens must have a basic level of understanding, rooted in substantive knowledge. Jour- nalists can facilitate this understanding in targeted ways. As mentioned, this potentially creates a virtuous circle: engaged citizens are more likely to be informed because interest incentivizes learning. By understanding the true stakes in issues for average citizens, journalists are therefore more likely to engage the public. Such a philosophical turn toward a synthesis

of informing and engaging is a vital step forward toward centering news practice on networks of recognition—and dealing squarely with the hybrid domain of facts and social facts, in which ordinary citizens increasingly live and try to make sense of the world.

## The Crowd and the Library

Shifts toward a world of networked knowledge have implications in two directions for journalists. First, journalists must be more highly engaged with public audiences to discover more “horizontal” knowledge, as anec- dotal perspectives and related information are now part of the broader pic- ture that is necessary to “know” a subject. Second, in a world replete with misinformation and a vast sea of noise, journalists must have much deeper subject area expertise in order to engage with audiences and help build well-grounded public knowledge. Because selection now becomes so impor- tant, knowledge must be built into the journalist’s training so that selection is judicious and intelligent.

Both the crowd and the library are part of the continuum of knowledge now, and if journalists are to succeed in this new world, they must learn to thrive in both spaces. The *crowd* is the world of social networks and social facts, of nonhierarchical perspectives and anecdotes. The *library* no longer looks like it once did; it’s hypertextual, after all, linking to near- infinite sources. The growth of Wikipedia represents this new hybrid para- digm. Wikipedia harnesses the crowd but still uses systematic information as some of its core building blocks, an idea more congenial to that of the traditional library, or systems of scientific and research-based knowledge.

Ultimately, deep investigative and explanatory reporting can facili- tate important kinds of network formation that would not exist other- wise. Networks of recognition may require very deep digging to come into being. In previous chapters, we examined instances in which journalists engage with crowds online. Let’s now look at several examples of stories that can help explain how journalists are engaging with and creating more systematic knowledge too. Such stories provide powerful fuel for networks of recognition. They show how different levels of society are implicated in common concerns and how they are knitted in core citizenly responsibili- ties and decisions.

## “Hell and High Water”

Journalists traditionally have been “translators” of knowledge, writing through medical studies and government reports, making arcane scientific and social-scientific findings more accessible for the lay public. Yet new roles, even higher up the information value chain, are emerging across the spectrum of journalism, powered in particular by some digital-native out- lets and nonprofit news organizations. This trend is in part fueled by acces- sible software that facilitates computational and visualization tasks, but it is also spurred by an emerging spirit of daring and confidence—venturing through areas into which traditionally only academics and government agencies could or would go.

When Hurricane Harvey blasted the port city of Houston, Texas, in late August 2017, the flooding and mayhem unleashed seemed, to many resi- dents, policymakers, and news reporters, a shocking event. Many dozens of lives were lost, and more than $100 billion of property and infrastruc- ture damage was wrought. Yet the events should not have been shocking, necessarily.

Why? The *Texas Tribune*, ProPublica, Reveal, the University of Texas at Austin, Rice University, Texas A&M Galveston, and Jackson State University had combined forces to produce a stunningly prescient, interactive story roughly eighteen months prior called “Hell and High Water,” which pre- sented the likely scenarios for a direct hit on the city by a major hurricane. Calling Houston a “sitting duck,” the story—by journalists Neena Satija for the *Texas Tribune* and Reveal, Kiah Collier for the *Texas Tribune*, and Al Shaw and Jeff Larson of ProPublica—showed how citizens and policymakers had utterly failed to prepare for the kind of storm that, almost inevitably, would eventually come to the city.

Using accessible visualizations based on sophisticated modeling by their academic researcher partners, the journalists constructed a compelling warning to the city of Houston. Academics spent many hours helping the journalists bring together the data files and render them accurately. The legacy of the story—the great unheeded warning it represents—is in many ways tragic, but it also stands as an important case study in how journalism can team up with research institutions to produce powerful public-interest reporting.11 The journalists served as both knowledge- and policy-brokers, or translators, mediating vital technical information for the public. But they did more than just translate. The mix of policy reporting and complex

data-visualization tasks combined to create an altogether new body of knowledge, one informed by expertise but accessible enough to average persons. It has continued to contribute to a substantial public conversation about coastal development, zoning, planning, and climate adaptation. In a century when risk and resilience are becoming part of our vocabulary— from the global climate to financial markets to networked technologies, danger seems to know no boundaries—such reporting based on forecast- ing will likely become essential in terms of preparing the public to make smarter adaptive choices that can lead to resilience.

## “Fatal Force”

The answers to society’s public policy problems are not always sitting on the servers of government or academic institutions, and sometimes the data needed to effect positive change is simply not available. There are times, increasingly, when journalism must serve in the role of primary knowl- edge generator, especially when governments and markets fail to provision adequate information on vital policy issues. Such was the case with police- involved shootings in the United States—which, extending through many other high-profile cases, such as the death of Michael Brown in Ferguson, Missouri, became the focus of roiling national debate.

Motivated by the fact that the government was not collecting system- atic information on fatal shootings by police officers, the *Guardian* (“The Counted”) and the *Washington Post* (“Fatal Force”) both stepped in and decided to function themselves, in essence, like administrative government data-collection agencies.12 Both used methods of crowdsourcing and tar- geted records requests, as well as broad interviewing, to compile unique databases. The *Post*’s accounting of fatal shootings by police officers nation- wide, in particular, embarrassed the FBI and spurred action. It prompted FBI Director James B. Comey in October to call for better federal recordkeeping and greater police accountability. “It is unacceptable that the *Washington Post* and the *Guardian* newspaper from the United Kingdom are becoming the lead source of information about violent encounters between police and civilians. That is not good for anybody,” then-director Comey told law enforcement officials and politicians.13 The agency’s new method and approach to data collection in some ways replicates the *Post*’s.

The news organization–generated data was referenced across Capitol

Hill in testimony, and it was cited in various academic and nonprofit

reports, adding to the overall body of knowledge about this important public policy issue. The data collection itself has helped to grow and sus- tain networks of recognition, uniting grassroots activists and policymakers in a vital discussion about mutual obligations to all citizens and issues of trust among communities.

## “Crime in Context”

This data-collection role, sometimes discussed as the building of news apps or online interactive databases, can put news organizations themselves in the position of knowledge generator. The sophisticated interpretation of the data is another matter, too, and other news organizations such as the Marshall Project, along with a suite of other digital-native outlets such as Vox and FiveThirtyEight, have risen to that challenge.

To take just one example, journalists Gabriel Dance and Tom Meagher of the Marshall Project set out to answer the question of whether violent crime was up or down in the United States, a political football of a ques- tion that seemed highly susceptible to bias and distortion. In a penetrating feature, “Crime in Context,” the journalists carefully collected and synthe- sized four decades of FBI data from sixty-eight urban police jurisdictions, assembling a nuanced portrait of the conflicting macro- and microtrends playing out across the United States in cities.14 Using statistical techniques to create weighted averages and smooth random fluctuations, the piece fea- tured data visualizations to explore the complex nuances of this ostensi- bly simple question—“Is violent crime up or down?”—getting beyond the political rhetoric that so often distorts public perceptions of safety. “We found that the reported violent crimes rose in our cities last year to its high- est point since 2012,” the journalists conclude. “But viewed in the broader context of the past five decades, crime remains near record lows.”

## “Machine Bias”

In the age of big data and increasingly accessible computational tools, there is also the opportunity for journalists to become hybrid journalist-academic researchers themselves, building upon academic literature to study thorny public-interest issues. Such was the case with ProPublica’s “Machine Bias” investigative feature, which explored and critiqued computer software that scored criminal defendants’ likelihood to reoffend. The software was being used by courts to help shape sentencing decisions.15 That pioneering

investigation of an algorithm, what Nicholas Diakopolous has called the emerging journalistic beat of “algorithmic accountability,” stands as a tour de force of fearless and sophisticated reporting in the public interest.16 Build- ing upon the existing academic literature that had parsed and critiqued other risk and sentencing software, reporters and editors Julia Angwin, Jeff Larson, Surya Mattu, and Lauren Kirchner performed their own statistical analysis, concluding that the software being used was biased against minor- ity defendants.17 Baked into these ostensibly neutral algorithms, developed by a private company and deployed by the justice system, were the unmis- takable signs of discrimination, going both ways: “The formula was par- ticularly likely to falsely flag black defendants as future criminals, wrongly labeling them this way at almost twice the rate as white defendants.” Fur- ther, the journalists found, “white defendants were mislabeled as low risk more often than black defendants.”

There are risks in journalists venturing into complex, research-oriented territory. A team at Stanford has critiqued the methodology used in the “Machine Bias” story, for example.18 But this is normal in the research world. The key is for journalists to express clearly any areas of uncertainty in their analysis and to condition their audiences to appreciate such uncer- tainty. Each day now, there seem to be new examples of bold journalis- tic experimentation and sophistication that matches forms of academic analysis and carries out broader data-oriented tasks that were once the sole domain of research institutions. Such activity is clustered around the higher-end, deeper-resourced organizations, but there is no reason that it cannot become more common. For such complex work to become more common, many more journalists will need to prepare for the field in dif- ferent ways, to build the requisite skills and knowledge—and organizations will need to take different approaches to news.

The specific examples cited here of “deep dive” investigative, data-cen- tered inquiry and reporting will always be, in some sense, special cases. No newsroom could dedicate those kinds of resources all of the time. Most sto- ries will be daily stories. Obviously, journalism will not always be involved in heavy data collection or statistical analysis. The more regular benefit of greater knowledge in journalism will be its application in the judicious selection of what’s important in the process of reporting on deadline. What remains clear from the major public reaction to such stories—and all of the important conversations they began—is that this new kind of deep

knowledge can generate new networks of recognition that serve demo- cratic needs.

## Pictures in Our Heads

How does journalism contribute to general knowledge? And if practiced badly, how much might it foster general ignorance? Although simple on their faces, such questions contain layers upon layers of complexity. Schol- ars have been thinking about them for at least a century now. Revisiting two classic stories from the field’s foundational texts can help us frame these issues.

The 1931 autobiography of Lincoln Steffens, one of journalism’s great early muckrakers, contains a rightly famous passage that illustrates how journalism can profoundly shape our sense of reality. In a section titled “I Make a Crime Wave,” Steffens recounts how, in an escapade driven by rivalry with his journalistic competitor and friend Jacob Riis, he decided to focus on more and more sensational crimes across New York City. Riis responded in kind. The triggering event was a familiar one to all beat report- ers: both correspondents had “scooped” one another in sequence and were upbraided accordingly by their editors. Steffens and Riis then engaged in a contest of sorts, digging out all manner of crime to hype it. The public, and then-police commissioner (and future president) Teddy Roosevelt, sud- denly found themselves deluged by what seemed an accelerating pattern of crime. Commissioner Roosevelt called in both reporters, asked them what in the world was happening, and told them to stop. The crime wave, such as it was according to Steffens’ colorful account, then halted.19

The fact that news can change the public’s perception of reality in dra- matic ways may be obvious, but it is worth situating this point in deeper context: reality is always in some way mediated, whether by mass media, social media, or merely the people with whom we live and work. The Steffens incident highlights a more general phenomenon articulated by Lippmann in the opening passage of *Public Opinion*, in a section called “The World Outside and the Picture in Our Heads.” He recounts a situation in which people of several European nations were living on an isolated island in the ocean when World War I broke out in 1914. According to Lippmann, for a long time the English, French, and German inhabitants of the island had no news of the outbreak of war. “For six strange weeks

they had acted as if they were friends, when in fact they were enemies,” he writes. Perceptions of reality are shaped by information—or, in this case, its absence. Lippmann goes on to make a more general insight: “The only feeling that anyone can have about an event he does not experience is the feeling aroused by his mental image of that event.” These “pictures inside the heads” of people, “the pictures of themselves, of others, of their needs, purposes, and relationship, are their public opinions.”20 Lippmann’s entire prescriptive and analytical project in the book becomes precisely how to facilitate a more accurate picture of the “world outside” in the minds of the citizenry.

It would seem that both the Steffens and Lippmann anecdotes may be artifacts of a predigital era; it is hard to imagine them unfolding in quite the same linear way, uninterrupted by other, competing information sources, in the era of email and Facebook. And yet new problems of misinforma- tion, propaganda, fake news, and outright mainstream media neglect are as powerfully with us as ever. The basic problem of appropriately and pro- portionately mediating reality—how to condense and accurately represent the infinite data that constitute the physical and social world—continues in new forms, despite new technologies and platforms.

## Knowledge and Journalism Practice

In recent years, a nascent literature has grown around the theoretical con- nections between knowledge and reporting. Patterson defines knowledge in this context as “systematic information,” a category distinguishable from the anecdotal information gleaned from interviews and on-scene observations. Grasping these systematic patterns is a “key to devising accu- rate interpretations of what is observed or factually recorded.” This capacity transcends tapping more online sources for information; rather, knowledge enables the “investigator to recognize things that would otherwise be mis- understood or go unnoticed.” Patterson asserts that the Internet era, rather than making journalists less relevant, has created an even greater demand within democracy because the vast pools of available information are of such varying quality.21

Similarly, Wolfgang Donsbach notes that the “possibilities for journal- ists to do research and for people to have a voice—even in non-democratic systems—have never been better.” Because of journalism’s increasing

“marginalization” amid a diversified communications landscape, it is neces- sary for journalism to redefine itself as a “knowledge profession,” Donsbach argues, to make journalism “distinct again from other forms of communi- cation—for the sake of the quality of the public discourse.”22 This idea of a professionalized knowledge-based role has also undergone further theo- retical elaboration by Matthew Nisbet and Declan Fahy, who see the jour- nalist variously serving public audiences as “knowledge broker,” “dialogue broker,” and “policy broker.”23 This can mean the translation of arcane research, the facilitation of critical conversations around complex issues, or the unpacking of thorny and difficult policy proposals that address soci- etal problems. Mitchell Stephens has called for more “wisdom journalism,” with media organizations staffed by “interpretive journalists.” Journalists with expertise in specific areas might be organized “by subject matters akin to academic disciplines or subdisciplines”; they will be “looking not for news, but for the meanings and consequences of news.”24

Several other trends help to contextualize these theories and new frame- works for journalistic practice. Kevin G. Barnhurst has noted a broad trend in journalism, dating back a half century, away from event-centered or “realist” reporting and toward “meaning-centered news” and “sensemak- ing.”25 This observation builds upon previous work on this issue by Barn- hurst and Diana Mutz, in which they partly attribute the evolution toward meaning-centered news to a rise in quantitative data collection, enhanced computing capacity, an assimilation of social science approaches by jour- nalists, rising education levels among journalists, and increasing profes- sionalization.26 Likewise, Katherine Fink and Schudson have documented an “enormous” industry shift toward “contextual” or analytical/explana- tory journalism, a pattern that they call the “quantitatively most significant change in newspaper journalism between the 1950s and the early 2000s.”27 The current journalism landscape has seen the rise of some newer outlets that have seized on new, knowledge-based capacities and trends, including deep “explanatory reporting” outlets and verticals such as Vox, FiveThir- tyEight, the *New York Times*’ Upshot, the *Washington Post*’s Wonkblog, and the data-journalism/investigative outlet ProPublica. The rise of data jour- nalism is a kind of extension of the “precision journalism” first pioneered by Philip Meyer and others in the late 1960s and 1970s.28 It was ampli- fied by the movement toward computer-assisted reporting (CAR), which has empowered a certain class of journalists to begin executing what data

journalist Steve Doig has called “social science done on deadline.”29 Cloud computing, sophisticated web-based software, an emphasis on learning computer programming, and increasingly accessible and creative data-visu- alization tools are also fueling the continuing convergence of social science and journalism in some respects. The programming language R, a go-to data science tool among academics, has been readily adopted by the likes of FiveThirtyEight and data journalism team members at the *New York Times*. Journalists themselves appear to be cognizant of these larger patterns and their changing professional role in response. Media scholars Lars Will- nat and David H. Weaver found in 2013 that 69 percent of respondents said that “analyzing complex problems” in society is “extremely important,” the highest historical level recorded on the survey, which dates back to 1971. The scholars note that the level of response to that question is up an “astonishing 18 points from 2002” and that analyzing complex problems and investigating government claims are what journalists now believe are

their two most important functions.30

Dewey long ago noted the need for the merging of timeliness and rel- evance with social scientific principles of inquiry. News, he noted, is defi- nitionally a form of high alert for change and shocks to the continuous flow of events, and “the catastrophic, namely, crime, accident, family rows, personal clashes and conflicts, are the most obvious forms of breaches of continuity.” The search for discontinuity is what makes news *news*:

So accustomed are we to this method of collecting, recording and presenting social changes, that it may well sound ridiculous to say that a genuine social science would manifest its reality in the daily press, while learned books and articles supply and polish tools of inquiry. But the inquiry which alone can furnish knowledge as a pre- condition of public judgments must be contemporary and quotidian. Even if social sciences as a specialized apparatus of inquiry were more advanced than they are, they would be comparatively impotent in the office of directing opinion on matters of concern to the public as long as they are remote from application in the daily and unremitting assembly and interpretation of “news.” On the other hand, the tools of social inquiry will be clumsy as long as they are forged in places and under condi- tions remote from contemporary events.31

Dewey acknowledged that this synthesis of timeliness and depth will be no small task; in fact, he conceded there is a certain “ridiculous” quality to the suggestion. Yet the rise of available knowledge through the web and sophisticated tools that are instantly accessible online makes this vision much more achievable in our current moment. Tools of inquiry that are

being developed through both data journalism and social media listening and analytics, as well as “learned books and articles” by the millions online, are now readily available. Journalists must seize these opportunities.

## A Body of Knowledge

In an age of big data and networks, and of increasing polarization, journal- ism must get much closer to social science in its approach. As mentioned, this idea has long been advocated by the likes of Meyer.32 Above all he advo- cates for more careful attention to journalistic method, which he believes could bring journalists closer to the goal of true objectivity. “Instead of implying that there is an equal amount of weight to be accorded every side, the objective investigator makes an effort to evaluate the competing view- points,” he notes. “The methods of investigation keep the reporter from being misled by his or her own desires and prejudices.”33

It is striking to compare journalism as a discipline to other fields, such as law, medicine, accounting, business management, and many more. “Almost alone among the professions, journalism is not rooted in a body of substantive knowledge,” Patterson notes.34 Here we might distinguish between content and process knowledge: *Content knowledge* means an understanding of a particular discipline, such as economics, health care, the environment, or criminal justice. By contrast, *process knowledge*, as Donsbach has defined it, involves awareness of issues of communication and potential bias and—at the higher, metacognitive level—the ability to evaluate the strengths and weaknesses of one’s own reporting practices and of journalistic practices and strategies more generally. “If journalists know about, for instance, socio-psychological factors and group dynamics, they might resist more of the drives of ‘pack journalism’ and its often irratio- nal decision-making,” Donsbach notes. “If journalists know more about audience research, they [may] be able to present their messages in a way that might maximize not only attention to news but also, if employed in a responsible way, its cognitive processing by the audience.”35

Although journalism may never be rooted in as specific a body of con-

tent knowledge as the fields of law, medicine, or other well-defined profes- sions—journalism covers every field, after all—it nevertheless must train journalists to root their methods and practice more deeply in systematic information and data while also understanding theories and concepts that

help put events and information in meaningful context. The locus of this debate, naturally, is journalism schools, in which the issue of how to pre- pare students for leadership in an industry with an uncertain future is the essential question.

Given societal and technological trends, the logical step for journalism is to imagine and delineate how preparation for the profession might better incorporate knowledge-related skills, interdisciplinary learning, and online engagement and news-gathering strategies based on deep knowledge of net- works. G. Pascal Zachary writes that in an “era of pervasive digital networks that instantly deliver news with scant human help, the successful journalist will be, above all, a knowledge maker.”36 This echoes Donsbach’s central idea of journalism as the “new knowledge profession.” Such a transition is made all the more urgent by the fundamental challenge to journalism’s core value proposition presented by the online environment. “Today, many journalistic functions have been stripped from the news media,” Picard has noted. “Social media are now the primary centers of breaking news.”37

Digital skills and fluency with tools are necessary, for sure, but they are not sufficient. Serena Carpenter suggests that as technology and the media business evolve, journalism students may be better served by having “adap- tive knowledge” and more “theoretical knowledge” that is flexible enough to be applicable in new and unpredictable circumstances, which may make obsolete most skills with software and digital tools.38

The current debate joins a long-running discussion among journalism scholars. Michael Ryan and Les Switzer note that there has been a persis- tent tension within journalism education over balancing skills and *concepts*, or traditional academic content. “Many programs in the latter part of the 20th century evidently were oriented primarily toward skills development,” they note.39 In 2013, Jean Folkerts, John Maxwell Hamilton, and Nicholas Lemann—all former deans of major journalism schools—called for jour- nalism programs to orient themselves more toward their universities, with faculty doing more academic research and with curricula engaging more systematically with the content-based offerings in other university disci- plines. They note that earlier in the history of journalism education, some instructors were integrating many other disciplines from outside journal- ism, including a broad menu of liberal arts: “We see all three of [the] early strains in journalism education—practice-oriented, subject matter-oriented, and research-oriented—as essential.”40

Similarly, G. Stuart Adam has recommended matching “elements of practice” to university disciplines, including “evidence-gathering and fact assessment” that has “authority not only in journalism itself, but in sci- ence, empirical social science (including statistical evidence), legal stud- ies, and information science,” in addition to “analytical and interpretative capacities nursed into existence through the formal study of ideas, on the one hand, and through specialization in the languages and forms of under- standing marking a major discipline.”41 Finding connection points such as these across university curricula will be vital in strengthening journalism education along dimensions of knowledge.

## New Knowledge Guideposts

As the discussion in this book has so far suggested, journalism education and training might focus on two key areas to help guide reform and the fostering of new competences and to chart new interdisciplinary pathways within universities. These might be loosely clustered under the categories of knowledge competences and network competences, although there are interconnections between the two areas; their separation here is merely for illustrative purposes.

## Knowledge Competences

Journalists may cover so many subjects in the course of a career that a focus on a single area of specialization, particularly at the undergraduate level, may not be sufficient. The process of learning the fundamentals of a science-based or social science–based discipline, however, can expose a student to valuable analytical methods. Ultimately, the goal must be a form of training that prepares students to learn quickly and deeply in an online context, what information scientist Alison Head and I have called master- ing the art of “knowledge in action.”42 The core competency, then, is a deep and flexible capacity to master complex issues—to acquire, so to speak, knowledge about how to use knowledge.43 Under these broad competences, we might include specific items, such as the following:

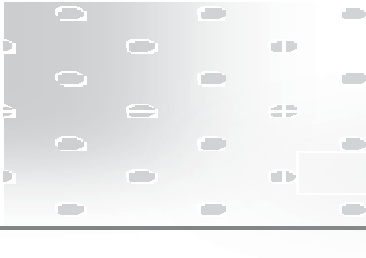
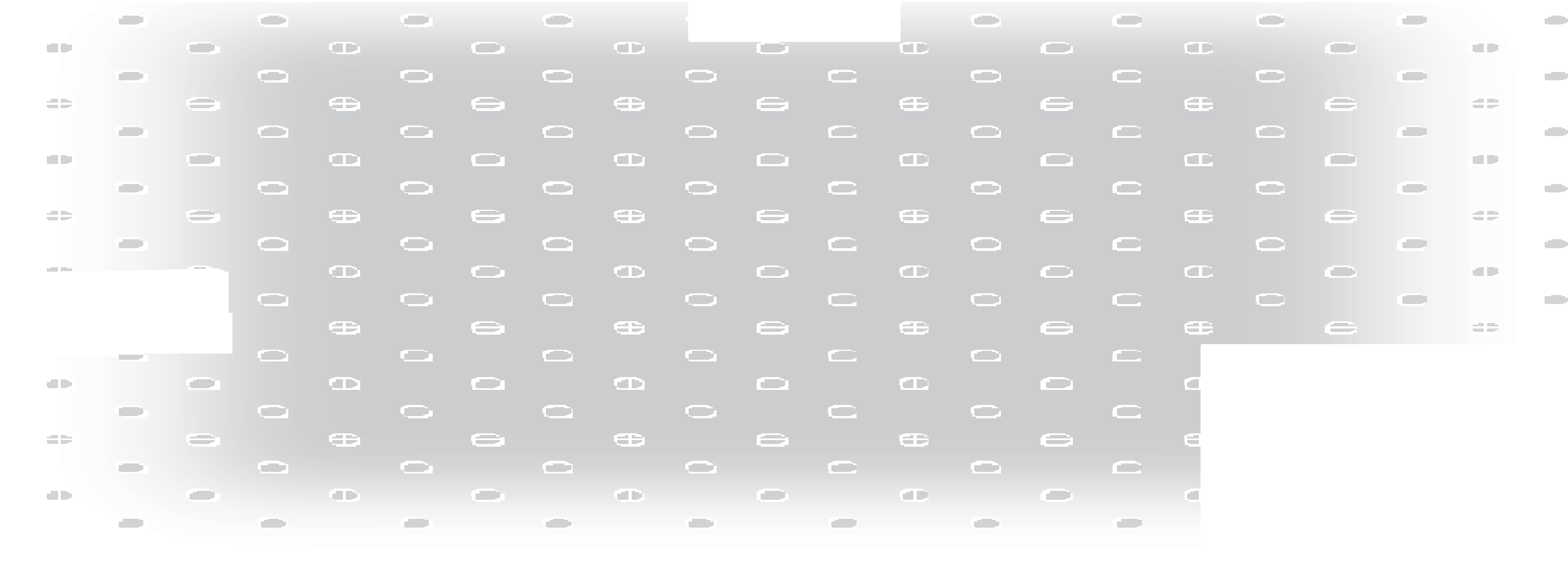
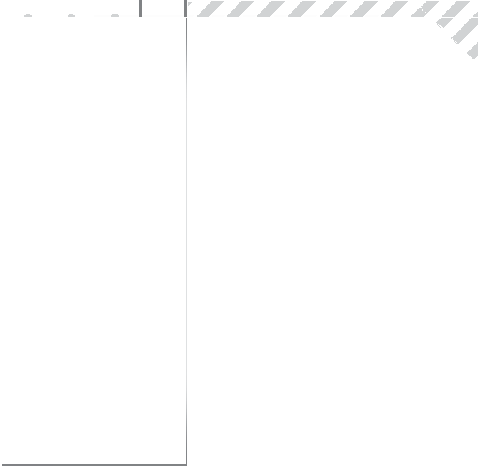
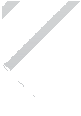
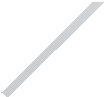
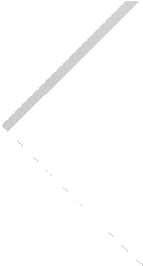
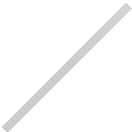
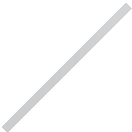
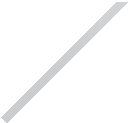
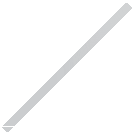
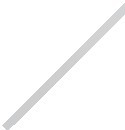
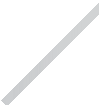
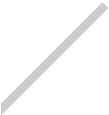
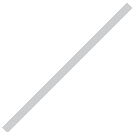
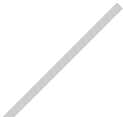
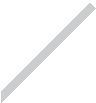
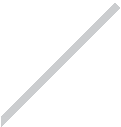
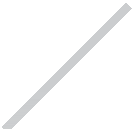
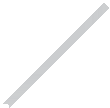
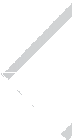
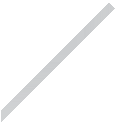
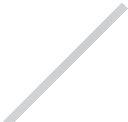
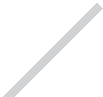
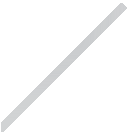
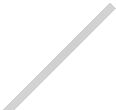
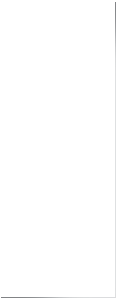
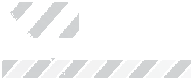
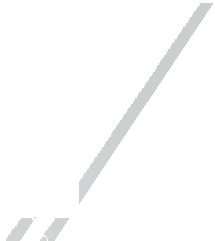
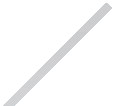
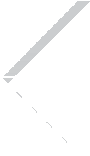
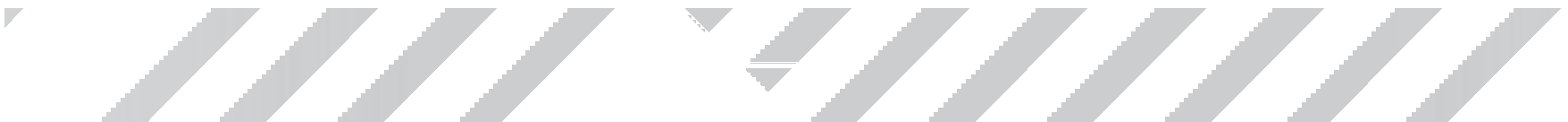
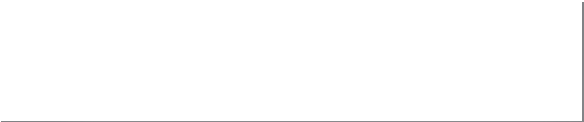
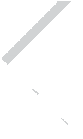
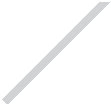
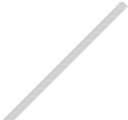
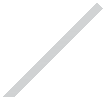
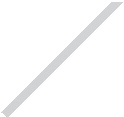
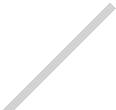
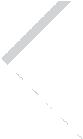
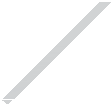
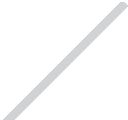
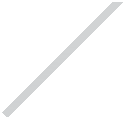
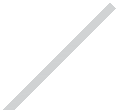
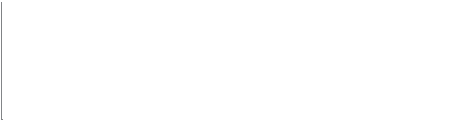
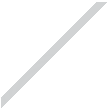
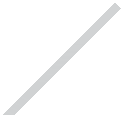
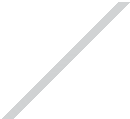
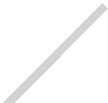
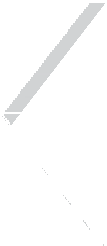
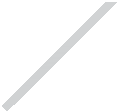
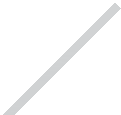
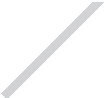
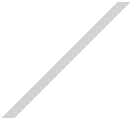
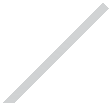
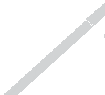
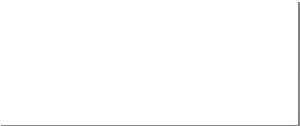
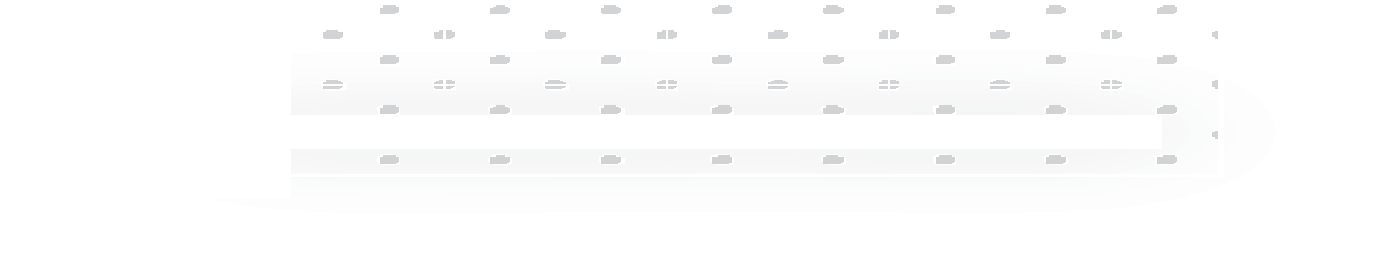
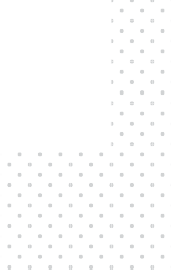
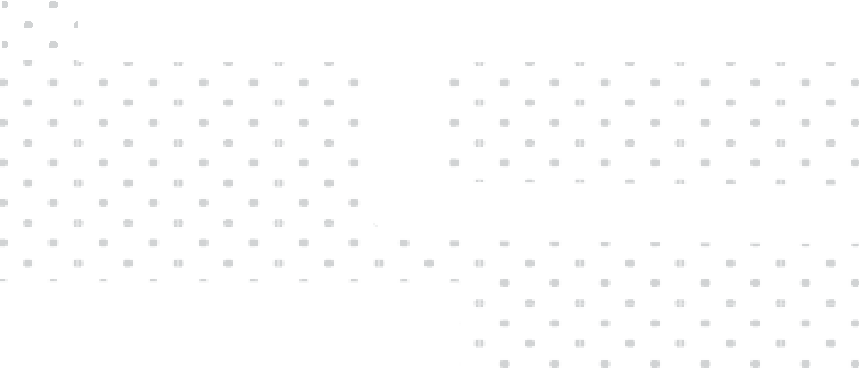
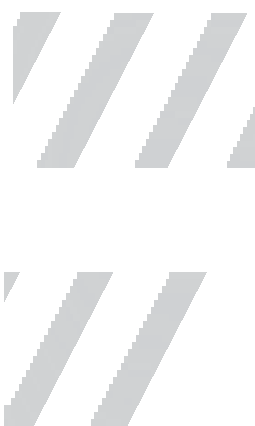
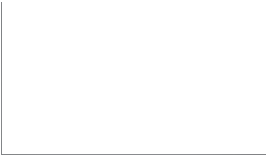
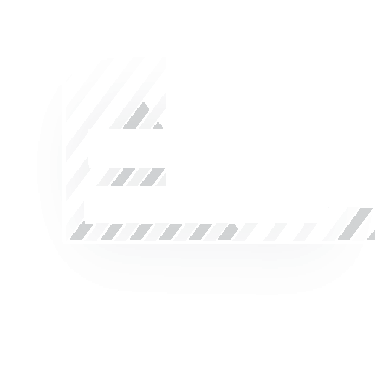
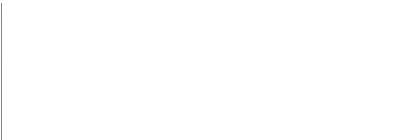
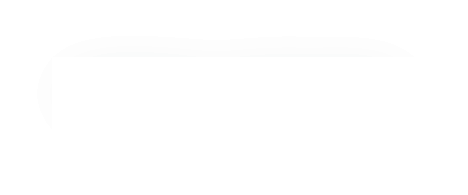
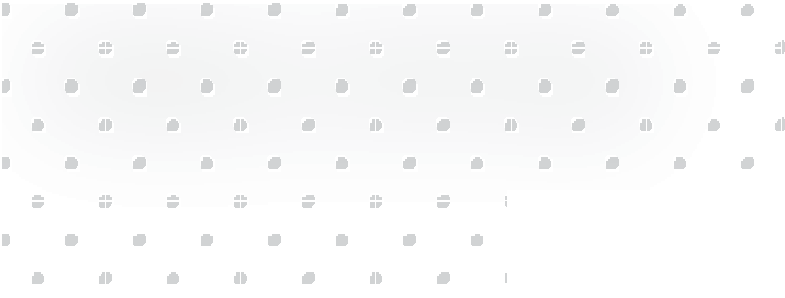
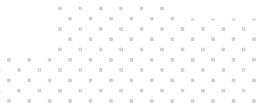
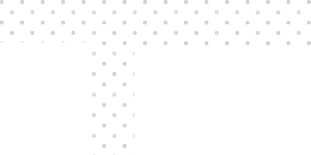
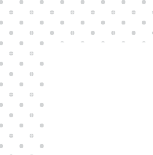
* Literacy with basic statistics and strong quantitative reasoning skills. A knowledge of how research is conducted, including issues relating to sam- ple sizes, confidence intervals and error bars, *p*-values, and common statis- tical analysis techniques such as regression.
* Awareness of how hypotheses are tested and theories are built. Under- standing of the idea of an independent, dependent, and intervening vari- able that work to form an explanatory model.
* Skills in the manipulation and analysis of primary and secondary data in tabular form.
* The ability to map research discourses and to discern the rough “state of knowledge” within different disciplines and relating to certain questions.44 An example might be the state of knowledge on an issue such as tough crime laws and deterrence, were a reporter to report on a policy debate in this area. This requires familiarity with online databases and a critical approach to the culture and conventions relating to how knowledge is pro- duced and disseminated.
* Fluency with public records, the laws and procedures that allow access, and the typical norms and conventions of government agencies at all levels that determine how information is collected and synthesized.
* Web-based techniques for acquiring and presenting information, from scraping and accessing application programming interfaces (APIs) to visual- izing data.

Of course, interviewing and gathering information in the field will remain core to journalism practice. We might imagine these new com- petences as being woven together with the traditional tasks, creating an iterative process (see figure 7.1).45 Any provisional model of an “ideal” jour- nalistic process will not be appropriate in all situations; journalism is too varied for any single model. However, we might stipulate that it should begin with identifying existing assumptions and biases—a first step for journalists striving toward true learning and impartiality—while bookend- ing the process with transparency, both in terms of showing one’s work and being clear about the limitations and uncertainties in the reporting so far.

By grounding their practice in knowledge and then expanding the pub- lic’s insights through reporting in context, journalists are at lower risk of committing the litany of lamentable practices well known in media criti- cism: the personalization of issues; the thin “he said, she said” stories; the political game and horse race narrative; or the “churnalism” of the retyped press release. These lamentable patterns embedded in coverage have increas- ingly divorced journalism from democracy and alienated citizens from news media. In this regard, Patterson has observed: “When reporters must file quickly, without the opportunity to observe or conduct interviews, they

|  |  |  |
| --- | --- | --- |
|  |  |  |
| ANALYZING DATA | | |

**Figure 7.1**



**IDENTIFYING EXISTING ASSUMPTIONS**

**FORMING A HYPOTHESIS**

SOCIAL LISTENING AND ENGAGEMENT

**MAPPING**

ACQUIRING CONTEXT

**THE DISCOURSE**

SYNTHESIZING INFORMATION

**EVALUATING EVIDENCE**

**PRACTICING TRANSPARENCY**

GATHERING DOCUMENTS AND BACKGROUND

INTERVIEWS

Guiding principles and patterns of workflow for journalism in an age of networks.

*Source:* Steven Braun and John Wihbey.

have no place to turn except to what they already know. Knowledge is the best remedy for hastily concocted, wrongheaded story lines.”46

## Skills with Networks

A review of much of the current professional discourse, the journalism studies literature, and the instructional material read in courses suggests that the discipline has not become fluent with a new and broad set of

scientific disciplines that have direct bearing on news creation and dissemi- nation—specifically, network science and theory. Social network analysis and areas such as graph theory and a wide, related range of data science techniques have become the basis for the great modern information com- panies such as Facebook and Google. There is real potential in journalism drawing on network-related fields, or at the very least better understanding their language and frameworks. This knowledge can help journalists under- stand audiences, sources, and opportunities to connect groups and nodes of information, sparking networks of recognition.

## Network Competences

Social media management and some basic analytics courses are being taught at some colleges and universities, but it remains the case that jour- nalism schools have not to date capitalized on the revolution taking place in the network sciences and computational social science. Competence in this area would extend well beyond the ability to disseminate information to wider audiences; it would also relate to the analysis of online publics and information spaces to help fuel deliberative discourse and to analyze patterns of sentiment, behavior, and discourse. Understanding networks is also key to investigating the sources of online misinformation. The network competences might include the following:

* A rich understanding of how the web operates at a technical and behavioral-social level; of the basic patterns of information flows; and of the archetypal forms—tight crowds, community clusters, hub-and-spoke networks, and so on—that online communities commonly take as dis- course unfolds.
* Comprehension of website and social media analytics, as well as the meanings of, and debates over, the proper way to measure success for jour- nalists in an online environment.
* The ability to map, using social network analysis techniques, the shape, sentiment, and size of online communities.
* An understanding from business and cultural perspectives of how com- mercial, third-party online platforms operate and are governed and how form and function may affect information flows.
* A theoretical sense of socially networked behavior, informed particu- larly by the quantitative social science and network science literature and including the techniques of social network analysis.

Journalists cannot be expected to be network scientists. Some network- related work can be achieved more or less easily as a function of quality software development. Experts who specialize in the analysis of networks often admit that, so far, the tools used for network visualization and analy- sis are not as intuitive and well-designed as the tools for more general data analysis and visualization purposes.

Network analysis techniques are not always used for the purposes of audience research or directed solely at social graphs of persons online. The computational techniques used in network analysis might see their most powerful use as an aid in mapping the relationships among persons and entities in public records. Data journalist Jonathan Stray analyzed thirty- four media stories in which network analysis of some sort was used; indeed, looking for relationships in public documents is one primary use of network analysis, although visualization is also frequently performed. “Network anal- ysis has now been in use in journalism for several decades, and is increasing in popularity,” he notes. “But the journalistic meaning of the term is some- times different from what is meant in computer science or sociology.”47

Stray points to several examples that represent the current use of these techniques: a *Seattle Times* article that mapped figures in the local art scene; a *Tampa Bay Times* investigation of the relationship among car thieves; and the Pulitzer-winning investigation run by the International Consortium of Investigative Journalists (ICIJ), which built a database to allow a coalition of some three hundred reporters globally to find relationships hidden in the millions of leaked documents that showed corruption in the global banking system.48 “Perhaps the journalist’s use of network data is closest in spirit to the ‘link analysis’ of criminal investigations,” Stray observes. “At the frontier of investigative journalism, graph databases are emerging as the representation of choice for fusing large and complex data sets.”49 New computational techniques and software must be developed to harness the possibilities of network analysis.

Finally, it should be noted that the art of *narrating networks*—journalistic visualization techniques and typologies that represent for audiences inter- connected persons and data points—is still a field in its infancy. The use of network imagery in visual journalism is only just now coming into wider use; how well these forms and images are able to connect with and engage audiences deserves further study.50

## Journalists’ Attitudes and Capabilities

If we grant that journalists must achieve this greater fluency with social sci- ence and data and apply this knowledge in their practice, it is worth asking how far away the field currently is from achieving any such vision, both in terms of the overall, current state of competences in this regard and the state of academic training. Where does the field stand?

Three consecutive annual surveys (2015–2017), all of which I conducted through the Shorenstein Center on Media, Politics and Public Policy, shed important light on issues of current capabilities and attitudes toward new skills. The most extensive survey illuminates attitudes and self-reported capacities relating to research and data across a wide range of measures.51 The survey respondents included 1,118 full-time working journalists and 403 journalism educators.52 The survey was sent to roughly nine thousand identified journalists and educators. The underlying demographic charac- teristics of the respondents roughly conformed to the news media busi- ness at large, in terms of age, education, employment, tenure, medium, and gender.

In keeping with long-standing tradition, journalists reported that con- ducting interviews, both on the phone and in person, in addition to on- location reporting, were the information-gathering methods that they most frequently use. However, the practice of drawing on and using gov- ernment data and research studies also figured prominently among the methods used, with about half of all journalists surveyed saying they use these methods frequently. Still, there is clearly room for improvement in terms of the methods with which research is accessed: The most frequent way that journalists report drawing on research for stories is through fol- lowing links in other articles and calling up experts. Only about one-fifth reported frequently using Google Scholar—by far the most common tool used by researchers themselves to access scholarly literature of all kinds— and other academic databases saw little use at all.

Reporters and editors are, in other words, mostly reliant on other sources to locate research relevant to their stories. This lack of direct access to research not only indicates a certain passivity on the part of journalists but also highlights their susceptibility to biased interests—even individual researchers or research institutions—who may carry a hidden agenda. As

Patterson notes, “Journalists’ knowledge deficiency is a reason they are vul- nerable to manipulation by their sources.”53

What was striking to see among journalists in that same survey, however, is a general enthusiasm for the possibilities of research: three-quarters said academic research could be “very helpful” to journalists in terms of deepen- ing story context and strengthening story accuracy, and nearly 70 percent said such research could be very helpful in countering misleading claims by sources. The value of systematic information and knowledge to journalism seems clear enough to the field’s practitioners, at least in this sample.

Further, a statistical analysis on the 2015 survey data found some impor- tant correlations. Journalists producing stories for a national audience, ver- sus a regional or local audience, were more likely to report using research studies in their story over the past year and to report speaking frequently with academic experts. This might be expected, given that national sto- ries may look for wider, more general context. Educational attainment was associated at a significant level with greater frequency in speaking with aca- demic experts, although having advanced degrees was not associated at a significant level with using research studies more frequently in stories. Fur- ther, among journalists who reported having enough training to perform statistical analysis on their own, there was a significant relationship with both using more research studies in stories and greater frequency of con- tact with experts. As might be expected, journalists covering science-heavy beats, particularly in medical science, were more likely to draw on research studies in their stories and speak with experts more frequently. Reporters covering politics were less likely to say they drew on research studies as compared to those covering other beats, although they were just as likely to be in touch with experts. Among different news mediums, journalists in television/video were less likely to draw on research.

One of the chief takeaways from the survey was the striking disconnect between journalists’ self-reported skills with various data-related tasks and the amount of value they know such skills have for journalism. News media members know they are not as prepared as they should be (see figure 7.2). In terms of data skills, only about one in ten journalists in the survey said they were “very well equipped” to perform statistical analysis on their own, and 46 percent said they were “somewhat” well equipped on that skill mea- sure. However, troublingly, only one-quarter of journalists said they were very well equipped to interpret statistics generated by other sources, with

* **On your own, how well are you equipped to:**
* **How important is it for journalists to:**

% Do statistical analysis % Do statistical analysis

**11** Very well **39** Very

**46** Somewhat **52** Somewhat

**43** Not well **9** Not very

% Interpret statistics from other sources % Be able to interpret statistics from sources

**25** Very well **80** Very

**58** Somewhat **19** Somewhat

**17** Not well **1** Not very

% Interpret research studies % Be able to interpret research studies

**32** Very well **77** Very

**54** Somewhat **22** Somewhat

**14** Not well **1** Not very

Sample size of journalists: N=875

**Figure 7.2**

How journalists rate their own data abilities and see data’s importance.

*Source:* 2015 survey, Journalist’s Resource, Shorenstein Center, Harvard University.

58 percent saying they were somewhat equipped. In terms of their self- assessed ability to interpret research studies, about one-third said they rated their ability very highly.

In the 2016 Shorenstein Center survey (of about seven hundred full-time or nearly full-time journalist respondents), journalists were asked about the barriers to their drawing on more research in their reporting. Some 60 per- cent pointed to a lack of access, such as online paywalls; a third said they didn’t know enough about research methods to assess accuracy; and nearly half were worried that potential bias and funding sources were not clear and therefore could not be assessed.

Another survey conducted that same year asked a group of 110 health science journalists about their views on dealing with the academic research and scientific institutional worlds. The publication of new scientific stud- ies, they said, was the lifeblood of their reporting cycles, as nearly half indicated that their stories were frequently triggered by new publications; nearly a third of journalists said government reports were a frequent trig- ger for stories too. That said, about 40 percent said having inadequate time

inhibited their ability to produce quality stories in a knowledgeable way, one-third cited difficulty in assessing the validity of new findings as a major problem, and another one-third blamed the need to frame stories in a way that will catch the public’s attention. About one-third of health science journalists said insufficient space for their stories was a major barrier to quality journalism. On the question of why health and medical informa- tion gets misrepresented to the public, about two-thirds of journalists sur- veyed blamed industry-funded scientists either “a lot” or “somewhat”; a roughly equivalent number of journalists blamed nonprofessional sources of news, such as blogs or talk shows.

The 403 persons in the educators group represented in the 2015 survey hailed from a diverse mix of schools and backgrounds. In the sample, about half were at research universities and half at teaching-oriented or liberal arts institutions (a few percent were at community or technical colleges). In terms of their primary preparation for work, 46 percent cited having been a professional journalist, 15 percent cited an advanced academic degree, 30 percent cited a mix of professional journalism and a training degree, and 8 percent cited a communication background.

It is interesting to note that the journalism educators consistently did not value academic research for the practice of journalism as much as the working journalists did. This may be explained by a variety of factors, including that many current instructors may have left the practice of jour- nalism before the digital revolution provided so much instant access to the research world, giving rise to the likes of Vox, FiveThirtyEight, ProPublica, and the Upshot at the *New York Times*. Further, although journalism aca- demics had greater self-reported levels of fluency with data and statistics in the 2015 survey, it was still the case that only 45 percent of journalism pro- fessors said they were very well equipped to interpret statistics from other sources, and only about one in five said they were very well equipped to perform statistical analysis themselves. Only 5 percent of journalism aca- demics said the academic program in which they teach provides “exten- sive” training in statistics to students (43 percent said there was “some” preparation). Further, just 8 percent said there was extensive training in interpreting numbers from sources, although 62 percent said there was some such preparation for students.

Overall, the evidence from these surveys speaks to the need for signifi- cant capacity building among working journalists, educators, and students.

It also speaks to the need for more scholarship in this area as there has been little other empirical research with respect to how much journalists draw on knowledge. Other research investigations of specific reporting areas are not heartening. For example, a 2015 study by Holly Yettick found that, in contrast to science or medical journalism, education journalists almost never cite peer-reviewed research. This means that the findings of the most reliable source of information about education are “barely a blip on the radar of American education reporting.”54 Studies of basic media accuracy also broadly speak to this problem: one study of American newspapers found that 61 percent of articles contained errors.55 The public has con- sistently complained about a lack of knowledge on the part of journalists on basic economic, legal, and government issues they are covering; public evaluations of news accuracy continue to decline.56

If we accept the obvious fact that the world is becoming increasingly data-driven and knowledge-focused, it would make a great deal of sense for journalists to prepare themselves better for this environment. Further, to maximize their contribution to the functioning of democracy and provide the public with relevant and accurate material, it is inarguably essential that journalists, as a whole, become much better equipped to make selec- tive judgments about the importance of issues and information and parse complex quantitative patterns amid the blur and noise of the online public sphere. It is unrealistic to expect all in journalism to become statisticians, and certainly not every beat and subject requires deep familiarity with the relevant academic literature. Still, we should value these skills and, as an aspiration, look to impart them as pillars in media work, as vital parts of the body of knowledge that constitutes the evolving discipline in the digital era.

## Characterizing Uncertainty in News

A greater embrace of knowledge also means a greater commitment to cap- turing uncertainty. What the “boundary-free” pattern of knowledge in the digital ecosystem requires of journalists may be a much more decisive emphasis on transparency relating to information-gathering and interpreta- tion, as well as a humbler approach to the verdicts rendered and the pictures presented to the public. The public has little understanding of the methods that journalists employ or the codes of ethics to which journalists adhere. An even wider disjunction between trends in the world in general—in which a

lack of hierarchy and endless modification and interpretation prevail across the web—and journalism—in which purportedly authoritative statements about the world are rendered in final form—threatens to undermine the reporting profession even more. Surely it is one of the reasons that trust in the press has declined so precipitously across the United States.

If there is a general trend that we might cite as particularly relevant in this regard, it is the broad, secular decline in terms of trust in US insti- tutions of almost all kinds—from Congress to religious institutions, from the Supreme Court to news media, which have seen among the sharpest declines in public evaluations of trust.57 It is worth thinking about a jour- nalistic response to our age of anti-institutionalism.

We may be entering an era in which there is simply less tolerance for cer- tainty and definitive judgments on controversial issues of any kind—and news media, having hit near rock-bottom in terms of general trust, should look more explicitly to state uncertainty and lack of information up front. Strategies of intellectual transparency may aid the creation of networks of recognition, insofar as citizens may connect with the network for differ- ing reasons, drawing on different civic epistemologies and modes of under- standing. Stories and narratives that express areas of uncertainty—where further knowledge is needed—may be less likely to alienate and more likely to draw in diverse publics for varying reasons.

Some observers and scholars have also called for a new journalistic eth- ics based on transparency itself, replacing older ideas about objectivity.58 All of these changes and trends speak to the need for journalists to frame their work more as an ongoing process than as a finished product. It also speaks to the need to make clear notions of uncertainty and fallibility. A world of wide, populist, and unsettled knowledge also means changing audience expectations and greater accountability (and punishment) for errors of hubris.

Nate Silver, the data journalist who founded FiveThirtyEight, notes that news media often fabricate clear trends based on noisy data, creating what are pejoratively called *media narratives*. Media have a “probability problem,” in his view, stemming in part from lamentable professional incentives. “One can understand why news organizations find ‘the narrative’ so tempt- ing,” Silver states. “The world is a complicated place, and journalists are expected to write authoritatively about it under deadline pressure.”59 Silver’s prime case studies in media probability problems relate to political polling

and elections, as well as extreme weather events such as hurricanes—classic cases in which journalists frequently overinterpret forecasting.

Silver’s point can be applied more generally. The need for analytical humility and the clear communication of the possibility of error, or future deviation from current trends, is vital across all beats. Journalists must find ways to acknowledge uncertainty and to modify interpretations as the world of increasingly “unsettled” knowledge demands it. This issue of char- acterizing uncertainty, anathema to a media world of blaring headlines and confident statements delivered by talking heads and pundits, is a crucial issue, one in need of a great deal more examination and study.

Reporters often have built their picture of what they believed was gener- ally true through anecdote, through observation and interview. Surely such tools always will be useful for exploring human experience and events. Data analysis cannot always capture the texture and nuance of lived experience, but being able to place anecdotes in the context of systematic information is vital if the journalistic picture of the world presented to the public is to be reasonably accurate.

## Histories of Uncertainty

Let’s consider the lack of trust in media from a historical perspective. On June 11, 1807, President Thomas Jefferson wrote a letter in reply to John Norvell, a young man seeking career advice and asking Jefferson’s opinion on becoming a newspaper publisher. Earlier in his career, Jefferson is known to have had a few positive and memorable things to say about newspapers. In a 1787 letter, he famously wrote that “were it left to me to decide whether we should have a government without newspapers or newspapers without a government, I should not hesitate a moment to prefer the latter.”60 How- ever, having been the object of sustained criticism by certain quarters of the press throughout his presidency, Jefferson was not so sanguine two decades later. In a letter dripping with sarcasm, he told the young Norvell (a Ken- tucky native who would go on to edit periodicals in Lexington, Kentucky; Baltimore; and Philadelphia)61 that, if he were to start a newspaper, the whole endeavor should be wholly and strictly reformulated:

Perhaps an editor might begin a reformation in some such way as this. divide his paper into 4. chapters, heading the 1st. Truths. 2d. Probabilities. 3d. Possibilities. 4th. Lies. the 1st. chapter would be very short, as it would contain little more than

authentic papers, and information from such sources as the editor would be willing to risk his own reputation for their truth. the 2d. would contain what, from a mature consideration of all circumstances, his judgment should conclude to be probably true. this however should rather contain too little than too much. the 3d. & 4th. should be professedly for those readers who would rather have lies for their money than the blank paper they would occupy.62

Jefferson’s acid take on the press—the chapter on “truths” would be “very short”—and his evident exasperation is no doubt a reaction to the river of negative ink he saw as president, much of it based on innuendo, gossip, and hearsay. In 2017, the *Washington Post* noted that Jefferson stands as a kind of progenitor to President Donald J. Trump, who likewise has shown abso- lutely no affection for journalism.63 (Both, notably, were favorably disposed to the press earlier in their careers.) Jefferson’s views also provide further perspective on the “fake news” crisis of our current political moment: more than two centuries prior to the 2016 presidential election and its fallout, the sitting president of the United States noted that “nothing can now be believed which is seen in a newspaper. Truth itself becomes suspicious by being put into that polluted vehicle.”64

The opinions of politicians aside, what is more interesting is taking seriously Jefferson’s idea that news outlets might more explicitly label certain representations as “probabilities” and “possibilities.” The issue of formally expressing probabilities has remained a hot one in science jour- nalism, in which the task of reporting typically involves accurately captur- ing researchers’ own expressions of uncertainty in a particular study. The communication and journalism studies literature has examined this issue fairly extensively, and some research has suggested that more nuanced, or hedged, portrayals of scientific research can engender more trust with news consumers.65 Whole books have been written about how journalists can better handle numbers in general, including quantification of uncertainty; it has long been a pet peeve of researchers that journalists regularly distort numerical information or get it wrong.66

In some ways, however, science journalism, or journalism specifically about any kind of research, is a special case, in which the expression of uncertainty is already baked into the subject. In such cases, journalists need to do a better job of reflecting any probabilities articulated in the given research paper and avoid the temptation to overinterpret or sensationalize. Quality interviews with the researchers involved and careful attention to

nuance are the key in these cases. There also should be due attention to critical views of other scientists not connected to the research in question and even of researchers not totally embedded in that particular, narrow cor- ner of science, as statistician Andrew Gelman recommends. “If journalists go slightly outside the loop—for example, asking a cognitive psychologist to comment on the work of a social psychologist, or asking a computer scientist for views on the work of a statistician—they have a chance to get a broader view,” he suggests. “To put it another way: some of the problems of hyped science arise from the narrowness of subfields, but you can take advantage of this by moving to a neighboring subfield to get an enhanced perspective.” Gelman advocates that journalists bring an attitude of skepti- cism to new findings as a form of postpublication review, “conveying to readers a sense of uncertainty, which is central to the scientific process.”67

In terms of graphical representation of uncertainty in data, journalism has a less-than-stellar track record, even among the most sophisticated and elite outlets. Amanda Cox, editor of the Upshot at the *New York Times*, has said that she can find only eight examples in the paper’s graphics archives in which journalists “formally expressed some type of confidence inter- val.” In the instances in which uncertainty was articulated in this way, she says, it generally appears that the *Times* was somewhat “forced” to do it to account for an odd or marginal trend. An example she gives is a story in which child obesity was essentially plateauing in the United States, but plotting the data made it look like there was a slight increase. “I do think that if we got more comfortable with uncertainty,” Cox said, “if we got more comfortable with the fact that we don’t know the future but that we can have educated guesses about things, I think that there are real world implications and policy consequences to that.”68 The real-world implica- tions may be that audiences both benefit from and appreciate the increas- ing honesty and humility from news organizations.

The lack of formal expressions of uncertainty in journalism may not stem from laziness or malpractice, but rather from a reasonably well-founded belief that audiences simply will not understand. Alberto Cairo has pointed out that the “cone of uncertainty” that is often used to represent the path of hurricanes on weather maps is frequently misinterpreted by viewers as the size of the actual hurricane. Cairo hypothesizes that there are likely histori- cal reasons that visual representations for public audiences do not include expressions of uncertainty: most of the classical and canonical forms (e.g.,

scatter plots and bar graphs) for visualizing data were created at the end of the nineteenth century, before the advanced science of uncertainty and sophisticated statistical techniques and data analysis were developed in the twentieth century (by the likes of Ronald Fisher and John Tukey, among others).69 It remains the case that the public has trouble interpreting simple plots showing the correlations between two variables, never mind more complex visualizations that highlight uncertainty.70 The research on how lay audiences respond to visual manifestations of uncertainty is not yet well developed.71

For stories in which facts and knowledge are in dispute, there may be good reason for journalists to show as much transparency and uncertainty as possible. Damaris Colhoun has noted in *Columbia Journalism Review* that “uncertainty can be a powerful tool. When reporters embrace how little they know, resist forming conclusions, and share their doubts with their readers in a form that breaks with convention, they may wind up getting closer to the truth.” This speaks to a more general point: the reporting of nearly any short-term statistical trend—rising violent crime, more car acci- dents, increased home valuations, fewer drug overdoses—more frequently should be reported with substantial caveats. Trends fluctuate for all sorts of reasons; many short-term patterns are just random noise and eventually regress to a historical mean.

Technical questions over expressing uncertainty in the context of sci- ence, research, and data visualization should also prompt us to think more broadly about how to convey our general confidence in any conclusion based on the available evidence, across stories that may involve interpreta- tions relating to specific events—things that are episodic in nature. What should we make of a local election result or a year of lower test scores in a school or a team’s streak of victories? Some issues are so mundane that it might seem pure nerdy overkill to assign some level of confidence to a story, yet many might benefit from a journalist, or a group of journalists and editors, saying in effect, “We believe X explains Y with high/moderate/ low confidence, based on the following evidence.” This would be to take a page from, for example, the intelligence community, which is always work- ing with incomplete information to render defensible judgments.

Charles Weiss has proposed using legal terminology to express scien- tific uncertainty, a body of language and concepts that are more familiar to the lay public. He has proposed using legal-inspired language over a 0–10

confidence interval scale delineated by terms such as *beyond a reasonable doubt*, *preponderance of evidence*, *probable cause*, and *no reasonable grounds for suspicion*. The scale runs from extremes of “impossible” to “beyond all doubt.”72 Whether or not this precise language would work in journalism is unclear, but it points to an important problem that would need to be solved. Fact-checking organizations, such as PolitiFact, currently use sliding scales to evaluate truth claims, and other such norms could evolve.

It might be a reasonable goal for news outlets to create a common lan- guage that can better convey degrees of certainty to audiences. Implicit in this is a need for journalists to better understand how hypotheses are tested and theories built and to bring a more scientific framework to the evalu- ation of evidence.73 As discussed, some of the research evidence suggests that audiences would appreciate this; it is possible that it could even depo- larize audiences a bit on controversial issues, putting news media more in the role of explicitly fallible referee rather than judge and executioner. The other necessary piece of any such efforts, as mentioned, is transparency. “Journalism is not scholarship and does not generally use bibliographies or footnotes,” Nicholas Lemann notes, “but you should use attribution in your work in such a way that readers and colleagues can see, to the great- est extent possible, where your information came from and how you have reached your conclusions.”74 Showing the data and the documents, the body of evidence, is becoming a new norm in many forms of journalism.

In an age of increasing public distrust and skepticism, reframing the journalistic product by more clearly approaching and articulating stories as hypotheses that can be tested and that are susceptible to further evidence is an essential move. Paradoxically, an era that demands greater knowledge and closer proximity to systematic data from journalists also requires them to be less certain. But stating one’s methods and assumptions, and staying open to new evidence, is the very core of science. Journalism will never be science, but it can both get closer to reality and potentially better engage audiences through an approach that emphasizes depth, self-awareness, and humility. Articulating limits, unknowns, and uncertainty may also invite public participation, potentially creating more space for diverse networks to discuss and share information.

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