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A “Full Stack” Approach to Public Media in the United States

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Summary

Over the course of U.S. history, and especially in turbulent times, the federal government and civil society have sought to promote civic information. They have sought to make it easier for citizens to get accurate, local, and timely information, and for suppliers of that information to reach citizens. Exposure to civic information and engagement with it is what makes self-rule possible, which is why the First Amendment is the cornerstone of democratic liberties. As a policy matter, the United States has treated civic information as a critical infrastructure—one that should be resilient and decentralized. The infrastructure built at the nation's founding started with the postal service. After the authoritarian surge in Europe around the Second World War, the focus turned to modifying a highly concentrated commercial system of information production to shore up democracy. Amid the turmoil of the 1960s, the commitment to civic information infrastructure powered the creation of a decentralized public media system.

Today, the challenges to democratic practice and governance are as severe as they have ever been. Many Americans live in separate realities, lack access to local news, distrust expertise and institutions, feel antagonistic to tens of millions of their fellow citizens, and struggle to access or accept credible information. They are manipulated by a digital advertising machine that

pushes them toward disinformation and discord.¹ The problem is so bad that the U.S. Surgeon General has issued an Advisory on health misinformation.² Disordered information flows are a global phenomenon and some of the responses will require coordinated effort to change the incentives and characteristics of social media and digital advertising. But there are also distinctly U.S. responses that are available, drawing on the country's decentralized public media tradition.

This paper outlines what a “full stack” approach to new public media might look like. The “full stack” involves all the layers in communicating information, from production through distribution. In considering what a reinvigorated infrastructure for civic information might look like, the paper asks anew what have always been questions for media policy: How can community anchor institutions like libraries and universities participate? How can we ensure robust and resilient physical infrastructure everywhere? What technical and regulatory protocols will free citizens from exploitative commercial control? How can we support accurate, high-quality content that the market does not produce?

The United States needs to invest in a new digital public sphere—a new civic infrastructure—if it hopes to sustain democratic practice and informed participation.

1 See Matthew Crain and Anthony Nadler, “[Political Manipulation and Internet Advertising Infrastructure](#),” *Journal of Information Policy* 9 (2019).

2 U.S. Health and Human Services, [Confronting Health Misinformation: The U.S. Surgeon General's Advisory on Building a Healthy Information Environment](#) (2021).

Introduction

A half-century ago, the United States embarked upon a remarkable democratic experiment. In the mid-1960s, the Carnegie Commission on Educational Television conducted a major study to research the role of noncommercial television in U.S. society.¹ Broadcast television had by then established itself as a breakthrough technology, enabling unparalleled forms of communication and, in its ubiquity, presenting profound implications for social life. Observing that television was “a miraculous instrument,” the Carnegie Commission’s task was “to turn the instrument to the best uses of American society, and to make it of new and increased service to the general public.”² The power of television, in other words, could be harnessed for more than just commercial value. It had the capacity to remake civic life for the better. The Carnegie Commission sought to design a new system as an alternative to existing commercial networks, one that would use broadcast technologies to enable free and open expression, serve the diverse information needs of the public, and foster connection and mutual understanding among communities.

Throughout the country, once-vibrant media ecosystems serving local communities have collapsed, leaving vast news deserts in their wake.

When the Carnegie Commission published its final report in 1967, it laid out a grand vision for public media. The report’s recommendations proposed a major network of community infrastructures, imagined not just as a collection of uniform broadcast stations but as an interconnected system of varying institutions and technologies. At its foundation were the talents and energies of local communities that, with adequate technical and financial support, would

attend to their own particular information needs and contribute to those of the national polity. Supplementing this diverse, pluralistic base of communities were initiatives for research, innovation, and professional training. The system was, according to its authors, a distinctly U.S. approach to social progress and technological innovation. The Carnegie Commission’s report formed the basis for the Public Broadcasting Act of 1967, initiating a lasting experiment in distributed and democratic media.

More than 50 years later, the United States suffers from an information disorder. The business models for local media are all but defunct. Although the market for digital advertising is worth hundreds of billions of dollars, the platforms’ market power means that content creators collect a tiny share of ad revenues.³ Throughout the country, once-vibrant media ecosystems serving local communities have collapsed, leaving vast news deserts in their wake. As outlets shutter or look to cut costs, the production of high-quality information like local news reporting and investigative journalism is often the biggest casualty.⁴ Meanwhile, when a user accesses content on a platform through search functions and content feeds, opaque artificial intelligence algorithms prioritize information based not on whether it will inform the user but on whether it will maximize “engagement,” often in the form of outrage. By capturing a user’s attention, the platform can monetize greater volumes of personal information, generally without meaningful consent.⁵ So while high-quality information languishes, low-quality information like clickbait, racist and misogynist abuse, conspiracies, and disinformation abound.

1 Carnegie Commission on Educational Television, *Public Television: A Program for Action: The Report and Recommendations of the Carnegie Commission on Education Television*, 1967.

2 *Ibid.*, p. 11.

3 Ranking Member Maria Cantwell, [Local Journalism: America’s Most Trusted News Sources Threatened](#), U.S. Senate Committee on Commerce, Science, and Transportation, October 2020, p. 16.

4 David Ardia et al., [Addressing the Decline of Local News, Rise of Platforms, and Spread of Mis- and Disinformation Online: A Summary of Current Research and Policy Proposals](#), UNC Center for Media Law and Policy, October 2020, 11.

5 Luke Munn, [“Angry by Design: Toxic Communication and Technical Architectures.”](#) *Humanities and Social Sciences Communications* 7:53 (2020).

This situation has already proven profoundly harmful to U.S. democracy, from undermining trust in elections to fueling xenophobia to hindering public health responses. One positive sign is that there does appear to be a public consensus that the problems facing the U.S. information environment are real and serious. In recent years, the digital platforms have responded primarily through content-moderation regimes. Put most simply, these systems rely on often elaborate frameworks to discern and then sift good information from bad.⁶ Content moderation, however, gives a few platforms excessive power to punish and silence, as well as to ignore and condone. Content moderation as a focus of the information disorder elides the problem of private platforms controlling the flow of important information. It is readily apparent that new approaches are necessary.

Strangely, public media has not figured prominently in the discourse surrounding information disorder, notwithstanding the fact that public media entities are among the most trusted institutions for both conservatives and liberals.⁷ This absence may be due to an overly narrow conception of what public media is or could be. As the history of the Public Broadcasting Act shows, the public media agenda is about much more than any specific technology (broadcasting) or any set of legacy institutions. It is a vision for how alternative, noncommercial infrastructures can be deployed to support communicative practices for a healthy democracy. If public media is to play a significant role in alleviating information disorder, however, it must be reimagined for the challenges and opportunities of a 21st century communications environment.

This paper proposes an agenda for transforming public media, broadly understood, into a vital bulwark for digital democracy. We use the term “public media stack,” based on the concept of a technology stack, to

refer to a layered, interconnected network comprised of information infrastructures—“hard” technologies and “soft” institutional arrangements—operating according to civic principles. Through technological characteristics such as open-data protocols and accountable-governance principles, the public media stack should be designed to devolve decision-making powers to end-users, while amplifying local information, opportunities for cultural exchange, and constructive engagement in the democratic process. By decentralizing control over the flow of information through the network, the public media stack should empower users, rather than platform authorities, with the tools to “boost the signal of good information” and “dampen the noise created by bad actors and disinformation.”⁸ While public media commentary has long focused on content decision, technical and governance design choices that encourage informed civic discourse are just as important to combat information disorder.

Civic Information Principles in the U.S. Tradition

Every so often, Americans face a collective reckoning over the role of communications technologies in their democracy. Social, political, and technological upheavals generate previously unimagined opportunities alongside new dilemmas, unsettle notions of their information needs and vulnerabilities, and present recurrent questions in new contexts: What is the role of media and communications in a democratic society? How can new communications technologies be harnessed to increase freedom and well-being? What is the appropriate responsibility of government in ensuring a free, vibrant, and just information ecosystem?

The Hutchins Commission

In the late 1940s, amid the massive social changes of the postwar period and still coming to terms with the

6 See, for example, Facebook, “[Community Standards](#).”

7 Christopher Ali, et al., “[PBS Could Help Rebuild Trust in US Media](#)” *Columbia Journalism Review*, March 9, 2021. (describing independent research showing “the political leanings of PBS viewers span the spectrum from extremely liberal to extremely conservative” and PBS research finding the network to be “America’s most trusted institution”).

8 Karen Kornbluh, Ellen P. Goodman, and Eli Weiner, [Safeguarding Digital Democracy: Digital Innovation and Democracy Initiative Roadmap](#), German Marshall Fund of the United States, 2020, p. 28.

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advent of broadcast technologies, disparate sectors of civil society—including educators, religious organizations, civil rights groups, civil libertarians, and labor unions—coalesced around a mistrust of the nation’s commercial media system. Animated by concerns not unlike today’s, this movement of media reformers took aim at monopolistic control of media entities, the underrepresentation of racial minorities in media content and ownership, and the excesses of commercial advertising.⁹ What emerged from these critiques were calls for policy changes responsive to the information needs of a diverse and pluralistic democratic polity.

The 1947 report *A Free and Responsible Press* was one response, published by the Commission on Freedom of the Press (better known as the Hutchins Commission for its chair).¹⁰ Comprised of the era’s leading intellectuals in the field, the commission undertook an in-depth study of media to determine how American society could protect freedom of expression within an increasingly complex and interconnected information environment.

The Hutchins Commission recognized the difficulties of its task in a booming market economy. The U.S. form of industrial organization in the mid-twentieth century drove toward high concentrations of corporate power. At the same time, informed democratic participation was ever more reliant on mass communications. While a competitive economy might tolerate relatively high degrees of corporate concentration, a competitive market in ideas could tolerate less. Concentrations of power in the communications industry posed acute threats to the free circulation of ideas. This bottleneck control over information flows, or gatekeeping,¹¹ hurt free expression not only because it concentrated speech power, but also because it harnessed expres-

sion to a business model beholden to the narrow profit motives of advertisers. Even as that concentration was a threat, however, aggressive government action to mitigate the threat—whether through antitrust enforcement, subsidies, or direct regulation—could itself imperil free expression insofar as it impinged on the private media companies’ production and circulation of information.

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In light of its historical understanding of the First Amendment, the Hutchins Commission concluded that constraints on media concentration advanced free speech interests. It understood the constitution to mean that “Where freedom of expression exists, the beginnings of a free society and a means for every extension of liberty are already present. Free expression is therefore unique among liberties: it promotes and protects all the rest.”¹² But the freedom had to belong to the general polity, not only to the press. Rejecting the binary opposition between government inaction to create the conditions for free speech and tyrannical government oppression, the Hutchins Commission adopted a positive rights view of First Amendment protections. In other words, it put the “freedom for” the public to participate in civic dialog on a par with “freedom from” government coercion.¹³

The Hutchins Commission bolstered its reading of the First Amendment with a historical account of comparative threats to free speech. In the eighteenth century the biggest threat to free expression was government censorship, rather than economic wherewithal, because it was relatively easy to reach an

9 Victor Pickard, *America’s Battle for Media Democracy: The Triumph of Corporate Libertarianism and the Future of Media Reform*, Cambridge University Press, 2014.

10 Commission on Freedom of the Press, *A Free and Responsible Press*, University of Chicago Press, 1947.

11 Stuart N. Soroka, “The Gatekeeping Function: Distributions of Information in Media and the Real World,” *The Journal of Politics* 74:2 (2012).

12 Commission on Freedom of the Press, *A Free and Responsible Press*, p. 6.

13 *Ibid.*, p. 128.

audience through print.¹⁴ By contrast, in its own time, the commission thought the greatest censorial threat was excessive concentration in media institutions. As a result, protection against government actions was necessary but insufficient to protecting the public's First Amendment interests. For the First Amendment to meaningfully protect free expression and an informed democratic citizenry, it also had to deal with the threats of excessive private power.

Society's challenge then, as now, was to carefully pursue interventions that advanced the public's interest in accessing high-quality information from diverse sources while protecting the communications ecosystem from government coercion.

Society's challenge then, as now, was to carefully pursue interventions that advanced the public's interest in accessing high-quality information from diverse sources while protecting the communications ecosystem from government coercion. Deeply sensitive to this tension, the Hutchins Commission envisioned a kind of twentieth century "social contract" between private media, government regulators, and the democratic polity.¹⁵ It held private industry primarily responsible for meeting the country's information needs and hoped companies would voluntarily assume public service responsibilities and professional standards. The commission also advocated for civil society organizations (including libraries and universities) to play a more significant public role by providing media literacy education, communications research, nonprofit broadcasting, and watchdog oversight of private media. Finally, the commission viewed the government's role as a crucial backstop. It recommended that the government expand First Amend-

ment protections (for example, by extending freedom of the press to radio and film for the first time), reduce barriers to entry into the communications industry, and provide public service media where private industry was unable or unwilling to do so.

From the Post Office to the Internet

While wary of overzealous state power, the Hutchins Commission recommendations acknowledged the government's long-standing role in promoting freedom of expression and technological progress dating back to the nation's founding. In the republic's early days, policymakers focused on postal mail, the nation's first long-distance communications network. Driven by the founders' belief that it was a civic imperative to keep the citizenry closely informed about the affairs of the nascent state, support for the postal system became a key policy priority following ratification of the constitution.¹⁶ James Madison argued in 1791 that Congress had an affirmative obligation to improve the nation's communications facilities by, among other measures, encouraging the "circulation of newspapers through the entire body of the people" via the mail.¹⁷ In 1792, Congress passed the Post Office Act, which barred public officials from opening personal letters, provided significant postal subsidies for newspapers, and transferred key management responsibilities from the executive to Congress so as to democratize control.¹⁸

These measures encapsulated the foundational U.S. approach to communication infrastructures. The legislation safeguarded civil liberties by protecting citizens' privacy, provided enormous indirect subsidies to publishers, and established a distributed architecture to guarantee a far-flung citizenry access to subsidized,

¹⁴ Ibid., pp. 15-17.

¹⁵ Pickard, *America's Battle for Media Democracy*, 211. For the Hutchins Commission's complete recommendations, see Commission on Freedom of the Press, *A Free and Responsible Press*.

¹⁶ Richard R. John, "Recasting the Information: Infrastructure for the Industrial Age," in Alfred D. Chandler, Jr. and James W. Cortada (eds.), *A Nation Transformed by Information: How Information Has Shaped the United States*, Oxford University Press, 2000, 58; Victor Pickard, *Democracy Without Journalism?: Confronting the Misinformation Society*, Oxford University Press, 2020, p. 16.

¹⁷ Quoted in John, "Recasting the Information," p. 59.

¹⁸ Congress, Sess. I, Ch. 7, [An Act to Establish the Post-Office and Post Roads within the United States](#), February, 20, 1792.

timely information on public affairs. Throughout the nineteenth century, Congress expanded routes, constructed a vast network of postal roads, and established an extensive railway delivery system. Within decades of the Post Office Act's passage, the United States maintained the largest and most advanced postal system in the world. In 1828, the country's 7,500 post offices amounted to 74 per 100,000 inhabitants, compared to 17 in Great Britain and four in France.¹⁹ Relying on public investments equivalent to billions of dollars today, the postal network delivered tens of millions of newspapers each year, supported civic communications by voluntary associations and political parties, and was vital to the development of geographically extended industries such as banking, agricultural trade, and insurance.

The history of U.S. investment in communications infrastructure and policies to promote access and civic engagement holds key lessons for thinking about the challenges of today's information disorder.

Since the Post Office Act, the United States has experienced immense economic, social, and technological transformations. In response, the government has repeatedly recast its role in communications development and deployed a wide range of strategies to satisfy the public's information needs. During the Civil War, Congress subsidized construction of the transcontinental telegraph system and granted telegraph firms the right to string wires along postal routes in exchange for regulatory oversight.²⁰ With the arrival of the telephone in the early twentieth century, the government used its antitrust authority to prevent anti-competitive cross-ownership of the telegraph and telephone industries and to guarantee long-distance interconnection access for independent telephone

companies.²¹ Congress also mandated universal telephone service through the Communications Act of 1934.²²

Following the Second World War, the government supported communications technologies through research and development (R&D) funding. The Defense Department's Advanced Research Projects Agency (ARPA) pioneered the development of space satellites and constructed the world's first packet-switching network, ARPANET, which led to subsequent network advancements by the National Science Foundation and, in the 1990s, the transition to the commercial Internet.²³

These histories of strategic U.S. investments in communication infrastructure to promote access and civic engagement hold key lessons for thinking about the challenges of today's information disorder. First, the U.S. government has always invested in the country's communication infrastructures because democracy requires an informed and engaged citizenry. Adapting to radical technological change, the government has advanced the public's interest in free expression through a wide variety of strategies, including direct public services, targeted subsidies, antitrust enforcement, R&D, standard-setting, and, where appropriate, deregulation. Second, the nation's information infrastructures are defined by more than technological and economic characteristics. They have developed according to distinctive U.S. commitments to decentralization and distributed power. Third, private firms have always been indispensable to U.S. communications, but they have never met the public's information needs on their own. News and culture, along with basic infrastructure, are public goods that generate positive externalities for society, and are systematically underproduced by profit-max-

¹⁹ John, "Recasting the Information," p. 60.

²⁰ *Ibid.*, pp. 75-78.

²¹ Paul Starr, *The Creation of the Media: Political Origins of Modern Communications*, Basic Books, 2004, p. 229.

²² 47 U.S.C. § 151 et seq. (1934).

²³ Janet Abbate, "Government, Business, and the Making of the Internet," *Business History Review* 75:1 (2001).

imizing markets.²⁴ Federal, state, and local governments, along with key sectors of civil society, have therefore assumed key responsibilities to ensure a free, open, and robust marketplace of ideas along with meaningful access and social cohesion.

Public Media as Devolved and Networked Public Space

A generation after the Hutchins Commission, the United States was again in a period of introspection and anxiety over the ability of its government to achieve the stated ideals of its founding. As in the postwar period, those inclined toward national introspection turned to the mass media and its failures to provide content and connection fit for the nation's needs. In 1961, the Chairman of the Federal Communications Commission (FCC), Newton Minow, gave a catalytic speech to this effect in what became known as his “vast wasteland” address in which he lamented “in a time of peril and opportunity, the old complacent, unbalanced fare of action-adventure and situation comedies is simply not good enough.”²⁵ In the mid-1960s, another blue-ribbon commission—the Carnegie Commission on Educational Television—set about devising a new public media system.

About a decade earlier, the federal government had already made the decision to reserve broadcast spectrum for the exclusive use of noncommercial television, and before that, radio. This was a commitment to noncommercial media infrastructure that would come to be worth billions of dollars. Early noncommercial stations provided news and information especially relevant to rural populations and niche interests, but they were not organized or funded to serve the broader interests of a diverse and pluralistic citizenry.²⁶ The Carnegie Commission's members devised

a structure for locally based noncommercial broadcast media distinctive to U.S. culture and priorities. They envisioned “an indigenous American system arising out of our own traditions and responding to our own needs.” By consolidating existing resources and facilitating the creation of new ones, they sought to leverage what were then breakthrough technologies to establish “a new and fundamental institution in American culture.”²⁷

The Carnegie Commission aimed not to supplant existing commercial networks but to develop a public service system that would exist alongside them.²⁸ Just as people have commercial needs as consumers, so too do they have noncommercial needs as citizens and community members. The public's commercial needs are generally well satisfied by the private market, in which competing firms operating under a logic of profit-maximization vie to provide the best value to consumers and advertisers. This profit-driven system, however, is not optimized to meet non-commercial needs, such as empathy, democratic deliberation, and even accuracy and context when their provision is expensive and the product dull or depressing. Such goods, the commission reasoned, required an information infrastructure shaped by a logic of civic rather than market principles.

Soon after the Carnegie Commission published its final report in 1967, many of its recommendations were adopted in the Public Broadcasting Act passed the same year, which established the Corporation for Public Broadcasting and, eventually, the Public Broadcasting Service (PBS) and National Public Radio (NPR).²⁹ Beyond merely creating new organizational entities, the report and the subsequent legislation embodied the foundational ethos of public media, setting civic information principles for strengthening

24 C. Edwin Baker, *Media, Markets, and Democracy*, Cambridge University Press, 2001, pp. 41-62.

25 Newton N. Minow, [Television and the Public Interest](#), National Association of Broadcasters, May 9, 1961.

26 See Ellen P. Goodman, “Public Service Media Narratives,” in Monroe E. Price and Stephaan Verhulst (eds.), *The Routledge Handbook of Media Law*, 2012.

27 Carnegie Commission, *Public Television: A Program for Action*, p. 4.

28 *Ibid.*

29 47 U.S.C. § 396 (1967).

democracy and free expression. These principles operate along the following four key dimensions:³⁰

- **Content:** The character of public media content is distinct from commercial programming. It emphasizes local affairs and culture in response to the needs of the community it serves. Public media producers should be encouraged to take creative risks to avoid homogenization.
- **Audience:** Public media prioritizes the information needs of those on the social margins, including children and racial minorities. Through local engagement and outreach, it must establish itself as a valuable community resource.
- **Technology:** Public media has a responsibility to drive technological innovation in telecommunication and distribution services. Its technical architectures should facilitate interconnection across the network and universal access.
- **Governance:** Public media leaders should be drawn from diverse fields including journalism, culture, education, and the arts, and they should be representative of the country's diversity. At every level, public media must be independent from undue political and corporate influences.

These founding principles show the capacious vision of public media: a locally based, decentralized civic infrastructure capable of invigorating democratic engagement. The values of decentralization and localism (that is, the dispersion of decision-making powers to local communities) are deeply embedded in the U.S. tradition, beginning with Thomas Jefferson's notion of "little republics." For Jeffersonians, the virtues of democratic freedom are best safeguarded by decentralizing powers to autonomous localities, cultivating an informed and educated citizenry, and encouraging robust political participation underpinned by individual responsibility.

The Jeffersonian tradition has played an especially important role in the history of U.S. media law and policy. Starting in the 1920s, the FCC's regulatory

approach to radio and television broadcasting was largely oriented toward maximizing the autonomy of local broadcasters and reducing the influence of national networks over local programming. The 1927 Radio Act, for instance, awarded broadcast licenses on a local rather than national basis, and the FCC continued that licensing practice when television was introduced in the late 1940s.³¹ The FCC also introduced rules to limit the amount of control centralized networks could exercise over local affiliates.³² Central to these policy initiatives was the recognition that locally situated information was fundamental to vibrant democratic participation. Moreover, by focusing on structural interventions to transfer power to decentralized local units, the government maintained a neutral role with respect to specific content decisions by local programmers.

The Jeffersonian tradition has played an especially important role in the history of U.S. media law and policy.

Alongside devolution of power, Jefferson emphasized the need for extensive public works such as educational institutions and communication infrastructures to unify the country's distinct communities. An architecture that combined dispersed decision-making powers with local, well-resourced institutional capacities was necessary to promote the social good by limiting the threat of tyrannical power and expanding the exercise of informed choice by individual citizens.³³ These insights have animated

30 See "Congressional Declaration of Policy" at 47 U.S.C. § 396(a); William Hoynes, "Public Broadcasting for the 21st Century: Notes on an Agenda for Reform," *Critical Studies in Media Communication* 24: 4 (2007).

31 Christopher Ali, "Critical Regionalism and the Policies of Place: Revisiting Localism for the Digital Age," *Communication Theory* 26:2 (2016), p.110. \\uc0\\u8221 { \\i { } Communication Theory } 26, no. 2 (2016

32 Philip M. Napoli, "The Localism Principle in Communications Policy-making and Policy Analysis: Ambiguity, Inconsistency, and Empirical Neglect," *Policy Studies Journal* 29:3 (2001): 375. The Supreme Court upheld these regulations as a valid expression of the FCC's public interest authority under the "public interest" standard. *National Broadcasting Co. v. United States*, 319 U.S. 190 (1943).

33 Andrew Kakabadse et al., "Calling on Jefferson: The 'Custodiary' as the Fourth Estate in the Democratic Project," *Contemporary Politics* 16:3 (2010).

communications policymaking for most of this country's history, accounting for a vigorous commitment to localism as a central element of the public interest. Such ideals, which have served the nation well, take on new urgency in light of today's information crises.

New Threats to the Public Interest

The United States today faces information challenges as serious as any in its history. The Hutchins Commission pushed for media to support those democratic commitments that had survived a global assault. The Carnegie Commission confronted the failures of a purely market-based approach to media that was failing an increasingly diverse nation in a time of civil unrest. Now, democracies are facing legitimacy crises and a loss of faith. Media systems are beset by misinformation, the collapse of local journalism, racial inequalities and the harassment of marginalized groups, and public distrust of media institutions, among other issues.³⁴

These problems are of course multifaceted; communications technologies are as usual a cause and a means of address. The dominance of a few private digital platforms—especially Google and Facebook—over what is salient in U.S. political, commercial, and cultural discourse threatens the exercise of public democratic agency. These platforms capture user attention, collect vast amounts of personal data, and target advertising to exploit and direct human behavior, operating under a logic that the scholar Shoshanna Zuboff has termed “surveillance capitalism.”³⁵ Economies of scale, network effects, and exclusionary conduct all work to centralize information flows.³⁶ Platforms deploy ad microtargeting and audience segmentation, optimized

with unaccountable algorithmic ranking, to prioritize sensational, and even inflammatory, content.³⁷ The recent coronavirus lockdowns only accelerated the informational lockdown of the public sphere within privately controlled digital walls.³⁸ When Facebook for a period stopped linking to news in Australia, the world saw how totally providers of civic information (including even emergency responders) depend on commercial platforms to reach the public.³⁹ We have also seen that providers of civic information may choose to opt out of conversations rather than invite the toxic responses that the dominant social media companies have allowed to overtake the public square.⁴⁰ In short, platform dominance governs the structure of the information environment according to a logic entirely at odds with principles of Jeffersonian democracy and citizen control.

In recent years, scholars, advocates, and technologists have been engaged in a robust dialogue to reconsider online environments as civic-minded spaces. The design of online spaces—and the behaviors, power structures, and conversations they encourage—create “the ecology of social life.”⁴¹ If that ecology is unbalanced and blighted in this moment, it is necessary to look for ways to promote healthier and more sustainable information environments. Civic Signals Initiative's New_Public project, for example, has been pursuing innovative research to reimagine online platforms as the digital analog to parks and libraries, where people can meet on equal footing in spaces designed to promote growth, opportunity, and empa-

34 PEN America, [Losing the News: The Decimation of Local Journalism and the Search for Solutions](#), November 20, 2019; Victor Pickard, “Journalism's Market Failure Is a Crisis for Democracy,” *Harvard Business Review*, March 12, 2020; S. Derek Turner, “How Big Is the Reporting Gap?” *Free Press*, June 2020.

35 Shoshana Zuboff, *The Age of Surveillance Capitalism*, Public Affairs, 2019.

36 Stigler Committee on Digital Platforms, [Stigler Committee on Digital Platforms: Final Report](#), Stigler Center for the Study of the Economy and the State, University of Chicago, September 2019, pp. 34-43.

37 Martha Minow, “[The Changing Ecosystem of News and Challenges for Freedom of the Press](#),” *Loyola Law Review* 64:3 (2018), p. 515-16.

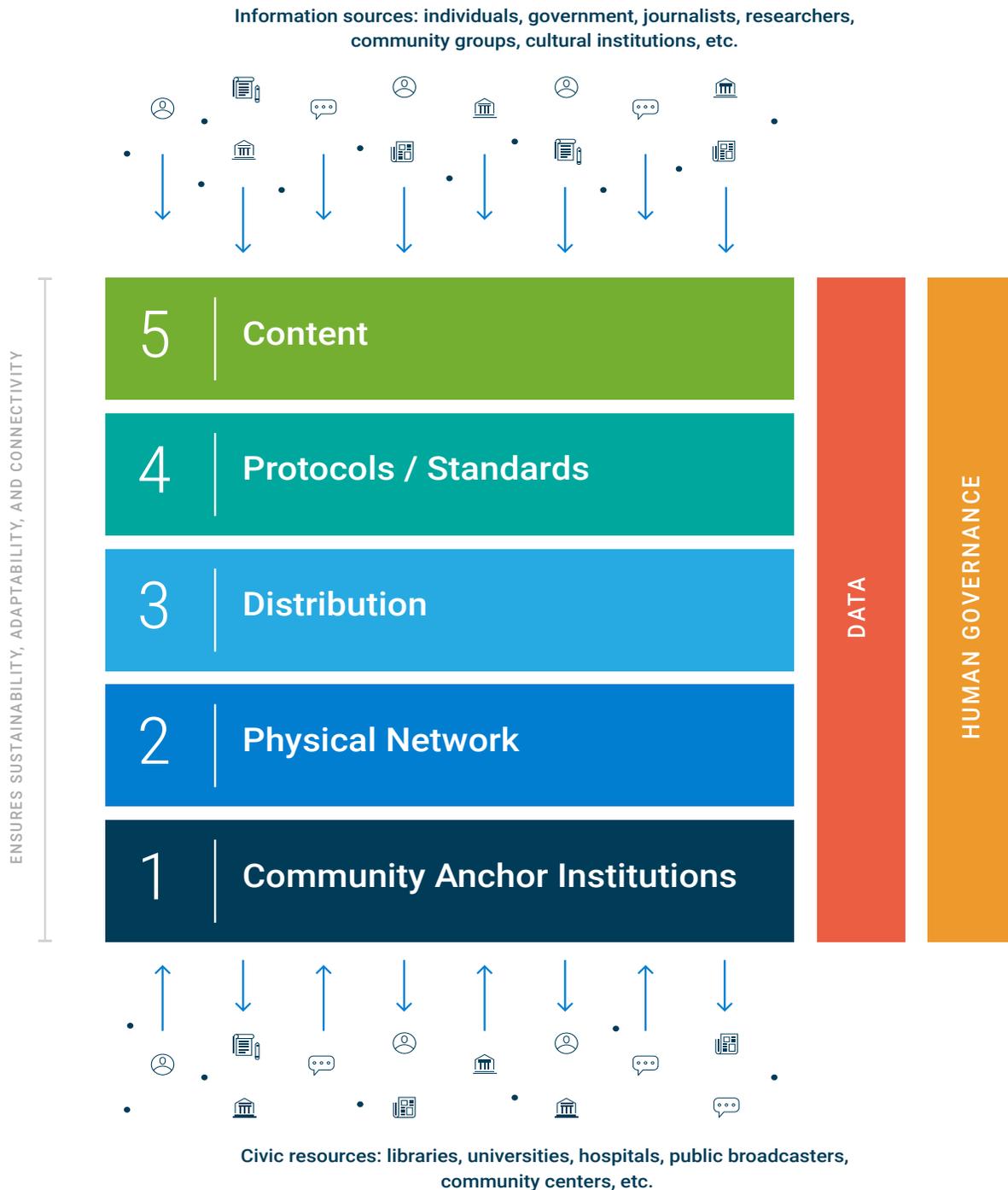
38 Carolina Are, “[A Corpo-Civic Space: A Notion to Address Social Media's Corporate/Civic Hybridity](#),” *First Monday* 25:6 (June 1, 2020).

39 Chris Keall, “[Police, Health, Emergency Services Blocked as Facebook Bans Australia News](#),” *New Zealand Herald*, February 17, 2021.

40 Micah L. Sifrey, “[The Facebookification of Local Life](#),” *The Connector*, Substack, January 26, 2021, (example of librarians staying away from hosting public conversations on Facebook because they do not want the garbage).

41 Dipayan Ghosh and Nick Couldry, “[Digital Realignment: Rebalancing Platform Economies from Corporation to Consumer](#),” M-RCBG Associate Working Paper Series, Mossavar-Rahmani Center for Business & Government, Harvard Kennedy School, October 2020, p. 22.

Public Media Stack: Elevating accurate and relevant information to the public



thy.⁴² Projects like this invariably lean on a conception of public media in service of citizen capabilities for self-government.

This brings us to the twenty-first century version of the Carnegie Commission's question: what should public service media look like and how should alternative or complementary public media components relate to the dominant private communications platforms? The answer cannot be simply to adapt the old broadcast models of public media to the private digital platforms and their logic of surveillance capitalism. The alternative is to revitalize public media's foundational ethos of civic information infrastructures, or what the scholar Ethan Zuckerman calls "digital public infrastructures."⁴³ The components of these infrastructures should be rooted in Jeffersonian notions of local democracy and citizen sovereignty. Responding to information disorder calls for ambition and experimentation, drawing from the best traditions of U.S. communications policy to chart the future of the country's democratic project.

The "Full Stack" Approach to Civic Information Infrastructures

Behind every online search or social media feed is a complex social and technical architecture. There is the information content itself. Whose labor produced it and under what terms? How is it amplified, by whom, for what purpose, and with what amount of user control? There is the vast physical network of data servers, exchange points, wireless infrastructure, and fiber optic cables that make bits available (or not) according to rules or protocols that implicate privacy, access, and control. All that information is fed into proprietary algorithms that decide what the user sees and in what order. The platform interface itself embeds design elements intended to nudge the user's

behavior in one direction or another.⁴⁴ There is the data generated from the users and non-users,⁴⁵ whose personal characteristics are analyzed and fed to advertisers for microtargeting precision. And finally, there are the managers—the engineers and executives who decide how the whole system works, and the third-party organizations (media and other) that interact with the information.

These different aspects of digital communications can be conceptualized as a layered stack of infrastructures.⁴⁶ If we want this stack to care for civic values, we need a public media stack. This would not be a free-standing *alternative* infrastructure, but rather a stack of interventions into the *existing* infrastructure that takes various forms of regulation, subsidy, supported collaboration, and persuasion. Historically, public media has had its *own* infrastructural stack, starting with broadcast spectrum and working up to content and community engagement. In this way, public media, organized around civic values, has intersected with and operated alongside commercial media, organized around profit. The present moment offers a chance to reconceptualize and build anew the public media stack. Matt Locke, who led innovation strategy at the British Broadcasting Corporation, first used the term "public media stack" as a way to think about "public media institutions as platforms for infrastructure, not just as content-commissioning organizations."⁴⁷ Locke's efforts align with thinking about new public media models that decenter the old broadcast networks in favor of digital distribution models.⁴⁸ A public media stack that embodies a non-exploitative civic logic would be designed to increase the circulation of truthful and socially relevant information,

42 Civic Signals, "[New Public](#),"; Eli Pariser and Danielle Allen, "[To Thrive, Our Democracy Needs Digital Public Infrastructure](#)," Politico, January 5, 2021.

43 Ethan Zuckerman, "[The Case for Digital Public Infrastructure](#)," in *The Tech Giants, Monopoly Power, and Public Discourse*, Knight First Amendment Institute, Columbia University, 2020.

44 Norwegian Consumer Council, "[Deceived by Design](#)," Forbrukerrådet, June 27, 2018.

45 David Ingram, "[Facebook fuels broad privacy debate by tracking non-users](#)," Reuters, April 15, 2018.

46 See John Evans, "[The Internet: We're Doing It Wrong](#)," TechCrunch, August 8, 2013.

47 Mike Janssen, "[The Public Media Stack: Imagining a Better Tech Ecosystem for Today's Pubmedia](#)," Current, June 3, 2019.

48 Ellen P. Goodman, "[Public Media 2.0](#)," SSRN, August 1, 2008, pp. 16-19.

devolve control to local communities, facilitate active participation and civil exchange, and treat users as subjects, not objects for data harvest.⁴⁹

In this paper, we conceptualize a public media stack comprised of four discrete layers (from bottom to top): community anchor institutions, the physical network, protocols and distribution, and content. Alongside these layers and involving all of them are data and governance principles that make innovations sustainable, resilient to changing circumstances, and easily interconnected to one another so as to promote participation and access.⁵⁰

Unpacking Public Media Stack Layers

Community anchor institutions

The base of the public media stack consists of the local communities and community institutions that generate civic information and socially relevant conversations, and that provide last mile or last block outreach and inreach. Often, these institutions are libraries, schools and universities, museums, community centers, and local businesses that facilitate inclusive, accessible democratic deliberation. For the public media stack to enrich U.S. democracy, it must be grounded in social practices through which ordinary citizens can actively participate in the decisions that most impact their lives. The essential function of the public media stack, then, is to empower community members by ensuring that they are well informed and accurately represented. This is especially significant in the context of racial justice, given the extraordinary harms media outlets have historically inflicted on Black Americans through exclusion and misrepresentation.⁵¹

Democracy requires the circulation of high-quality information and the civic capacity to act on that infor-

mation. The latter requisite points to the importance of on-the-ground infrastructures that facilitate spaces where community members may come together in dialog over important issues, be seen and heard as equals, and assert an active role in addressing local issues. These practices of democratic deliberation are not only Jeffersonian in lineage, but create possibilities for what the political scientist H el ene Landemore calls open democracy, “in which actual exercise of power is accessible to ordinary citizens via novel forms of democratic engagement” such as citizens’ assemblies, policy crowdsourcing, and other innovative experiments in civic participation.⁵² Over the last decade, countries from Ireland and Belgium to Taiwan and South Korea have responded to political deadlock and polarization by successfully implementing deliberative democracy initiatives that vest power with local publics to identify problems, gather ideas, and fashion their own solutions.⁵³

Based on in-depth data drawn from about a dozen communities in Southern California, the communication scholars Yong-Chan Kim and Sandra J. Ball-Rokeach point to the central importance of communities’ embedded communication infrastructures to local civic engagement.⁵⁴ Their study shows that these infrastructures involve not only local media producers but also, crucially, community organizations and informal networks of local residents. These latter non-media entities play a vital role in precipitating and sustaining various forms of civic dialogue. Further, the quality of local information infrastructures—their capacity to disseminate relevant information, foster community belonging, and facilitate political participation—depends both on the presence of diverse civic actors and the degree of connectedness between them. To build an information architec-

49 Casey Newton, “[What Social Networks Can Learn from Public Spaces](#),” *The Verge*, January 13, 2021.

50 Ellen P. Goodman and Anne H. Chen, “[Modeling Policy for New Public Media Networks](#),” *Harvard Journal of Law and Technology* 24:1 (2010) (advocating the concept of “promiscuous connectivity”).

51 See Joseph Torres, et al., [Media 2070: An Invitation to Dream Up Media Reparations](#), Free Press, 2020.

52 H el ene Landemore, *Open Democracy: Reinventing Popular Rule for the Twenty-First Century*, Princeton University Press, 2020, p. xvii.

53 OECD, [Catching the Deliberative Wave: Innovative Citizen Participation and New Democratic Institutions](#), OECD Publishing, 2020.

54 Yong-Chan Kim and Sandra J. Ball-Rokeach, “[Civic Engagement From a Communication Infrastructure Perspective](#),” *Communication Theory* 16:2 (2006).

ture facilitating high levels of democratic engagement requires support for a wide range of community entities as well as for developing social and technical linkages at the local level.

Fortunately, U.S. communities already possess key assets to help support local democracy. Anchor institutions such as libraries, universities, community centers, public broadcasters, and public access stations provide a vital basis for nurturing civic participation. But they need retooling and new company to play a more significant role in the democratic process. Legal scholar Jonathan Zittrain has suggested that another kind of community institution—the jury—could rebuild trust in online platform content moderation.⁵⁵ Library scholar Barbara Alvarez sees an enhanced role for libraries in battling disinformation campaigns as “Because of their unique positions as partners, educators, and community champions, librarians have an opportunity to teach information and media literacy.”⁵⁶

***U.S. public media traditions
have always involved working
with anchor institutions.***

The coronavirus pandemic made clear the important role of community institutions in combatting fears and conspiracies about vaccination, and actually became preferred vaccine distribution sites because of the level of community trust they inspired.⁵⁷ And one could find many other examples of and ideas for how community institutions can generate trusted civic information and connect citizens to productive discourse. These might include becoming convenors for citizens assemblies

on local issues and network their recommendations and problem-solving efforts across polities. New kinds of community apps connected to institutions could even help to gamify civic engagement and create social incentives to participate in community problem-solving as an alternative to conspiracy-theorizing.

U.S. public media entities have always worked with anchor institutions. Public radio was originally embedded in public land-grant universities.⁵⁸ Local nonprofits and libraries now routinely collaborate with legacy public media to serve as community centers for participatory communication. For example, the Urbana-Champaign Independent Media Center in Illinois operates out of its community’s historic downtown post office building. It hosts space and programming for a nonprofit newspaper, a low-power radio station, a local news website, publicly accessible computers, wireless network services, a library, a performance venue, a community art gallery and studios, and a tech “maker-space.”⁵⁹ Public broadcast stations such as WGBH Boston, WHYY Philadelphia, and Ideastream in northeastern Ohio have long collaborated with community institutions to become hubs of information, culture, and education.⁶⁰ These projects are core to a public media stack that taps into community resources to expand information access and encourage experimental forms of democratic involvement. But to make these efforts scale, civil society organizations will need support to improve their capacities and integrate them into the stack’s digital network. Reflecting distinct community contexts, the stack’s base layer should nurture experiments in using and generating information for democratic innovation and distributed authority.

The physical network

Anchor institutions can also play a part in supplying the next layer of the stack: the physical telecommunications assets needed to ensure everyone can get

55 Jonathan Zittrain, “[A Jury of Random People Can Do Wonders for Facebook](#),” *The Atlantic*, November 14, 2019. (“A bunch of retired judges or other thoughtful people on that board can, perhaps, deliberate, show their reasoning, and thus convince even those who don’t agree with them that the process wasn’t rigged against them.”)

56 Barbara Alvarez, “[Public libraries in the age of fake news](#),” *Public Libraries* 55:6 (2016).

57 Angie Leventis Lourgos, et al., “[Clergy, doctors and activists take on COVID-19 vaccine hesitancy and access in Black and Latino communities: ‘Don’t underestimate the fear’](#),” *Chicago Tribune*, December 19, 2020.

58 Jack, W. Mitchell, *Listener Supported: The Culture and History of Public Radio* (2005), p. 45.

59 Urbana-Champaign Independent Media Center, “[About](#).”

60 Fred Johnson and Karen Menichelli, [What’s Going On In Community Media](#), Benton Foundation, 2007, pp. 6-7.

online and there is distributed control over this basic utility. Public media has historically advanced the mission of a universal telecommunications service emanating from a decentralized infrastructure. That is why noncommercial broadcast stations were erected in almost every locality, with wireless spectrum allocated to the public media service. Even if the whole commercial network were shut down or otherwise corrupted, the public would still have access to public broadcasting.

In the digital world, the most important component of the physical network is high-speed broadband Internet.⁶¹ At least since the Broadband Plan of 2010—an attempt to get all Americans on broadband networks—the path toward universal broadband access has been well surveyed and includes government subsidies, improvements to the FCC’s Lifeline broadband program, support for state and local governments, and direct municipal provision.⁶² Beyond this, anchor institutions such as post offices, libraries, schools and universities, and public broadcasting stations can help to provide fiber and other physical infrastructure.⁶³ Recent research by John Horrigan and Jorge Schement identify measures that are necessary to reach universal broadband connectivity.⁶⁴

Protocols and distribution

Once users are connected to the network, they encounter services that distribute digital content and the technical protocols interconnecting those services. For public media to function in a digital environment, there have to be protocols that actually supply end-users with high-quality information and partici-

patory possibilities. The original public broadcasting system provided UHF radio frequency antennas and airwaves for distribution. Public broadcasters would have been singing into the wind if Congress had not passed the All Channel Receiver Act to ensure that television receivers were actually equipped to receive these channels.⁶⁵ Today, effective distribution means the ability to penetrate on digital platforms. The social media platforms have taken steps to amplify authoritative information, and they have been urged to do more. This is better than no action, but the Jeffersonian ideal of decentralized power over information militates against relying on digital platforms to order our information flows. Something else is needed.

One way in which digital architecture can promote distribution of high-quality civic information while preserving decentralized design is through open protocols, which technologist and entrepreneur Mike Masnick has argued could enhance free expression and user autonomy while guarding against abusive speech.⁶⁶ Reflecting the design of the early Internet, such a regime involves the deployment of technical instructions that anyone can use to build content filters or interfaces. (Email, for example, was built on the open standards SMTP, POP3, and IMAP.) Open protocols untether content and applications from oligopolistic platforms. Users can then have access to a wide array of services they can mix and match. Digital platforms today classify and distribute content using opaque ranking and discovery algorithms that amplify low-quality information and reproduce patterns of bias.⁶⁷ Imagine if a user could select a civic information news feed that privileges high-quality local content, combined with an algorithmic filter that demotes racism, misogyny, and harms to children.

61 See [#Tech2021: Ideas for Digital Democracy](#), German Marshall Fund of the United States, November 2020.

62 Tom Wheeler, “[5 steps to get the internet to all Americans](#),” Brookings Institution, May 7, 2020.

63 See Ellen P. Goodman, “[‘Smart Cities’ Meet ‘Anchor Institutions’: The Case of Broadband and the Public Library](#),” *Fordham Urban Law Journal* 41:5 (2014): 1689-90; see also Pickard, *Democracy Without Journalism?*, pp. 155-57.

64 John Horrigan and Jorge Schement, [Broadband as Civic Infrastructure: Community Empowerment, Equity, and a Digital New Deal](#), German Marshall Fund of the United States, March 23, 2021.

65 47 U.S.C. § 330 (1961).

66 Mike Masnick, “[Protocols, Not Platforms: A Technological Approach to Free Speech](#),” Knight First Amendment Institute, Columbia University, 2019.

67 Ethan Zuckerman, “[Talia Stroud, Civic Signals](#),” *Reimagining the Internet*, The Institute for Digital Public Infrastructure, October 27, 2020; Will Douglas Heaven, “[Facebook says it will look for racial bias in its algorithms](#),” *MIT Technology Review*, July 22, 2020.

Masnick notes that a protocol-based architecture would also help users protect their personal information because the collection of personal data would be narrowly tailored to the specific service rather than monopolized by the platform.

The shift to a protocol-based architecture would necessitate some basic technical standards. For purposes of transparency and competition, all the protocols would have to be “open standard,” meaning that they could be freely adopted, implemented, and modified. The open standard protocols should be interoperable through one or more standard application programming interfaces (APIs)—software intermediaries that allow applications to communicate—accessible to third parties on a non-discriminatory basis.⁶⁸ By diminishing network barriers, full protocol interoperability would encourage new entrants who would compete on the basis of service. Moreover, it would ensure that networks could create new kinds of content that aggregators could access.⁶⁹ The Public Broadcasting Act explicitly called for the development of “interconnection systems” to improve access to programming throughout the network.⁷⁰ Open protocols and standard APIs could make digital interconnection a reality.

A public media platform that is interoperable with the large commercial platforms might function something like a “PBS for the Internet.”⁷¹ The platform could, for instance, support uniform metadata processes to organize licensing and payments for digital content. It could adopt its own civic-oriented services for content archives, aggregation from public and private publishers, and search, all of which would be capable of being modified by third-party services or migrated to platforms like the Public Radio Exchange

(PRX). Likewise, social networking functions could be used to form decentralized communities for deliberation and mobilization.⁷² It could interoperate with civil society organizations like CivilServant that help digital communities experiment with different rules to meet their unique needs.⁷³ Protocols and standards developed for the public, with civic stewardship at their core, could also create the foundation for data trusts. Commentators and activists aspire to create user collaboratives and data fiduciaries to give people control of their data. A “full stack” approach to public media could be incorporated into these efforts, and ultimately create capacity for data fiduciary services.⁷⁴

A public media platform that is interoperable with the large commercial platforms might function something like a “PBS for the Internet.”

To empower users to classify content and filter it according to their preferences, they need access to “middleware” software to do the content sorting. This software sits on top of the platform and can modify the presentation of the underlying data.⁷⁵ One feature of the public media platform would be experimentation with competing middleware services providing different options for how information on the platform is filtered and curated. A middleware product might amplify local publishers, or flag hate speech, or sort news stories based on truthfulness. The latter issue of truthfulness has proven to be especially contentious in public debate, and existing services have adopted varying approaches. For instance, the nonprofit NewsGuard employs trained news workers to rate publishers

68 Tom Wheeler, “[How to Monitor Fake News](#),” New York Times, February 20, 2018.

69 Stigler Committee on Digital Platforms, “Stigler Committee on Digital Platforms,” 117–18; Zuckerman, “The Case for Digital Public Infrastructure,” p. 32.

70 47 U.S.C. § 396(g)(1)(B) (2006).

71 Karen Kornbluh and Ellen P. Goodman, “[Three Steps to Help Treat America’s Debilitating Information Disorder](#),” Washington Post, January 13, 2021.

72 Zuckerman, “The Case for Digital Public Infrastructure,” p. 33.

73 Civil Servant, “[About Us](#).”

74 Sean McDonald, “[Reclaiming Data Trusts](#),” Centre for International Governance Innovation, March 5, 2019; Trebor Sholtz, [Platform Cooperativism: Challenging the Corporate Sharing Economy](#), Rosa Luxemburg Stiftung, January, 2016.

75 Francis Fukuyama, Barak Richman, and Ashish Goel, “[How to Save Democracy From Technology: Ending Big Tech’s Information Monopoly](#),” Foreign Affairs, January/February 2021.

based on standards of credibility and transparency.⁷⁶ The company The Factual uses content algorithms to grade an article’s credibility based on site history, author expertise, quality of sourcing, and tone.⁷⁷ Twitter’s Birdwatch, a pilot project for crowdsourcing moderation, relies on users themselves to flag and contextualize potentially misleading content.⁷⁸

Public media resources should be available to a broad range of potential producers—including independent journalists, local governments, private nonprofits, and educational entities.

Each of these modes of content moderation invites its own criticism, so it is important for users to be able to make their own judgments about the best methodologies for assessing quality, and be able to switch between middleware services. This is not to say that public media curators should be agnostic with respect to “truth.” Rather, in the best traditions of legacy public media, they should invite experimentation and provide space for innovations that are not supported by the commercial market, always with an eye to supporting democratic discourse rooted in tolerance, liberty, and equity.⁷⁹ For a more passive experience, the public media platform could deploy default middleware services that promote general civic information goals and make them transparent to the user. By devolving editorial decisions over content to competing services and vesting users with ultimate control, a flexible architecture would be capable of prioritizing high-quality civic information while avoiding the dangers of censorship.

76 NewsGuard, “[Rating Process and Criteria](#).”

77 The Factual, “[How It Works](#).”

78 Keith Coleman, “[Introducing Birdwatch, a community-based approach to misinformation](#),” Twitter Blog, January 25, 2021.

79 47 U.S. Code § 396(a)(3-6) (“[E]xpansion and development of public telecommunications and of diversity of its programming depend on freedom, imagination, and initiative on both local and national levels”).]

Content

Most of the attention on reinvigorating journalism and public media has been directed at the content layer.⁸⁰ Indeed, the public media stack should be designed to support journalism (especially local) and civic information and culture (especially local) that the market underproduces. It should also enable content innovation by encouraging media producers to take creative risks. Today, despite increasing efforts to guide public media through a “digital transformation,” the system is still built around broadcast stations as the fundamental source of media content.⁸¹ Departing from the status quo strategies, the sources of public media content should instead be expansive.⁸²

Public media resources should be available to a broad range of potential producers—including independent journalists, local governments, private nonprofits, and educational entities. Legacy public media radio and television production capabilities are critical in the ecosystem, as is the ability of those legacy institutions to train and network with an increasingly diverse array of content producers. But given the convergence of media technologies in the digital environment, resources should be deployed with less emphasis on specific technologies so to encourage innovations in multimedia projects that blur the lines of print, audio, video, and emerging media.

80 See, for example, Craig Aaron and S. Derek Turner, “[What a Journalism-Recovery Package Should Look Like During the COVID-19 Crisis](#),” Free Press, May, 2020; Timothy Karr and Craig Aaron, “[Beyond Fixing Facebook](#),” February 2019; Save the News, “[Save the News Senate Newspaper](#),” 2020; Victor Pickard, *Democracy Without Journalism?*; Philip Napoli, *Social Media and the Public Interest: Media Regulation in the Disinformation Age*, Columbia University Press, 2019; Gene Kimmelman, “[The Right Way to Regulate Digital Platforms](#),” Harvard Kennedy School, Shorenstein Center on Media, Politics and Public Policy, September 18, 2019; University of Chicago, Booth School of Business, George J. Stigler Center for the Study of the Economy and the State, “[Committee for the Study of Digital Platforms Market Structure and Antitrust Subcommittee Report](#),” July 1, 2019.

81 See, for example, Corporation for Public Broadcasting, “[CPB Extends Funding to PBS for Professional Development to Help Public Media Stations Accelerate Digital Transformation](#),” CPB Press Release, October 15, 2019.

82 Goodman and Chen, “[Modeling Policy for New Public Media Networks](#),” p. 125.

The Public Broadcasting Act makes broadcast stations the principal beneficiaries of federal funds. A technology-neutral approach to who and what are recognized as public media would increase the diversity of civic information and bolster the stack's connectivity with essential anchor institutions. These anchor institutions could be a vital provider of services ancillary to content production, such as community journalism training and media literacy programming.⁸³ Taken together, a structural shift in public media content could also benefit commercial publishers. Combined with fair licensing practices that favor smaller outlets, the amplification of civic information content in the distribution layer would in effect subsidize the private production of high-quality information that serves the public.

Governance and Data

Permeating each layer of the public media stack are the governing institutions responsible for ensuring that the system is functioning effectively relative to its civic objectives. Also permeating each layer is the flow of sensitive personal data about content preferences and habits, as well as metadata about content permissions and features. Data governance that is privacy-respecting, non-exploitative, and supportive of diverse creators must be a hallmark of the entire stack.

Governance

The public media stack's governing institutions must be designed as democratically responsive safeguards rather than as organs of top-down control. As many analysts have noted, an important step to bringing the public broadcasting system into the digital age is to reestablish the Corporation for Public Broadcasting (CPB) as the Corporation for Public Media (CPM).⁸⁴ The move to a new CPM should involve more than just

linguistic touch-ups. It should entail a recommitment to the Public Broadcasting Act's requirements that the CPM's board of directors be politically independent and sufficiently representative of the communities it seeks to serve. Supplementing the act's direction that the board be composed of members who are "eminent in such fields as education, cultural and civic affairs, or the arts,"⁸⁵ the CPM should add "technologists" to guide investments in the stack's technical infrastructures. With an urgent focus on R&D initiatives, the CPM would be responsible for helping to drive technological innovation in the public media system and ensuring that the system's architecture facilitates interconnection, universal access, and decentralized control.

It is critical that governance be appropriately devolved to local and regional entities who may be more responsive to community needs. In the Jeffersonian tradition, strategies to disperse decision-making powers should seek to leverage existing institutional resources such as local anchor institutions. Universities in particular are well situated to manage public media's R&D responsibilities, provided they have sufficient directives and resources. Another strategy would be to revive the idea of community advisory boards (CABs), based on the recognition that civic infrastructures should be designed in partnership with the communities that use them.⁸⁶ In 1978, the Communications Act mandated that public broadcast stations, except those owned by states and public agencies, maintain a CAB comprised of community members whose purpose was to advise the station's management on meeting community information needs.⁸⁷ Under a modernized regime, CABs could be made up of representatives from public media anchor institutions with a focus on broadening local community participation in design planning and strategic investments. The experience that deliberative democracy experiments have had with citizen assemblies in France, Canada,

83 Minow, "[The Changing Ecosystem of News and Challenges for Freedom of the Press](#)," p. 554.

84 Steve Waldman and the Working Group on Information Needs of Communities, [The Information Needs of Communities: The Changing Media Landscape in a Broadband Age](#), Federal Communications Commission, 2011, p. 169.

85 47 U.S.C. § 396(b)(2).

86 Newton, "[What Social Networks Can Learn from Public Spaces](#)."

87 47 U.S.C. § 396(k)(8).

and Iceland show that randomly selected citizens tasked with engaging with difficult problems can bridge socioeconomic and political divides to create a shared agenda.⁸⁸ Such structures could provide direction for local public media institutions.

Data

Public media should deploy data to empower citizens, not exploit them. Data collection should be limited in purpose to serving the public's civic information needs while maximizing user autonomy over personal information. Public media can model resistance to surveillant advertising as the singular, default model for financial sustainability.⁸⁹ This requires a robust set of ethical and technical standards limiting the collection and use of users' personal data. Public media entities should be considered "information fiduciaries" beholden to special duties of loyalty and care in their handling of users' personal information.⁹⁰ At its most basic, this includes the duty to be fully transparent with users about the particular data collected, the identity of any third parties who may receive the data, and the length of retention. Some kinds of sensitive information (such as certain biometrics) should never be collected under any circumstances.⁹¹

In addition to implementing robust data privacy protections as a default matter, public media entities have a responsibility to delegate as much user control over personal data as possible. Through standard APIs, the user should be able to access and transfer their personal data with ease. Senator Mark Warner's proposed ACCESS Act, which would require high-revenue platform companies to maintain data forms that are portable and interoperable, provides

a helpful framework.⁹² Standards for data portability and interoperability enable a wide range of actors to integrate their services into the public media stack according to the user's discretion. If adopted by the private platforms, these standards would also create opportunities for innovation over cross-platform applications and diminish the platforms' power over information flows.

Such innovations should devolve power over personal data to the users. One hopeful sign in that regard is the open-source data architecture Solid. Developed by the Internet pioneer Tim Berners-Lee, Solid enables users to maintain their own interoperable personal data stores and grant access to third-party applications rather than permitting the companies to store and manage the data for them.⁹³ In 2020, several public agencies in the United Kingdom, including the British Broadcasting Corporation and the National Health Service, launched pilot tests using Solid's architecture, pointing the way toward a new model for managing civic data.

It is not only the treatment of personal data that is important, but also the metadata that guides uses and accessibility of content. The principles of accessibility, portability, and interoperability are all essential to the metadata used to provide access to content archives. As a matter of standard practice, all public media content should be indexed, retained, and made digitally accessible with human and machine-readable URLs so they can be easily aggregated.⁹⁴ The deployment of interoperable public media databases would support the public's interest in re-accessing local content, preserving common heritage, and conducting scientific research. The Library of Congress and the WGBH Educational Foundation have taken an initial step in this direction by creating the American Archive

88 Helene Landemore, Open Democracy. See also Alexander Hurst, "France Turns to Citizen-Legislators to Craft Climate Reforms," *The American Prospect*, February 18, 2020.

89 Zuckerman, "The Case for Digital Public Infrastructure," p. 33.

90 Jack M. Balkin, "Information Fiduciaries and the First Amendment," *UC Davis Law Review* 49:4 (2016).

91 Ghosh and Couldry, "Digital Realignment," pp. 38–39.

92 U.S. Senate, [Augmenting Compatibility and Competition by Enabling Service Switching Act of 2019](#) (S.2658), 116th Congress, introduced October 22, 2019.

93 John Thornhill, "NHS signs up for Tim Berners-Lee pilot to reinvent web," *Financial Times*, November 9, 2020.

94 Matt Locke, "Building the Public Media Stack," *Medium*, January 8, 2019.

of Public Broadcasting, a digital database of historical public media content.⁹⁵ Given its social importance, anchor institutions such as universities and libraries are well situated to support these efforts.

Toward a Public Media Stack for the 21st Century

The United States is due for a bold and ambitious reimagining of its public media system. The crises emanating from the information disorder are inflicting significant harms not only on individual citizens but on the very character of the democratic polity. In an age in which information is the major currency of social, political, and economic life, the centralized control of communications threatens the nation's capacity for informed, democratic participation and shared economic prosperity. But this state of affairs was not determined by technology. In the face of society's rapid transformations, it is the result of several decades of decisions and indecisions about the country's collective social organization. The effort to reclaim free expression in the digital age, however, can draw from the best of U.S. traditions to formulate a path forward.

The vision to reinvent public media presented here is enabled by technologies that were unimaginable only a generation ago. But at its essence, the public media stack is animated by a long history of U.S. leadership in developing advanced, resilient, and democratic communication networks. The context has undoubtedly changed since the nation's political founding. The strategies that led to U.S. global leadership in postal mail were not the same ones that led to its preeminence in the Internet age. Yet even as the means shifted with the times, constant throughout these groundbreaking policy successes was the recognition that the government's responsibility to safeguard free expression required it to establish effective institutions and make strategic investments in communication infrastructures.

More than 70 years ago, the Hutchins Commission put forward a social contract for communications in response to information monopolies, commercial excesses, social marginalization, and widespread public distrust in the media. Today, faced with a remarkably similar set of crises, the United States needs a new digital social contract that rearticulates the public's relationship to its communication networks and takes advantage of technology to advance democratic interests.⁹⁶ The public media system can and should be where that vision is brought to life. Although the fervor of public media's collective ambition may have settled in the five decades since the Public Broadcasting Act, there is now an opportunity to harness its core civic principles and apply them to a post-broadcast world. In that vein, the public media stack is more than a defensive reaction to alleviate the many harms of surveillance capitalism. Rather, it is an agenda for the active construction of Jeffersonian digital democracy, reflecting a long-standing social vision—with various permutations over U.S. history—that communication infrastructures should be designed to devolve power to local communities, to provide conditions for the circulation of high-quality information for a well-informed citizenry, and to facilitate expansive democratic participation.

A structural overhaul on this scale involves many policy considerations and would have to proceed through a managed transition. As a starting point, the CPB should remove its technology-specific content funding preferences and widen its base of eligible grantees beyond radio and television producers to encompass digital content from a broad range of journalism nonprofit entities.⁹⁷ Likewise, its digital efforts need to refocus away from simply helping broadcast stations adapt their operations to the digital environment in favor of a more capacious vision of entities and technologies that could support thriving online spaces for public media. In prioritizing its R&D efforts

95 American Archive of Public Broadcasting, "[Participating Organizations](#)."

96 Ghosh and Couldry, "[Digital Realignment](#)," pp. 25–27.

97 Goodman and Chen, "[Modeling Policy for New Public Media Networks](#)," 165–66; Steve Waldman, "[Curing Local News for Good](#)," *Columbia Journalism Review*, March 31, 2020.

alongside various partner organizations, for instance, the CPB should shore up its workforce of technologists and expand research collaborations with anchor institutions. These processes of enlarging and decentralizing public media, in terms of network architectures and institutional arrangements, call for a congruent diversification of public media funding streams to incorporate state-level and private funding sources.

The diversification of funding sources notwithstanding, a transformation of the public media system for the digital age will require substantial investments and subsidies from the federal government.

A useful model for how some of this could work in practice is the New Jersey Civic Information Consortium.⁹⁸ Established in 2018 with a mission to serve the information needs of New Jersey residents (with a focus on underserved communities, low-income communities, and communities of color), it is a grantmaking charity run by five of the state's public universities and funded primarily using proceeds from the state's sale of public television licenses. The consortium funds collaborations between its constituent universities and local community organizations, media outlets, and technologists, and the variety of funded projects is broad, from media production to community dialogue initiatives to the development of civic information technologies. Although it is still in its early years, in theory the consortium is designed to meet communities' acute information needs through a diverse range of expertise and by fostering close connections between different kinds of anchor institutions. While it may not be exactly the model public media should try to scale nationally, it illustrates how local resources and connections can be leveraged to serve civic information missions. Moreover, it is

notable that the consortium exists beyond the current public media ecosystem. An effective public media stack should have the institutional and technical capabilities to assimilate pioneering grassroots initiatives throughout the country.

The diversification of funding sources notwithstanding, a transformation of the public media system for the digital age will require substantial investments and subsidies from the federal government. The United States is already a global outlier for funding its public media system at one of the lowest per capita amounts in the developed world, much to the detriment of the public.⁹⁹ The issue, however, is not just the quantity but the structure of funding. Because its funding is determined by biannual congressional appropriations, the CPB has often found itself subject to various kinds of political interference that threaten its independent status. Some have advocated removing CPB funding from the appropriations process by devising a regular stream of dedicated funding. In its 1967 report, the Carnegie Commission recommended that public television be funded not by Congress directly but by a tax on the sale of television sets, a model for dedicated public media funding reflecting that used in most of Europe.¹⁰⁰ Scholars have proposed that Congress endow an independent trust fund that would provide stable, long-term, and politically insulated funding for public media.¹⁰¹ One proposed source for establishing the trust fund is a tax on platforms' digital advertising revenues, a potentially attractive option given how the platforms stand accused of abusing their bargaining power to syphon revenues away from local public interest journalism.¹⁰² Whatever the precise funding mechanism, it is increasingly evident from the scale of the information disorder that the cost of doing nothing will be intolerable, most of all for U.S. democracy.

98 New Jersey Civic Information Consortium "[About the Consortium](#)"; Mike Rispoli, "[Why the Civic Info Consortium Is Such a Huge Deal](#)," Free Press, September 30, 2020.

99 Josh Silver et al., [New Public Media: A Plan for Action](#), Free Press, December 27, 2010.

100 Carnegie Commission, [Public Television: A Program for Action](#), p. 70.

101 Pickard, [Democracy Without Journalism?](#), pp. 170–71.

102 Kornbluh, Goodman, and Weiner, [Safeguarding Digital Democracy](#), 6; Pickard, [Democracy Without Journalism?](#), p. 170.

Conclusion

The public media stack offers a meaningful way forward to alleviate the information disorder afflicting U.S. society. In today's digital age, communities deserve a robust public sphere that promotes free expression by ensuring universal access to truthful and socially relevant information, strengthening local capacities for democratic engagement, and safeguarding individual autonomy. Consistent with the best traditions of U.S. communications policymaking under the First Amendment, the government should recommit to its historic role in supporting the civic logics of public media alongside commercial ventures. We make the following recommendations to advance a policy that fosters a civic information infrastructure relying in part on public media.

Governance (independent from undue government or corporate influence; representative of the country's diversity, increased responsibility for technological innovation)

- Reestablish the Corporation for Public Broadcasting as the Corporation for Public Media, with a substantially revised mandate and funding structure.
- Appoint to the corporation's board members who are politically independent, have expertise in relevant fields, and reflect the country's diversity.
- Revive Community Advisory Boards to promote local participation in public media governance.
- Remove public media's technology-specific funding preferences and significantly expand its base of grantees to include a wide range of content producers, non-profit organizations, and technologists.
- Prioritize support for research and development initiatives.

Community resources (attend to diverse local information needs; enable dense connectivity; facilitate democratic participation; encourage experimentation)

- Guarantee universal broadband access.

- Identify and support community anchor institutions that can contribute to local content production, information access, civic-technological innovation, and other modes of democratic engagement.

Technological development (advance civic innovation; support interconnectivity and interoperability; devolve control to end users)

- Develop standard protocols for the public media stack's open architecture.
- Mandate interoperable, standard APIs to enable digital interconnection in the public media stack.
- Support the growth of middleware services that end-users can mix and match.
- Build an interoperable public media platform (PBS for the Internet).

Data practices (maximize user autonomy over personal information; support content accessibility)

- Develop ethical and technical standards to limit the collection and use of personal data.
- Mandate data portability and interoperability in the public media stack.
- Maintain databases for public media content, with standards for digital indexing, retention, and access.

Together, these infrastructures would reinvigorate the commitment to the networked, decentralized production and distribution of civic information in the digital age. By leveraging technology in accordance with civic values and empowering people and anchor institutions to assert themselves in the information ecosystem, a newly imagined public media stack can help the United States to address information disorders and reinvigorate democratic capacities.

This work represents solely the opinion of the author and any opinion expressed herein should not be taken to represent an official position of the institution to which the author is affiliated.

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About GMF Digital

The German Marshall Fund's Digital Innovation and Democracy Initiative (GMF Digital) works to support democracy in the digital age. GMF Digital leverages a transatlantic network of senior fellows to develop and advance strategic reforms that foster innovation, create opportunity, and advance an equitable society.

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