UTILITIES FOR DEMOCRACY: WHY AND HOW THE ALGORITHMIC INFRASTRUCTURE OF FACEBOOK AND GOOGLE MUST BE REGULATED

JOSH SIMONS AND DIPAYAN GHOSH

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EXECUTIVE SUMMARY

In the four years since the last U.S. presidential election, pressure has continued to build on Silicon Valley's biggest internet firms: the Cambridge Analytica revelations; a series of security and privacy missteps; a constant drip of stories about discriminatory algorithms; employee pressure, walkouts, and resignations; and legislative debates about privacy, content moderation, and competition policy. The nation — indeed, the world — is waking up to the manifold threats internet platforms pose to the public sphere and to democracy.

This paper provides a framework for understanding why internet platforms matter for democracy and how they should be regulated. We describe the two most powerful internet platforms, Facebook and Google, as new public utilities — utilities for democracy. Facebook and Google use algorithms to rank and order vast quantities of content and information, shaping how we consume news and access information, communicate with and feel about one another, debate fundamental questions of the common good, and make collective decisions. Facebook and Google are private companies whose algorithms have become part of the infrastructure of our public sphere.

We argue that Facebook and Google should be regulated as public utilities. Private powers who shape the fundamental terms of citizens' common life should be held accountable to the public good. Online as well as offline, the infrastructure of the public sphere is a critical tool for communication and organization, political expression, and collective decisionmaking. By controlling how this infrastructure is designed and operated, Facebook and Google shape the content and character of our digital public sphere, concentrating not just economic power, but social and political power too. Leading American politicians from both sides of the aisle have begun to recognize this, whether Senator Elizabeth Warren or Representative David Cicilline, Senator Lindsey Graham or President Donald Trump.

Regulating Facebook and Google as public utilities would be a decisive assertion of public power that would strengthen and energize democracy. The public utility concept offers a dynamic and flexible set of regulatory tools to impose public oversight where corporations are affected by a public interest. We show how regulating Facebook and Google as public utilities would offer opportunities for regulatory innovation, experimenting with new mechanisms of decisionmaking that draw on the collective judgement of citizens, reforming sclerotic institutions of representation, and constructing new regulatory authorities to inform the governance of algorithms. Platform regulation is an opportunity to forge democratic unity by experimenting with different ways of asserting public power.

Founder and CEO Mark Zuckerberg famously quipped that "in a lot of ways Facebook is more like a government than a traditional company."[1] It is time we took this idea seriously. Internet platforms have understood for some time that their algorithmic infrastructure concentrates not only economic power, but social and political power too. The aim of regulating internet platforms as public utilities is to strengthen and energize democracy by reviving one of the most potent ideas of the United States' founding: democracy requires diverse citizens to act with unity, and that, in turn, requires institutions that assert public control over private power. It is time we apply that idea to the governance of Facebook and Google.

INTRODUCTION

The liberty of a democracy is not safe if the people tolerate the growth of private power to a point where it becomes stronger than the democratic state itself.

— Franklin Delano Roosevelt[2]

America's founding fathers engineered its democracy to avoid the factionalism they felt had destroyed other democratic experiments in the past. They applied the principle of public control that underpinned ancient institutions of direct self-government to forge a constitutional system of public representation.[3] James Madison wrote: "No man is allowed to be a judge in his own cause; because his interest would certainly bias his judgement, and, not improbably, corrupt his integrity. With equal, nay with greater reason, a body of men, are unfit to be both judges and parties, at the same time… justice ought to hold the balance between them."[4]

Democracy is a ceaseless project that requires diverse citizens to find unity in order to govern themselves effectively. Madison and his contemporaries understood that unity does not simply emerge from difference, it must be forged through public institutions that represent competing interests and articulate deep disagreements. In matters of fundamental public concern, the central challenge for modern democracies is to establish and maintain institutions that assert public control over private power, building shared ends and common purpose in polities like today's

United States, the diversity of which would have dazzled the founders. Madison saw that for those institutions to endure, no entity, whether private corporations or social groups, could be permitted to acquire unfettered power to shape the public sphere or stifle the possibilities of collective action.

[Facebook and Google] threaten democracy because they have unilateral control over algorithms that structure public debate and access to information, shaping how we consume news, how we communicate with and feel about one another, and how we debate fundamental questions of the common good.

Facebook and Google have become precisely such entities. These two companies threaten democracy because they have unilateral control over algorithms that structure public debate and access to information, shaping how we consume news, how we communicate with and feel about one another, and how we debate fundamental questions of the common good. Facebook and Google have used their vast troves of data to build sophisticated machine learning algorithms that have come to be a new kind of infrastructure. Their control over this infrastructure concentrates not only economic power, shaping the terms of digital advertising, but also social and political power, shaping the character and content of our digital public sphere.

The two tech titans illustrate a broader challenge for democracy. There is a pressing need to develop a broader and more imaginative range of regulatory institutions, policy tools, and legitimate decisionmaking processes to govern vital social infrastructure controlled by private corporations. Our aim in this paper is to show how we might begin to do this by rediscovering and reanimating the neglected concept of public utilities and applying it to large internet platforms, and in particular, to Facebook and Google. Regulating these companies as public utilities would represent a decisive assertion of public power that would strengthen and energize American democracy. *(For transparency, one of us, Josh Simons, is a visiting researcher in Facebook's Responsible AI team.)*

Asserting democratic authority over internet platforms is an opportunity for dynamic regulatory innovation. We can experiment with new mechanisms of decisionmaking that draw on the collective judgement of citizens, reform sclerotic institutions of representation, and construct new regulatory authorities to oversee the governance of algorithmic infrastructure. This experimentation would be motivated not just by the desire to protect competitive and efficient markets, but by a commitment to democracy. Internet regulation is an opportunity to forge unity by experimenting with different ways of asserting public power.

Mark Zuckerberg famously quipped that "in a lot of ways Facebook is more like a government than a traditional company."[5] It is time we took this idea seriously. Internet platforms have understood for some time that their algorithmic infrastructure concentrates not only economic power, but social and political power too. Democracy has been built through revolutions that rejected the authority of unchecked and unrepresentative powers that profoundly shape the lives of citizens.[6] We need a new revolution that begins by rejecting the unaccountable and unrepresentative power of internet platforms that concentrate corporate control over so many of our economic, social, and political interactions.

ALGORITHMS AS INFRASTRUCTURE

As more social, economic, and political activity has moved online, so too has much of the infrastructure of the public sphere. We now use the internet to consume news and access information, to buy and sell goods, and to organize political action. Much of the digital infrastructure that supports and shapes these activities is controlled by two companies: Facebook and Google. By one measure, over 70% of all internet traffic goes through websites owned by these two companies alone.[7]

The infrastructure that supports and shapes these activities is powered by machine learning. Facebook and Google deploy machine learning algorithms to order content created by news organizations and social media users and to rank websites and advertisements relevant to different search queries. How these algorithms work — what kinds of content they show to different users or what kinds of websites they return for different searches — profoundly shapes our digital public sphere.[8] The design of algorithms in internet platforms has become a kind of public policymaking. The goals and values built into the design of these algorithms, and the interests they favor, affect our society, economy, and democracy.[9]

Asserting public power over internet platforms, therefore, requires a clear understanding of what these algorithms are and how they work. How we conceptualize them will influence the internet regulation we develop. This section argues we should think of these algorithms as a kind of infrastructure, one that shapes how citizens consume advertisements, access news and information, and engage with one another at unprecedented speed and on an unprecedented scale. Designing and operating this algorithmic infrastructure involves unavoidably political choices that benefit the interests of some over others and promote some fundamental values while violating others. Facebook and Google are private companies whose algorithms have become part of the infrastructure of our public sphere.

Facebook and Google's algorithms...

Facebook and Google use machine learning algorithms to solve a problem of relevance. Imagine all the websites that Google could return in a search for "home": real estate or home improvement sites, guidance about how to build and repair furniture, or, depending on what Google knows, the state or town you are from. For one of us, this comes to 23,790,000,000 websites. Google uses machine learning to order these websites, ranking them from most to least relevant to your particular search query.[10]

Facebook does something similar on your News Feed. Imagine all the content Facebook could show each time you load the website: every status or photo posted by friends, every news article or video shared by groups you like. A typical user has several thousand stories that could be ranked and displayed on their News Feed at any given moment, depending on the size of their friend network.[11] This comprises the inventory — the stock of content Facebook could display to you. Facebook uses machine learning to order this inventory content, based on predictions about which content someone is most likely to engage with. In a split second, the predictions of hundreds of machine learning models are combined to rank content from most to least likely to engage a particular user.

While individuals rank and order things all the time, from household chores to books on our shelves, each time Facebook and Google make decisions about these machine learning algorithms, they exercise a kind of private power over public infrastructure, shaping how algorithms rank and order a vast quantity of content and information about fundamental matters of public concern. They are algorithmic gatekeepers of our digital public sphere, controlling access to news and information and shaping the terms of public debate.[12] There are two particular things that Facebook and Google's algorithms do.

...Distribute digital ads

First, they distribute advertisements among billions of people. Facebook and Google's business models depend chiefly on revenue from this digital advertising.[13] What makes their advertising systems attractive to businesses and political campaigns is the accuracy with which powerful machine learning algorithms can predict which ads are most relevant to which users.[14]

There are three particular differences between Facebook and Google's advertising systems, powered by machine learning algorithms, and existing advertising mediums. First, they deliver ads at an unprecedented level of precision, scale, and speed. Facebook's advertising system shapes which ads are shown to 2.45 billion active users across the globe — including about 70% of Americans — based on accurate predictions about who is likely to engage with which ads.[15] Second, who sees which ads is determined not primarily by the companies or campaigns who create ads, but by how Facebook and Google design the machine learning algorithms within their advertising system.[16] Third, Facebook and Google's advertising systems replicate patterns of inequality across gender, race, age, and zip code, not because their algorithms explicitly use protected traits or because ads are deliberately targeted at particular groups, but because powerful machine learning algorithms always replicate patterns of inequality encoded in the data on which they are trained.[17]

Consider an example of a simple model used in advertising systems — p(click), which predicts the probability a given user will click on a particular advertisement. Because the model is trained on large quantities of data detailing which kinds of users tend to click on which kinds of advertisements, it replicates patterns of user behaviour that reflect persistent inequalities. For instance, if women tend to engage with job ads with lower average incomes than men, the algorithm will show women job ads

with lower average incomes than men. P(click) becomes a powerful tool for replicating the past: predictions that reflect gendered stereotypes reinforce those same stereotypes, reinforcing and even exacerbating gender disparities over time.[18]

...Distribute news and information

Second, their algorithms distribute news and information. Half of all Americans get their news from Facebook and about one-in-five from YouTube, which is owned by Google.[19] Google processes 3.5 billion searches a day, about a quarter of which come from the United States.[20] Just over half of all external traffic to news websites is driven by Google's search results (another 27% is from Facebook).[21] A quarter of Americans use internet search as their main way to access news.[22]

Facebook and Google use ranking algorithms to order inventory content — all the news articles, posts, websites that could be shown to each person — in someone's social media feed or search engine results. Google deploys its PageRank algorithm — among several other important inputs — to estimate the relevance of websites in response to a search query.[23]

Facebook uses algorithms in its News Feed to rank stories based on predictions about which stories users are most likely to want to see. It combines the predictions of hundreds of machine learning models, each of which predict something quite specific, such as the probability someone will click on, like, or share a post. As News Feed algorithms tend to boost all kinds of unpleasant content, Facebook has also developed integrity algorithms that predict whether content might violate Facebook's prohibited content policies, then heavily demote it so nobody sees it.[24] Each integrity algorithm demotes a particular kind of bad content: the hate speech algorithm demotes content it predicts is probably hate speech, and the misinformation model demotes content it predicts is probably false or misleading.[25]

These ranking algorithms matter because people are far likelier to engage with content that appears higher on their search results or social feeds. According to one study, 95% of web traffic goes to the first page of search engine results, 33% to the first search result and 18% to the second.[26] Facebook and Google's ranking algorithms are like a news editor deciding where and how to present various articles in a physical paper: whether to place them as top stories on the front page, "above the fold" or deeper into the paper, with or without a paid content disclaimer. Whereas editors of reputable news outlets consider whether stories have a public interest value as well as whether they will engage the consumer, guided by professional standards and the law, Facebook and Google set their own standards for ranking and ordering content, refining their personalized ranking algorithms to keep people engaged and to maximize returns.[27]

...Shape the public sphere

How Facebook and Google design and control machine learning algorithms that distribute advertisements, news, and information creates the infrastructure of our digital public sphere, shaping how individuals debate and discuss matters of public concern, the nature of the tools they have to organize and collaborate, and how they confront deep disagreements and make collective decisions.[28]

> **The fact that this infrastructure is composed of algorithms changes the point at which humans exercise control over how it works, and in particular, who it benefits and harms, and what values are built into its design.**

The fact that this infrastructure is composed of algorithms changes the point at which humans exercise control over how it works, and in particular, who it benefits and harms, and what values are built into its design. How Facebook affects our society and our politics is determined not by people hired to judge

whether individual posts violate particular policies, but the people who design Fakebook's News Feed, hate speech, or misinformation algorithms. Those who determine Google's effects on the world are not the people who rate the quality of particular websites, but the people who design the algorithms that power Google's search ranking system.[29]

Designing infrastructural algorithms is necessarily political

People often disagree about how the algorithms underlying these companies should be designed and controlled. These disagreements arise out of fundamental disagreements about how the public sphere should be governed: what constitutes hate speech or misinformation; what actions should be taken when it is detected and by whom; and more broadly, what principles should drive how news is disseminated and access to information is controlled. Designing and controlling algorithms that influence the nature of the public sphere is necessarily political. There are two reasons for this.

First, infrastructural algorithms are political because they inevitably prioritize the interests of some social groups over others. Several studies have shown that how Facebook defines hate speech, then uses machine learning algorithms to detect it, disproportionately demotes content produced by African Americans.[30] Conservatives have also accused Facebook of defining and detecting misinformation in ways that disproportionately demote content produced by conservatives.[31] Every choice about how to design algorithms that shape public debate will advantage some and disadvantage others, particularly as the data used to build them necessarily encodes persistent patterns of social inequality across race, gender, age, and geography; the purpose of an effective machine learning system is, after all, to discriminate.[32] As one of us has argued, internet platforms have an incentive to politicize the debate about content moderation, to draw public attention and political will away from the more substantial financial threat of economic regulatory reform focused on market competition and utility regulation.[33]

Second, infrastructural algorithms are political because they implicate fundamental values, such as those underpinning competing views about the governance of public speech. Responding to protests in Minneapolis following the killing of George Floyd, President Donald Trump tweeted: "…These THUGS are dishonouring the memory of George Floyd, and I won't let that happen. Just spoke to Governor Tim Walz and told him that the Military is with him all the way. Any difficulty and we will assume control but, when the looting starts, the shooting starts. Thank you!" Twitter chose to hide the post for violating its rules about "glorifying violence," while Facebook left the post untouched.[34] This prompted a widespread debate about whether Facebook should shield content produced by politicians from algorithms that detect and demote misinformation and hate speech.[35]

What motivates this debate is not just particular undesirable features of the algorithms that internet platforms have built, like their propensity to exacerbate political polarization or spread misinformation.[36] The debate is about control. Because Facebook has unilateral control over so much of the algorithmic infrastructure of our public sphere, Facebook can simply impose its own approach to the design of our public sphere, free from any obligation to reflect or represent deep disagreements about the governance of public debate. Without regulatory oversight or democratic accountability, regardless of the particular algorithms or policies Facebook develops, that kind of unilateral control over important social infrastructure is, in a democracy, objectionable on its own.

REGULATING INFRASTRUCTURAL POWER

Internet platforms raise a fundamental question for our democracy: How should we regulate corporations that concentrate private power over vital social infrastructure? The most persuasive answers to this question were developed by legal reformers, institutional economists, and the Progressive movement in the early 20th century.

They began by asserting a fundamental principle of public accountability: private powers that shape the fundamental terms of citizens' common life should be held accountable to the public interest. This principle is fundamental to democracy: collective self-government requires that concentred forms of private power are not simply arbitrary, they are held accountable to the public by the representative institutions of constitutional democracy.

The principle of public accountability is central to the challenge of internet regulation. Regulation must ensure internet platforms who control a kind of algorithmic social infrastructure are subject to democratic constraints and structures of accountability. By providing a language to articulate this social and political challenge, the public accountability principle sharpens what internet regulation must aim to develop: a multi-pronged strategy for promoting accountability and asserting public power, involving antitrust and competition policy, corporate governance, and most importantly, the public utility concept, adapting and developing each to fit particular forms of corporate power over different kinds of public infrastructure. This section briefly situates antitrust within this strategy, as it is the area of regulatory policy that has so far received the most attention, before outlining the broad and dynamic public utility concept first articulated in the Progressive Era.[37]

Situating antitrust

Too often, antitrust is presented as an alternative to other forms of structural regulation, particularly the public utility approach. This is a mistake. The principle of public accountability helps to situate antitrust as one prong within a broader approach to structuring the public oversight of corporate power. How antitrust is combined with other approaches should depend on a clear analysis of the nature of that corporate power, and in particular, of the threats posed by private control over particular kinds of public infrastructure. The choice between antitrust and the public utility approach is false — the two are complements.

The politics of antitrust

The purpose of antitrust is to protect and promote competition, not to address every concern about corporate power. Many of the most substantial concerns about internet platforms are not about competition, but about discrimination, equity, privacy, and corporate control over the public sphere. Facebook and Google exercise a particular kind of infrastructural power because they design algorithms that shape not only commercial relationships among citizens, but also social interactions, collective action, public debate, and political decisionmaking, influencing the flow of ideas and information and structuring public debate. The regulation of internet platforms is a question not just of competition or avoiding harm, but a question of how and by whom the algorithmic infrastructure of the public sphere should be governed.

> **Antitrust affirms a commitment to the idea that economic regulation has political aims, because untrammelled corporate power threatens the balance of power that underpins democracy.**

This clarifies the role of antitrust in regulating internet platforms. Antitrust should remain focused on its goal of protecting and promoting competition. And that goal should be understood as political as well as economic. In 1967, Richard Hofstadter observed that "once the United States had an antitrust movement without antitrust prosecutions; in our time there have been antirust prosecutions without an antitrust movement."[38] We have lost a broad understanding that antitrust protects competition not just for narrow economic reasons of consumer welfare and market efficiency, but also for reasons of political liberty and self-government, because private powers which control important forms of public infrastructure should be subject to clear structures of accountability. As Louis Brandeis wrote: regulation is "necessary to the preservation and development of liberty" just as

it "is essential to the preservation and development of competition."[39] Antitrust affirms a commitment to the idea that economic regulation has political aims, because untrammelled corporate power threatens the balance of power that underpins democracy.[40]

Two policy reforms would help to re-energize antitrust law in its application to internet platforms.

Reform 1: Recalibrating the risks of inaction. In 1958, the Supreme Court described the Sherman Antitrust Act of 1890 as "a comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade."[41] Since then, the scope of the Sherman Act's vague anti-monopolization provision has been considerably narrowed, particularly over the last few decades.[42] The Federal Trade Commission's (FTC) last investigation into Google, which concluded in 2013, illustrated how difficult it is to apply a weakened prohibition of anticompetitive conduct to the design and control of algorithmic systems: "virtually every instance of suspected anticompetitive conduct could be explained as an earnest effort to improve the quality of Google's search engine results."[43] The Justice Department's ongoing antitrust case against Google may well rest on the strength of its evidence of exclusionary conduct.[44]

The dominant view in recent years has been that the risks of over-enforcement are greater than the risks of under-enforcement. However, this view is based on widely discredited economic theory that cartels are unstable, that business practices in normal competitive markets do not harm competition, and that markets eventually always self-correct.[45] The dominant view does not incorporate the risks of under-enforcement in industries of fundamental social and political, as well as economic, activity, as in case of internet platforms.[46] Aspects of antitrust developed to reduce the risk of over-enforcement should be reformed, and requirements of proof currently placed on plaintiffs in enforcement action should be lowered. If courts do not respond to clear shifts in economic theory, social action and political opinion, as they have in the past, these reforms should be developed on a statutory basis.[47]

Reform 2: A presumption of anticompetitive mergers. The Clayton Antitrust Act of 1914 prohibits mergers and acquisitions which may "substantially lessen" competition.[48] The FTC's antitrust inquiry against Facebook is likely to invoke this provision, focusing on the company's acquisition of Instagram in 2012 and WhatsApp in 2013.[49]

There are significant challenges to demonstrating that acquisitions executed by dominant internet platform companies would substantially lessen competition among firms operating over the internet. The case against Facebook, for instance, must grapple with the difficult question of how to define Facebook's market. Antitrust has limited conceptual or legal tools to address market power in non-monetary markets, such as when Facebook charges advertisers for the use of algorithms trained to accurately capture users' attention. Furthermore, competition in the technology sector aims to define future markets, rather than simply compete for shares of existing, well-defined markets. This makes it difficult to judge the efficiencies and welfare-enhancing products that might be foreclosed by mergers and acquisitions.[50] Some of these challenges may be addressed by drawing on recent research in economics on anticompetitive conduct in two-sided markets, in which the interests of consumers and advertisers may diverge,[51] and by conceptualizing attention as the scarce resource for which tech companies compete.[52]

More fundamental reforms may also be necessary. These could focus on standards in antitrust enforcement, such as presuming that below-cost pricing qualifies as prohibited exclusionary conduct.[53] The most immediate and important reform, however, should be to establish an enhanced merger review for industry-leading internet and technology firms. This enhanced review process should include a rebuttable presumption of the anticompetitive effects of potential mergers and acquisitions by dominant internet platforms. It must be supported by better funding of enforcement authorities like the FTC and Justice Department and in the longer term, a broader shift in antitrust enforcement from *ex post* adjudication towards *ex ante* rulemaking.[54]

The idea of public utilities

When concerns about corporate power extend beyond competition, retrospective lawsuits, prohibitions on mergers and acquisitions, and forcible corporate break-ups may not be the best regulatory tools. The public utility idea opens up a more dynamic and flexible range of regulatory approaches that can be invoked to structure accountability in the governance of corporations that control vital social infrastructure.

Today, "public utilities" evoke a familiar set of images: railroad companies that control a single node within a transport network that is essential for downstream social and economic activity, or telephone and broadband companies that control a cable essential for the activities of businesses and households across the country. These images are generally understood to capture the essence of what makes a corporation a public utility: that it monopolizes control over a public good, defined as a non-rival and non-excludable good with high sunk costs in production.[55] On this view, corporations are public utilities if they provide public goods (non-rival and non-excludable goods with high sunk costs in production) and are "natural monopolies" (subject to network effects and economies of scale).

Consider the case of internet platforms. Data's value is cumulative: Data about one person is valuable to the extent that it can be combined with data about hundreds, thousands, or millions of others. More data produces machine learning algorithms that make more accurate predictions, and more accurate predictions support more useful products, and ultimately, generate more revenue. While we do not take a firm position on whether Facebook and Google are natural monopolies that control public goods,[56] we believe antitrust enforcement must explore and deepen understanding about what kinds of network effects the machine learning algorithms that power Facebook and Google are subject to.[57]

However, the case for treating corporations as public utilities does not depend on the question of whether they are natural monopolies that provide necessary goods. This narrow focus is a legacy of the overly economistic concept of public utilities developed since the 1970s that has come to stifle our thinking about how to imagine and regulate different forms of corporate power.[58]

Instead, we should recover an older and more expansive concept of public utilities articulated by legal reformers, institutional economists, and Progressives in the early 20th century. These reformers argued, as the legal scholar William Novak describes, that "the legal concept of public utility was capable of justifying state economic controls ranging from statutory police regulation to administrative rate setting to outright public ownership of the means of production."[59] They systematically explored the connections between social, political, and economic power, experimenting with different ways of asserting public power over the corporate control of different forms of social infrastructure.

As a result, they considered a much broader range of corporations to be public utilities. In 1926, the institutional economist John Maurice Clark included: electricity and the telephone, irrigation and flood prevention, radio and aerial navigation, the Federal Reserve system, labor legislation, and public health. The idea of public utilities was the crucial prong in a dynamic "movement toward [public] control" that sought to impose different kinds of public controls over health insurance firms, immigration, and prison corporations, and forms of social control within the structure of industry itself through the "democratization of business."[60]

This broader idea of public utilities recognizes that a range of different kinds of corporate powers may violate the principle of public accountability, as their activities bear in critical ways on the fundamental terms of citizens' lives. In 1911, the legal scholar Bruce Wyman described these corporate powers

as "public service corporations" who should be governed by a "special law" that Wyman detailed in 1,500 pages and over 5,000 court cases.[61]

This idea was first outlined by the Supreme Court in *Munn v. Illinois* in 1877.[62] The Court upheld that an Illinois statute which regulated rates charged for storing grain was a legitimate exercise of state police power. Chief Justice Morrison R. Waite argued that elevators and warehouses which stored grain were businesses "affected with a public interest" and therefore were the legitimate objects of a range of regulatory measures and institutions necessary to impose public control and assert the common good.[63] The idea that the appropriate scope of public oversight should be determined by the extent to which corporate powers are "affected with a public interest" became a critical principle for determining what economic organizations should be considered public utilities and subject to regulatory obligations and oversight.[64]

In the next few decades, the *Munn* doctrine was cited in numerous rulings that upheld diverse forms of regulation and oversight. In an effort to broaden the scope of civil rights regulation, Justice John Marshall Harlem wrote:

> "the doctrines of *Munn v. Illinois* have never been modified by this court, and I am justified, upon the authority of that case, in saying that places of public amusement... are clothed with a public interest, because used in a manner to make them of public consequence and to affect the community at large. The law may therefore regulate... the mode in which they shall be conducted, and, consequently, the public have rights in respect of such places... It is consequently not a matter of purely private concern."[65]

The public interest doctrine gives effect to the principle of public accountability. The nature and extent of public interest involved in corporate activities that concentrate social, economic, and political power, should determine the nature and scope of public oversight and government regulation. As Felix Frankfurter wrote in the original *Encyclopaedia for the Social Sciences* in 1934, the "contemporary separation of industry into businesses that are 'public,' and hence susceptible to manifold forms of control...and all other businesses, which are private...has built itself into the structure of American thought and law," making possible "a degree of experimentation in governmental direction of economic activity of vast import and beyond any historical parallel."[66] On this broader view, public utilities are corporations whose exercise of private power is a matter of fundamental public concern that shapes the terms of citizens' common life.

Let us apply this idea to Facebook and Google. As we argued in the first section, these companies control the algorithmic infrastructure of the public sphere. This infrastructure is not only critical to downstream economic activity, it influences the flow of ideas and information in our society, shaping how citizens discuss issues of common concern, organize to shape the world around them, and make collective decisions about fundamental matters of self-government. How Facebook and Google design this algorithmic infrastructure, in the language of the *Munn* doctrine, is affected with a clear and fundamental public interest.

The broader public utility concept is fundamentally concerned with the liberty of citizens in democracy. It recognizes that regulation of vital social infrastructure is first and foremost a political challenge, rather than an economic one.

The broader public utility concept is fundamentally concerned with the liberty of citizens in democracy. It recognizes that regulation of vital social infrastructure is first and foremost a political challenge, rather than an economic one. This focuses our attention on an analysis of the nature of the infrastructure controlled by particular corporations, of what kinds of activities that infrastructure supports, and of who is affected

and made vulnerable by unilateral private control over that infrastructure. The kind of infrastructural power particular corporations exercise should shape how they are governed.[67]

The Supreme Court has described Facebook and Google's algorithmic infrastructure as "a modern public square," perhaps "the most powerful mechanism available to a private citizen to make his or her voice heard."[68] The public square "is any place that a story can be shared: a newspaper, magazine, book, website, blog, song, broadcast station or channel, street corner, theater, conference, government body and more."[69] The public square is a place citizens come to buy and sell goods, meet friends, discuss the issues of the day and make plans with one another, engage and organize politically, and select their representatives. Its infrastructure is a critical tool for communication and organization, political expression, and collective decisionmaking.

Facebook and Google's unilateral control over the infrastructure of our digital public square implies a clear power to shape not only the economic activities of citizens, but their social and political activities too, placing citizens in a position of vulnerability at risk of subordination and exploitation.[70] The Supreme Court has implicitly recognized that these two companies control an algorithmic infrastructure which has become critical to our social and political lives and to the flourishing of our democracy.[71]

Facebook and Google should be treated as a new kind of public utility — utilities for democracy. These are public utilities in a far more fundamental, political sense than the narrow, economic concept of corporations that exercise a monopoly over public goods. Their unilateral control over the algorithmic infrastructure of the public sphere concentrates forms of social and political as well as economic power, shaping how we understand and interpret the world around us, discuss matters of fundamental public interest, organize social and political groups, and make choices about matters of collective self-government. This violates the principle of public accountability because it leaves private powers to

shape the fundamental terms of citizens' common life without public accountability. Unlike utilities that operate primarily economic infrastructures, utilities for democracy control the infrastructure of our digital public sphere, threatening the liberty and well-being of our democracy.

Governing these utilities is an opportunity for dynamic regulatory innovation. We should experiment with new ways of structuring accountable decisionmaking over time, developing legitimate and participatory processes to design and control algorithms by drawing on the collective judgement of citizens. We should also reform sclerotic institutions of representation and construct new regulatory authorities to oversee the governance of algorithmic infrastructure. Internet regulation is an opportunity for the kind of regulatory imagination and innovation that has so often strengthened and reanimated democracy in the America.[72]

GOVERNING UTILITIES FOR DEMOCRACY

Regulating Facebook and Google as public utilities offers exactly the kind of dynamic approach to governance required to structure accountability in the design of complex algorithms.[73] Internet regulation should structure flexibility and experimentalism in developing specific governance mechanisms and regulatory obligations, guided by the underlying normative purpose of the public utility concept. As the legal scholar William Boyd put it, the public utility approach is:

"first and foremost a normative effort directed at ensuring that the governance of essential network industries... proceeds in a manner that protects the public from abuses of market power by providing stable, reliable, and universal service at just and reasonable rates. Public utility, in this broader sense, is not a thing or type of entity but an undertaking — a collective project aimed at harnessing the power of private enterprise and directing it toward public ends."[74]

How these utilities should be governed, and what obligations they should be required to respect, should be guided by the underlying aim of structuring accountability in the governance of corporate power.

We outline four kinds of obligations that could be imposed on the utilities for democracy, each of which represents a development of the public utility approach and fills gaps in existing regulatory regimes. These obligations would all likely require federal legislation, with flexibility built in to acknowledge that specific obligations will evolve over time to encourage technological innovation while enabling regulatory adjustment.[75]

Obligation 1: Public values

Utilities for democracy should be required to respect certain public values and rules of the road designed to protect the public interest. These should include rules around equal access, non-discrimination, public safety, and consumer privacy. Many of these obligations could be imposed using existing regulatory powers held by the FTC, as Commissioner Rohit Chopra has recently argued.[76]

In some critical areas, internet platforms should be required to respect affirmative obligations to serve marginalized or underserved communities.[77] For instance, imposing obligations to respect public values through the new utility model could transform how internet platforms design their advertising systems. Recall the p(click) model, which predicts the probability someone will click on a particular advertisement. Imposing public values of non-discrimination and equal access in advertising would require Facebook and Google to completely change how this model works to ensure it does not reinforce or exacerbate existing patterns of inequality, such as in the average income attached to job ads shown to men and women. As Senator Mark Warner has argued, "particularly in the context of employment, credit, and housing opportunities… a degree of computational inefficiency seems an acceptable cost to promote greater fairness, auditability, and transparency."[78]

Internet platforms regulated as public utilities would no longer be permitted to deploy machine learning algorithms that project the injustices of the past into the future.[79]

The underlying principle should be that these new kinds of public utilities are required to explain and outline, to both citizens and regulators, what approach they have taken to ensuring their algorithmic infrastructure promotes justice and equity over time.

Democratic utilities should have considerable discretion about how to implement these requirements. Facebook and Google could explore and evaluate a range of promising technical approaches to imposing criteria of equity and fairness on machine learning algorithms, working closely with regulators, civil society groups, and academic experts.[80] The underlying principle should be that these new kinds of public utilities are required to explain and outline, to both citizens and regulators, what approach they have taken to ensuring their algorithmic infrastructure promotes justice and equity over time. This suggests a second obligation that supports the first: targeted transparency requirements.

Obligation 2: Targeted transparency

Transparency is a means, not an end in itself, to ensuring organizations that control vital social infrastructure respect the principle of public accountability. What information internet platforms should be required to report and explain should depend on who would benefit from using that information. Transparency requirements should be targeted according to their particular audience.[81]

The first set of requirements are designed to empower citizens, ensuring that utilities for democracy explain the processes and principles they use to design their most important algorithms.[82] The difficulty of explaining how machine learning algorithms work is not a significant

obstacle; accountability need not require digital communications firms to publicly release source code. It is the effects of these systems that matters to citizens, not their technical workings. Democratic utilities should be required to explain how their systems are designed and articulate the principles that underpin them, and develop consistent approaches to publish data that sheds greater light on the impact they have on public debate.[83]

Facebook and Google could relatively easily outline the basic principles that underpin the design of their algorithmic systems, explaining how content is disseminated, ranked, and removed. The opacity of complex algorithms is not an excuse for failing to provide basic but important descriptions of what those algorithms are designed to do. Facebook and Google could also report basic summary statistics about the outcomes their algorithms produce, which could be examined by technologists, academics, journalists, public policy experts, and the broader public.

A second transparency requirement would be aimed at regulators, who ensure internet platforms comply with rules and requirements established in legislation or directives. Regulators could, for instance, be empowered to verify that Google's search was respecting public values of equal access and non-discrimination. Regulators could request technical information, including the datasets used to train machine learning algorithms, the outcome variables algorithms are trained to predict, and what inputs they use. Firms could also be required to provide anonymized datasets and technical information to academic and civil society researchers, vetted by regulators before release, to verify that systems work in the manner they publicly describe.[84]

Obligation 3: The imposition of firewalls

The governance of utilities for democracy should also involve a set of structural reforms. Instead of federal agencies imposing top-down requirements about how public debate should be governed,

mechanisms of governance should be imposed on companies like Facebook and Google to structure accountability to the public and their representatives over time.[85] The content of these structural reforms should vary over time and across different internet platforms, and should also depend on the success of other regulatory strategies.

The most basic structural reform should require democratic utilities to establish firewalls. These firewalls would separate the various functions of internet platforms, diminishing structural conflicts of interest by separating the commercial imperatives of digital advertising from other functions, such as the governance of public debate.[86] Similar firewalls were pioneered by the newspaper industry, in which editorial judgements are insulated from commercial incentives and imperatives.[87]

Establishing such firewalls could ensure that internet platforms consider the public interest as they design and operate infrastructural algorithms that shape public debate. The principles to guide these firewalls could draw on the Radio Act of 1927, which established an exclusionary licencing agreement on the condition that broadcasters recognize that their purpose is to serve "the public interest, convenience, and necessity." The Supreme Court has suggested that in some cases, private ownership of this public infrastructure can be rescinded where broadcasters fail to faithfully serve the public interest.[88] This could encourage Facebook and Google to be transparent to citizens about how they influence public debate, in addition to respecting public values of fairness and non-discrimination.

Obligation 4: Democratic governance and public utilities

The most critical regulatory innovation required to assert public power over utilities for democracy is the systems of governance firms should be required to experiment with. Citizens have deep and legitimate disagreements about the values and interests that should guide the design and control of the algorithmic infrastructure of the public sphere.

The commercial goals of a telecommunications firm or railroad company — providing connectivity and transportation to many people in an efficient and equitable manner — are much less contested than the objectives of a company that controls the infrastructure of the digital public sphere. Asserting democratic authority over the private governance of that infrastructure is an opportunity to develop new mechanisms of governance and explore new processes for making legitimate decisions that enable disagreements to be articulated and represented.

Utilities for democracy must not only be regulated; they must be democratically governed.

Utilities for democracy must not only be regulated; they must be democratically governed. In areas where there are disagreements about what constitutes the public interest — as in the governance of public debate — these new utilities should be required to experiment with different kinds of democratic processes of governance to determine and make decisions about the algorithms that shape the public sphere. Such governance should involve legitimate and participatory processes that enable the expression of competing interests and disagreements.[89] These processes should draw on existing efforts by internet firms themselves, which have experimented with a wide range of different forms of participatory decisionmaking, and the growing body of research and experimentation with varied forms of corporate governance.[90] They would connect decisionmaking in regulatory authorities to decisionmaking within the hierarchies of large internet platforms like Facebook and Google. These would represent a significant innovation for public utility regulation that furthers the principle of public accountability by imposing structures of collaborative governance and democratic oversight over time.[91]

Two mechanisms of democratic governance could prove particularly useful. The first is citizen juries. Citizen juries build legitimacy for particular judgements or policy outcomes and educate citizens by empowering them to participate in reasoning and decisions about important issues of public concern.[92] Several recent attempts to implement citizen juries in areas like health and environmental policy could be extended to algorithmic design and content moderation.[93] Citizen juries could be used as regular components of internet platforms' governance of public debate by involving citizens in the design of high-stakes content moderation algorithms, similar to several ideas Jonathan Zittrain has outlined.[94] Regulators could require these democratic utilities to periodically assemble larger citizen juries to consider more fundamental policy or design questions, such how internet platforms should control and regulate political advertising and harmful forms of political speech.[95]

The second is the mini-public.[96] Mini-publics can be an effective tool to connect corporate decisionmakers with the concerns and demands of citizens and policymakers. Federal regulators and executives of internet platforms could agree on agendas for monthly mini-publics, each focused on a particular issue decisionmakers wish to address. These deliberations could be recorded and made publicly available. Mini-publics can be a useful forum for gathering information and synthesising evidence for consideration, bridging the gap between citizens, elected representatives, and technical and policy experts.[97] Internet platforms could use them to identify what kinds of harms citizens are most concerned about in the algorithmic governance of public debate and for developing consensual definitions of how to characterize those harms.

These democratic mechanisms of governance would build consensus and legitimacy to how internet platforms design and control the algorithmic infrastructure of the public sphere. They would encourage regulators, corporations, civil society actors, and citizens to come together at defined moments within structured processes of

governance, periodically asserting the principle of public accountability. This would remind citizens, elected officials, and executives within internet platforms that the public has the ultimate authority to shape how the algorithmic infrastructure of the public sphere is designed and controlled.

PUBLIC UTILITIES AND THE FUTURE OF DEMOCRACY

A commitment to democracy entails a commitment to the principle of public accountability. Private powers who shape the fundamental terms of citizens' common life should be held accountable to the public good. The public utility idea was developed to enact this principle, offering a dynamic and flexible set of regulatory tools to impose public oversight where corporations are affected by a public interest. The public utility tradition has played an important but neglected role in American life. It recognizes that different industries and corporations play different roles in democracy because they control different kinds of public infrastructure that shape the social, economic, and political interactions between citizens in different ways. The tools of governance and legal obligations imposed on public utilities should depend on the nature of the infrastructure they control.[98]

This paper has applied this broad concept of public utilities to the regulation of internet platforms, outlining a range of obligations and structures of governance that would orient their activities toward the public good. Regulating Facebook and Google as public utilities offers opportunities for dynamic regulatory innovation, drawing on innovative approaches to algorithmic design, structural reforms to corporate governance, and several forms of democratic and participatory decisionmaking. The approach we have outlined would ensure the internet industry is accountable to the public good, empowering citizens to wrestle with their differences and impose their judgements on the governance of the algorithmic infrastructure of the public sphere.

American democracy may be the chief beneficiary of such a regime. Regulating Facebook and Google as utilities for democracy would be a decisive assertion of public power, reanimating institutions that represent citizens' competing interests and deep disagreements and providing a framework for experimenting with democratic structures of governance, which could unblock sclerotic institutions of representation. Above all, the aim of regulating internet platforms as public utilities is to strengthen and energize American democracy by reviving one of the most potent ideas of the United States' founding: democracy requires diverse citizens to act with unity, and that, in turn, requires institutions that assert public control over private power. It is time we apply that idea to the governance of Facebook and Google.

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84 For a more detailed outline of the reporting requirements this might involve, see: Talia B. Gillis and Josh Simons, "Explanation < Justification"; "Creating a French Framework to Make Social Media Companies More Accountable," French Secretary of State for Digital Affairs.

85 K. Sabeel Rahman, "The New Utilities."

86 Similar requirements would be imposed on platform utilities. Companies like Google and Amazon who control online marketplaces, such as Amazon's Marketplace or Google's Ad Exchange, would be prohibited from also offering products which compete in those marketplaces, such as Amazon's Basics or Google's Search. The part of the company which controls the marketplace would be required to maintain a distinct governance structure to the part of the company which offers the product that competes on the marketplace.

87 There are of course valid concerns about the effectiveness of these firewalls in the newspaper industry. The algorithms operated by Facebook and Google already operate much like newspaper editors. A newspaper editor judges whether content is sufficiently well-supported by evidence for it to be trusted and defended. Facebook, for instance, employs a variety of techniques to train algorithms to predict which publishers and sources should be trusted. The company does not tell users what is true and what is false, but it does convey judgements about what users should or should not trust. This is public knowledge but often overlooked, including by Facebook itself. Kathleen Chaykowski, "Facebook To Prioritize 'Trustworthy' Publishers In News Feed," *Forbes*, January 19, 2018, https://www.forbes.com/sites/kathleenchaykowski/2018/01/19/facebook-to-prioritize-trustworthy-publishers-in-news-feed/.

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89 Others have begun to propose similar ideas, but without an overall framework for imposing these obligations over time. (See Jonathan Zittrain, "A Jury of Random People Can Do Wonders for Facebook," *The Atlantic*, November 14, 2019, https://www.theatlantic.com/ideas/archive/2019/11/let-juries-review-facebook-ads/601996/.)

90 The public utility approach can draw on recent research into different kinds of corporate structures of governance, applying them to the governance of the algorithms which shape public debate. "Creating a French Framework to Make Social Media Companies More Accountable," French Secretary of State for Digital Affairs; Abraham A. Singer, *The Form of the Firm: A Normative Political Theory of the Corporation* (Oxford University Press, 2018), chapters 1, 6.

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94 Regular citizen juries could also consider standard policy changes about which content would be prohibited, with a simple majority vote among jury members about whether to authorise the policy change. Were the policy change to be rejected, the firm would have to re-evaluate and advance different proposals. Jonathan Zittrain, "A Jury of Random People Can Do Wonders for Facebook"; Robert E. Goodin, *An Epistemic Theory of Democracy* (Oxford: University Press, 2018), chapter 1.

95 There is no consensus about the right course of action on this issue, not only because there is a dearth of evidence about how, when, and why political advertising online shapes the democratic process, but also because there are reasonable disagreements about the underlying values related to the governance of political speech. These disagreements cannot be designed away; better then to ensure differences of view are aired, discussed, and a legitimate judgement is reached and reconsidered over time. A citizen jury drawn from across the country could engage in an intensive investigation into this question, with access to all the existing evidence, reaching a collective — interim — judgement about the best policy for governing political advertising and speech. This judgement could be periodically reviewed by either the same or a different group of citizens. New utilities could be left to explore how best to implement the recommendations of such citizen juries. Conor Friedersdorf, "Doubt Anyone Who's Confident That Facebook Should Ban Political Ads," *The Atlantic*, November 1, 2019, https://www.theatlantic.com/ideas/archive/2019/11/twitter-facebook-political-ads/601174/.

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ABOUT THE AUTHORS

Josh Simons is a graduate fellow at the Edmond J. Safra Center for Ethics and Ph.D. candidate at Harvard University. Simons' dissertation, "Citizen Rule: Democracy in the Age of Prediction," explores what machine learning is and why it matters, and how technology regulation is connected to issues of democratic reform. Simons is a visiting researcher in Facebook's Responsible AI team, a research fellow at the Institute for the Future of Work, and a U.S.-India Technology Policy Fellow at New America. Simons formerly worked as a policy advisor for the Labour Party in the U.K. Parliament and graduated with a starred double first in politics from Cambridge University.

Dipayan Ghosh is co-director of the Digital Platforms & Democracy Project at the Harvard Kennedy School and faculty at Harvard Law School. He is the author of *Terms of Disservice: How Silicon Valley is Destructive by Design* (2020, Brookings Institution Press). Ghosh has been cited and published widely on privacy, artificial intelligence, and disinformation in *The New York Times*, *The Washington Post*, CNN, MSNBC, NPR, the BBC, and others. He previously led strategic efforts on privacy at Facebook and served as an economic advisor in the White House during the Barack Obama administration. Ghosh received a doctorate in electrical engineering from Cornell University and an MBA from the Massachusetts Institute of Technology.

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