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Executive Summary

In this report, I draw on interviews with journalists and critics, as well as a broad reading of published work, to assess the current state of technology coverage and criticism in the popular discourse, and to offer some thoughts on how to move the critical enterprise forward. I find that what it means to cover technology is a moving target. Today, the technology beat focuses less on the technology itself and more on how technology intersects with and transforms everything readers care about—from politics to personal relationships. But as technology coverage matures, the distinctions between reporting and criticism are blurring. Even the most straightforward reporting plays a role in guiding public attention and setting agendas.

I further find that technology criticism is too narrowly defined. First, criticism carries negative connotations—that of criticizing with unfavorable opinions rather than critiquing to offer context and interpretation. Strongly associated with notions of progress, technology criticism today skews negative and nihilistic. Second, much of the criticism coming from people widely recognized as “critics” perpetuates these negative associations by employing problematic styles and tactics, and by exercising unreflexive assumptions and ideologies. As a result, many journalists and bloggers are reluctant to associate their work with criticism or identify themselves as critics. And yet I find a larger circle of journalists, bloggers, academics, and critics contributing to the public discourse about technology and addressing important questions by applying a variety of critical lenses to their work. Some of the most novel critiques about technology and Silicon Valley are coming from women and underrepresented minorities, but their work is seldom recognized in traditional critical venues. As a result, readers may miss much of the critical discourse about technology if they focus only on the work of a few, outspoken intellectuals.

Even if a wider set of contributions to the technology discourse is acknowledged, I find that technology criticism still lacks a clearly articulated, constructive agenda. Besides deconstructing, naming, and interpreting technological phenomena, criticism has the potential to assemble new insights and interpretations. In response to this finding, I lay out the elements of a constructive technology criticism that aims to bring stakeholders together in productive conversation rather than pitting them against each other. Constructive criticism poses alternative possibilities. It skews toward optimism, or at least toward an idea that future technological societies could be improved. Acknowledging the realities of society and culture, constructive criticism offers readers the tools and framings for thinking about their relationship to technology and their relationship to power. Beyond intellectual arguments, constructive criticism is embodied, practical, and accessible, and it offers frameworks for living with technology.

Epigraph

“This is a work of criticism. If it were literary criticism, everyone would immediately understand the underlying purpose is positive. A critic of literature examines a work, analyzing its features, evaluating its qualities, seeking a deeper appreciation that might be useful to other readers of the same text. In a similar way, critics of music, theater, and the arts have a valuable, well-established role, serving as a helpful bridge between artists and audiences. Criticism of technology, however, is not yet afforded the same glad welcome. Writers who venture beyond the most pedestrian, dreary conceptions of tools and uses to investigate ways in which technical forms are implicated in the basic patterns and problems of our culture are often greeted with the charge that they are merely ‘antitechnology’ or ‘blaming technology.’ All who have recently stepped forward as critics in this realm have been tarred with the same idiot brush, an expression of the desire to stop a much needed dialogue rather than enlarge it. If any readers want to see the the present work as ‘antitechnology,’ make the most of it. That is their topic, not mine.” ---Langdon Winner[1]

Introduction

Technology criticism evokes visions of loom-smashing Luddites and told-you-so Cassandras. Something about criticism in the context of technology seems to suggest that technological change is problematic, or something to be resisted entirely. Yet other forms of cultural criticism don't share this fault-finding burden. In other contexts, criticism is understood to be thoughtful consideration and close analysis rather than oppositional judgment and rejection.

By only seeing the negative connotations of technology criticism, we miss opportunities to better understand our ongoing social and cultural relationship to technology. This report investigates the source of these negative associations, offers strategies for expanding our notion of what technology criticism can be, and articulates the necessity of a more inclusive and generous understanding of technology criticism. The report aims to improve the quality and complexity of the media discussion about issues facing technology and society. Technology touches almost every aspect of contemporary life, making it absolutely imperative that we develop a robust vocabulary and framework for understanding our relationship to it.

The findings in this report are presented in four main parts. In the first section I trace the recent history of technology coverage in both reporting and criticism to understand how the public discussion about technology is shaped by the media and how it has changed over the last few decades. Next I explore how the current state of mainstream criticism fails readers and misses opportunities to improve how we live with technology. I then expand the scope of criticism beyond well-known critics to include other writers and journalists who contribute to critical discourse about technology. I also show how criticism from this wider circle of writers employs a variety of critical lenses to ask important questions of technology. Lastly I offer strategies for writers and editors to pursue constructive technology criticism, with an emphasis on offering alternatives alongside deconstructions. For students and practitioners, the appendix includes an annotated reading list and a style guide for technology writing.

Research Questions

This research takes up the following questions:

Question 1: How is the nature of technology coverage changing? How do technology reporting and technology criticism relate to one another?

Question 2: What is the nature of mainstream technology criticism today? How diverse are the ranges, styles, and forms of writing contributing to popular critical discourse about technology?

Question 3: Who is recognized as a technology critic and where is technology criticism published? Who else could be recognized as a critic and what work do they do?

Question 4: What is missing from technology criticism today? What are the features of constructive technology criticism?

Methods

The research draws from a wide range of material, including twenty-five original, semi-structured interviews conducted in-person or on the phone when possible, otherwise via email. Spoken interviews ran between forty and one hundred and ten minutes, adding up to more than twenty hours in total. I was careful not to prime interviewees with too much background, and I focused discussion around my subjects' prior experience and expertise. I also used our conversations as a snowballing source for expanding my research materials. I identified interviewees through purposive sampling[2] to address a diversity of approaches, voices, and publications that present critical work about technology. I approached critics, journalists, bloggers, and freelance writers of all sorts based on relevant published work across a variety of publications and mediums. I acknowledge a New York media bias in my interviews, which reflects the industry's concentration. I include a list of interviewees in Appendix C.

Nonreactive[3] sources included published articles in the popular press, both on the subject of consumer technologies and about the state of technology writing and thought leadership. I also drew from discussions in conference panels and podcast conversations. Many of these sources are cited throughout, but more can be found in the supplemental syllabus and the more expansive and constantly updated Zotero folder of resources.[4]

Using standard methods of qualitative analysis, I conducted a close reading of my interview and publication data to surface themes across the material. I was careful to capture and analyze *in vivo*[5] language and ideas.

I present my findings as a montage or *bricolage*[6] of voices and examples, in hopes of addressing the breadth and depth of material that contributes to the wider public discourse about technology. Though not exhaustive, I start with a historical approach to understand how issues covered by technology writing have changed.

The research is informed by existing literature in the fields of science and technology studies, media studies, and the history of technology. These academic literatures inform some of the earliest public thinking about technologies' social effects, as well as give historical and intellectual precedent to the critical work I examine here. This report also represents an interdisciplinary and intersectional approach to the topic of technology criticism, including ideas from the social science and anthropology of technology, film and media studies, and law and policy of technology.

Defining “Technology”

Technology is admittedly a broad category for analysis. Until recently, *Gizmodo*’s tagline echoed the vastness of the definition: “Everything is technology.” My interviewees used “technology” as a shorthand for many things: consumer devices, digital platforms, the cluster of companies and industries based in Silicon Valley, and larger concepts like Artificial Intelligence and Big Data.

Beyond the tools and artifacts themselves, technology also encompasses the sociotechnical systems that develop and create these technologies, as well as those who use them. As an early philosopher and sociologist of technology, Lewis Mumford uses the word “technics” to refer to the interplay of a social milieu and technological innovation—the “wishes, habits, ideas, goals,” and “industrial processes” of a society. This definition addresses the human/machine relational system that makes up technology.[7]

Metallurgist and physicist Ursula Franklin similarly shares an expansive definition of technology: “Technology is not the sum of the artifacts, of the wheels and gears, of the rails and electronic transmitters. Technology is a system. It entails far more than its individual material components. Technology involves organization, procedures, symbols, new words, equations, and, most of all, a mindset.”[8] Franklin’s “real life” of technology focuses on practices, that is, how people use and apply technologies, as a means of understanding technology’s role in society.

Informed by these definitions, and taking into account the range of meanings my interviewees expressed, I define technology as the tools and systems, as well as the design and use of those tools, that people in their everyday lives. Technology in this report stands in for consumer computing technologies, both the ones we know and interface with at a personal scale and the ones that operate in the background as the foundation for those systems. This definition mirrors the media’s general readership, and the vernacular shorthand of what the “technology industry” most often refers to today, though it has been argued recently that all contemporary industries use technology in some fashion.[9, 10] Still, it is helpful to draw on Mumford’s and Franklin’s broad definitions, which encompass all tools and mechanisms that extend humans’ capabilities to shape and alter the world around them.

Technology Coverage Versus Technology Criticism

This report makes a key distinction between technology coverage as it is practiced by journalists, and technology criticism as it is practiced by critics. As this report will elaborate, coverage and criticism form a continuum and are not dichotomous categories, but it is worth elaborating these two ideal types, as well the spaces between them. The basic difference between coverage and criticism is the difference between describing what technology is versus what it all means.

JOURNALISM	CRITICISM
objective	subjective
facts	opinions
reporting	interpreting
fourth estate	policy recommendation
agenda setting	filling holes in public conversation
investigation	synthesis
breaking	trending
research	analysis
impartial	judging merits
tick-tock details	commentary
neutral	assessment
description	deconstruction
impartial	disapproving
watchdog	fault-finding
article	column or opinion
inverted pyramid	argumentative essay
real-time	long durée
concise	nuanced

Journalism about technology looks like: reporting, facts, the fourth estate, agenda setting. This kind of writing is constrained by PR embargoes and exclusive access. It can suffer from regurgitating Silicon Valley jargon and from telling seductive stories, as in the case of Theranos being judged as a startup rather than a medical company. Producer and freelance

writer Rose Eveleth points to the problem: "There's so much glittery, breathless writing about technology that fails to slow down and think about why we're making these things, who we're making them for, and who we're leaving out when we make them."[11] Dave Lee, tech reporter for the BBC, further asks if the role of technology journalism is meant to be "reporting every concocted venture capital investment, or being the first draft of our digital history."[12]

On the other hand, criticism about technology looks like: analysis, interpretation, commentary, judging merits, and unfavorable opinions. In the best cases, criticism offers the opportunity for context setting, and for asking questions beyond the tick-tock of technical development and into the how's and why's of a larger cultural shift. Criticism leaves room for interpretation, analysis, assessment, and more systematic inquiry. Popular criticism seeks to question established and unexamined knowledge—the assumptions and positions taken for granted. As author and contributor for *The New York Times* Virginia Heffernan reflects, criticism should "'familiarize the unfamiliar' and 'de-familiarize the familiar.'"[13]

In other words, the critic articulates why we like the things we like, why we don't like others, and poses possible explanations of what these artifacts say about our culture. While hesitant to describe his work as criticism, associate editor Robinson Meyer acknowledges some of the features of criticism *The Atlantic* Tech aims for: "We aspire to be essayistic; we aspire to be constellational in our thinking, and we aspire to be incisive and insightful. Those are all traits of criticism. A lot of our work also is about naming things that don't have a name yet."[14]

Criticism, in the context of technology, seeks to make meaning out of technological change. Contributing writer for *The New York Times Magazine* and a columnist for *Wired*, Clive Thompson offers a concise vision of tech criticism as work that "wrestle[s] with this question of how tools and their affordances change and alter the fabric of everyday life . . . asking,] 'How is technology affecting the warp and woof of everyday life?'"[15] Meyer adds that tech critics "observe and pay attention to tools and objects of power as they come into the world . . . and imagine the application of those tools and extrapolate into how they'll shift the environment around them to better understand what the good and bad of them [might be]."[16]

A critic of technology is not merely a gadget reviewer, weighing in on consumers' decision to buy the latest bendable iPhone. Thompson explains the distinction, looking back to his time covering video games for *Wired*:

> I insisted, pompously, that I was a critic and not a reviewer. The difference is a reviewer is trying to stay current and is interested in telling you whether or not something is worth your money. If something is a terrible game, they will say, “This is a terrible thing to play.” A critic is someone who is interested in the meaning of games and so it doesn’t matter whether or not the game is any good. I would frequently write about terrible games because they did something that was interesting.[17]

Though criticism and coverage may share subjects and space in the same publications, both forms follow a similar path as their relationship to the tech industry matures and evolves.

The Critical Turn in Technology Coverage

Question 1: How is the nature of technology coverage changing? How do technology reporting and technology criticism relate to one another?

This section takes up the question of how technology coverage has evolved during the last two decades. It also explores the question of how technology reporting and technology criticism relate to one another. I trace the evolution of technology coverage using two key turning points in the last two decades of public discourse on technology and society. These moments elevated the importance of the media's coverage of technology and brought it to a wider audience. The first moment was the debut of the iPhone in 2007. The second was Edward Snowden's 2013 revelations on the massive system of surveillance underway in the United States. The former brought new meaning to the idea of personal technology by placing computers in everyday consumers' pockets. The latter made citizens aware of the potential for technology's use as a means of social and political control.

From Backend Systems to Back Pockets: A Brief History of Technology Coverage

Technology, and its media coverage, has changed in the last twenty years. The magazine *Wired* came of age moments before the dot-com bubble started blowing up. As one of the first magazines on the web, and the first with banner ads, *Wired* and *HotWired* bridged the print world and the frontier of online technology journalism. It was one of the first mainstream venues to focus on consumer technology, albeit only for consumers of a certain affluent and connected class. Before *Wired*, technology coverage had been largely left to publications of the International Data Group publishing consortium, like *ComputerWorld*, *InfoWorld*, and *CIO*, going back as early as 1967. Managed by an offshoot of the technology company International Data Corporation, these trade press publications were written for and by the industry itself. Thus, technology coverage had been mostly targeted at industry professionals or the Silicon Valley subculture (such as readers of the *Whole Earth Catalog*).

The optimistic and gadget-loving ethos of *Wired* spawned more niche technology blogs covering the proliferation of consumer devices. With the popularization of platforms like WordPress and Blogger, media corporations began to take blogging seriously as a new venue for niche content. Gadget blogs emerged that catered to geeks who were already spending time on their computers at home and at work. The gadget-market advertising dollars rolled in. *Gizmodo* launched in 2002 just moments after the first bubble, and *Engadget* began two years later in 2004.

At its peak, the rivalry between *Gizmodo* and *Engadget* inspired a 2008 *Wired* article depicting boys wandering the booths of the Consumer Electronics Show (CES), shouting expletives and throwing gang signs at each other. Former co-editor of *The Awl* Matt Buchanan got his start at *Gizmodo* and recalled what it was like to cover CES: “It was like the fucking Super Bowl. You just needed as many bodies as possible to cover as much of the floor as possible.”[18] As an indication of how much journalistic coverage of technology has changed since then, Buchanan notes that it is now almost considered a mark of shame to be sent to cover CES.[19]

Buchanan, recalling those early days before the iPhone came out, says:

> We didn’t realize it at the time. We were at the forefront of how people were changing . . . how everything was going to work. We were chronicling the front lines of that, and we didn’t even realize it . . . I started at *Gizmodo* in December of '06. One year before the iPhone came out. When I first started, you still wrote about MP3 players and Nokia N95. Big screen TVs were still a thing that were worth waxing on and on about.[20]

The relationship between technology and everyday life began to change profoundly when the iPhone reached saturation in the mobile phone market. The iPhone meant anyone, not only businessmen with BlackBerries, could be connected all the time. Anyone could have access to mobile computing power. The line between enterprise technology and personal computing blurred as consumer devices and cloud services made it easier for users to switch between contexts. Alexis Madrigal points to this as an important shift for readers of technology coverage. He notes that:

> [Coverage changed] once people started using cellphones all the time and encountered all of the wonders and complexities and problems of that. Technology reporting—if that was basically hagiography technology—just stopped working. People were like, "Bullshit. That's not the only way that could work. I have a phone. I know how this goes. I spend sixteeen hours a day engaged in technology. You can't tell me there's only going to be good things that are going to come out of it."[21]

Readers of technology coverage were now a little closer to technology, and for more parts of their daily lives. And technology became something more people talked about and cared about. People all over the world joined Facebook as it opened beyond college email addresses.

Optimism or Boosterism? Early Days of Technology Coverage

Wired was criticized early on for its boosterism and its agnostic stance toward politics. Communications professor and former journalist Fred Turner, in his book *From Counterculture to Cyberculture*, details how Stewart Brand and Kevin Kelly blurred the lines between traditional journalism and ego-centric thought leadership without a sense of duty to a code of journalistic ethics or objectivity.[22] Turner writes: “Kelly meant for *Wired* to be a forum for the various networks in which he circulated . . . He thought of himself as ‘a convener of interesting ideas’—much like a conference host on *The WELL*. His job, he thought, was to stir up conversations and print them. For this reason, Kelly often allowed traditional professional boundaries to dissolve.”[23]

As early as 1994, *The Baffler* tackled *Wired*’s thinly veiled gadget advertorials: “*Wired* is technology’s hip face, an aggressive apologist for the new Information capitalism that speaks to the world in the postmodern executive’s favored tones of chaotic cool and pseudo-revolution.”[24]

Leading technology commentators extolled the new access to information and platforms, celebrating their potential for advancing democracy and empowering people. Much of that enthusiasm spread from Silicon Valley into the academy and beyond. Positive messages of change were distilled into fifteen- to eighteen-minute presentations for TED conferences, turning them into “ideas worth spreading” and generating books and other media to go along with them.[25] The dominant narrative around technology exuded optimism.

Investigation and Accountability: Technology Coverage Evolves

The summer of 2013 marked another turning point in the relationship between technology and society, which journalists covering technology had to address. Revealing the massive scale of coordinated, multinational government and corporate surveillance, Snowden confirmed privacy advocates' worst fears: that the same technologies that connect us can also be used to monitor and control citizens without their knowledge or consent. Snowden's revelations forced journalists, thought leaders, and citizens to begin untangling just how much of the tech industry was complicit in building a global surveillance network. It was also a "moment of broader cultural awareness about how much these huge mechanisms that have been built around us are affecting us now on civic levels," says writer Elmo Keep of Real Future at *Fusion*.[26]

The few journalists and commentators who had warned about the power of data felt simultaneously vindicated and defeated, and a "general pall came over technology reporting," notes *Fusion* editor-in-chief Alexis Madrigal.[27] In the journalistic community, what blossomed out of this was an understanding of how much more the technology industry deserved investigative attention and journalistic resources. Since then, investigative efforts have exposed labor practices at Amazon,[28] detailed Google's extensive lobbying efforts,[29] uncovered Uber's means for dealing with harassment,[30] and surfaced discriminatory decisions and predatory practices of algorithms.[31] Journalists have used both traditional reporting tactics and programmatic data journalism methods to hold technology companies and practices accountable, and there is room for still more investigative coverage. Senior editor of *The Nation* Sarah Leonard compares it to the way "we have financial journalists and labor journalists who look at Walmart, or look at collusion on Wall Street."[32]

The “Tech Beat” Breaks

My interviews with writers suggest that what it means to cover technology is a moving target. Once dominated by PR cycles and product releases, coverage has moved beyond the breathless declarations of “the next sexiest thing” that marked the early days of publications like *Wired* and *Gizmodo*. Recent coverage reflects an expanding definition of technology, from materials and mechanisms to the people and systems behind them.

Robinson Meyer commented on this shift from tech-as-tool to tech-as-system in a string of tweets: “Since spring of 2012, you could watch the tech beat break. What were business stories, media stories, policy stories were labeled ‘tech.’”[33] When gadgets were no longer the story, gadget blogs realigned themselves toward covering the structures, histories, and ethics that support and surround technologies. Meyer characterized the shift: “The editorial ethos of *The Verge* could be ‘You liked smartphones five years ago. Now you like other things. We cover all of them.’”[34]

Unlike the early technology coverage, writing about technology is no longer limited to catching the latest iPhone release or startup IPO. Coverage is becoming more focused, and it has expanded outside its traditional section silos, moving beyond the business section of traditional media outlets. Stories relating to technology can be found in every editorial section: from security, to style, to economics. For example, Caroline O’Donovan’s job title is the labor reporter for *BuzzFeed* San Francisco, a position that would have been hard to imagine a few years ago. But it seems natural now, given rising concerns about working conditions in technology companies and the platform disruption of traditional labor markets.

In the wake of the Snowden stories, Alexis Madrigal characterized the last few years as a recovery of technology journalism.[35] What has emerged is something more grounded in the cultural, social, and political roles technology plays in our lives, he says, rather than covering technology for its own sake.

Where Technology Intersects with Everything

Today the technology beat focuses less on the technology itself and more on how technology intersects with and transforms everything people care about—from politics to personal relationships. Many of the writers I spoke with acknowledged that covering technology has matured beyond just writing about tech as a subject—the "tech beat." Meyer explains his tweetstorm [36] on the subject further: "There's just this understanding now that technology is necessarily intersectional . . .It got boring just writing about technology all the time, and it stopped being new, so it was like, 'Where do people go now?' The answer is understanding what [tech] crosses over with, what [tech] intersects with."[37]

Many other interviewees concurred there has been a shift in the nature of coverage in the last few years. Any publication that once concerned itself with technology is now more focused on the intersection of technology and something else (e.g., culture, politics, labor, etc.) Tech is no longer the story. It's a core part of what's happening, but it's not the subject. This can also make for a confusing definition of what, exactly, constitutes technology coverage. John Herrman, a David Carr Fellow at *The New York Times*, shares, "You're not really writing a tech story [anymore]. You're writing a set of stories about labor and about business, maybe about law . . . It's hard to say what makes it a tech story."[38]

Buchanan recalls his path from *Gizmodo* to *The Awl*, where he and Herrman thought they were "finally done with tech" but found they gravitated toward it in other ways. Buchanan observes: "[We're] mostly interested in structures. That's how we've come to articulate it. We've been mostly writing about labor and capital and technology and real estate and urbanism and different subsets within that. [We're now talking about] cultural forces."[39]

Sociologist and *New York Times* op-ed contributor Zeynep Tufekci agrees, and demands more of this approach: "Technology is no longer 'just' a technology story—many things, from social to economic, are intertwined with technological developments . . . What we need is more people covering the intersection."[40] In other words, technology coverage has reached a point where it is no longer possible to separate social questions from technological ones.

Clive Thompson has long held the position that technology is a lens toward everything else: "Politics, business, literature, art, culture. It's a fantastic conduit. Journalists often hate being stuck in a box. They get bored by their beat. This beat is going to go everywhere. I'll never get bored. Sure enough, twenty-five years later, I'm not even slightly running out of things that I'm fascinated by."[41]

New Yorker staff writer Nathan Heller similarly describes his approach: "I am usually trying to write about tech at points where it intersects with something else: municipal politics, cultural history, art, business practice, or thought. In other words, I'm trying to write about tech in the

world. Approaches tend to interest me if I feel as if they open up onto, and help illuminate, some broader arc of cultural change."[42]

Technology = Culture

My interviews suggest that today's media coverage treats the subject of technology much more like a cultural phenomenon than it did just a few years ago. Nathan Heller sees this as an important inflection point: "Technology is increasingly thought to be part of the daily fabric of life. I think this is smart progress, because it means that it can be assessed in the context of everyday life."[43]

Supporting this observation, Virginia Heffernan shares a helpful comparison from her early career: "'Technology' is the masculine form of the word 'culture.' When I stopped saying I wanted to be a cultural critic and started saying I wanted to be a tech critic, people wanted to give me more assignments."[44]

Perhaps because mobile phone adoption and connectivity has almost reached a saturation point, with transformative effects on everyday life, it has become impossible for journalists covering technology to ignore questions of ethics, attention economics, and political change. Caroline O'Donovan offers a signal of the shift in concern: "It's something that everyone cares about. I have to talk at parties about my work sometimes when I don't want to. People are always talking about Uber, everyone is always fucking talking about Uber constantly . . . which is just weird. It's a consumer technology, I guess."[45]

O'Donovan pointed to a recent job posting for Cosmopolitan's tech reporter as a further sign of the times.

Critical Reporting and Its Challenges

As technology reporting takes on issues of culture, economics, and politics, the line between reporting and criticism is blurring. And as readers gain increasingly detailed and direct accounts of events, writers are doing more to provide context and analysis to the news, pulling coverage away from conventional reportage toward explainer journalism and critical interpretation.[46] Reporting and criticism today are rarely mutually exclusive. This makes it necessary to place technology coverage on a spectrum of criticality, which recognizes that even straightforward reporting plays a role in guiding public attention and agenda setting.

Still, reporters doing critical work on the technology industry and Silicon Valley face many challenges. Access to sources within companies is tightly controlled, and without a large publication or an established relationship with PR, writers can be discouraged by boilerplate marketing responses. Conversations with engineers are often on background, and details from visits to tech campuses languish under nondisclosure agreements. Writing for *Nieman Reports*, Adrienne LaFrance observes, “Some of the world’s most powerful companies end up dictating a startling degree of coverage about them—because reporters often rely solely on information released by those companies, and, with some key exceptions, get few opportunities to question them.”[47]

Rose Eveleth thinks companies like Apple and Google increasingly make this basic reporting work as hard as possible: “Apple and Google are masters of grooming reporters to do what they want, and provide access only to folks they think will make them look good. Access has always been a bargaining chip, but I think these companies are much more media-savvy than they used to be, and I think they’re realizing not just how to exclude reporters they don’t like, but how to feed and encourage reporters they do like.”[48]

Very few writers are given privileged access within tech companies. Writing for *Backchannel* on Medium and in his books about the company, Steven Levy chronicles interesting Google stories, but arguably maintains his close relationships within the company because of his overall optimistic outlook on what technology is capable of.

Other writers are publicly taken down or even threatened for their critical coverage. Referencing the Peter Thiel *Gawker* case, technology reporter for *The Guardian* Nellie Bowles writes, “After six years as a reporter in Silicon Valley, I’ve found that a tech mogul will generally call anything unflattering I write ‘clickbait’ and anything flattering ‘finally some real journalism.’”[49] Indeed, Uber executive Emil Michael suggested he would put money behind opposition research about journalists to dissuade negative coverage in response to *PandoDaily* editor-in-chief Sarah Lacy’s piece on Uber’s sexism and misogyny.[50]

Meanwhile, publications struggle with critical stories as their access to readers is increasingly mediated by the tech companies themselves. The Tow Center's Emily Bell has noted how "news publishers have lost control over distribution" and the "inevitable outcome of this is the increase in power of social media companies."[51] Adrienne LaFrance summarizes the tension: "Powerful companies like Facebook and Google are major distributors of journalistic work, meaning newsrooms increasingly rely on tech giants to reach readers, a relationship that's awkward at best and potentially disastrous at worst. Facebook, in particular, is also prompting major newsrooms to adjust their editorial and commercial strategies, including initiatives to broadcast live video to the social media site in exchange for payment."[52]

Where might critical reporting about Facebook be published if publications must rely on Facebook Instant Articles and the vicissitudes of the News Feed to reach audiences? John Herrman reiterates, "Any industry sufficiently powerful to absorb the fourth estate is worthy of its scrutiny . . . Tech is taking control of the story, including its own."[53]

“Critics” Address Journalism’s Gaps, with Limits

Journalists’ tech coverage sets the stage for critics’ contributions. Close attention to the technology news cycle reveals that the relationship between journalism and criticism plays out in different ways. On one hand, Theranos didn’t receive the initial technical and scientific scrutiny it deserved. On the other, the Facebook Contagion Study saw immediate critical response from academics ready to comment on the treatment of human subjects and the study’s methodological merits.

Rising to meet the often optimistic and progress-focused boosterism of traditional technology coverage, widely-recognized contrarian Critics like Evgeny Morozov, Nicholas Carr, and Sherry Turkle have sought to temper enthusiasm for and poke holes in the technocratic, libertarian ideologies of Silicon Valley. I refer to these particular set of critics as “Critics” throughtout to differentiate their recognized status and title. They rain on the progress parade. Still, their counterintuitive (or counter-narrative) arguments make it onto the cover of *The Atlantic* magazine, feature prominently in *The New York Times* Sunday opinion section, and dominate the Critic at Large feature in The *New Yorker*. They also garner significant deals with major publishers, often with repeated success. Morozov himself has acknowledged he has “more influence than I ought to have.”[54]

These Critics are often given the most space in the publications that shape the popular media and the broader conversation about technology. While there is plenty of space in other outlets and online for a variety of voices and approaches to technology criticism, prestigious publications have tended to give the most space to technology coverage and criticism with a very narrow, negative, and pessimistic bent. *The New York Times*, as the paper of record, has featured some exceptionally problematic editorial choices in its technology coverage. For instance, former columnist Nick Bilton, writing about “the demise of the pen” based on his inability to find one in his house, has been harangued as the “worst” tech writer.[55] Within the space of one weekend, *The New York Times* printed both a review of Sherry Turkle’s book by sympathetic “literary handwringer” Jonathan Franzen[56] and an op-ed[57] by Turkle summarizing the argument of her book (which practically self-plagiarized yet another opinion piece appearing in the same slot just three years prior).[58]

Sociologist Jenny Davis articulates why elevating too narrow a view of criticism, such as Turkle’s, risks foreclosing important conversations about technology and society:

> Definitive blanket statements about technologies’ deleterious effects indulge and feed on cultural concerns while undermining and creating obstacles for more nuanced and productive lines of inquiry . . . This would be less consequential were Turkle not the predominant public voice of academic thought with regard to the social effects of technology. However, as a prominent professor at a highly prominent institution (MIT), Turkle and her message take up a lot of space. Through book tours, interviews, op-eds, and TED Talks, Turkle’s message strongly shapes the public imagination. Therefore, Turkle’s voice is one with which others speaking on the topic of technology must now contend. The downfall of sociality then becomes the base from which public commentators start (and have to dig out of) before addressing the diverse set of questions that occupy their research agendas. Ironically, in trying to save conversation, Reclaiming Conversation frames a debate that largely shuts the conversation down.[59]

No matter where it is published or how it is distributed, technology coverage with a critical bent matters today more than ever. As institutions like the fourth estate operate within a technologically mediated system, critical technology coverage is even more deserving of attention and support.

Tech Criticism and Its Discontents

Question 2: What is the nature of technology criticism today? How diverse are the ranges, styles, and forms of writing contributing to popular critical discourse about technology?

This section surveys the current landscape of mainstream technology criticism to uncover its modes and assumptions. I find three themes in the current technology criticism landscape. First, what is commonly counted as “technology criticism” is attributed to the writings of a handful of identified “critics.” Second, the word “criticism” in the context of technology tends to carry a negative and judgmental connotation rather than one of critique, contextualization, and interpretation. Third, much conventional criticism rests on assumptions about the notion of technological progress, and thus skews the genre negative and nihilist.

A Handful of Recognized “Critics”

Searching results in LexisNexis and Factiva for technology critics brings up a select group: Walt Mossberg, David Pogue, Neil Postman, Walter Isaacson, Sherry Turkle, Andrew Keen, Nicholas Carr, Jaron Lanier, Jeremy Rifkin, and Evgeny Morozov. On Amazon there appears a more historical and theoretical group with Neil Postman, Leo Marx, Ursula Franklin, and Martin Heidegger. When I asked my interviewees to name those they associate as technology critics, many of the same names came to mind.

Beyond the short list of identifiable Critics in the field, technology criticism has become enough of a genre to merit its own self-reflexive critique. Political scientist Henry Farrell’s 2013 *Democracy Journal* essay caused a stir by addressing the political economy of those he dubbed the “tech intellectuals” and “tech critics.” For Farrell, tech intellectuals, including Clay Shirky, Stephen Johnson, and Nicholas Carr, operate in a Silicon Valley vacuum, offering marketable insights and garnering consulting fees. Farrell laments that even the Critics “work within the same economy of attention as the people they want to argue against, and labor under many of the same intellectual burdens. Their obligation to gather attention undermines their purported goals.”[60]

Even Morozov[i] has reflected on “what it means to be a technology critic in today’s America,” by way of his review of Carr’s book.[61] In a *Columbia Journalism Review* profile on Morozov, Michael Meyer aptly sums him up: “Depending on whom you ask, Evgeny Morozov is either the most astute, feared, loathed, or useless writer about digital technology working today.”[62] Morozov recognizes his own shortcomings and laments the impossibility of a more radical and politically informed technology criticism that would address the neoliberal ideology underlying the industry. He concludes:

> Why, then, aspire to practice any kind of technology criticism at all? I am afraid I do not have a convincing answer. If history has, in fact, ended in America—with venture capital (represented by Silicon Valley) and the neoliberal militaristic state (represented by the NSA) guarding the sole entrance to its crypt—then the only real task facing the radical technology critic should be to resuscitate that history. But this surely can’t be done within the discourse of technology, and given the steep price of admission, the technology critic might begin most logically by acknowledging defeat. Changing public attitudes toward technology—at a time when radical political projects that technology could abet are missing—is pointless. While radical thought about technology is certainly possible, the true radicals are better off theorizing—and spearheading—other, more consequential struggles, and jotting down some reflections on technology along the way.[63]

Criticism's Pessimistic Baggage

The word "criticism" on its own carries negative connotations, that is, to criticize or find fault. That meaning differs from the analytical meaning of the *critique* as practiced in cultural criticism: an attempt to judge the merits of and provide social and cultural context for a creative work. One need not be against something to do the work of criticism, in the same way a judgment doesn't necessitate being judgmental. Cultural critics love culture. They aren't against it. Critics might be harsh at times, but their passion for the subject is the source of their authority and conviction. They offer value judgments, but those judgments are not inherently negative.

Too often in the current discourse of technology, being a Critic of technology means offering reactionary disapproval of the forward trajectory of progress. Akin to smarm,[64] mainstream technology criticism's core themes are judgmental—how can you be against this wonderful thing that is supposed to be making our lives better? Tow Fellow Michael Keller puts it simply, "A food critic obviously loves food. A movie critic loves movies. A technology critic is a Luddite."[65] In the modern bastardization of the word, the Luddite stands for those incumbent old folks, not ready for technological change. In that vein, Critics like Morozov, Turkle, Carr, and Lanier bemoan the loss of that which makes us human, or extol the folly of solutionist thinking. Their literary colleagues—Jonathan Franzen and Zadie Smith—also focus on what is lost, as these new technological modes of writing and reading threaten both their craft and their audience.

Ethics scholar Michael Sacasas notes, "Some of the best critics of technology have seemed to love technology not at all. What do we make of that?"[66] The range of technological objects is far too broad for a critic to love them all. Sacasas continues, "What does it mean to be a critic of a field that includes such a diverse set of artifacts and systems?"

Setting out to interview technology writers, I feared that describing this kind of work with the language of "criticism" might inevitably limit meanings. Senior editor at *New York Magazine* Max Read offered his support of the negative, critical associations with the enterprise of criticism:

> It is important to keep the word ["criticism"] than actually find a softer word because I think the real danger of, let's say, the technology industry right now and maybe technology generally is that it is necessarily positivist. It is ideologically committed to ideas of success and end points and perfect, empirically derived futures. I think that some small amount of negativity implied in the word criticism is important for us to hold on to. I think it is good to say that not everything that is being proposed to us by the Marc Andreessens of the world is going to work out. In fact, a lot of it relies on suppositions that are deeply harmful and shitty and crappy.[67]

Technology Criticism and Notions of Progress

What makes the pessimistic stance of much technology criticism so persistent? And why is it so hard to imagine an analytic meaning of technology criticism?

For many people, technology is associated with the teleological ideal that history moves toward progress. Technology exists to make things better: It is a means to an end with the goal of improving. We understand technology to be an element of modernization along with developments in science that improve societies over time. So in criticizing technology, criticism seems to be against progress.

The negative and anti-progress associations of technology criticism are long established. Science and technology studies professor Langdon Winner articulated this tension in his 1986 introduction to The Whale and the Reactor:[68]

> This is a work of criticism. If it were literary criticism, everyone would immediately understand the underlying purpose is positive. A critic of literature examines a work, analyzing its features, evaluating its qualities, seeking a deeper appreciation that might be useful to other readers of the same text. In a similar way, critics of music, theater, and the arts have a valuable, well-established role, serving as a helpful bridge between artists and audiences. Criticism of technology, however, is not yet afforded the same glad welcome. Writers who venture beyond the most pedestrian, dreary conceptions of tools and uses to investigate ways in which technical forms are implicated in the basic patterns and problems of our culture are often greeted with the charge that they are merely “antitechnology” or “blaming technology.” All who have recently stepped forward as critics in this realm have been tarred with the same idiot brush, an expression of the desire to stop a much needed dialogue rather than enlarge it. If any readers want to see the present work as “antitechnology,” make the most of it. That is their topic, not mine.[69]

In other words, because progress, and by association technology, resist criticism, the task of constructing thoughtful technology criticism is especially difficult.

For this reason, it is all too easy to dismiss Critics of technology when they focus only on the drawbacks of a dominant system. Philosopher and ethicist Evan Selinger explains the unfairness of the dismissal: “‘Paranoia’ has connotations of irrationality and delusion. It’s an unfair association . . . It’s particularly troubling because versions of the rhetoric are routinely applied to technology critics to unduly strip their skepticism of legitimacy.”[70] This may partially explain the hesitation so many writers and journalists expressed when asked if they consider themselves Critics of technology.

Even the word "Luddite," often used to connote the anti-progress bent of technology critics, has a more complicated history than a simple progress/anti-progress perspective would allow. Author Nicholas Carr has written about the Luddites as the unfortunate strawmen of history, who have been reduced and simplified to stand for anti-progress—"caricatures, emblems of backwardness" smashing looms and advocating for their labor rights. Carr acknowledges their more complicated history and sets them as a model for us all. It's a bold move, given the reductive associations the "Luddite" epithet has developed, but his point is well taken: "The Luddites . . . understood that decisions about technology are also decisions about ways of working and ways of living—and they took control of those decisions rather than ceding them to others or giving way to the momentum of progress. They stepped back and thought critically about technology."[71]

Moreover, approaching technological change with skepticism and scrutiny need not be inherently pessimistic. Historians of technology and science, as well as science and technology studies scholars, have done a lot of work to unpack the assumption of the inevitability and benevolence of progress. Technologies' effects are not universally good, bad, or even neutral. Some technologies fail. Others are not widely adopted. Other technologies live on long after they are considered innovative. And still others follow completely different paths than intended by their creators. Criticism of technology can and should address all of these possibilities, but most mainstream technology criticism still only offers contrarian opposition.

Robinson Meyer offers a resolution for the progress/anti-progress love/hate tension that criticism wrestles with: that the critic might be best understood as "deeply loving the world, as well as seeing ways that it could improve."[72] Meyer points to a guiding principle from early theorist and technology critic Neil Postman that he often returns to, the "loving resistance fighter":

> You must try to be a loving resistance fighter . . . A resistance fighter understands that technology must never be accepted as part of the natural order of things, that every technology—from an IQ test to an automobile to a television set to a computer—is a product of a particular economic and political context and carries with it a program, an agenda, and a philosophy that may or may not be life-enhancing and that therefore requires scrutiny, criticism, and control . . . In short, a technological resistance fighter maintains an epistemological and psychic distance from any technology, so that it always appears somewhat strange, never inevitable, never natural.[73]

Yet despite the possibilities for a critical stance that transcends the progress/anti-progress duality, why do negative associations still drown out the potential for more considered and skeptical forms of criticism when it comes to technology? In part, this is because the criticism that major media outlets elevate is so often riddled with problematic styles, tactics,

assumptions, and ideologies. Matt Buchanan laments: “It sucks that the word ‘criticism’ has been ruined.”[74] And there are a number of ways mainstream criticism and Critics have failed us so far.

Traps of Styles and Tactics

Most Critics perpetuate negative associations by using unexamined assumptions and ideologies. In this section, I list common fallacies and follies present in much contemporary, mainstream technology criticism. In doing so, I aim to both surface hidden patterns in the writing of current technology criticism and to empower future technology critics to avoid these traps. Further examples of common framing problems and clichés found in technology writing are provided in the style guide in Appendix B.

Style and Tactic Traps	Questions to Ask of the Critics
Controversy and Counter-Narrative	Is this a real concern, or is it an easy takedown of a trendy topic?
Missing People	What do actual users think, and how do they use the technology?
Generalizing Personal Gripes	Is this representative of a larger concern?
Cults of Personality, Bullying, and Misrepresentation	Does focusing on this one person make us miss the bigger picture?
Preaching to the Choir	What audience is this trying to convince?
Deconstruction Without Alternatives	If this is the problem, what can we do about it?

Style and Tactic Trap: Controversy and Counter-Narrative

Ironically, mainstream technology criticism is itself a product of the internet and media conditions it seeks to criticize. Contrarian views are clickbait. They lead to totalizing headlines like “Is Google Making Us Stupid?”[75] Critics have often fallen into the trap of the vacuum-filling, counter-narrative strategy to remind readers why they should all be worried.

Critical writing, particularly in the quick cycle of hot takes, has to garner attention. They rely on sensationalizing tactics, akin to those of cable news, as law professor and contributor to *The New Yorker* Tim Wu puts it in his review of Morozov’s book.[76] Morozov’s vindictive personal attacks and counter-narrative arguments grab attention, and he’s successful because such controversy and contrarian headlines result in clicks.

Farrell dissects how contrarian and controversy tactics undermine critics’ messages, using Morozov as an example: “Morozov’s success shows how trolling can be a viable business model for aspiring public intellectuals . . . [Critics] work within the same system as their targets, in ways that compromise their rejoinders, and stunt the development of more useful lines of argument.”[77] Morozov himself acknowledges this fact: “I’m very conscious of what I’m doing . . . I’m destroying the internet-centric world that has produced me. If I’m truly

successful, I should become irrelevant."[78]. While these strategies may draw attention to the problems that Critics raise, they end up doing more harm than good by clouding the argument and incensing their targets to the point of ignoring the message.

Style and Tactic Trap: Missing People

More than just missing the social and political factors that bring a technology into existence, Critics of technology often fail to address the people for whom the technology is made. In his review of Morozov's *To Save Everything*, Alexis Madrigal points to the missing users: "Without a functioning account of how people actually use self-tracking technologies, it is difficult to know how well their behaviors match up with Morozov's accounts of their supposed ideology."[79]

Critics also tend to write in the idiomatic royal "we" without representing real users' interests or perspectives. Madrigal again articulates the importance of talking to people: "It is in using things that users discover and transform what those things are. Examining ideology is important. But so is understanding practice."[80] Criticisms that don't take people into account—either users themselves or the social systems in which they live—are functionally useless to readers, policymakers, and the creators of these technologies.

Much mainstream criticism also fails to understand the development cycle within technology companies. Most tech writers have not spent time working within a technology company, and they usually don't gain access to developers, engineers, and designers within the company without careful mediation through corporate PR. So while Critics might be capable of writing more nuanced critiques that take into account the human side of technological development and management, this would require a greater degree of access and mutual trust between tech companies, reporters, and critics. For example, greater understanding of software development would lend more credibility and efficacy to outsider critiques[ii].

Style and Tactic Trap: Generalizing Personal Gripes

Another common mode in mainstream technology criticism is for the Critic to generalize personal gripes about technology into blanket judgments about technological progress. This is the mode used by Franzen when he complains about Twitter, a technology that threatens his livelihood by distracting him from his writing practice and changing the way his readers consume media. It can also be seen in Morozov's description of the safe in which he locks his internet router so he can write his damning screeds without distraction. Lanier has issued similar laments about the lost analog range in lossy, compressed music. And Carr has expressed his own wistful longing for the stick shift with which he learned to drive.

In this mode of mainstream criticism, Critics seem to worry about the collective present and future on our behalf, but they are actually worried about themselves. Morozov recognizes this, and so he has headed back to the academy to add further credibility to his gripes: "It is easy to be seen as either a genius or a crank. If you have a Ph.D., at least you somewhat lower the chances that you will be seen as a crank."[81] But even a Ph.D. can't generalize the personal gripes that some Critics project onto the broader culture. Picture the Critic, sitting in his leather office chair, stroking his chin and milling over his analysis of society without evidence beyond his subjective experience. This is an association a number of my interviewees cited as a deterrent to being known as a Critic.

Style and Tactic Trap: Cults of Personality, Bullying, and Misrepresenting Ideas

Though it is important to understand the ideological positions of the titans of the tech industry, some technology Critics unduly focus attention on individual personalities in isolation from their contexts. Profiles and takedowns of Silicon Valley moguls like Elon Musk, Peter Thiel, Mark Zuckerberg, and Tim O'Reilly make for compelling (anti-)hero narratives, but they often miss the details of the larger system and the labor that surrounds them. These profiles also perpetuate the mystique of ownership and power attributed to these Silicon Valley leaders.

Morozov, in particular, is guilty of personal, vindictive, intellectual bullying of his targets, no matter what side of the argument they represent. Whether it's commentators like Jeff Jarvis, Tim O'Reilly, and Clay Shirky, or the heads of technology companies, Morozov punches up, down, and sideways. One of Morozov's mentors, Joshua Cohen, lifts the veil: "I don't think he has written anything yet that withstands the kind of close critical scrutiny that he gives to other people's work."[82] And despite his close attention, Morozov ends up "distorting their arguments (sometimes to the point of intimating that these people are saying the opposite of what they do say) . . . In ways that are both offensive and extravagantly wrong, Morozov tempts these intellectuals to respond in public."[83] And, Farrell argues, this continues the cycle of the clickbait attention economy.

Though a narrow focus on personalities can miss important context, this kind of criticism can also be an important corrective for the hero narrative so common in technology circles. For example, in writing for *Valleywag*, Sam Biddle and Nitasha Tiku took a tabloid approach to the industry, holding the industry to account for its hypocrisies, excess, and thinly veiled ideologies. Clearly critical, snarky, and often mean in the way many early *Gawker* network bloggers were, John Herrman and Elmo Keep both said they missed Biddle's devotion to "slash in every direction."[84]

Style and Tactic Trap: Preaching to the Choir

Mainstream critical writing performs well because it appeals to readers' established positions and biases. Incendiary posts target skeptical readers likely to forward on these pieces to their family members. As Tim Wu puts it, "Because of its hostile and abstract air, the main audience for Morozov's work won't be Silicon Valley readers, but tech-hating intellectuals warmed by his attacks because they already despise Google, Twitter, and maybe just the West Coast in general."[84] These arguments do little to change minds. They dig deeper into an entrenched position, and they fall on deaf ears, thus minimizing their potential for impact.

Style and Tactic Trap: Deconstruction Without Alternatives

One of the most widely recognized Critics of technology has made it his mission to destroy the industry and everyone associated with it. Writing against what he calls "solutionist" thinking, i.e. that all problems are potentially solvable (and often with technology), Morozov facilely avoids offering alternative solutions. "Morozov insists that his refusal to be useful is its own kind of usefulness—and even, as he recently wrote in one of his essays for German newspapers, an intellectual duty."[86] Senior editor at *The Nation* Sarah Leonard acknowledges that Morozov's tactics have their place: "Some people are just born critics. They're not going to come up with the answers. That's fine. If their critiques are sharp and intellectually productive, that's great."[87] Heffernan adds of Morozov, "He put so much heavy twentieth-century pressure on these seemingly fragile forms."[88]

Madrigal acknowledges, "It's a lot to ask of a critic to both demolish the existing ideology of technology and replace it with something better, but Morozov has never had small ambitions."[89] Morozov's critique of solutionism conveniently inoculates him from providing solutions or alternatives to the current state of technocratic thinking. Perhaps he offers different ways of thinking about technology and its capabilities for influencing and producing change, but these are little more than tools for thinking and certainly not tools for construction.

Traps of Ideology and Unexamined Positions

Though they are willing to deconstruct the logic and assumptions of their targets, Critics are sometimes opaque about their own biases, ideological positions, and disciplinary blind spots. This section attempts to lay out the traps of ideology and unexamined positions that underlie much contemporary criticism.

Traps of Ideology and Unexamined Positions	Questions to Ask of the Critics
Technological Determinism and Progress	Does this technology coerce and limit users? Or are there alterative uses?
Fear Mongering, Sensationalism, and Moral Panics	How likely is this to happen? And haven't we always worried about these concerns?
Dualisms and Zero-Sums	Does it have to be either or? Does this oversimplify the issue?
Defeatism of the Critical Stance	What is this criticism trying to accomplish?

Ideology Trap: Technological Determinism and Progress

Is technological determinism making us stupid? Or just making us write bad headlines? Technological determinism is a common blind spot in much of contemporary criticism. While addressing important questions, much criticism falls toward a determinist stance, blaming technologies' social impacts on the design or the device and leaving less room for more subtle investigations of use and adoption practices. The idea that technology has a teleology, that there is an inevitability to its development and effects, removes all human agency from the equation, both in the consumption and the production of technologies.

It is compelling to think that technology does things to us. Doing so acknowledges the power dynamics at play in sociotechnical systems. Technologies do embed coercive potential in their default designs, but determinist framings perpetuate the myth that technology is the driving force shaping behavior and diminish the importance of the "socio" in sociotechnical systems. While these framings pose simple questions that generate clicks, they do little to further readers' understanding of the complexity of the interactions between humans and human-built systems. Morozov recognizes this problematic position: "The very edifice of contemporary technology criticism rests on the critic's reluctance to acknowledge that every gadget or app is simply the end point of a much broader matrix of social, cultural, and economic relations."[90]

Ideology Trap: Fear Mongering, Sensationalism, and Moral Panics

The most sensational forms of criticism offer alarmist, fear-mongering warnings about a loss of humanity. Most of what Critics put forward in opposition to technological trends does little more than appeal to readers' existing anxieties.

It can be hard for critics, who have to clarify what is at stake in their writing, to avoid overstating their concerns. In *The Glass Cage*, Carr chastises the "alarmist tone" of Critics warning of a near future where robots take our jobs, yet Carr himself does not hesitate to use the buzzwords of moral panic.[91] He points to the ills of depression, suicide, and attention deficit hyperactivity disorder that plague our age, and he ties them back to the effects of a frictionless, automated existence.

Similarly, Sherry Turkle worries for the sake of our children, about their ability to have conversations in the traditional face-to-face sense: "One teacher observed that the students 'sit in the dining hall and look at their phones. When they share things together, what they are sharing is what is on their phones.' Is this the new conversation? If so, it is not doing the work of the old conversation. The old conversation taught empathy. These students seem to understand each other less."[92]

Throughout history, commentators have worried about the effect of technologies on vulnerable populations, namely women and children. Genevieve Bell, an anthropologist at Intel, has identified factors that prime us for moral panics: technologies that change our relationship to time, space, and each other.[93] Deputy editor of *The Economist* and author Tom Standage has collected numerous examples of technologies that evoked strong cultural concern upon their introduction, from the novel, to the railroad, to the photographic camera.[94] Throughout history, dramatic change has evoked this response, manifesting as moral panic narratives and sensationalized worst-case scenarios.

Ideology Trap: Dualisms and Zero-Sums

Mainstream criticism of technology can also tend toward polarities, thereby mimicking the either/or binaries of the technologies they examine. Technology is either making people smarter or making people dumber (see Carr's "Is Google Making Us Stupid?"). People are either technophobes or technophiles (Evgeny Morozov and Kevin Kelly, respectively, by Carr's estimation), shilling utopian or dystopian visions for the future of the world. The most contrarian technology Critics lead readers to believe that we can't have it both ways.

Many Critics are guilty of romanticizing the past or fetishizing the real. Carr exclaims: The screen is but a "shadow of the world."[95] "We're disembodying ourselves, imposing sensory constraints on our existence. With the general purpose computer, we've managed,

perversely enough, to devise a tool that steals from us the bodily joy of working with tools."[96] Turkle similarly poses a zero-sum-game between digital communication and face-to-face conversation. She has recently turned her attention toward the ways technology damages interpersonal relationships by removing the ability to communicate with each other, but her work skirts over the fact that communication technologies connect people who may not share physical space. Her work today privileges the real rather than exploring the possibilities of the virtual as she has done in the past. These Critics' arguments end up favoring the status quo, which is why it is all too easy to dismiss their critiques as conservative and anti-progress. They romanticize the past, perpetuating a dualist binary between life before and after the selfie, or between the real and the virtual.

Dualist criticism also drives readers toward binary questions rather than critical thinking. This kind of criticism offers either utopian or dystopian narratives of the near future. Author and activist Astra Taylor aptly describes it in the introduction to *The People's Platform*: "The argument about the impact of the internet is relentlessly binary, techno-optimists facing off against techno-skeptics."[97] She unpacks an example in an article with technology and art writer Joanne McNeil:

> In the current framework, the question posed by The *New Yorker* panel, "Is Technology Good for Culture?" can be answered only with a yes or no—and plotted as it is along the binary logic of 1s and 0s, it chiefly serves to remind culture critics that the Silicon Valley mindset has already won. Though they appear to stand on opposite sides of the spectrum—unapologetic utopian squaring off against wistful pessimist—the Shirkys and Franzens of the world only reinforce this problem: things will get better or worse, pro or con.[98]

As early as 1998, technology writers have been making the case for more nuanced rather than polarized writing about technology. A manifesto drafted by Andrew Shapiro, David Shenk, and Steven Johnson on *Technorealism.org* argued for moving beyond framing technological change as either good or bad. They warned: "Such polarized thinking leads to dashed hopes and unnecessary anxiety, and prevents us from understanding our own culture."[99]

Writing today, Virginia Heffernan resists the reductive binaries that publications so often employ in headlines. Technology is both good and bad, makes us smart and stupid, connects us and separates us. For Heffernan, the internet is Magic **and** Loss. Her aesthetics of the internet leave room for both possibilities, often at the same time. Rather than directing us to a binary conclusion, she encourages us to explore the murky spaces in between.[100]

Ideology Trap: Defeatism of the Critical Stance

In his defeatist salvo, Morozov never answers his own opening question, “What can technology criticism accomplish?”[101] He laments, “Disconnected from actual political struggles and social criticism, technology criticism is just an elaborate but affirmative footnote to the status quo.”[102] If popular discourse about technology and society is dominated by this small set of Critics currently standing for mainstream technology criticism, then Morozov’s concerns are founded: “Contemporary technology criticism in America is an empty, vain, and inevitably conservative undertaking. At best, we are just making careers; at worst, we are just useful idiots.”[103]

There is a place for the radical, deconstructive type of criticism Morozov practices and calls for, and he can be credited for his prolific contributions where a dearth of skepticism in the discourse about technology once existed. But intellectual, politicized work naming the neoliberal technological determinism of Silicon Valley only offers language to describe the present state, and “doesn’t provoke a lot of further development,” suggests Sarah Leonard.[104] Writers like Morozov and Carr end up leaving readers only with the sense that we should worry and think twice about adopting emerging technologies. This is not a practical or productive criticism of technology.

A Diverse Technology Discourse

My aim in outlining these traps of problematic styles, tactics, ideologies and unexamined positions is to illustrate how they influence our wider understanding of what technology criticism is, what it does, what its aims and audiences are, and how effective it is. If these tactics stand in for what technology criticism means to most people, how can writers reach the readers who aren't willing to abandon their smartphones or the engineers whose livelihoods depend on the continued success of the industry?

Alexis Madrigal relates that there's space for all tactics and approaches, that even the most problematic strategies contribute to the conversation and force the issues into the public consciousness. He advocates for a mixed-methods, intersectional approach to criticism that leaves room for all these approaches. Madrigal takes a more open stance to critical work that wants to produce change:

> [You] need people who are super radical, anti-technology, anti-capitalist. You also need people inside the companies who are just barely more ethical than the next person. Also you need people who try and connect the big ideas of technology companies with the ethical standards the country at least nominally sets out for itself. You need all those different things. You need people who are completely uninterested in the ideological battles that are super into reporting the dirt on these companies. Exactly how things are going. You need all of those different components, I think, and I would just say, in my more humble moments, that I realize I'm just one lever.[105]

If technology criticism is to be useful, to accomplish something, then it has to acknowledge and include in it a suite of strategies, positions, approaches, and voices.

Who Is a Technology Critic?

Question 3: Who is recognized as a technology critic and where is technology criticism published? Who else could be recognized as a critic and what work do they do?*

So far I have assessed the state of technology coverage, and I have diagnosed the state of mainstream technology criticism including its problematic styles, tactics, and assumption. This section takes up the question of categorizing and classifying the set of writers contributing to a wider critical discussion about technology, understanding the nature of their work, and the venues where such work is published.

Through my interviews and reading, I find that a wider circle of journalists, bloggers, and academics are contributing to a critical discourse about technology by contextualizing, historicizing, and giving readers tools for understanding our relationship to technologies in our everyday lives. And yet these writers are reluctant to be associated with “criticism” because of the negative connotations and destructive tactics described above.

Reluctant Critics

I found through my interviews that who gets to or wants to contribute to the critical discourse as a "Critic" is limited. With a few prominent voices leading the charge of mainstream technology criticism, many writers I spoke with wanted to avoid associations with the problematic styles, tactics, and traps I describe above. I found that many journalists and bloggers are thus reluctant to associate with criticism, and only few identify with the title of "Critic."

Given the shortcomings of the recognized Critics, it's no wonder that journalists and bloggers covering the tech beat are reticent to take up the criticism cause. But my work uncovered an emerging cohort of writers who are bringing a critical approach to their writing, and their work exemplifies some of the best technology criticism today. Recognizing their contributions to technology criticism as examples in practice helps to build a more evolved notion of technology criticism as a whole. Regardless of their titles, these writers are taking positions and making editorial choices that do the important work of critique by holding power accountable, by introducing and expanding upon ideas, and even through deep investigative reporting. Each of these journalistic efforts contributes to critical discourse in meaningful ways. At the center of their work, they are giving readers tools for thinking about how we relate to technology, how we use it, and how it impacts our lives.

Virginia Heffernan's Twitter bio encapsulates many writers' hesitation to don the critical mantle. She has described herself as "something like a critic."[106] *Magic and Loss* strongly stakes her claim as a technology critic, however hesitant she might be. Though she may not read like Morozov or Turkle, her work widens the current understanding of what technology criticism can be, and what it can do to help readers understand the world. Heffernan shares "the deep feeling that digitization has cost us something very profound." But she also encourages readers to relish new forms of media. Her passion for her subject pulls technology criticism out of a relentlessly pessimistic spiral.[107]

The more helpful and subtle contributors to technology criticism I uncovered in my research wouldn't necessarily call themselves critics. They are writers like Rebecca Solnit and Astra Taylor, whose title is author rather than critic. Or they are journalists like Clive Thompson, Alexis Madrigal, and Virginia Heffernan, who are covering technology and culture. They are polymath designers, technologists, and writers like Robin Sloan, Craig Mod, and Paul Ford. They are academics like Kate Crawford or Zeynep Tufekci.

When pushed on their reluctance to be called critics, much of it is due to a commitment to reporting. Thompson, who frequently does the work of contextualizing new technologies and their meanings, is adamant that he thinks of himself as "really straightforwardly a

journalist."[108] Robinson Meyer shares, "What I do, I think of mostly as technology journalism, honestly, because it's a less pretentious title [than technology criticism] . . . A lot of what we do can fall under the mantle of technology criticism. We tend to talk about it in terms of journalism." He adds:

> The critic sits somewhere and has ideas, and a journalist or a reporter gets out into the world and finds things then discards them, continually having to shuttle your work into the world, continually having to shuttle your thoughts with what you're seeing in the world . . . Having to talk to other people using the things and seeing how it works in real life and how people feel empowered by it and how people feel disempowered by it—I think that tends to make work better. That tends to improve ideas and bring in new ones.[109]

Michael Keller adds that he associates a Critic as a columnist with an identifiable voice. "Food critics, technology critics, they are almost like columnists because they have personalities. A reporter doesn't view him or herself as having a personality in that same way."[110] Though many journalists shy away from acknowledging any bias or position, Max Read encourages more to do so:

> It is important that writers and journalists take sides and say, "Not everything is going to be great. Not everything is great." Especially as Silicon Valley . . . sucks up into itself and starts publishing everything directly on Medium and refuses to even engage with journalism. I think the last thing that journalism has in that case—if it has lost all access—is the rhetorical ability to make a case. That is probably flattering to think that "by the force of my pen I might take down Marc Andreessen," but it's about all I have left.[111]

Though Clive Thompson exclusively identifies as a reporter, his cultural-trends pieces rely on in-depth interviewing and near-ethnographic understanding of users' behaviors with and interests in technology.[112] He also draws on history to tie trends back to their precedents and precursors. It is hard not to see the contributions to cultural criticism in his work, however thoroughly reported it is. Alexis Madrigal still thinks of himself as an "aughts blogger," starting with an idea and working outward from there. He shares, "I grew up, and probably still am at heart, more an aughts blogger than I am a pure play journalist . . . I think of that as a specific genre practically where you basically had thoughts and then did reporting around them."[113] Though he often speaks to designers and users and develops a story, Madrigal's approach to writing leans toward the analytic aspects of criticism rather than straight storytelling. Morozov, a self-styled critic, acknowledges he does not report, but only researches and theorizes based on what has already been put out in the world. While their sources and methods differ, these writers' work is idea-driven.

Matt Buchanan points to a wholly different group of critics as inspiration for what's missing from technology criticism today: "I aspire to be more like Susan Sontag and Hannah Arendt. That's probably where technology critics should be aspiring to . . . What is *On Photography*,

but a huge tract of technology criticism? That's where I think tech critics should be drawing from increasingly, Susan Sontag, and not Walter Mossberg."[114]

Sontag defined photography and its relationship to art forms that came before it and gave us language to address the aesthetic and ethical questions surrounding photographic practice. "In teaching us a new visual code, photographs alter and enlarge our notions of what is worth looking at and what we have a right to observe," Sontag wrote. "They are a grammar, and even more importantly, an ethics of seeing." Virginia Heffernan recognizes the potential for this approach, and explicitly ties her recent work to this lineage of cultural criticism.[115]

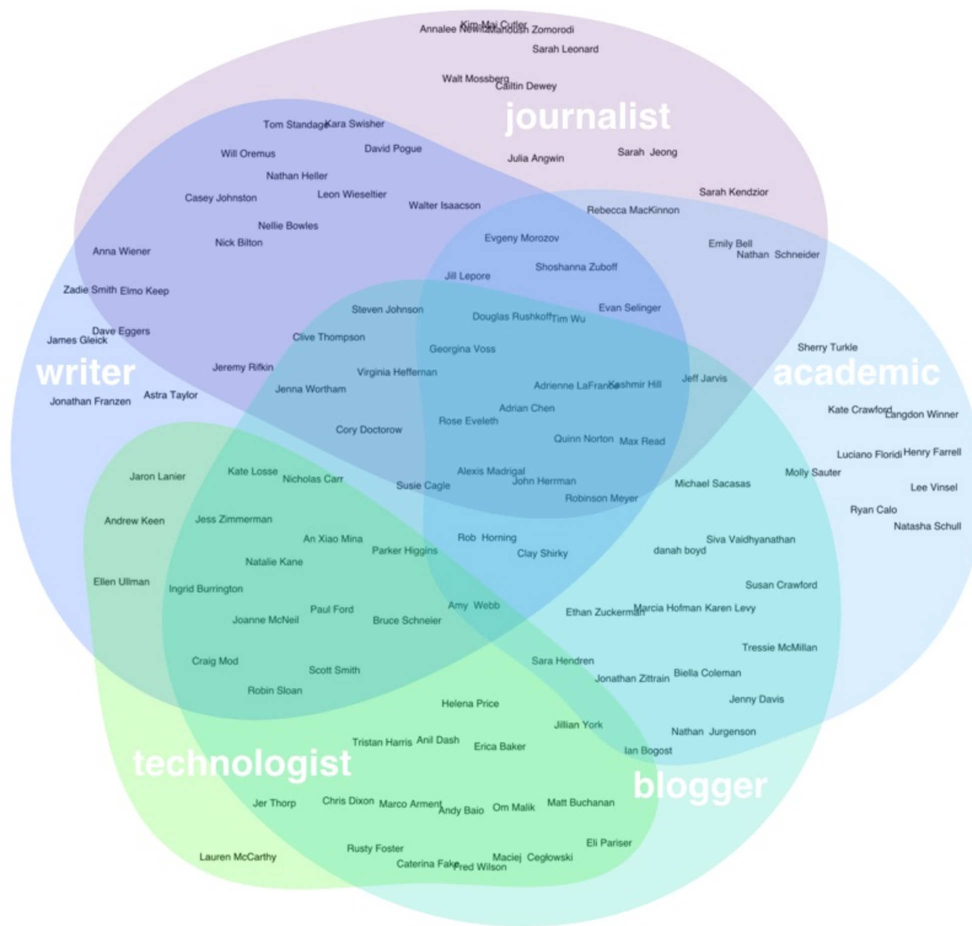
Contributors to the Critical Discourse

My close reading of the body of technology writing and criticism reveals that a larger collection of writers, often professors and academic experts, are contributing to popular discourse through policy positions and op-eds. These voices commenting on technology come from a wide range of places and professional backgrounds. The media might recognize them as pundits, commentators, or public intellectuals. I offer a taxonomy of these voices below to better integrate and recognize their contributions to the critical public discourse about technology.

To build a more robust rubric of contributions to the critical discourse about technology, I started with writers acknowledged in the popular press as critics. I then looked to other writers who have offered meta-analyses of the role of tech criticism, such as in Henry Farrell's "The Tech Intellectuals"[116] and Evgeny Morozov's "The Taming of Tech Criticism."[117] All the people I identified write in public (that is, not limited academic journals behind paywalls), either in popularly accessible publications or in blogs, Medium posts, or public talks. I considered an individual's own chosen signifiers, and identified occupations in their public bios or bylines. I also relied on interview material and took my own estimations and analysis into account. I recognize the possibility of oversight and have admittedly skewed this list toward English-speaking and American sources based on my own limits of language and scope. It is by no means exhaustive and only reflects a snapshot of contributors at the time of publishing.

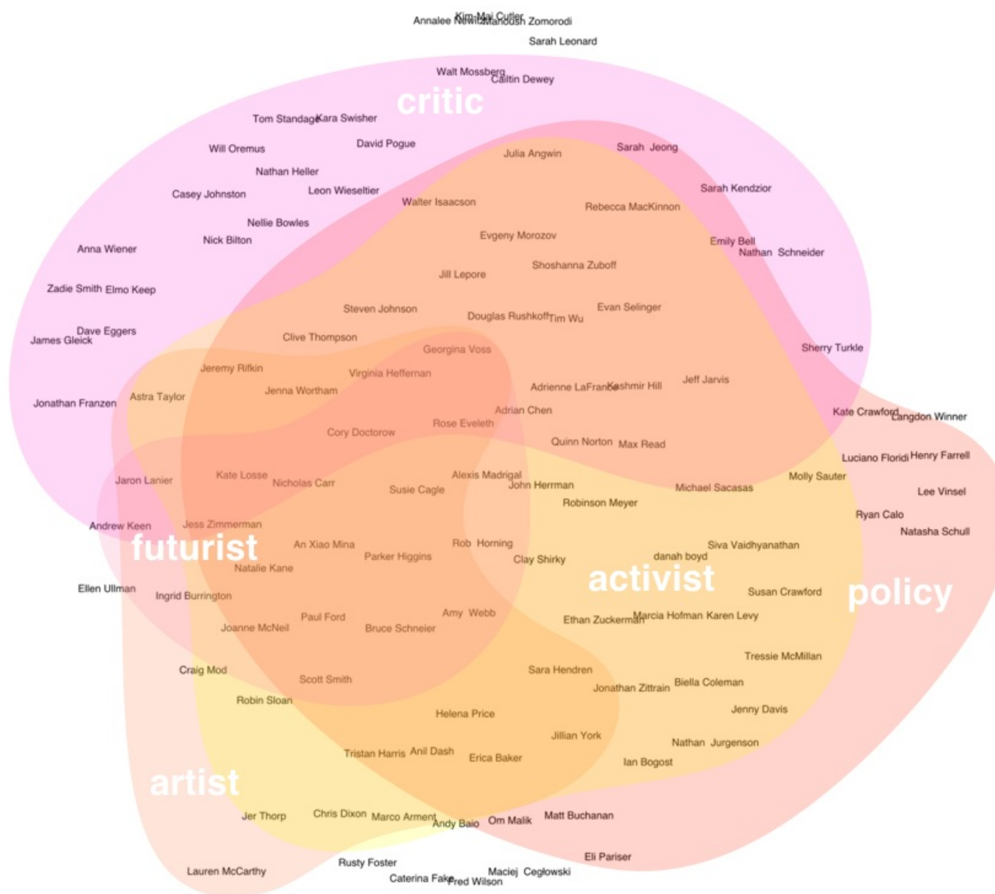
Having done this analysis, I find that the critical voices tend to fall into a few cohorts, with some overlaps reflected in the visual diagram. The network was created in Gephi using the ForceAtlas2 layout spatialization, where each name reflects a node, and their proximity is based on shared categorizations and roles. For example, academics who also focus on policy work are arranged closer together. Overlaying the network graph are Venn diagram shapes meant to highlight overlapping categorizations.

The first diagram image shows the primary categorization of the way contributors are writing, either as journalists, bloggers, writers, technologists, or academics.



Contributors to the Critical Discourse About Technology, Venn Diagram of Primary Roles and Titles

The second illustrates more focused specialities in their roles as activists, policymakers, critics, futurists, or artists. Secondary categorizations are less closely concentrated, so the Venn diagram areas capture more than just those who associate with that form of work. These graphs give a sense of the diversity of identities and roles contributors take on in the critical discourse of technology.



Contributors to the Critical Discourse About Technology, Venn Diagram of Specialties

The “Critics”

Evgeny Morozov, Nicholas Carr, Sherry Turkle, Andrew Keen, Douglas Rushkoff, and Jaron Lanier

These people make their living writing as self-proclaimed Critics, publishing books about their critical angles on current trends in technology with a decidedly negative, anti-technology stance. Morozov defines the target: “To be a technology critic in America now is to oppose that bastion of vulgar disruption, Silicon Valley.”[118] Morozov counts himself among this specific cohort, including Nicholas Carr, Andrew Keen, Sherry Turkle, and Jaron Lanier, while dissecting the failures of this group’s particular brand of technology criticism.

Cross-Over Academics

Zeynep Tufekci, Jonathan Zittrain, Evan Selinger, Susan Crawford, Ethan Zuckerman, Tim Wu, Henry Farrell, Kate Crawford, Rebecca MacKinnon, Tressie McMillan, Deb Chachra, Shoshana Zuboff, Biella Coleman, Siva Vaidhyanathan, and danah boyd

Cross-over academics include those who publish beyond their audience of peer-reviewed journals and academic conferences. They blog, tweet, write on Medium, and contribute opinion pieces and popular book reviews, testing ideas in publications with broader reach. They are bridge figures, working to make their writing accessible to general audiences and stakeholders—from consumers, to technologists, to policymakers. These are academics who drop in to write commentary and opinion pieces and who attach their relevant work to the latest news hook. Sociologist and legal scholar Karen Levy describes her approach to this kind of writing: "Each style of writing improves the other—the public-facing stuff has a quicker turnaround and helps me think through emerging ideas in a 'live' way, while the academic stuff is backed with more thorough empirical research."

Writing for the public may not add much to their tenure portfolios, but these writers are motivated to have a direct policy impact in the near future. Immersed in the new forms of publishing the internet allows, these academics do not judge their impact solely on the traditional metrics of academic publishing. In her response to Farrell's dissection of the "The Tech Intellectuals," free expression activist and Electronic Frontier Foundation director Jillian C. York writes about the clear motivations for straddling sides: "The modern 'technology intellectual' is often a public intellectual in true form, eschewing the slow pace of academia for the urgency of online debate."[119] Publications are eager for these cogent, timely, and informed angles, often with some policy angle or more precise articulation of the problem. Many of these academics also grew up as bloggers.

Journalists, Bloggers, Writers

Alexis Madrigal, John Herrman, Paul Ford, Adrian Chen, Rose Eveleth, Elmo Keep, Adrienne LaFrance, Joanne McNeil, Kate Losse, Clive Thompson, Virginia Heffernan, Max Read, Caitlin Dewey, Nathan Heller, Jill Lepore, Astra Taylor, Quinn Norton, Sarah Kendzior, Julia Angwin, Kashmir Hill, Annalee Newitz, Jess Zimmerman, and Sarah Jeong

This category includes writers who don't consider themselves Critics but whose work takes on a decidedly critical angle. A select few in this crowd get the time and space to tackle questions about technology and society for publications like The *New Yorker* and *The New York Times*. Many of these journalists act as a bridge, translating academic material into contemporary contexts and issues. Nathan Heller explains, "I try to apply a critical intelligence even if I'm writing a reported piece, or something else that wouldn't explicitly be called criticism." Writers here often deploy these critical lenses, and write and report from specific perspectives.

Tech Insiders

Anil Dash, Marco Arment, Om Malik, Chris Dixon, Ellen Ullman, Caterina Fake, Fred Wilson, Bruce Schneier, Andy Baio, Tristan Harris, and Maciej Cegłowski. Rusty Foster and Paul Ford overlap between the technologists and writers.

These voices critique the technology industry from the inside, often in blog posts, op-eds, and speaking engagements. They are entrepreneurs, developers, engineers, and venture capitalists with something to say. Their primary audience is often their peers in the industry, but their material sometimes reaches beyond techies.

Shared Features of the Wider Circle of Critics

The greatest commonality among this diverse cohort of critics is not that they are technically adept, but that they grew up on the internet. For instance, Heffernan recalls accessing Usenet from her university town connection. Max Read remembers his time in AOL chat rooms. danah boyd recalls her early experiments blogging and working in public, as well as managing her Ani Difranco lyrics fan page. These critics live closely with technology and want to better understand it.

Many of the critics I identify here share an interdisciplinary curiosity. Nicholas Carr is a prime example, pulling from economics, philosophy, psychology, sociology, design theory, the history of technology, and even poetry to build his case in his most recent book, *The Glass Cage*. Virginia Heffernan does something similar in *Magic and Loss*. Like many journalists, these critics tend to come from liberal arts backgrounds, and many noted in interviews that they had considered an academic career. Heffernan describes how her English Ph.D. informed her approach to the subject: “I invented—or jerry rigged, or something—a methodology that made it possible for me to deal with disparate subjects. Like, use the same tools and methodologies and viewpoints and assumptions and impulses to criticize [as I would to] talk about Keats. [I started off my dissertation wanting to use those] to talk about market dynamics and increasingly want[ed] to talk about technology, hardware, and software.”[120]

In this interdisciplinary sense, critics play an important role in bridging audiences and translating ideas. Tom Standage describes this work: “Someone like me who hasn’t studied [the history of science, or science and technology studies] academically is interested in it and has read enough about it to be aware of the academic discourse around it . . . One of the useful things journalists can do here is be that bridge between different communities, between the technology community and the sort of study of technology.”[121]

Farrell also describes this type of writer: “I think of it as a subset of cultural criticism . . . A lot of critics are organic intellectuals without academic training but often able to bridge the worlds of academic and public debate better than scholars can.”[122] Madrigal’s background in the history of science comes through in pieces where he surfaces scholars whose work can be meaningfully applied to address new technologies and practices. But in the case of Morozov’s Cybernetics piece in The *New Yorker*, it can result in what appears to be wholesale “idea theft”[123] if not adequately attributed to its scholarly source (in this example, computer historian Eden Medina).

Missing Voices

I also found that among these categories many types of voices are missing. Some of the most novel critiques about technology and Silicon Valley are coming from women and underrepresented minorities, but these people are seldom recognized as critics.

Despite proliferating venues for diverse critical work and cultural commentary, including open platforms like Twitter, sociologist Tressie McMillan argues that those conditions don't necessarily result in a more diverse set of voices contributing to the public discourse. She writes, "Social media is supposed to democratize the access points into the pundit class. So far, social media platforms seem to submerge the machinery more than it reveals ways to disrupt it."[124]

Still, advocates for acknowledging diverse contributions to the tech industry are vocally and visibly creating change. One example is Anil Dash's Makerbase,[125] which aims to give due credit to all contributors, small and large. Anil explicitly states his identity as "an entrepreneur, activist and writer recognized as one of the most prominent voices advocating for a more humane, inclusive and ethical technology industry."[126] In another example, the photographer Helena Price's Techies Project[127] put a face to the story about the challenges diverse and underrepresented populations face within the technology industry itself.

How Do Critics Get Recognition?

Who is defining the set of voices readers look to for technology criticism? Farrell's look at the "tech intellectual" and "tech critic" picks apart the motivations and political economy of prominent authors and speakers whose work relies on the attention economy they operate in.[128] In her response to Farrell's male-dominated roster, York notes that he "fails to recognize the value and often-dissenting contributions made by women technology intellectuals. That oversight, from even someone as enlightened as Farrell, says a lot about the state of twenty-first-century intelligentsia."[129]

But for women, having a strong opinion in the public sphere where these conversations take place can be daunting. Citing writer Laurie Penny's suggestion that "a woman's opinion is the short skirt of the internet" to explain the threats she receives on social media after publishing political pieces, Astra Taylor and Joanne McNeil also point to the "disproportionate pushback" and harassment that women face when they share an opinion on the internet.[130] In the same "Dads of Tech" article for *The Baffler*, they also note how male thought leaders and Critics "get ahead on their looks—they look like authorities, like the kind of people who know how to build an iPhone app, though they themselves often don't have programming chops."

York emphasizes the need for diverse voices in criticism: "By increasing diversity in the spaces where technology is debated, we take a step toward diversifying the spaces in which it is created."[131] McNeil and Taylor echo this need: "We need to diversify the tech debate . . . so we can imagine new questions, answers, and paths forward. For while men are free to adopt the ready-to-wear identities of futurist and nostalgist, no woman in her right mind can slip on such shopworn garb."[132]

Where Critics Publish

Where does technology criticism and coverage live? Or rather, where are critics and journalists publishing about technology? This section surveys the places where criticism and coverage is thriving. Criticism exists in a wide range of formal and informal publications and in a range of media formats. Cobbled together from variety of sources, readers face a loose agglomeration that constitutes a body of technology criticism. The proliferation of venues and voices results in a seeming lack of coherence and a diffuse sense of the critical enterprise itself. Eveleth echoes this observation that criticism lacks a common venue: “I think so much of it happens on Twitter and not in defined journalistic spaces.”[133]

Virginia Heffernan’s work is an example of the hybrid venues that are evolving for criticism. She came to technology criticism by way of reviewing the screens that were becoming the new form of television as *The New York Times*’s television critic in her Medium column in the Sunday magazine. She, among others like Joanne McNeil and Robin Sloan, recently wrote for *The Message*, a collection on the platform Medium (which is discussed below). There is no *New Yorker* column for Heffernan’s kind of work aside from the occasional Critic at Large or the mixed-purpose science and technology Elements blog online. Pieces about the cultural implications of technology often end up in the Style section of *The New York Times*, written by a columnist who claims to “live in the future,”[134] where fingers have completely replaced pens.[135] Consistently identifiable criticism may not have the space and attention it deserves.

Alexis Madrigal notes that the space and attention for tackling critical questions about technology is, and has always been, an “elites game.” What has changed is that publications no longer command readers’ critical attention like they once did:

> *The Atlantic*, *London Review of Books*, and twenty other websites no one’s ever heard of—where before they would have gone to one place, now they are going to their Facebook feed, Twitter feed, and they are seeing things from all over the place. The elite audience ends up reconstituting the elite publication out of all the views of many publications, some of which are elite, some of which are not, but all of which can cover things that would make it into that wheel of policy, wealth, power, etc.[136]

While traditional venues for cultural criticism still carry a lot of weight, they no longer have a monopoly on big ideas. With diversifying publication platforms, online critical contributions can be found anywhere, though their reach may be limited within specific social circles or a tech-savvy audience. Cultural publishing institutions still have the potential to reach the widest and most diverse audiences.

With this introduction, the paragraphs below offer a classification of venues hosting technology coverage and criticism.

Old Guard Cultural Institutions and Archaic Sectionalism

The New Yorker, *The New York Times*, *The Atlantic*

Technology coverage in legacy print publications is often limited by a section-oriented organization. Business and lifestyle angles on technology stories run parallel to each other, even though the concerns in these stories are increasingly commingled and tied together in the world. For example, Jenna Wortham's features for the business section of *The New York Times* often say more about culture than they do about the economics of startups. She quickly outgrew the thematic limitations of the business section and has since moved on to the Sunday magazine.

Tom Standage shares the natural progression of technology stories across sections of *The Economist*: "The initial kind of theoretical work on something would be covered in our Science pages. Then it would kind of move in to [Tech Quarterly] where we would cover technology between the lab and the marketplace and the emerging technologies. Then eventually the companies evolved, you know the IPO would get taken over. Then you might see coverage in the business pages."[137]

In contrast to the thematically focused section coverage of technology stories found in print publications, the reconstituted personal publication of the internet makes it easy to "forget what site I'm on when reading an article, let alone what vertical,"[138] writes *Pando* contributor David Holmes. Context signals became a central point of contention in the controversy over whether Morozov plagiarized the work of academic Eden Medina or, in the tradition of the Critic at Large spot in *The New Yorker*, whether he was reviewing a set of ideas for a piece on the history of cybernetics in Chile.[139] On a conference panel, Jenna Wortham shared an additional challenge of working within a traditional print journalism worldview when online readers lack traditional signals of a story's importance, such as appearing above the fold:

> When I started out my career I thought the end goal would be to write stories that would end up on the front page of *The New York Times* . . . I had a story that I was so proud of that went on the front page of *The New York Times* and someone tweeted at me and said, "I love that blog post," and I was like, "Wait, but this was an A1 story that everyone around the world saw." It was this really humbling moment that readers don't care where stuff comes from. They just want it to be good and interesting and relevant to their lives.[140]

Niche and "Little" Magazines

Dissent, Jacobin, The Baffler, New Republic, Harper's, The Nation, Los Angeles Review of Books, The New Inquiry, n+1, Model View Culture, Pacific Standard

Most of the more radical and politically focused criticism finds a venue in the "little magazines," ones that have historically offered space to cultural commentary. Sarah Leonard describes her editorial approach: "*Dissent* is very much an upstream magazine. It puts out ideas. Hopefully, they are adopted by larger outlets. It's the thing that intellectuals read. It's not a mass-circulation magazine. We wish that it was. We try to do it in clear and non-jargony language so that anyone can pick it up, but the fact is that it is the definition of a little magazine which has a limited audience."[141]

These articles tend to offer more intellectual arguments with lengthy word counts. But they also give venue to salvos like Morozov's takedown of Tim O'Reilly.

Online First

The Verge, *Ars Technica*, *The Atlantic Tech*, *The New Yorker Elements*, *Fusion*, *The Awl*, *Motherboard*, *BuzzFeed*, *New York Magazine Following*

Evolving from the earliest tech-focused gadget blogs, new additions to the critical publishing landscape are either supplementing online content for print institutions or creating wholly new venues for publishing online. These online-first publications have emerged as ripe venues for tech-focused commentary.

Some of these venues arise from single-sponsor opportunities, like Max Read's latest project for *New York Magazine*, Select All.[142] The challenge with these venues is a matter of resources and pace. Matt Buchanan describes the tension of writing blog posts for The *New Yorker*: "How do I combine some weightiness with the reality of publishing on a daily basis?"[143] Meyer points to the concept of "Stock and Flow,"[144] describing the challenge in the world of online publishing for editors and writers to find the special balance between newsy, quick posts and longer researched arguments. "You need that really savvy creator making both of those at the same time. That blog post is about Alexis [Madrigal]. It's by Robin Sloan, and it is explicitly about Alexis . . . I think *Atlantic Tech* probably fits in there."[145]

While these sites may not be destinations for readers, their stories have the potential to make an impact and make the rounds regardless of where they are published. Madrigal comments on the challenge of this new model: "Maybe what's really changed is that you don't have to be [in those elite magazines] in order to get an idea into this sphere. What you do have to do is get enough people who are interested in that sphere to see that story initially. That's where it gets tricky."[146]

Medium

The Message, *Backchannel*, *Matter*

Joanne McNeil writes, “Kate Losse once called Medium the ‘inter-office bulletin for the tech industry,’ and that’s still what I think of this website.”[147] Writers of technology from blogs and elsewhere found new homes when Medium put lots of money behind editorial experiments like *The Message* and *Matter*. That attracted quality writers and offered space for bloggy, thinking-out-loud pieces and experiments with form. At one point or another, *The Message* has included Robin Sloan, Clive Thompson, Joanne McNeil, Anil Dash, Zeynep Tufekci, Virginia Heffernan, Paul Ford, Tim Carmody, Quinn Norton, Tressie McMillan, and Craig Mod. As the name suggests, many of these pieces addressed the formal qualities of technologies in the McLuhan sense. Being a strange media startup, Medium’s strategy seems to have shifted as *The Message* has lain dormant since early 2016.

Podcasts

Flash Forward, Reply All, Note to Self

Given the robust podcast era, there are a number of podcasts that take a closer look at technologies and their human implications. Rose Eveleth, producer of the *Flash Forward* podcast (formerly known as *Meanwhile in the Future* . . .) shared how the podcast form gives space for contemplating potential futures:

> Podcasts are really good for a couple of things . . . I get to really set a scene in a way that it’s hard to do, I think, in print because there’s only so many times you can say, “Imagine a world . . . ” and then describe things, whereas with the podcast I get to build that world and really think about scenes and sounds and what it would sound like and what it would look like.[148]

Producer Ariana Tobin and show host Manoush Zomorodi are aiming to do something similar with WNYC’s *Note to Self* podcast. Originally known as *New Tech City*, the show evolved from covering the tech industry in New York to increasingly covering the human side of technology. *Note to Self* now attempts to answer the “what does it all mean” question, drawing from listeners’ real concerns about technology. Says Tobin about the kinds of conversations they have on the show, “We don’t fully know how this [technology] is affecting our lives. We haven’t had enough time to process it, so let’s all talk about this together now.”[149] The podcast has been building community through specials and series that encourage discussion, like the special “Bored and Brilliant”[150] and the “Infomagical”[151] series.

Tobin shares that their goals for the podcast were “for listeners to feel like you’re part of a community of people who are asking the same questions and worrying about some of the same things and hashing them out in a smart way . . . You’re being guided in a way that at the end of it you feel slightly more equipped to deal with the world around you.”[152]

Acknowledging the diversity of venues for publication and the range of contributors adding to the discussion helps us see a wider, and potentially more positive, notion of what technology criticism is, where it exists, and how it thrives. Though this work may not immediately be recognized as criticism, and these writers may not be known as critics, seeing this work gives us a more robust and nuanced understanding of the current discussion about technology and society.

Critical Lenses

This section seeks to classify some of the tactics and approaches used to write about technology, drawing from the broader group of bloggers, journalists, academics, and even industry leaders who contribute to the critical discourse about technology. They do so by bringing certain critical lenses to bear on the challenges and problems that technology (and the social and cultural systems around technology) pose. For example, recapping the editorial approach of *The Atlantic Tech*, Madrigal wrote in 2012: "What does all this add up to? A project to place people in the center of the story of technology. People as creators. People as users. People as pieces of cyborg systems. People as citizens. People make new technologies, and then people do novel things with them. But what happens then? That's what keeps us writing, and we hope what keeps you reading."[153]

Critique of this kind does not exist in a vacuum. Most writers apply a lens of analysis to address a particular critique of technology. These writers care deeply about the ways technology operates in the context of particular social justice, economics, ethics, and historical framings. In this mode of criticism, academic disciplines and framings make their way into critical work in productive, illuminating ways. This section lays out the critical lenses that a wider set of writers are using to understand technology. These lenses include power, form, aesthetics, ideology, histories, and futures. Acknowledging these positions, frames, and points of view helps to clarify the contributions these critics make to the dialogue about technology.

What follows is a collection and classification of the ways technological critiques are applied and examined by a range of writers, drawing from a wealth of recent examples and topics covered by an expanding set of voices. These are not schools of thought in technology criticism, but rather vectors through which writers can approach any given technology in order to expand the inquiry beyond the technological object to include its social dimensions. Of course, these vectors are not mutually exclusive, and they are often deployed in tandem. The categorizations also map to further commentary in the annotated syllabus and suggested readings in Appendix A.

Critical Lenses	Questions that Lenses Help Ask
Design and Form	How does the design, development, and structures of technology shape its nature, uses, and impact?
Reception and Use	What is it like to live with technologies? How are they adopted? How do people think about their own use of the technology in their lives? How do users' practices and behaviors differ from those of technologists and designers?
Ideology and Rhetoric	What are the underlying assumptions and unspoken values behind technological change? What are the principles that guide engineers and investors, and shape the culture of technologists?
Power, Diversity, and Feminism	How are marginalized people represented in the design, development, and use of technologies? What are technologies' relationships to power structures, and how are they employed as tools for control? How can designers better respond to and respect users' diverse and dynamic needs?
Economics and Labor	If technologies disrupt markets, how do they do so? How does Silicon Valley influence the nature of work, both in building a new work culture and in supplanting traditional structures of institutional labor?
Humanities, Ethics, Aesthetics	How do we read technologies as texts? All technologies are human constructions, so how can we evaluate their ethics and aesthetics as such? How do technologies extend and constrain human experience?
History	What is uniquely innovative about new technologies? What can we learn from their predecessors? And what can we learn about the trajectory of technologies by looking both at successes and failures?
Futures	How do future scenarios help us think through social impacts and ethical questions in concrete, relatable ways? How can critics responsibly discuss future scenarios while avoiding sensationalized and reductive dystopian or utopian visions?

Critical Lens: Design and Form

The design of technologies, their affordances and their defaults, encourage and direct users in specific ways. No technology operates outside its human creators. Critical work using this lens deconstructs the technical architectures and forms of meaning-making embedded in the formal structures of technology. Writer and technologist Paul Ford's examination of Twitter for *Bloomberg Businessweek* elaborated on the complexity contained in a mere 140 characters.[154] And my interviewees often referenced Ford's longer interactive piece "What is Code?" as a clear, technical analysis of the shape and structure of contemporary systems.[155] Many of the writers of formal technology criticism come from technical backgrounds and speak from the position of the engineer. Media studies and architectural criticism also influence material critiques.

Critical Lens: Reception and Use

Critique that focuses on users takes attention away from the innovation or the engineer behind technology and directs it toward the technology's utility to people in the wild. Work in this lens looks at how technologies are adopted and how their use expands beyond their original intended purposes. Focusing on reception and use also puts novelty in the background and directs attention toward technologies that continue to be useful long after they are introduced or innovative. Critique here depends on embedded ethnographic or journalistic practice to understand users' behaviors, as well as self-reflection on one's own practices. It might also come straight from users, as was the case when Eric Meyer described his disturbing reminder of the death of his daughter in Facebook's automatically generated year-in-review. He first shared this on his blog,[156] after which Slate picked up and reposted the story on its website.[157]

Critical Lens: Ideology and Rhetoric

Critiques of the ideology and rhetoric of the tech industry and Silicon Valley take nothing for granted. Work in this lens considers the political positions of those shaping technological power, even when those voices purport to be apolitical. This kind of work questions underlying assumptions and positions taken as given. John Herrman suggests that this is the work of taking technologists' proclaimed future projections seriously:

> A lot of tech criticism clusters around these performances, either rejecting industry claims as brazen or arrogant or accepting them as inevitabilities. There is, of course, a third way to approach these claims and what results from them. To understand them as promises that might be kept, if possible. Or as threats that are, if not imminent, at least genuine. To less accept or reject than to just take it all very seriously.[158]

Writing about Google, media and law scholar Siva Vaidhyanathan describes ideological and rhetorical attention precisely: "We need to examine what Google has told us about itself, its means, and its motives as it makes the world anew in these ways, and to interrogate and evaluate both the consequences of Googlization and the ways we respond to it."[159] For example, Elmo Keep used an opportunity to follow aspiring politician and transhumanist Zoltan Istvan to discuss the life-extension libertarian values being explored in Silicon Valley.[160]

Nathan Heller shares his concern about unexamined jargon: "Certain of the industry's buzzwords have gone mainstream. What does 'innovation' really mean? What constitutes 'disruption'? Whatever specific meaning these terms may once have had is now completely lost; everybody and his sister tosses those words around, usually abstracted to the point of meaning nothing. That's slightly unsettling to me: honored words that mean almost nothing can be very dangerous."[161]

This work unravels founding myths and marketing jargon to get to the core issue at hand. Much of this work is supported by science and technology studies, critical theory scholarship, and intellectual history to follow the thread of ideas as they are applied and enacted in new contexts.

Critical Lens: Power, Diversity, and Feminism

Many writers have lamented the dominance of Silicon Valley's white, male, hetero engineers who are building and testing technology for themselves, potentially missing the needs and concerns of other underrepresented populations. For example, writing for *Bloomberg Businessweek*, Vauhini Vara covered why black coders are scarce and harder to keep in the workforce, looking at specific initiatives at Howard University.[162] These critiques often consider power and the possibility of oppression and coercion through technology. Many of these critiques stem from those underrepresented populations surfacing their concerns publicly to raise awareness of the problem and capture the attention of engineers who could change things. Rose Eveleth summarizes the primary question of this work: "Is this [technology] making things better for people? And who are those people?"[163] She's applied this to technologies that seek to track and manage bodies or that improve functionality and mobility as prosthetics that cannot anticipate all needs universally.

Critical Lens: Economics and Labor

Stemming from business coverage traditions, economic lenses "follow the money" behind the technology, looking at business models, funding, growth, competition, and monopolization cycles in the tech sector. These critical takes on the economics of technology go beyond absorbing the latest 10–K statement from Google and instead try to take a longer view of the business of technology. Writing that covers the economics and labor of technology takes as its subject both the disruption of traditional forms of work and the very nature of work in Silicon Valley. These writers address what happens when companies claim to support more perfect and natural markets, even though they still control the supply of goods through algorithms. This is an approach taken by Data & Society researchers Tim Hwang and Madeleine Clare Elish in their analysis of Uber's market rhetoric.[164] Or writers address the fallout effects of employment paradigms shifting toward gig work.

Critical Lens: Humanities, Ethics, Aesthetics

Looking to the humanities, one can read technologies as media artifacts that undergird, shape, and influence culture. Borrowing from art, media, and literary theory, these writers explore the formal structures and limitations of new technological forms, often placing them

in dialogue with those that came before. Virginia Heffernan most explicitly tackles technological change through a humanist aesthetics of the internet in her book, *Magic and Loss*. Heffernan excels at tying things together, bringing canon into conversation with cat videos. Her description of the visceral experience of virtual reality in Oculus Rift draws on French existentialist Jean-Paul Sartre's La Nausée. She rediscovers Walter Benjamin's lost aura in Etsy handmades and in tears spilled over a cracked iPhone.[165]

Critical Lens: History

The tech industry has a remarkably bad long-term memory, so everything old is new again. The last generation of tech only serves as the present state to be disrupted by the new. Paying attention to the history of new technologies—where they come from, how they are adopted, and even how they fail—gives us insight into our present technological moment and contextualizes trends that otherwise want to exist outside of any antecedent. Tom Standage, frustrated by the sense of breathless novelty in early internet coverage, looked to the telegraph to surface how global communication changed once before in The Victorian Internet. Clive Thompson, writing a regular column for The Smithsonian, starts with current trends of technological change and revisits the social concerns of their historical antecedents—from infographics to the photocopier to pneumatic tubes.

Critical Lens: Futures

No longer limited to works of science fiction, cultural writers are reporting from the unevenly distributed future by talking to real early adopters, and taking thought experiments to their logical conclusions to test if these are the futures that we want to build for ourselves. Entire publications like *Gizmodo* have reimagined themselves as future-oriented, changing their subhead from "Everything is technology" to "We come from the future" in the last year. Critical-future writers may not consider themselves "futurists," but they are interested in telling stories that illustrate potential futures. Of his Real Future work for *Fusion*, Madrigal says, "Scenario planning and gaming out what might happen, you can actually make arguments that other people can't make."[166] On her podcast *Flash Forward*, Rose Eveleth explains:

> I lean on science fiction a lot to help me bend my mind to think about ways that different bits and pieces of our future technology might work, or shape us, and in particular I've been really interested in Afrofuturist writing recently, and have revisited *Dark Matter* and the more recent *Octavia's Brood* for insights. But mostly I try to really talk to "regular" people as much as I can about how they view tech and what they struggle with or love or use.[167]

Toward a Constructive Criticism

Question 4: What is missing from technology criticism today? What are the features of constructive technology criticism?

In this final section of the report, I build on my research findings to argue that technology criticism is capable of accomplishing much more, even if it falls short of dismantling the larger economic and political context that is the foundation of today's technological society. The foundations of a constructive technology criticism would acknowledge the full spectrum of contributions to the critical discourse, not only from recognized Critics but from other sources as well. From the subtle, to the cultural, to the radical, constructive technology criticism can take many forms with varying contributions toward differing ends.

Salvaging Criticism: Making Room for Constructive Contributions

The mainstream technology Critic may shout his warning against the folly of progress for the sake of progress. But a critic of technology need not be limited to skepticism and resistance to change, as is the curmudgeon contrarian or the Cassandra. A maturing and constructive technology criticism is more akin to cultural and social criticism, grappling with politics, ethics, history, and culture. This is closer to the kind of criticism needed in a rapidly developing technological society: practical in accepting technology's place in our lives but critical in interrogating and interpreting its inherent assumptions, values, and influence.

Criticism need not be synonymous with pessimism or opposition, and certainly not with nihilism. The most generous criticism meets technology not with opposition but with an accepting curiosity and inquisitiveness. It is possible for criticism to begin from an optimistic starting point.

There is now space for writers to take what Nathan Heller describes as "a middle road that's scrutinous, thorough, and fair."[168] That kind of maturation requires a definition of technology criticism that acknowledges a wider range of contributing voices, a broader spectrum of vectors through which technology can be criticized, and a constructive approach that poses possible alternatives and futures. But even if we acknowledge that contributions to the technology discourse are manifold, it is still challenging to identify the constructive contributions in our present critical discourse.

Besides deconstructing, naming, and interpreting technological phenomena, criticism has the potential to assemble new insights and interpretations. In addition to offering a critique of a technology, its implementation, or the system from which it emerges, constructive technology criticism seeks to change the discourse or even the outcomes. It can do so by reframing the issue from a new perspective, or it can go so far as to offer concrete alternatives.

Strategies for Constructive Technology Criticism

Here I present a few strategies and principles for writing and thinking about constructive technology criticism. These strategies are synthesized from exemplary work that exhibits these features, from my research interviews with journalists and editors, and from theoretical material on criticism more broadly. Writers and editors eager to take criticism to the next level might use these principles as a starting point for framing and directing critical work.

Assembling

Rather than pitting stakeholders against each other, constructive criticism brings stakeholders together. In "Why Has Critique Run out of Steam," foundational science and technology studies theorist Bruno Latour outlines what could be described as a constructive vision for all criticism: "The critic is not the one who debunks, but the one who assembles. The critic is not the one who lifts the rugs from under the feet of the naïve believers, but the one who offers the participants arenas in which to gather."[169] Constructive criticism offers technologists framings that are novel and useful for thinking about their products and their users, bringing ideas together rather than tearing them apart.

Henry Farrell offers, "Criticism should start from the premise that people will disagree, often for good reason, and seek to sharpen that disagreement in useful ways rather than to wave it way."[170] Rather than shutting down conversations, or posing takedowns that are impossible to engage constructively, technology critics might frame their work to invite conversation, and back and forth.

Question Posing

Constructive criticism can start by asking better questions. Better questions are open questions, rather than closed ones with foregone conclusions or judgments already embedded from the start. Betteridge's law of headlines applies here: Most headlines phrased as questions can usually be answered, "No."[171] A more mature criticism of technology doesn't ask whether Google is making us stupid, but rather asks why editors and readers are prone to posing these questions in the first place.

LACKING: Is Facebook Making Us Lonely?

BETTER: *How* Are We Using Facebook?

Surfacing Values and Ideology

Constructive technology criticism resolves the tension between technological progress and a desire to improve and build the tools we want and need. Constructive technology criticism acknowledges that technological change is a process and is not inevitable, and therefore it can be approached with a sense of curiosity and dialogue rather than deconstruction or rejection.

Constructive technology criticism deals with questions of practice, ethics, adoption, and use. The normative work of the critic is to surface values, both those of users and those of the makers of technology. So often these values are implicit in the technocratic promise of pure objectivity and market forces. But those values often obscure the more political and social needs of users, as well as the biases that engineers take for granted. Critics can articulate and name emerging norms and values. As we adopt new technologies, our expectations of ourselves and others change. We learn to use new tools, and new behaviors emerge. Norms around those behaviors follow subtly and slowly. They are often the unspoken rules of engagement. The constructive technology critic can help us articulate and understand those behavioral and ethical changes.

Precision

The constructive critic needs to be precise in her criticism. Karen Levy puts it perfectly when commenting on the streak of outraged takes that ignored the context of a particular mandatory fitness tracking scheme in a college. She writes:

> Tech criticism often stands in for more generalized complaints about the state of the world. When we get anxious about data collection or electronic surveillance or algorithmic decision-making, we may be less worried by the technology per se than by what it signifies. It's about impersonality and bureaucracy; it's about quantification and the flattening of social experience; it's about neoliberalism and the intensifying concentration of capital. To be sure, new technologies might illuminate the scope and reach of these dynamics into our daily lives, or represent their intrusion into formerly sacred spheres. And in doing so, tech might exacerbate the inequities and injustices that these systems wreak on our world. So technology is not a strawman here—far from it. But we should be clear about which quality of a specific tech it is, precisely, that raises our hackles.[172]

Anil Dash echoes the need for precision when talking about technology companies that play many different roles, explaining what describing them as the "tech industry" obscures: "Rather than accepting that a company like Facebook, which knows more about our personal lives than any entity that's ever existed, is simply 'tech,' we should talk about it as an information broker, as an agent of government surveillance, as a media publisher, as a producer of unmanned drones, or in any other specific description that will assign appropriate accountability and context to their actions."[173]

This attention to precision is reflected in the work of writers and thinkers who draw on their technological or entrepreneurial expertise, such as Paul Ford and Anil Dash, or on their expert knowledge of surrounding social and political systems, such as Sarah Jeong's work on tech law for *Motherboard*.

Generosity

Being a constructive critic also means being generous. Constructive criticism acknowledges that the people behind these often demonized, monolithic companies are doing their best, and with good intentions. Instead of tearing down their stupidity and shortsightedness, constructive feedback may mean critics have a receptive audience not only among the users of the technology, but also among its creators. The most satisfying response to a piece of criticism can be an admission from inside the industry that says, "Yes, this is a tough nut to crack." The constructive critic has done something to help articulate the problem better and perhaps even offer alternatives. Criticism that treats the entire technology industry like an easy target full of engineers with misguided intentions does not foster dialogue.

Realism

The constructive critic writes in the space of high-minded, intellectual audiences and captures the ethos of a wider readership, offering concrete ways of addressing the problems with technology.

For the most part, society has accepted many technologies as inevitabilities, as foundational structures upon which contemporary life relies. Criticism that only offers rejection doesn't do us much good in the real world. Criticism that instead takes into account the realities and practicalities of users' lives guides readers in choosing how to use technologies for themselves, and can also influence how technologies are designed to meet users' needs.

Constructive technology criticism is actionable. Constructive technology criticism is more than an intellectual exercise, naming phenomena with a catchy label. Policies can be changed. Designs can be influenced. Consumers can make more informed choices. Users can be more conscious of their practices and behaviors.

Constructive technology criticism is realist. It is situated not in ideals, but in grounded experience.

Posing Alternatives

Constructive criticism poses alternative possibilities. It skews toward optimism, or at least toward an idea that future technological societies could be better than today's.

For inspiration, critics might look to literary critic and theorist Northrop Frye, who says that out of the current condition of society, criticism constructs “a vision of the society we want to live in.”[174] Beyond naming a problem, constructive technology criticism can pose alternatives to better address the gaps in our technological needs. Alternatives may not be fully fledged solutions, but they are a step in a different direction. They could take the form of a policy recommendation or a concrete design fix. Sometimes alternatives may be nothing more than a thought experiment. The constructive critic addresses the inevitable question, “What do we want instead?”

Helping readers imagine alternatives to the things that aren’t quite working is one significant lever for holding technological institutions accountable. If critics offer an alternative or demand a choice, companies are forced to consider their options. It’s stronger than a deconstruction or a teardown. The constructive critic influences the future direction of technologies by generating consumer demand for change. That might look like anything from asking Uber to show customers their passenger scores to demanding that Facebook set up more user-friendly privacy settings with concrete illustrations of their effects. Once readers are given the tools or seeded with the alternatives, demand for change can grow.

To be fair, knowing what the positive, constructive alternatives could be is the hardest question to answer, and that’s especially hard if you are writing as a journalist. Where should these alternatives live, only in the opinion section? And writers posing ideas for alternative structures might better be incentivized to build those alternatives themselves, as entrepreneurs with VC funding, rather than writing about it for pennies per word.

Better Living through Criticism

Acknowledging the realities of society and culture, constructive criticism offers readers the tools for thinking about their relationship to technology and their relationship to power. Beyond an intellectual argument, constructive criticism is embodied, practical, and accessible, and it presents frameworks for living with technology. The technology critic can provide readers tools for thinking about their relationship to technology. This approach starts from the assumption that people live in the midst of mobile devices, wearable sensors, cameras, RFID chips, and more, and it offers frameworks for judging those realities for ourselves.

Upon the departure of David Pogue and Walt Mossberg from their posts at *The New York Times* and the *Wall Street Journal*, respectively, in 2013, Matt Buchanan wrote that the next great technology critic would not be a gadget reviewer: “The kind of technology guidance that consumers need today differs markedly from what they needed in 2006 . . . The most meaningful personal-tech decisions left for the average person to make, [are] about . . . an entire digital ecosystem that surrounds and permeates their life, and which will affect every other piece of technology that they buy.”[175]

Buchanan’s articulation identifies a need for more and different kinds of critical writing about technology as the questions we ask of it change and mature. Michael Sacasas echoes this need for balanced, nuanced criticism: “Neither unbridled optimism nor thoughtless pessimism regarding technology foster the sort of critical distance required to live wisely with technology.”[176]

Promoting *Magic and Loss*, Virginia Heffernan addresses some practical ways for people to stop feeling so guilty or ambivalent about their time online, which has been much pathologized.[177] She writes: “Stop beating yourself up. The internet has a bad reputation for being a silly distraction, and people who like it are considered brain-damaged addicts. Once and for all, internet users: You’re not addicted or diseased; you’re enraptured. Pop culture is always said to be bad for you.” She invites readers to make the most of the internet that works for them: “Take the best and leave the rest . . . Find the channels that align with your integrity, and quit the rest. Life is too short to force yourself to tweet (or pin or post).”

Criticism, cultural or otherwise, is at its peak potential when it offers readers new ways of seeing, knowing, and experiencing that articulate an innate feeling, a concern, or question. As writer and critic Daniel Mendelsohn puts it: “What I was really learning from those critics each week was how to think. How to think (we use the term so often that we barely recognize what we’re saying) critically—which is to say, how to think like a critic, how to judge things for myself. To think is to make judgements based on knowledge: period.”[178]

Constructive criticism also has the potential to empower users to demand more of their own lives, and of technologies and institutions that shape them. A good template for this kind of criticism could be borrowed from other fields. For example, architecture critic Alexandra Lange describes the potential for criticism to empower readers with tools to see and judge the built environment for themselves, "to be able to recognize good planning and become advocates for it."[179] Like architecture criticism, technology criticism shares this empowering potential by offering the means to "recognize, articulate, and argue" for the technology we want to live with.[180]

Ursula Franklin extends the architectural metaphor, acknowledging the importance of understanding the built systems of technology all around us:

> As I see it, technology has built the house in which we all live. The house is continually being extended and remodeled. More and more of human life takes place within its walls, so that today there is hardly any human activity that does not occur within this house. All are affected by the design of the house, by the division of its space, by the location of its doors and walls. Compared to people in earlier times, we rarely have a chance to live outside this house. And the house is still changing; it is still being built as well as being demolished.[181]

Technology is all around us. It is inextricably a part of our contemporary society. As Franklin suggests, technology is changing all the time, as do the ways we choose to live with it. Finding the means to articulate the nature and qualities of this change, whether political, economic, aesthetic, or otherwise, is arguably one of the most important tools for living.

Conclusion

There is no question that technology is a significant part of everyday life. Journalists and critics alike are in a position to help articulate and understand our relationship to technology. While technology coverage has matured in recent history, there is still room for improving the quality of writing to address the most nuanced and complex issues facing society today.

Further research needs to explore the effects of technology coverage and criticism looking at measures of influence, or changes, in the market or governance of technology policy. And still more work remains to put voices from the tech industry, including public relations officers and venture capital funders, in closer dialogue with the media. As I have argued, this requires greater access for and mutual trust of technology reporters and critics in an environment where technology firms have become media platforms themselves.

With this report, I aim to illuminate the wider critical discourse about technology by acknowledging a more diverse set of contributors and approaches. In outlining a constructive criticism practice, I hope to encourage further contributions that speak to a variety of stakeholders, and empower readers to imagine alternative futures.

Appendix A. Constructive Technology Criticism Annotated Syllabus

This reading list reflects a broader, more generous definition of what technology criticism can and should be, and therefore includes a diverse range of contributors. Where possible, it pairs academic texts with examples from articles and from the popular media.

You can use this as a syllabus, following a structured path through the literature and the question prompts as guidance for the readings and discussion. You can also dip into a section as needed. The list is meant to be a primer to the major questions concerning technology and society, and how those questions are addressed in the popular discourse. More suggested resources and readings are available and constantly updated in the expanded and collaboratively edited Zotero group.[182]

Syllabus Objectives

- Catalog the ongoing meta-discourse about technology writing and criticism
- Pair popular articles with canonical academic work about technology
- Build a primer and resource for writers covering questions about technology and society

Part I: Tech Criticism Origins and Tensions

What does technology criticism look like in practice? How is the relationship between technology companies and journalism affecting critical journalism? How can criticism help surface the assumptions and values behind technologies and their development? Which writers—critics or otherwise—contribute to the public discourse about technology and society, and how?

Foundations of Tech Criticism

How have public intellectuals and theorists approached technological change in the past? How is technology criticism changing?

- Lewis Mumford, Technics and Civilization, 1934[183]
- Martin Heidegger, Question Concerning Technology, 1954[184]
- Marshall McLuhan, Understanding Media, 1964[185]
- Jacques Ellul, The Technological Society, 1964[186]
- Neil Postman, Amusing Ourselves to Death, 1985[187]
- Kevin White, "The Killer App" 1994[188]

Silicon Valley + the Media

How is the relationship between technology companies and journalism changing? How does this limit the critical voice of the media in holding technology powers accountable to society? When revenue and access to audience are mediated by technology powers, how does this constrain who can afford to publish probing criticism about technology?

- Adrienne Lafrance, "Access, Accountability Reporting and Silicon Valley," 2016[189]
- John Herrman, "Tech Is Eating Media. Now What?," 2015[190]
- Mike Ananny, "It's Time to Reimagine the Role of a Public Editor, Starting at The New York Times," 2016[191]
- Emily Bell, "Facebook Is Eating the World," 2016[192]
- Ben Smith, "Uber Executive Suggests Digging Up Dirt on Journalists," 2014[193]
- Nellie Bowles, "What Silicon Valley's Billionaires Don't Understand about the First Amendment," 2016[194]

Critic = Luddite/Anti-Progress?

How and why does technology resist criticism? How does criticism move beyond Luddite, anti-progress associations?

- Michael Sacasas, "What Does the Critic Love?," 2012[195]
- Evan Selinger, "Why It's Too Easy To Dismiss Technology Critics: Or, The Fallacies Leading A Reviewer To Call Nicholas Carr Paranoid," 2014[196]
- Jill Lepore, "The Disruption Machine," 2014[197]

Tech Ideology

What do technologists take for granted, and what are their shared influences and epistemological stances? How do those positions and assumptions surface in our technologies and in a technologically driven society?

- Ellen Ullman, Close to the Machine, 1997[198]
- Fred Turner, From Counterculture to Cyberculture, 2006[199]
- Elmo Keep, "Future Perfect," 2015[200]
- Richard Barbrook and Andy Cameron, "The Californian Ideology," 1995[201]

Means and Ends of Criticism

What is technology criticism for? Who is its intended audience? How can it affect real change, socially and politically? What does radical technology criticism look like, and what are its limits?

- Matt Buchanan, "Waiting for the Next Great Technology Critic," 2013[202]
- Mendelsohn, "A Critic's Manifesto," 2012[203]
- Ursula Franklin, The Real World of Technology, 1990[204]
- Evgeny Morozov, "The Taming of Tech Criticism," 2015[205]

Who is a "Critic"

Which voices are represented and published today? Who gets to—or wishes to—call themselves a "critic"? What have critics of technology accomplished so far?

- Henry Farrell, "The Tech Intellectuals," 2013[206]
- Jillian C. York, "Closed Network," 2014[207]
- Astra Taylor and Joanne McNeil, "Dads of Tech," 2014[208]
- Tressie McMillan Cottom, "How to Make a Pundit," 2014[209]
- Jenny Davis, "Our Devices Are Not Turning Us into Unfeeling Robots," 2015[210] [211]

- Rose Eveleth, “Why Aren’t There More Women Futurists?,” 2016[211]
- Sara M. Watson, “How Virginia Heffernan Is Reinventing Tech Criticism,” 2016[212]

Part II: Key Questions for Technology

Which tried and true questions about technology continue to puzzle those who think deeply about technology? Which new questions about technology are arising that haven't been addressed before? What can writers learn from theorists and historians in the academy about how we frame our questions about technology and society?

Man and Machine

How is technology—the ability to extend one's skills and abilities with tools—the thing that makes us most human? How does technology sit in opposition to our humanity? How does what we consider to be a technology in a given age change over time?

- Donna Haraway, "A Cyborg Manifesto," 1991[213]
- Sara Hendren, "All Technology Is Assistive," 2014[214]
- Norbert Wiener, Cybernetics, 1948[215]

Determinism Versus Social Construction

To what extent do technologies have inevitable trajectories? How do technologies constrain possible uses, and how do users and designers shape technologies' directions and embed ideologies and values within them?

- Nicholas Carr, "Is Google Making Us Stupid?," 2008[216]
- Stephen Marche, "Is Facebook Making Us Lonely?," 2012[217]
- Wiebe E. Bijker, Thomas P. Hughes, Trevor Pinch, and Deborah G. Douglas, The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology, 2012[218]
- Langdon Winner, "Do Artifacts Have Politics," 1980[219]
- Andrew Feenberg, The Critical Theory of Technology, 1991[220]

Objectivity and Positivism

How do technologies both remove human influence and bias, and formalize other assumptions and biases in their design and application?

- Tim Hwang and Madeleine Clare Elish, "The Mirage of the Marketplace," 2015[221]

- Bruno Latour and Steve Woolgar, Laboratory Life: The Construction of Scientific Facts, 2013[222]

Moral Panics

How and why do moral panic narratives dominate critical responses to technology? How can they be easily spotted, anticipated, and avoided to move discourse beyond fear-based criticism?

- Ben Rooney, “Women And Children First: Technology And Moral Panic,” 2011[223]
- Walter Kirn, “If You’re Not Paranoid, You’re Crazy,” 2015[224]
- Danah boyd, It’s Complicated, 2014[225]
- Tom Standage, “The Culture War,” 2006[226]

Part III: Critical Fallacies

How are critics falling short of their potential for cultural contribution?

Dualisms and Zero Sums

How and why does technology encourage the use of binary oppositions in critical discourse? How can we encourage critical discussion that allows for nuance and complexity?

- Sherry Turkle, "Stop Googling. Let's Talk.," 2016[227]
- Zeynep Tufekci, "Is the Internet Good or Bad? Yes.," 2014[228]
- Nathan Jurgenson, "Digital Dualism versus Augmented Reality," 2011[229]
- Nathan Jurgenson, "The IRL Fetish," 2012[230]

Bullying

Personalizing debates in technology thought leadership often end up misrepresenting arguments and shutting down conversation rather than encouraging discussion. How are these tactics endemic to a current internet attention economy of the media? What might be more effective means of argumentation?

- Evgeny Morozov, "The Meme Hustler," 2013[231]
- Evgeny Morozov, "The Internet Intellectual," 2011[232]
- Michael Meyer, "Evgeny vs. the Internet," 2014[233]

Universalizing/Armchair Philosophizing

Critics are often characterized as armchair philosophers, theorizing from their own experience without empirical basis. How can critics recognize and avoid this trap?

- Alexis Madrigal, "Toward a Complex, Realistic, and Moral Tech Criticism," 2013[234]
- Jonathan Franzen, "Technology Provides an Alternative to Love," 2011[235]
- Jonathan Franzen, "What's Wrong with the Modern World," 2013[236]

Part IV: Critical Approaches

What specific lines of inquiry inform quality contributions to the critical discourse? How are critiques sharpened through precision and focus?

Design and Form

How technologies are designed matters. What affordances do they have? How do they direct and constrain possible uses? What are they optimizing for? And what are the political and social influences they reveal? How do the design, development, and structures of technology shape its nature, uses, and impact? How can we pay attention to elements of the materiality of technology and infrastructure that are otherwise hidden or taken for granted?

- Paul Ford, "What Is Code? If You Don't Know, You Need to Read This," 2015[237]
- Paul Ford, "The Hidden Technology That Makes Twitter Huge," 2013[238]
- Alexis C. Madrigal, "The Machine Zone," 2013[239]
- Rusty Foster, "Don't Go Chasing Waterfalls: A More Agile Healthcare.gov," 2013[240]

Reception and Use

How people actually use technology is as important as the invention of it. What is it like to live with technologies? How are they adopted? How do people think about their own use of technology? How do users' practices and behaviors differ from those of technologists and designers?

- David Edgerton, Shock of the Old, 2011[241]
- Ruth Schwartz Cowan, More Work for Mother, 1983[242]
- Suzanne Fischer, "Why the Landline Telephone Was the Perfect Tool," 2012[243]
- Eric Meyer, "Inadvertent Algorithmic Cruelty," 20014[244]

Ideology and Rhetoric

What are the underlying assumptions and unspoken values behind technological change? How can we critically examine a system of technological production that purports to depoliticize through objectivity? What are the principles that guide engineers and investors, and how do those principles shape the culture of technologists? How do those principles propagate in the world?

- Alexis C. Madrigal, "What's Wrong With 'X Is Dead,'" 2010[245]
- Mat Honan, "Please Stop Calling Gadgets Sexy," 2011[246] Ian Bogost, "What Is 'Evil' to Google?," 2013[247]
- Molly Sauter, "In Televangelist of Technology Kevin Kelly's Divinely-Guided The Inevitable, the Future Isn't Quite for Everyone," 2016[248]
- Danah boyd, "It's Not Cyberspace Anymore.," 2015[249]
- Virginia Heffernan, "A Sucker Is Optimized Every Minute," 2015[250]

Power, Diversity, Feminism

How are marginalized people represented in the design, development, and use of technologies? Who gets to design and build technologies? And how do systems of power perpetuate structural forms of bias? In a white, male-dominated Silicon Valley, how do critics surface intersectional concerns? What are technologies' relationship to power structures and how are technologies employed as tools for control? How can designers better respond to and respect users' diverse and dynamic needs?

- Helena Price, The Techies Project, 2016[251]
- Joanne McNeil, "Why Do I Have to Call This App 'Julie'?," 2015[252]
- Vauhini Vara, "Why Doesn't Silicon Valley Hire Black Coders?," 2016[253]
- Rose Eveleth, "How Self-Tracking Apps Exclude Women," 2014[254]

Economics and Labor

If technologies disrupt markets, how do they do so? How does one market come to replace another? How does Silicon Valley influence the nature of work, both in building a new work culture and in supplanting traditional structures of institutional labor? What can "follow-the-money" journalism tell us about priorities and power in technological development?

- Tim Wu, The Master Switch, 2010[255]
- Caroline O'Donovan and Jeremy Singer-Vine, "How Much Uber Drivers Actually Make Per Hour," 2016[256]
- Caroline O'Donovan, "2015 Was The Year Work Stopped Working," 2015[257]
- Doug Henwood, "What the Sharing Economy Takes," 2015[258]

Humanities, Ethics, Aesthetics

How can we read technologies as texts? All technologies are human constructions, so how can we evaluate their ethics and aesthetics as such? How do technologies extend and constrain human experience?

- Virginia Heffernan, Magic and Loss, 2016[259]
- Jaron Lanier, You are Not a Gadget, 2010[260]
- Susan Sontag, On Photography, 1977[261]
- Whitney Mallet, “Miranda July and Paul Ford Cyberstalked Me,” 2016[262]
- Joanne McNeil, “Overfutured,” 2010[263]

Histories

Everything old is new again. What is uniquely new about new technologies? What can we learn from their predecessors? What can we learn about the trajectory of technologies by looking both at successes and failures? How can we avoid what Tom Standage calls “chronocentricity”—the egoism that your own generation is living in the cusp of history—by looking to the past?

- Tom Standage, The Victorian Internet, 1998[264]
- David E. Nye, Electrifying America, 1990[265]
- Uri Friedman “A Brief History of the Wristwatch,” 2015[266]
- Clive Thompson, “How the Photocopier Changed the Way We Worked—and Played,” 2015[267]

Part V: Constructive Contributions

How can technology criticism mature? How can it be more constructive? How can it pose alternatives and be more impactful by seeking to influence design, policy, and adoption of new technology?

Alternatives

How can writers avoid the pitfalls and clichés of technology writing? What can constructive technology criticism accomplish in bringing together instead of tearing apart? How can criticism reach specific audiences to affect change?

- Sarah Jeong, "How to Make a Bot That Isn't Racist," 2016[268]
- Jonathan Zittrain, "Facebook Could Decide an Election Without Anyone Ever Finding Out," 2014[269]
- Tim Wu, "Book Review: 'To Save Everything, Click Here' by Evgeny Morozov," 2013[270]
- Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," 2004[271]
- Karen Levy, "The Case for Precise Outrage," 2016[272]

Accountability

If algorithms are the secret sauce, how do we hold companies accountable for their proprietary practices? How can critics responsibly cover fast-moving and glittery tech narratives with limited resources and technical access or skills?

- Tom Hamburger and Matea Gold "Google, Once Disdainful of Lobbying, Now a Master of Washington Influence," 2014[273]
- Julia Angwin, Jeff Larson, and Surya Mattu, "Machine Bias," 2015[274]
- Nick Bilton, "The Secret Culprit in the Theranos Mess," 2014[275]

Op Eds

What does constructive technology criticism look like in practice? To what extent must constructive alternatives and solutions be limited to the opinion section? What are the benefits and drawbacks of the form? Who is best positioned to wrote this form of criticism?

- Zeynep Tufekci, "Volkswagen and the Era of Cheating Software," 2015[276]
- Kate Losse, "The Art of Failing Upward," 2016[277]
- Evgeny Morozov, "Why Growing Old the Silicon Valley Way Is a Prescription for Loneliness," 2015[278]
- Jonathan Zittrain, "Don't Force Google to 'Forget,'" 2014[279]
- Susan Crawford, "The New Digital Divide," 2011[280]

Addressing Peers

How can writers encourage change by speaking directly to engineers and designers within the technology community? What authority do writers need in order for their message to reach Silicon Valley effectively?

- Anil Dash, "Who Makes Your Apps," 2015[281]
- Anil Dash, "Toward Humane Tech," 2016[282]
- Tristan Harris, "How Technology Hijacks People's Minds," 2016[283]

Futures

How do future scenarios help us think through social impacts and ethical questions in concrete, relatable ways? Whose visions are represented in these futures? How does one report from the future without effectively writing fiction? Are futures the unique purview of criticism? How can critics responsibly discuss future scenarios while avoiding sensationalized and reductive dystopian or utopian visions?

- Rose Eveleth, Flash Forward, 2015–2016[284]
- Rose Eveleth, "The 'Kitchen of the Future' Isn't Just Retro, It's Regressive," 2015[285]
- Alvin Toffler, Future Shock, 1970[286]
- Joanne McNeil, "Postcards from the Futch," 2015[287]

Critical Engineering and Design

How can we provoke discussions about technology by posing and building functional alternatives? What means can we use to express critique beyond the written word?

- Lauren McCarthy and Kyle McDonald, pplkpr, 2015[288]
- Julian Oliver, Gordon Savičić, and Danja Vasiliev, "The Critical Engineering Manifesto," 2011[289]

Living with Technology

What does criticism offer the average informed reader? How can criticism empower users with frameworks for thinking about our everyday lives with technology?

- Manoush Zomorodi, Note to Self, "Infomagical," 2016[290] and "Bored and Brilliant," 2015[291]
- Douglas Rushkoff, Program or Be Programmed, 2011[292]
- Alexis C. Madrigal, "How We Think About Technology," 2012[293]

Part VI. Bonus: Criticism in Pop Culture, Comedy, and Fiction

Where does criticism surface in popular storytelling? How do comedy and satire offer an accessible and entertaining form of technology critique? Which audiences do these stories reach that other forms of communication don't? How do these pieces of popular culture become reference and shorthands for conversations about technology and society more broadly?

- Silicon Valley, 2014–2016[294]
- Minority Report, 2002[295]
- Ex Machina, 2015[296]
- Dave Eggers, The Circle, 2013[297]
- Black Mirror, 2011–2016[298]
- John Oliver, "Net Neutrality," 2015[299]
- Louis C.K. "Everything Is Amazing And Nobody's Happy," 2008[300]
- Aziz Ansari and Eric Klinenberg, Modern Romance, 2015[301]

Appendix B: Style Guide for Writing About Technology

Through my technology criticism research, I asked writers and journalists to identify common fallacies and failures of technology writing. What follows is a style guide, mostly offering tips on how *not* to write about technology, whether in reporting, features, or criticism. Think of this as a guide for avoiding the most egregious technology clichés and obscuring jargon.

Of course, writers need to follow their own style guidelines for their publication of choice, but editors and writers alike can borrow from these basic principles for how to write better and more useful stories about technology. If you've got tech writing clichés or editing pet peeves to share, please add them in the comments or send them to saramariewatson@gmail.com.

Framing

Moral panics sensationalize.

Moral panic narratives suggest we're on an inevitable path toward catastrophe. If you are worried about the women and children, you may be building up a moral panic narrative. Moral panic narratives present extreme emotional arguments that obscure nuance and shut down debate. Though these stories are deployed to block certain technological change, they aren't without merit. Panics can be a good indicator of something important, touching a nerve and changing our relationship to time, space, or to each other.[302]

Progress narratives are seductive.

Progress narratives suggest we're on a good path forward toward an ideal or better future state. But whose idea of the future is this really? Ask instead: Who is this future better for, easier for, faster for, more efficient for? Watch out for these narratives deployed by public relations and press releases.

Don't blame the technology.

It's people that both build and use technology. For example, Tinder isn't responsible for a "dating apocalypse"and hookup culture, but it might amplify and encourage existing behaviors and activities. It's more interesting to explore how, and in which ways, technologies and people interact.

Technology is always political.

Question rhetoric that suggests otherwise—"objectivity,""meritocracy,"and "neutrality."Technology is always optimized toward something, which is a human and therefore political, social, and ethical choice.

Is your issue with technology? Or is it actually late capitalism?

It's easy to conflate the two, but often worrying about one means it's difficult to address the engineers and developers who take that context for granted. And then we're all talking past each other.

Technological determinism is making you ask reductive questions and write bad headlines.

Google is not making us stupid. Aspire to better.

Don’t pathologize behaviors and technologies.

We bring our issues to devices as much as they influence our behavior. Facebook is not making us lonely.

The future of ____ isn’t here yet, so we don’t know what will happen. And ____ isn’t dead yet, so don’t write a eulogy for it.

Those stories are tired, and usually no more than speculation. Usually the conclusion is that we just don’t know yet.

Language and Rhetoric

Don’t use industry jargon.

If you have to rely on industry jargon to tell your story, you are probably too close to it. “Disrupt,” “innovate,” “startup,” “sharing economy.”Many words like these make it into a cultural lexicon and expand far beyond their initial context, and often end up meaning almost nothing. These honored words also gain a certain moral power, which can be a dangerous combination.

Don’t use lazy shorthands.

“Uber for X”obscures more than it illuminates. Though it may be common parlance for entrepreneurs’ elevator pitches, using the logistics platform as a shorthand comes with a lot of baggage.

Don’t write about “realms.”

What is this, Game of Thrones? The online and offline, virtual and real, continue to blur and are no longer meaningful distinctions. Nathan Jurgenson calls this false binary “digital dualism,”or “the common (mis)understanding is experience is zero-sum: time spent online means less spent offline.”[303]

Data is not ones and zeros.

No one codes like that. Don’t use it in imagery or in language to stand in for the digital. I vetoed this image for a series exploring how data is used in our everyday lives. “Code” is not ones and zeros, and The Matrix was so 1999.

I didn't let this get published. You shouldn't either!

Algorithm—I don't think it means what you think it means.

"Algorithm" often stands in for something else, like "formula," "filter," or even "heuristic. "It may be that the misuse of the word is perpetuated by PR and marketing, which uses the word to make technologies seem complicated, futuristic, and, above all, proprietary.

Don't write about "the internet" when you really mean "people on the internet."

Or "smart phone apps." Or "Reddit." Take this, for example: "Social networks seem to be feeding a cycle of action and reaction. In just about every news event, the Internet's reaction to the situation becomes a follow-on part of the story, so that much of the media establishment becomes trapped in escalating, infinite loops of 140-character, knee-jerk insta-reaction."[304] This sentence imagines the internet as a singular actor, rather than a collection of different platforms for discussion. It reduces down to the technology rather than to the people using it.

Avoid the royal "we."

Be precise in who you are referring to, especially when it's yourself. Which cohort are you representing? Narrow it down to avoid insisting that your reader is having that shared experience with you, too.

“Once the stuff of science fiction”is trite.

It’s gee-whiz reporting. Alexis Madrigal suggests a “categorical ban” on framings like this, saying they don’t add any information to the lede.[305]

Describing technologies as “creepy” is just a feeling.

That’s an interesting place to start the story, but there’s much more behind that. Dig deeper. Find out what, precisely, is creepy about the scenario—what does it say about our attitudes toward control, automation, or our sense of ourselves? Do you feel like you are being spied on? Is there a better word, like “uncanny,” to describe a more precise problem with the experience?

Don’t bother with overused quotes about technology.

“The future is already here—it’s just not evenly distributed yet.” –William Gibson*

“Any sufficiently advanced technology is indistinguishable from magic.” –Arthur C. Clarke

“Data is the new oil.”*

“If you’re not paying for something, you’re not the customer; you’re the product being sold” –blue_beetle on Metafilter

**Attribution disputed.*

Responsible Reporting

Is the story smothered under the secret sauce?

Proprietary technology might be too good to be true. Don't fall for the magic trick, or the man behind the curtain.

Talk to people.

Not just founders and CEOs or engineers, but actual users. Non-users. People outside your demographic.

Appendix C. Interviewees

- Matt Buchanan, *The Awl* *
- Adrian Chen, Freelance *
- Rose Eveleth, Freelance
- Henry Farrell, George Washington University
- Paul Ford, Freelance Rusty Foster, Today In Tabs
- Virginia Heffernan, *The New York Times*
- John Herrman, *The Awl**
- Elmo Keep, Freelance*
- Michael Keller, Tow Center, Bloomberg
- Nathan Keller, *The New Yorker*
- Sarah Leonard, *The Nation*, *Dissent*
- Karen Levy, Data & Society, Cornell University
- Alexis Madrigal, *Fusion*
- Robinson Meyer, *The Atlantic*
- Oliver Morton, *The Economist*
- Caroline O'Donovan, *BuzzFeed*
- Max Read, *New York Magazine*
- Caroline Sinders, IBM Watson
- Tom Standage, *The Economist*
- Clive Thompson, *The New York Times*
- Ariana Tobin, WNYC*
- Zeynep Tufekci, University of North Carolina, *The New York Times*
- Alan Wilkis, Big Data

  * At time of interview

Footnotes

[i]: Though I have reached out to him numerous times, Morozov declined to meet or respond to my requests for interviews, but his presence colored nearly all the conversations I had through the course of this research.

[ii]: Personal communication with off-the-record sources inside Facebook

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39. John Herrman, in discussion with the author, November 19, 2015.

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