Why So Sad? A Look at the Change in Tone of Technology Reporting From 1986 to 2013

BY DOUG ALLEN AND DANIEL CASTRO | FEBRUARY 2017

While coverage of technology in the 1980s and early 1990s was largely favorable, that tone has gradually shifted over the years, with more articles highlighting the potential ill effects of technology.

Public opinion on many issues is shaped by the media.[1] Yet while there is growing concern that the media is not always neutral in its reporting, the impact of media bias is not always well understood.[2] One understudied aspect of media bias is how the press portrays technology. This portrayal has important implications for public policy, because coverage that is slanted in one direction or another can drive public opinion—and thus policymakers—to favor unnecessary, unwarranted, or unwise policy interventions. For example, policymakers regularly cite surveys of consumer attitudes about privacy as part of their rationale for new laws and regulations for digital services.[3] But these views are likely distorted by media coverage.

Most people's opinions about hot-button issues, including popular technologies, are not shaped by the facts and details about the subject, but rather an amorphous set of emotionally charged data points they associate with that topic. Psychologists call this "hot cognition"—rather than processing and remembering all details about any given object, people instead have a running tally of affectively charged data points that come to mind automatically when they are presented with that object.[4] These types of opinions are often difficult for a person to fully explain, as the affect associated with a given piece of knowledge lasts long after that knowledge has faded from memory. For example, when people learn that a politician supports legislation they favor, they typically "tag" that piece of information as a plus and update their opinion of him or her accordingly to be more favorable. If, a month later, they are asked their feelings about that politician, the opinion

they formed will come to mind automatically (i.e., like or dislike), while the reasons that underlie that opinion will likely take more conscious effort to produce.

Thus, the way the media frames its coverage of an issue can affect people's attitudes about it. This effect can encourage readers in either direction, positive or negative. As time passes, the information associated with that tag will fade, but the affect that influenced the overall opinion will remain.

This report looks at the way that the U.S. print media has covered technology over the past 30 years, examining the claims that a typical reader of national newspapers is likely to have seen during that time.

Does technology solve problems and make our lives easier, allowing us to do more with less? Or does it introduce additional complexity to our lives, isolate members of society from each other, threaten our privacy, destroy jobs, or impose other potential harms?

The findings show that coverage of technology in the 1980s and early 1990s was largely favorable, with a heavy focus on the economic and military advantages afforded by advancing technologies. In the late 1980s, in particular, there was a notable focus on the economic opportunities afforded by the developing technology sector and its offerings. However, that tone has gradually shifted over the years, with more articles highlighting the potential ill effects of technology: its displacement of face-to-face interaction, its role in environmental degradation, its threat to employment, and its failure to live up to some of the promises made on its behalf.

The findings also indicate that positive and negative claims are more likely to be associated with certain segments of society than others. Claims about the potentials of technology and their associated benefits are more likely to come out of the private sector, while claims about the potential problems are more likely to come from actors in civil society and government.

Overall, the business sector is most frequently quoted making claims about technology, and positive claims from the business sector outnumber the negative ones more than 2-to-1. Both the government and the press are just on the positive side of equivalence, with slightly more than one positive claim for each negative claim. Both academics and civil society actors are most often quoted as naysayers, with concern about the risks of technology outweighing the optimism.

There are a number of possible explanations for the less favorable media portrayal of technology over time. One possibility is that there is something about the nature of technological innovation in the last decade or so that has been inherently more problematic than technological innovation was in the 1980s and early 1990s. Since the purpose of journalism is to examine important issues, developments, and trends with a critical eye, a change in the nature of technology would likely create a shift in coverage. While there certainly have been important developments in technology and society during this period—such as the proliferation of personal computing, the advent of the Internet, the

emergence of genetic testing, and the dot-com bubble—there does not appear to be anything about today's technologies that is, on balance, more problematic than prior technologies were. After all, debates about technology and its relation to ethics, culture, freedom, and privacy have been recurring themes throughout history. Consider, for example, past debates about the printing press, gas lighting, railroads, the telegraph, vaccinations, and contraception.

A stronger explanation is that the marked rise in critical press coverage of technology has been driven by two broad trends. First, there has been a significant increase in the number of "civil-society" organizations over the last two decades that are dedicated to identifying potential harms that may be associated with technology and are well practiced in rallying opposition through the media.[5] And as these organizations regularly release statements, studies, and coalition letters warning of the dangers of the Internet, genetically modified organisms (GMOs), drones, artificial intelligence, and the like, their voices tilt the balance of media coverage toward a more critical perspective. This trend is borne out in the results of this study, as the average frequency with which civil-society organizations were quoted making critical comments about technology rose from about 46 percent in the 1980s and 1990s to 77 percent in the years since. Likewise, the data show that there has been a decided shift in academia, away from more neutral, objective, and scholarly analysis toward more focus on advocacy and attention seeking. And one key way to get attention now for academics is to make extreme claims, usually about the dangers of technology.

Second, news organizations are under increased financial pressure, partially due to declining subscription revenue and print advertising.[6] Indeed, U.S. newsrooms peaked in 1990, with close to 57,000 employees; by 2015, that figure had declined more than 40 percent, to fewer than 33,000 employees.[7] As a result, reporters may have less time and fewer resources to dig deep into technology issues. In this environment, it may be easier to simply quote the professional technology critics without critically examining the merits of their claims and questioning whether they deserve to be repeated. In addition, since media outlets generate revenue from page views, they have an incentive to pursue stories that generate clicks. As the "if it bleeds, it leads" rule suggests, the press tends to give coverage to issues that raise fear, because they grab attention and generate traffic. As on other topics, a sure way to do that when it comes to technology is with jarring headlines such as, "Artificial intelligence may make your life easier—and take your job."[8] The desire to attract an audience in a competitive online environment creates a strong incentive for reporters and editors to highlight ever more extreme claims, a process that can create a "panic cycle" around emerging technologies.[9]

DATA AND METHODOLOGY

To compile data for this analysis, we gathered a sample of articles from three of the most widely read and politically influential newspapers in the country—*The New York Times* (NYT)*, The Wall Street Journal* (WSJ)*,* and *The Washington Post* (the *Post*)—using the LexisNexis database (for the NYT) and the Factiva/Dow Jones database (for the WSJ and the *Post*), drawing on every third year from 1986 to 2013 (10 years total). This sample was

There has been a significant increase in the number of "civil-society" organizations over the last two decades that are dedicated to identifying potential harms that may be associated with technology and are well practiced in rallying opposition through the media.

chosen in part because of practical limitations, such as the time frame of coverage of articles in the previously mentioned databases and available resources. Articles were eligible for inclusion in the corpus if they included the term "technology" and any of the terms "worry," "concern," "progress," or "potential." These four words (two positive, two negative) were chosen in an attempt to balance the corpus and capture a range of takes on the potential of technology. After preprocessing the corpus to exclude certain categories of articles (e.g., letters to the editor, obituaries, briefs describing articles appearing elsewhere in the paper), we randomly selected 250 articles for coding.

We read each article with an eye to the claims it contained regarding "technology": whether the mentioned technologies would improve or complicate life for the people and companies using them. Importantly, we focused on claims that were made about the possibilities afforded by the technology itself, rather than the possibilities that arose because different actors might use the technology differently. We chose this approach to avoid conflating claims about technology users with claims about the technologies themselves. We excluded articles in which technology was mentioned without a corresponding claim (either positive or negative), and we randomly sampled from each year in the data set until there were 25 relevant articles from each year.

For each identified claim, we coded it along three dimensions:

- the **valence** of the claim (i.e., positive or negative);

- the **sector** in which the effects of the technology would be felt (e.g., private sector, education, military); and

- the **source** to whom the claim was attributed by the author (e.g., academics, government official).

The first step in coding these articles was to determine whether each randomly selected article contained a claim, and thus was eligible for inclusion in the analysis. Many of the articles included in the search results were ineligible, for different reasons: the article included "technology" only as part of an institution name (e.g., "Massachusetts Institute of Technology") or a government position ("minister of technology"); the article contained only a purely descriptive (i.e., non-valenced) description of technology; or the article only referred to stock activity in the "technology sector." Figure 1 shows the total number of articles that we reviewed before reaching the threshold of 25 relevant articles in each year.

Figure 1: Articles Reviewed by Year
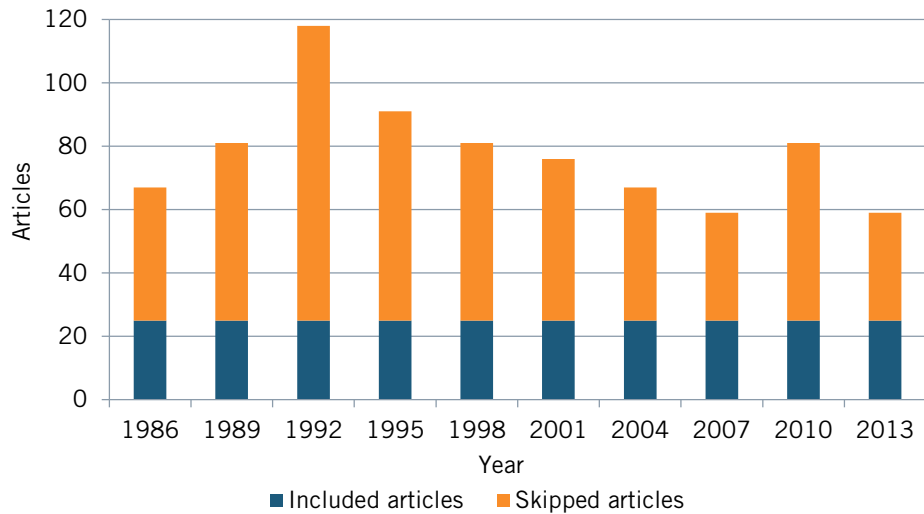
While they are not included in the remainder of the analysis, the ratio of skipped to included articles does provide some insight into the prominence of technology in popular society during these years. Notably, we see a peak in the early 1990s of irrelevant mentions, suggesting that journalists were more likely to include the term "technology" in their articles without a valenced claim during this period. The appendices contain more details on the specifics of the coding schema we used to categorize the articles.

RESULTS

As described below, we find that over time articles are more likely to contain negative claims about technology's impact on the economy and security and surveillance.

What is the tone of media coverage of technology?

The first portion of the analysis looks at the overall tone that the media used when describing technologies over the last 30 years. Positive tone is reflected by claims included in articles about the potential for technology to create opportunities or solve problems, while negatively toned articles focus on the problems caused by technology: loss of privacy, loss of jobs, damage to the environment, etc. An article describing the differences between prominent Republican politicians Newt Gingrich and Pat Buchanan provides an example of both a positive and negative claim:

> Gingrich sees in the technology-driven transformation from a manufacturing economy to an information and computer-based economy—what he calls the "Third Wave"—the opportunity "to give our kids the best high-value-added jobs and the greatest productivity" in open, global competition. Buchanan, in contrast, has focused his campaign on concerns of those tied to what Gingrich calls the "Second Wave"— production workers in the automobile, textile, steel and other industries facing competition from abroad, with their jobs threatened by machines and immigrant labor. (Thomas B. Edsall, "Gingrich, Buchanan Differ

Sharply on Visions of Conservatism," *The Washington Post*, July 15, 1995.)

While Gingrich focuses on the opportunities for technology to create jobs and expand industries, Buchanan focuses on the negative impact of technology on specific sectors. The quote above would be coded for two claims: a positive claim regarding the impact of technology on employment ("technology-driven transformation … '[will] give our kids the best high-value-added jobs'") from a government source, and a negative claim regarding the impact of technology on employment ("production workers … with their jobs threatened by machines") from a government source.

Figure 2 shows the breakdown of the overall tone of the articles across the sample. Articles that presented only positive or negative claims were categorized as "uncontested," while those that had equal numbers of positive and negative claims were categorized as "balanced." "Lean" articles included both positive and negative claims, but with more of one than the other.

Figure 2: Overall Valence of Articles Over Time
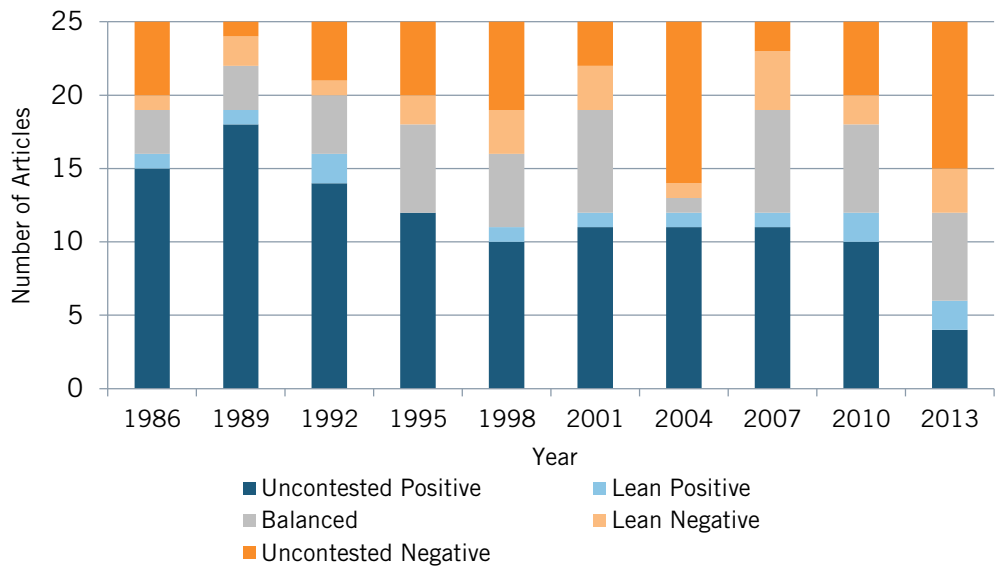
This breakdown suggests that the overall tone of press coverage of "technology" over the last 30 years is trending toward the negative. This trend is driven primarily by a decline in the number of articles that present an unequivocally positive view of technology, from 15 in 1986 (60 percent of articles coded) to just 4 in 2013 (16 percent of articles quoted). These findings support the idea of a "privacy panic cycle," which argues that the media tends to recognize more extreme claims, thereby creating an incentive for activists to steadily escalate their rhetoric about the negative implications of technology.[10]

What kinds of claims are being made?

The second part of the analysis looks at the sectors in which people expect technology to have an effect. This breakdown allows us to examine the sectors in which technology was

viewed as influential, and the balance of coverage about the effect that technology was having in that sector. A claim is categorized as relating to the economy if it deals with the effect of technology on the ability of the public to participate in the economic sphere, whether that means lowering prices through automation or displacing workers with robots. For example, the following passage was coded as a positively valenced claim about technology from a researcher (from an article about integrating technology into the Soviet Union's economy):

> In industry and in research institutes, computers are gradually being installed, but again inefficiency has been a problem. According to E. Jakubaitis, a Latvian scientist writing in the newspaper Trud, "as a rule, [computers] are given only enough work for three to four hours per day."
>
> Jakubaitis, vice president of the Latvian Academy of Sciences, is also the chief designer of Akademset, an experimental network that shares information on 55 interacting computers at various academic institutions. The goal is a prototype for information sharing among ministries—a concept that could radically alter the way information is distributed in this traditionally secretive society. Here, too, problems remain. As Jakubaitis pointed out, the Soviet Union still lacks a network of communication lines capable of transmitting computer data. He also noted that production of the necessary equipment is still lagging far behind demand.
>
> "All difficulties and shortcomings must be overcome as quickly as possible," Jakubaitis wrote. "After all, in our time information resources are the same kind of state wealth as fuel and energy resources…" (Celestine Bohlen, "Computer Anxiety, Soviet Style; 'The First Hurdle Is the Psychological Retuning of People'," *The Washington Post,* October 21, 1986.)

Technology, in this presentation, enables the streamlining of effort and communication across institutions, and is comparable to "fuel and energy resources" in the wealth that they represent for the nation. Note that this article was coded as "positive" despite Jakubaitis pointing out some of the issues with implementation. Since the technology is not at fault for the slow rollout, but rather society is, this does not represent a negative claim about the potential of technology.

The figures below break down the overall trend shown in figure 2 into three broad categories of claims: those about the economic sphere (including claims about efficiency, the environment, health care, employment, etc.), those about security and surveillance (including claims regarding military and police capabilities and privacy of personal information), and those about culture and society (including claims about how technology affects the way society functions and the way individuals within society relate to each other). Figure 3 shows the distribution of the coverage categories over time, while figure 4,

figure 5, and figure 6 show the balance of positive and negative reporting within each of those coverage categories in each year.

Figure 3 indicates that most of the articles (more than 85 percent across the whole analysis) limited their discussions of the impact of technology to one of the three sectors described above. When claims in an article crossed over into multiple categories, they were most likely to discuss implications for the economy and culture and society, and very seldom (in only eight of the 250 articles coded) were issues of security and culture brought up in the same article.

Figure 3: Issue Coverage by Year
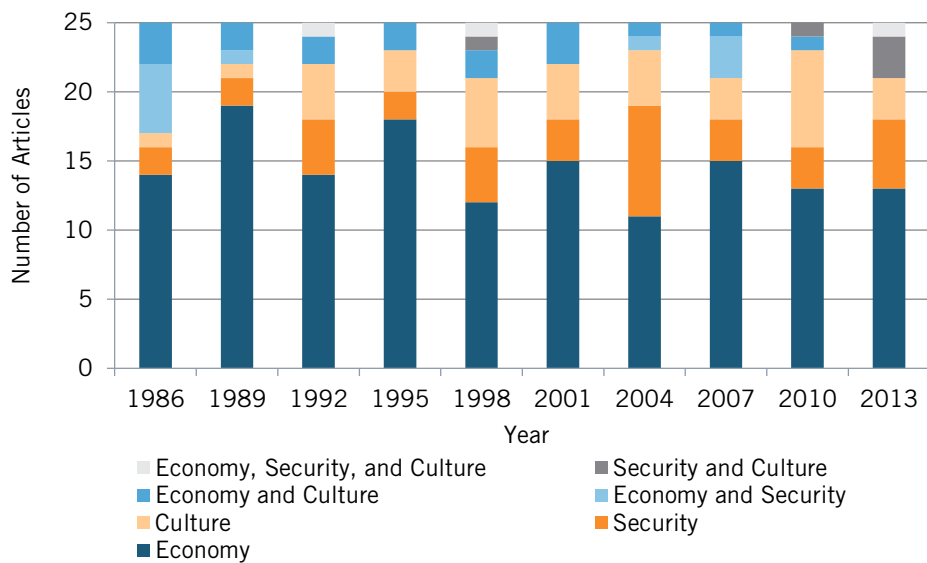
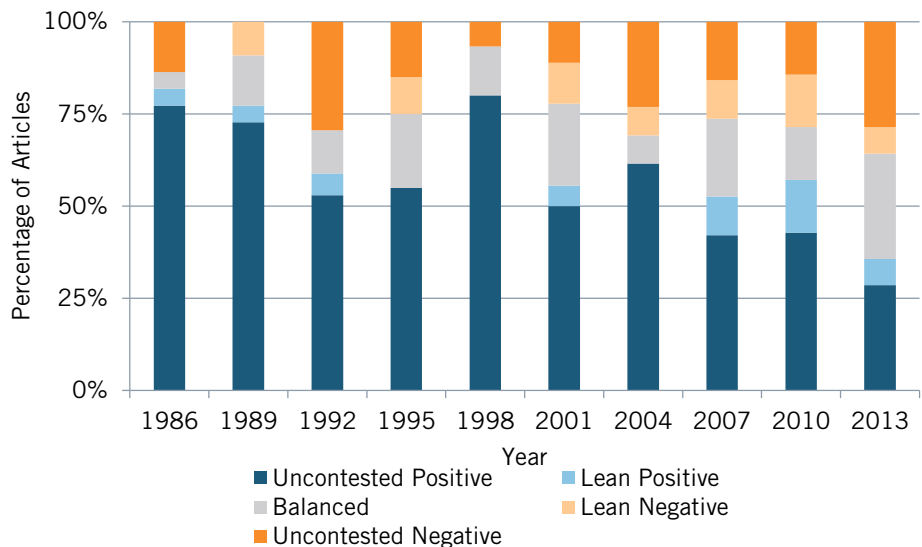**Figure 4: Overall Valence of Economy Articles Over Time**

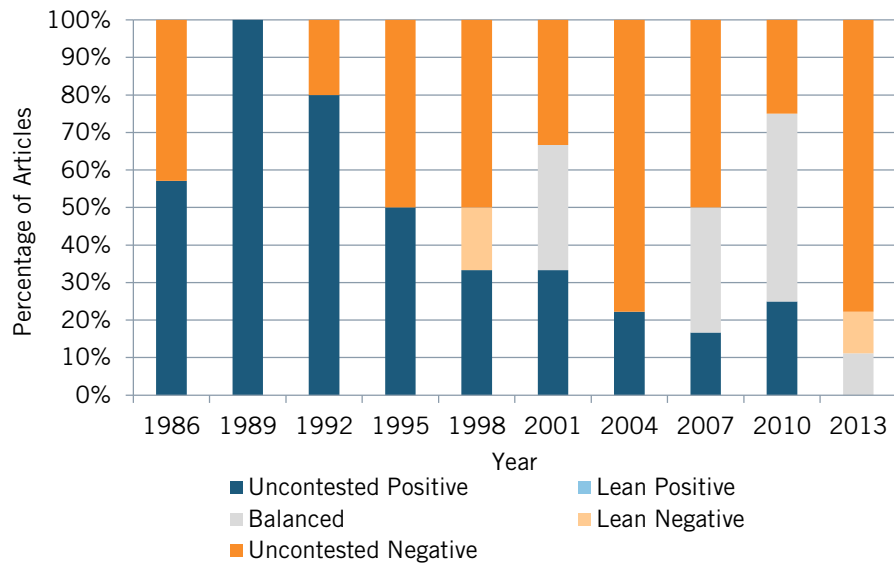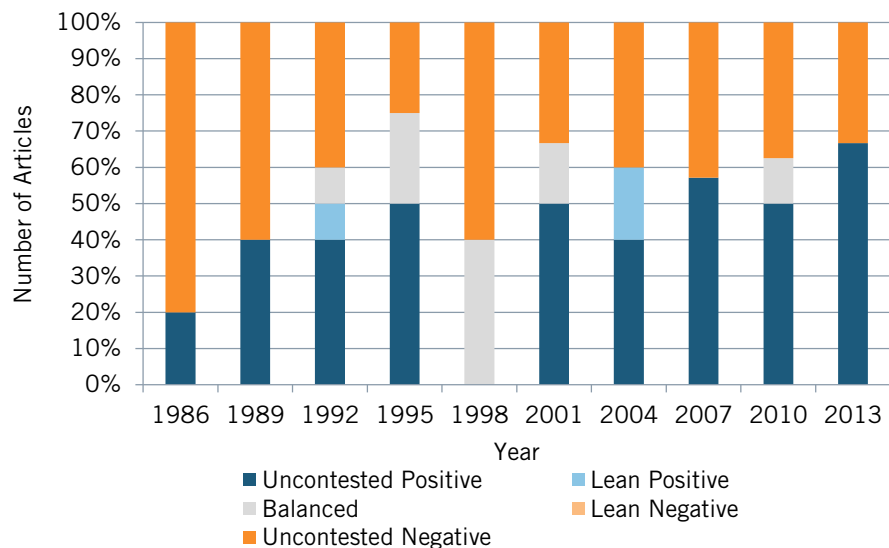**Figure 5: Overall Valence of Security and Surveillance Articles Over Time**

Figure 6: Overall Valence of Culture and Society Articles Over Time

Looking at figure 4 and figure 5, we see that the trend toward more negative coverage is driven primarily by changes in the way that the media has been presenting stories about technology's effect on the economy and on surveillance and security. While the tone regarding culture (figure 6) has become slightly less negative over time, articles covering the economy and surveillance and security both have tended to present fewer unrebutted positive claims and more unrebutted negative claims. These trends have coincided with historical events in which technological innovation has figured prominently. For example, the dot-com bubble of the late 1990s was prefaced by a fever of glowing coverage about the

possibilities of technology. That fever broke in the spring of 2000, and technology coverage took a more critical tone thereafter. Similarly, the early 1990s saw a spike of questioning coverage of security and surveillance issues as policy debates unfolded over issues such as export controls for encryption technology and the so-called Clipper chip, which would have given authorities a way of tapping encrypted phone calls.

From what sectors do these claims originate?

The final portion of the analysis examines whether certain types of actors (e.g., academics, business people, civil society groups—see appendix for full descriptions) are more likely to make positive or negative claims, and the areas to which these claims apply. Figure 7 shows how the different groups were cited as sources of claims in the articles over time, while figure 8 shows the distribution of claims in the coded articles by source and valence over the life of the analysis.

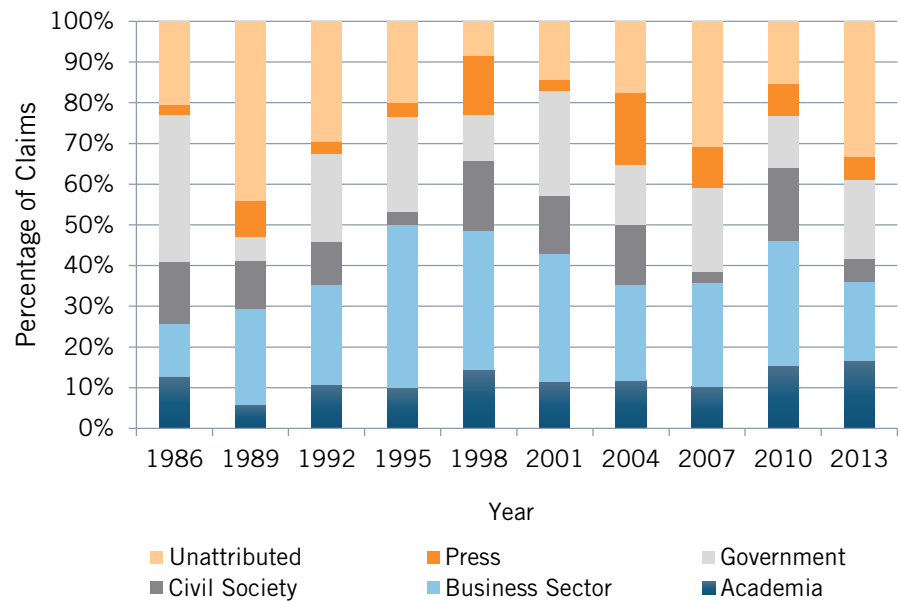**Figure 7: Distribution of Claim Sources Over Time**

Figure 7 suggests that the sources cited making claims about technology have remained relatively stable over time, with the exception of unattributed claims, which show some signs of tapering off in the latter half of the analysis, and business sector claims, which were slightly more prominent in the second half of the analysis period than the first.

Figure 8: Valenced Claims by Source
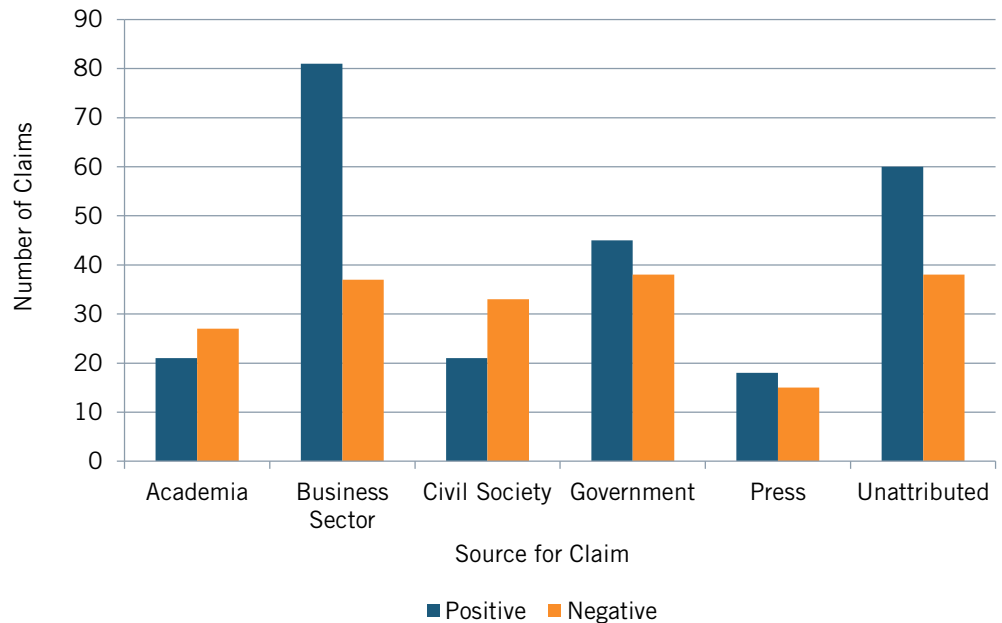
The business sector comes in with the most claims (118 claims, 27 percent of total) coded from the articles, while unattributed claims (98 claims, 23 percent of total) is next. For both unattributed claims and claims coming from the business sector, the claims are more likely to convey a positive tone about the potentials of technology. The following, from an article about a new VPN service offered by Alcatel-Lucent, is an example of an unattributed claim: "Mobile security is a mounting concern for many companies as they try to keep track of ever-larger amounts of sensitive data stored on computers spread across the globe." (Leila Abboud, "Alcatel-Lucent Enters New Area With Laptop-Security Product," *The Wall Street Journal*, updated May 21, 2007.)

This negative claim is presented by the author as fact, without tying it to any specific claim made by "companies" or actors from the business sector.

While government sources and the press divide their claims pretty evenly between positive and negative claims, academics and civil-society actors (public interest groups, citizens, etc.) are more likely to be cited making negative claims about the future of technology. The following quote, from a 1986 article on advances in the medical-testing field, provides an example of a negative claim from a researcher relating to the privacy of one's genetic traits:

> "Since genetic screening enables us to differentiate among and possibly discriminate against individuals, its potential for abuse is {great} [sic]," wrote University of Texas bioethicist [Thomas] Murray in MIT's *Technology Review* last year. 'The results of genetic screening could conceivably be used to justify denial of employment, job transfers, or even

The rate at which civil society and government make negative claims about technology has increased from the 1980s and 1990s to more recent years.

dismissal." (Joel Garreau, "Is Medical Testing Worth the Cost in Our Freedoms?" *The Washington Post*, June 29, 1986.)

The degree to which different sources make negative claims about technology in the media has changed over time. In particular, the rate at which civil society and government make negative claims about technology has increased from the 1980s and 1990s to more recent years. As show in figures 9A and 9B, approximately 46 percent of claims from civil society were negative in the earlier period, and this rose to 77 percent in the later period. Similarly, approximately 31 percent of claims from government were negative in the earlier period, and this rose to 61 percent in the later period. This suggests that government agencies that ostensibly support technological innovation can do more to do so in public statements to the press.

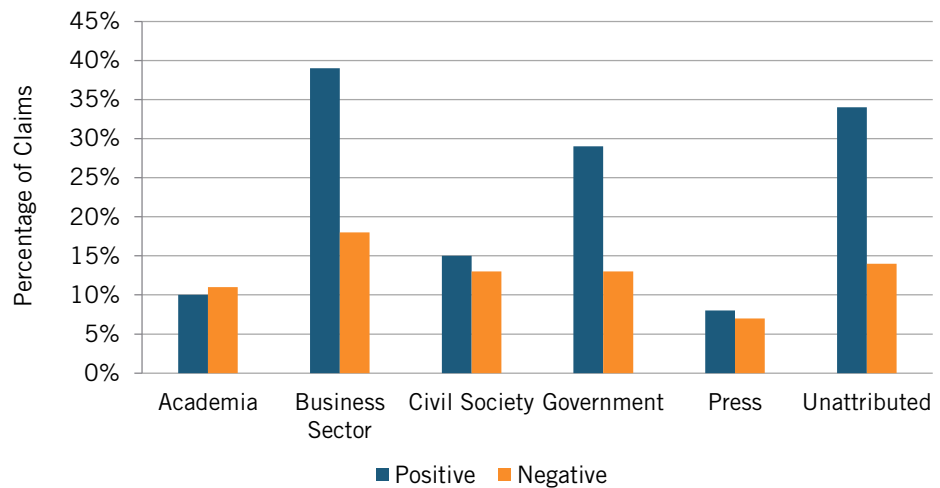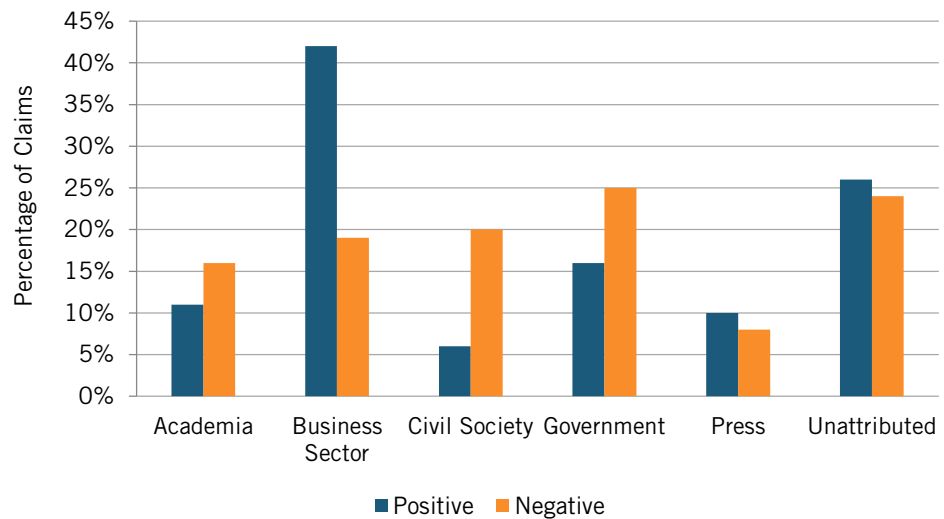**Figure 9A: Valenced Claims by Source, 1986-1998**

**Figure 9B: Valenced Claims by Source, 2001-2013**

We can further examine the sources cited in the press by looking at the areas in which different sources are likely to make technology-related claims. The following charts look at the percentage of the total claims (either positive or negative) in a given sector that can be attributed to different sources. Figure 10 breaks down the positive claims by sector and source.

Figure 10: Percentage of Positive Claims by Source and Target Sector
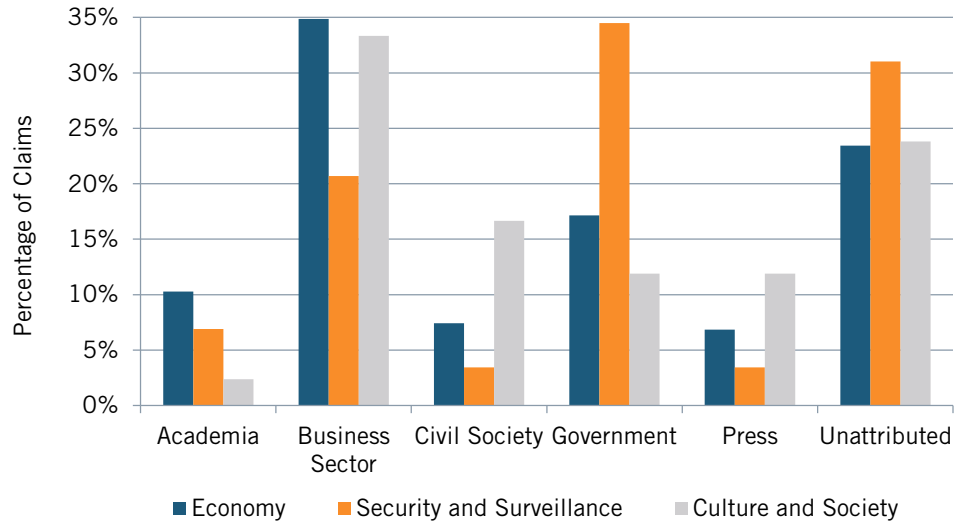
This chart shows the dominance of the private sector in making positive claims about technology's impact on both the economic sector (35 percent of all positive claims relating to the economy) and the broader culture (34 percent of all positive claims). In contrast, the government is the most prominent advocate for the use of technology in security or surveillance applications, both domestic (assisting police in solving crimes) and internationally (strengthening military capabilities).

Figure 11: Percentage of Negative Claims by Source and Target Sector
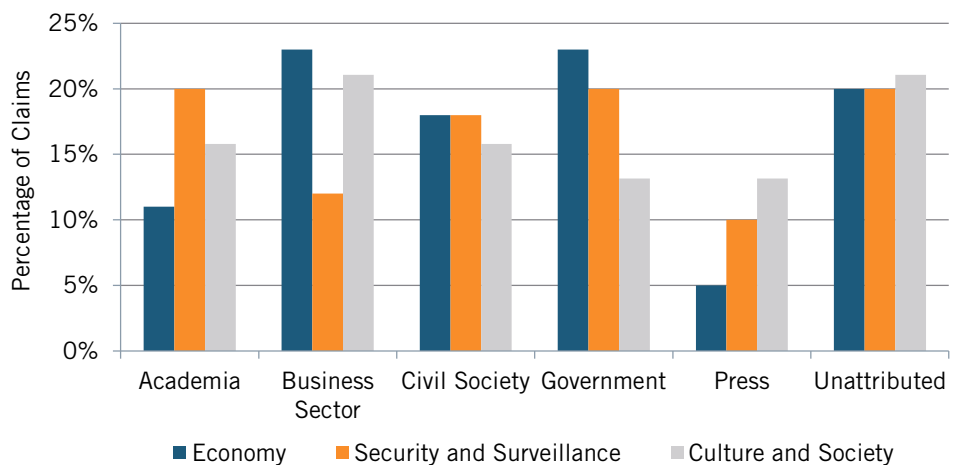
When it comes to negative claims about the influence of technology, the patterns change, as shown in figure 11. In each sector, claims are distributed much more equally across the different sources. While the business sector and the government accounted for as much as

35 percent of the positive claims in each area, no one sector is responsible for more than a quarter of the negative claims in any area. Once again, we see reluctance among business people to make any claims about security issues, while academics are disproportionately active in criticizing the role of technology in the security and culture spheres. The press, meanwhile, is most active in critiquing society and culture in the op-ed pages.

CONCLUSION

This report finds that there has been a notable decline in the favorable coverage of technology in the U.S. media. These findings reinforce the Information Technology and Innovation Foundation's earlier work that describes how the media contributes to a technology "panic cycle"—the usual trajectory of public fear followed by widespread acceptance that often accompanies new technologies—by repeating and amplifying negative claims by those espousing fears about technological advancement, often without critically examining these claims or presenting the opposing perspective. This matters because historically a key factor enabling the United States to become and remain the world's technology leader has been widespread popular support for innovation. To be sure, there have always been skeptics and critics. The Nobel Prize–winning economist Edmund Phelps has written about the importance not only of innovation-friendly regulations, but "a supportive culture." As he describes it, "The genius of [U.S.] high dynamism was a restless spirit of conceiving, experimenting and exploring throughout the economy from the bottom up—leading with insight and luck, to innovation."[11]

To be clear, this does not mean that the media should give up on its key responsibility to report all sides of a story accurately or allow for diverse perspectives. Good reporting helps ensure that good policy decisions will be made and supported. But the media does have a responsibility not to give more weight to the pessimists and technophobes than is warranted—even if doing so generates more revenue. Given these findings, the media should take steps to ensure its coverage of technology is less biased, and policymakers should be sensitive to the fact that public opinion about technology may be distorted by skewed views.

The media does have a responsibility not to give more weight to the pessimists and technophobes than is warranted.

APPENDIX: DETAILS ON METHODOLOGY
Description of Sectors Employed in Analysis

Each claim was coded according to the sector to which the claim applied. For example, an article that talked about how a new technology would bring down the cost of shipping and promote interstate commerce was coded as "Other Economic Activities."

Economy

- **Employment**: The claim relates to the effect of technology on the workforce. For example, articles claiming that increased automation will lead to fewer jobs were coded under this category.

- **Education**: The claim relates to the impact that technology has in schools. For example, articles that cite computers as a powerful new teaching tool were coded under this category.

- **Environment:** The claim relates to the impact that technology has on the environment, either as a polluter or as a tool for slowing environmental degradation.

- **Health/Medicine:** The claim relates to the role that technology plays in keeping us healthy or the ways in which technology makes us sicker

- **Other Economic Activity**: The claim relates to some other activity in the economic sphere. This spans areas such as increased productivity, increased convenience for consumers, or the importance of technology for continued economic growth.

Security and Surveillance

- **Privacy:** The claim relates to the effect that technology has on people's ability to keep private data private.

- **Military and National Security:** The claim relates to the effect that technology has on a nation's ability to keep its citizens safe.

- **Police and Crime:** The claim relates to the effect of technology on solving, preventing, or committing crimes.

Culture and Society

- **Culture:** The claim relates to the effect that technology has on the way our society functions or the way that individuals within society relate to each other.

Description of Sources Employed in Analysis

Each claim was coded according to the sector to which the claim applied. For example, an article that talked about how a new technology would bring down the cost of shipping and promote interstate commerce was coded as "Other Economic Activities."

- **Academics/Researchers:** The claim comes from someone within academia or the research sector.

- **Commercial Sector**: The claim originates from someone identified by their affiliation with the commercial sector (i.e. speaking on behalf of their company) or a trade organization affiliated with a specific industry.

- **Civil Society:** The claim originates from someone speaking based on their status as a citizen, as a member of a think tank or advocacy group.

- **Government:** The claim originates from someone employed by the federal, state, or local government or someone elected to office.

- **Press:** The claim originates from the author of the article and is clearly presented as the author's opinion (most frequently found in the op-ed pages) or is attributed to another mainstream media source.

- **Unattributed:** A claim is made, but it is not tied to a specific source. Phrases such as "some people worry" and "proponents argue" that fail to actually name a source for these claims were coded under this category.

ENDNOTES

1.   Maxwell E. McCombs and Donald L. Shaw, "The Agenda Setting Function of Mass Media," *Public Opinion Quarterly 36*, no. 2 (1972).

2.   Tim Groseclose and Jeffrey Milyo, "A Measure of Media Bias," *The Quarterly Journal of Economics 120*, no. 4 (2005).

3.   For example, in an FTC staff report on consumer privacy, the agency notes "Surveys of consumer attitudes towards privacy conducted in the past year are illuminating. For example, a *USA Today*/Gallup poll indicated that a majority of the Facebook members or Google users surveyed were 'very' or 'somewhat concerned' about their privacy while using these services." Federal Trade Commission (FTC), *Protecting Consumer Privacy in an Era of Rapid Change* (Washington, DC: FTC, March 2012), https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-report-protecting-consumer-privacy-era-rapid-change-recommendations/120326privacyreport.pdf.

4.   Alice G. Brand, "Hot Cognition: Emotions and Writing Behavior," *Journal of Advanced Composition 6* (1985).

5.   See for example, the number of advocacy groups focusing on privacy issues. Daniel Castro and Alan McQuinn, "The Privacy Panic Cycle: A Guide to Public Fears About New Technologies" (Information Technology and Innovation Foundation, September 2015), http://www2.itif.org/2015-privacy-panic.pdf.

6.   Amy Mitchell and Jesse Holcomb, "State of the News Media 2016" (Pew Research Center, June 15, 2016), http://www.journalism.org/2016/06/15/state-of-the-news-media-2016/.

7.   Ken Doctor, "Newsonomics: The Halving of America's Daily Newsrooms," *NeimanLab*, July 28, 2015, http://www.niemanlab.org/2015/07/newsonomics-the-halving-of-americas-daily-newsrooms/.

8.   Tim Johnson, "Artificial Intelligence May Make Your Life Easier—and Take Your Job," *The Kansas City Star*, December 1, 2016, http://www.kansascity.com/news/business/technology/article118069238.html.

9.   Castro and McQuinn, "The Privacy Panic Cycle."

10.   Ibid.

11.   Edmunds S. Phelps, *Mass Flourishing: How Grassroots Innovation Created Jobs, Challenge, and Change* (Princeton, NJ: Princeton University Press, 2013), 324.

ABOUT THE AUTHOR

Doug Allen was a Consortium for Media Policy Studies (COMPASS) Fellow with the Information Technology and Innovation Foundation. Allen received an M.S. in Energy Policy analysis and a B.A. in Environmental Economics from Stanford University, and an M.A. in Communications from the Annenberg School for Communications at the University of Pennsylvania.

Daniel Castro is vice president at ITIF. His research interests include health IT, data privacy, e-commerce, e-government, electronic voting, information security, and accessibility. Previously, Castro worked as an IT analyst at the Government Accountability Office where he audited IT security and management controls at various government agencies. He has a B.S. in foreign service from Georgetown University and an M.S. in information security technology and management from Carnegie Mellon University.

ABOUT ITIF

The Information Technology and Innovation Foundation (ITIF) is a nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized as one of the world's leading science and technology think tanks, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

FOR MORE INFORMATION, VISIT US AT WWW.ITIF.ORG.