

**Algorithms, Machine Learning, and Speech: The Future of the First Amendment in  
a Digital World**

A THESIS  
SUBMITTED TO THE FACULTY OF  
UNIVERSITY OF MINNESOTA  
BY

Sarah Wiley

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF ARTS

Professor Jane Kirtley, Advisor  
June 2017



## **ACKNOWLEDGEMENTS**

An enormous thank you to my committee: Professor Jane Kirtley, whose guidance has taught me to read between the lines; Professor Bill McGeveran, for his expertise and instruction; and Professor Chris Terry, for his willingness to help. Also, thank you to my family for their endless love and support.

## ABSTRACT

We increasingly depend on algorithms to mediate information and thanks to the advance of computation power and big data, they do so more autonomously than ever before. At the same time, courts have been deferential to First Amendment defenses made in light of new technology. Computer code, algorithmic outputs, and arguably, the dissemination of data have all been determined as constituting “speech” entitled to constitutional protection. However, continuing to use the First Amendment as a barrier to regulation may have extreme consequences as our information ecosystem evolves. This paper focuses on developing a new approach to determining what should be considered “speech” if the First Amendment is to continue to protect the marketplace of ideas, individual autonomy, and democracy.

## TABLE OF CONTENTS

<b>I. INTRODUCTION.....</b>	<b>1</b>
<b>II. RESEARCH QUESTIONS.....</b>	<b>4</b>
<b>III. FIRST AMENDMENT JURISPRUDENCE AND EXPANSION.....</b>	<b>6</b>
<b>A. Computer Code.....</b>	<b>7</b>
<b>B. Algorithmic Outputs.....</b>	<b>14</b>
<b>C. Data.....</b>	<b>18</b>
<b>IV. THINKING CRITICALLY ABOUT ALGORITHMS AND MACHINE LEARNING.....</b>	<b>26</b>
<b>A. History.....</b>	<b>26</b>
<b>B. Algorithms and Information.....</b>	<b>30</b>
<b>V. PUTTING IT TOGETHER – ALGORITHMS, MACHINE LEARNING, AND THE FIRST AMENDMENT.....</b>	<b>38</b>
<b>A. Theory.....</b>	<b>38</b>
<b>I. Marketplace of Ideas.....</b>	<b>39</b>
<b>II. Individual Autonomy and Democracy.....</b>	<b>41</b>
<b>B. Technology.....</b>	<b>44</b>
<b>VI. A CHANCE FOR ACCOUNTABILITY.....</b>	<b>48</b>
<b>A. Accountability Measures.....</b>	<b>49</b>
<b>I. Transparency.....</b>	<b>49</b>
<b>II. Objectivity.....</b>	<b>51</b>
<b>III. Accuracy.....</b>	<b>53</b>
<b>B. What is “Speech”? - A Scholarly Analysis.....</b>	<b>55</b>
<b>C. A Method for Determining First Amendment Protection in the Autonomous Algorithm Age.....</b>	<b>61</b>
<b>VII. CONCLUSION.....</b>	<b>67</b>
<b>VIII. BIBLIOGRAPHY.....</b>	<b>68</b>
<b>IX. CASES CITED.....</b>	<b>76</b>

## INTRODUCTION

We depend on algorithms to make an increasing number of important decisions in our lives. We trust them to navigate our travels and answer our questions. Algorithms write<sup>1</sup> and recommend the news we should consume, the books we read, and the friends we should get to know. In short, algorithms impact how individuals perceive the world-online and off. And they do so more autonomously than ever before.

Back in the day (before 2015) most computer algorithms functioned by following a specific set of instructions manually coded by programmers. Today's algorithms are different. Today's algorithms teach themselves.<sup>2</sup> Instead of relying on their programmer's step-by-step coded instructions, algorithms now employ machine learning – a form of artificial intelligence that relies on neural networks and access to massive amounts of data. Algorithms are now “taught” to create their own code to address new challenges and questions.<sup>3</sup>

Whether we realize it or not, such advanced algorithms already power much of our online activity. Facebook utilizes machine learning to determine which stories and

---

<sup>1</sup> Ross Miller, *AP's 'robot journalists' are writing their own stories now*, THE VERGE (Jan. 29, 2015), <http://www.theverge.com/2015/1/29/7939067/ap-journalism-automation-robots-financial-reporting>; Caitlin Dewey, *Facebook has repeatedly trended fake news since firing its human editors*, THE WASHINGTON POST (Oct. 12, 2016), <https://www.washingtonpost.com/news/the-intersect/wp/2016/10/12/facebook-has-repeatedly-trended-fake-news-since-firing-its-human-editors>.

<sup>2</sup> Jason Tanz, *Soon we won't program computers. We'll train them like dogs*, WIRED (May 17, 2016), <https://www.wired.com/2016/05/the-end-of-code/> (“With machine learning, programmers don't encode computers with instructions. They *train* them. If you want to teach a neural network to recognize a cat, for instance, you don't tell it to look for whiskers, ears, fur, and eyes. You simply show it thousands and thousands of photos of cats, and eventually it works things out. If it keeps misclassifying foxes as cats, you don't rewrite the code. You just keep coaching it”).

<sup>3</sup> For a more in-depth explanation of deep learning see Robert D. Hof, *Deep Learning – With massive amounts of computational power, machines can now recognize objects and translate speech in real time. Artificial intelligence is finally getting smart*, MIT TECHNOLOGY REVIEW (May 2014), <https://www.technologyreview.com/s/513696/deep-learning/>.

articles show up in News Feeds, Google Photos uses it to identify faces, Amazon's Alexa, Apple's new Siri, and Microsoft's Cortana all depend on machine learning for advanced language processing and machine translation when providing answers and suggestions.<sup>4</sup> Google even incorporated machine learning in its search engine in 2015, inching one step closer towards their goal of creating a "cybernetic friend that listens in on your phone conversations, reads your e-mail, and tracks your every move so it can tell you things you want to know even before you ask."<sup>5</sup>

It is becoming clear that these technologies are not simply a new medium through which we express ourselves. Old analogies to the days of paper and of the Internet as a "vast library"<sup>6</sup> are outdated and no longer make sense. Rather, as such technologies challenge the traditional notions of what it means to speak and communicate, it is imperative that the First Amendment adapt.<sup>7</sup> How exactly it should adapt is an easier question to ask than answer.

By arguing that some aspect of their algorithm-mediated processes constitute speech, information intermediaries such as Google and Verizon, as well as data-miners, have frequently cited the First Amendment as a barrier to regulation.<sup>8</sup> Courts that have

---

<sup>4</sup> Cade Metz, *AI is Transforming Google Search. The Rest of the World Is Next*, WIRED (Feb. 4, 2016), <https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/>; Maurice E. Stucke and Ariel Ezrachi, *The Subtle Ways Your Digital Assistant Might Manipulate You*, WIRED (Nov. 29, 2016), <https://www.wired.com/2016/11/subtle-ways-digital-assistant-might-manipulate/>.

<sup>5</sup> Hof, *Supra* note 3.

<sup>6</sup> *See Reno v. ACLU* 521 U.S. 844, 853(1997). Justice Stevens compared the Internet to both a "vast library including millions of readily available and indexed publications and a sprawling mall offering goods and services."

<sup>7</sup> Arguably there are calls for First Amendment doctrine to change every time a new technology enters the mainstream. However, as several scholars have pointed out, this time really is "different." *See, e.g.*, Tim Wu, *Machine Speech*, 161 U. PA. L. REV. 1495 (2013)

<sup>8</sup> *See Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011) ("Information is speech"), *Search King, Inc.*

addressed these First Amendment defenses to common-law and regulatory claims have struggled with the threshold question: When is something “speech” in such a manner that it triggers the First Amendment and its protections? So far, courts have been arguably deferential to such defenses as recent decisions have held that computer code, the transmission or possession of data, and algorithmic outputs in the form of search results should be considered speech.<sup>9</sup>

There may be very real consequences to broadly applying First Amendment jurisprudence to new technologies. As the information ecosystem changes, intermediaries and their algorithms hold enormous power to shape how individuals receive information and perceive the world. This can have an impact on the values underlying the First Amendment, namely the marketplace of ideas, individual autonomy, and self-governance.<sup>10</sup> However, as government regulations of speech are subject to strict scrutiny, intermediaries and their algorithms are left largely unchecked.<sup>11</sup> In other words, as technology evolves, the threshold question of what exactly constitutes “speech” in the digital context will become paramount. With the continued expansion of

---

*v. Google Tech., Inc.*, No. 02-1457, 2003 WL 21464568, at \*4 (W.D. Okla. May 27, 2003) (finding that Google PageRanks are entitled to “full” First Amendment protection); *Bernstein v. U.S. Dep’t of State*, 922 F. Supp. 1426, 1436 (N.D. Cal. 1996) (holding that source code is speech under the First Amendment); *see also Junger v. Daley*, 209 F.3d at 484-85 (6th Cir. 2000) (“Because computer source code is an expressive means for the exchange of information and ideas about computer programming, we hold that it is protected by the First Amendment.”); *Recording Indus. Ass’n of Am., Inc. v. Verizon Internet Servs., Inc.*, 351 F.3d 1229, 1231 (D.C. Cir. 2003) (Verizon made First Amendment arguments against the subpoena provisions of the Digital Millennium Copyright Act).

<sup>9</sup> *Id.*

<sup>10</sup> Wu, *Supra* note 7. *See also* Amanda Shanor, *The New Lochner*, 2016 WIS. L. REV. 133 (2015).

<sup>11</sup> Strict scrutiny is extremely difficult to satisfy. *See, e.g., Sable Commc’ns of Cal., Inc. v. FCC*, 492 U.S. 115, 126 (1989) (“The Government may...regulate the content of constitutionally protected speech in order to promote a compelling interest if it chooses the least restrictive means to further the articulated interest.”).



what is considered protected, will the First Amendment ironically become its own worst enemy? What poses a greater threat to the values the First Amendment is supposed to protect, the lack of regulations or the regulations themselves?<sup>12</sup> This thesis attempts to shed light on those questions, especially where new technological advancements, such as machine learning, are concerned.

### RESEARCH QUESTIONS

The goal of this thesis is to analyze the current judicial approach to answering the threshold speech question in technological situations, examine the potential impacts of machine learning algorithms on First Amendment values, and propose a revised theoretical framework for courts to apply when faced with complex issues surrounding speech and increasingly autonomous technology. This requires investigation into several elements, including:

**RQ1:** How do courts currently determine what constitutes “protected speech” in technological situations?

**RQ1a:** What are the theoretical justifications for distinguishing protected speech from unprotected communication?

**RQ2:** Are there negative implications for the First Amendment and its underlying values created by algorithms?

**RQ3:** How can courts create an approach that enhances First Amendment values for determining what constitutes protected speech in cyberspace?

**RQ3a:** What new or revised approaches have scholars proposed to determine what constitutes protected speech in cyberspace?

---

<sup>12</sup> See e.g., Andrew Tutt, *The New Speech*, 41 HASTINGS CONST. L.Q. 235 (2013), Tutt’s article also asks and attempts to answer these questions.

This thesis is necessarily interdisciplinary in its focus and commences in four parts. It begins by conducting a legal case analysis to determine how courts decide what constitutes speech for First Amendment purposes. It explores how the judiciary attempts to understand new technology and balances the values of free expression. Part two pulls from mass communication research and gives an overview of how algorithms have impacted the information ecosystem by changing how information is created, indexed, distributed, accessed, and consumed. It also details how algorithms have changed over time. Part three addresses the impact algorithms have on the values underlying the First Amendment and highlights the danger of continued deference to First Amendment defenses based on outdated analogies and assumptions about our information ecosystem.<sup>1314</sup> Part four then concludes by proposing a new approach to the constitutional inquiry of “speech” by focusing on the identity of the speaker (algorithmic or human), and the functionality of the communication. It also takes a look at what types of regulations and accountability measures other scholars have called for. Striking the right constitutional balance is important: too little protection would be detrimental to speakers who no longer depend on pen and paper, but too much protection would

---

<sup>13</sup> Some scholars have argued that the expansion of the First Amendment and its use as a deregulatory tool has hit *Lochner*-like proportions. See Orin S. Kerr, *Are We Overprotecting Code? Thoughts on First-Generation Internet Law*, 57 WASH. & LEE L. REV. 1287 (2000); Shanor, *Supra* note 10.

<sup>14</sup> This thesis is only concerned with judicial opinions that push First Amendment protections into truly new territory such as computer code, algorithms and their outputs, and digital data collection. For example, the extension of the First Amendment to video games in *Brown v. Entertainment Merchants Ass’n*, 131 S. Ct. 2729 (2011), is sometimes presented as a technology case, but it would have been more surprising if the Court found that video games did not receive similar protections to the movies they resemble. See also Kyle Langvardt, *The Doctrinal Toll of Information As Speech*, 47 LOY. U. CHI. L.J. 761 (2016), Langvardt also considers these cases as currently pushing the boundaries.

threaten to permit discrimination and invasions of personal privacy while actually undermining the values of the First Amendment.

## **I. FIRST AMENDMENT JURISPRUDENCE AND EXPANSION**

To be clear, the question of what exactly constitutes protected “speech” is not novel, courts have had to wrestle with such a determination whenever new technologies materialize. For example, in the early twentieth century, cases regarding various forms of entertainment (most prominently film) were causally dismissed.<sup>15</sup> Commercial advertising was once considered to be beyond the scope of First Amendment protection until the 1976 *Virginia State Board of Pharmacy* decision.<sup>16</sup> In 1997, the Supreme Court announced protections for the Internet<sup>17</sup> and in 2011, video games.<sup>18</sup>

This section will analyze the continued development of First Amendment jurisprudence in truly technological situations.<sup>19</sup> It will focus on judicial opinions that have applied the First Amendment to the functional elements that necessarily form the digital realm as we know it— namely code, data, and automated outputs. It will demonstrate that although the decisions seem reasonable based on their respective facts, they often lack technological understanding and theoretical justification, together creating a broad and troubling precedent.

---

<sup>15</sup> *Mutual Film Corporation v. Industrial Commission of Ohio*, 236 U.S. 230 (1915); *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495 (1952).

<sup>16</sup> *Virginia State Pharmacy Board v. Virginia Citizens Consumer Council*, 425 U.S. 748, 758, 770 (1976) (holding that “commercial speech, like other varieties, is protected”).

<sup>17</sup> *Reno v. ACLU*, 521 U.S. 844, 870 (1997).

<sup>18</sup> *Brown v. Entertainment Merchants Association*, 564 U.S. 786, 790 (2011).

<sup>19</sup> *Supra* note 14. In addition, at least one federal court has held that blog posts and tweets are protected, but this question doesn’t necessarily push the First Amendment into new territory. *See United States v. Cassidy*, 814 F. Supp 2d 574, 577-78 (D. Md. 2011).

## A. Computer Code

Around the turn of the century considerable attention was paid to whether computer code was speech, such that regulations of code would trigger the heightened scrutiny required by the First Amendment. Litigation largely focused on regulations surrounding distribution. By regulating the circulation of the code itself, the U.S. government sought to limit the proliferation of computer programs it perceived as jeopardizing national security. The most influential and precedential cases regarding the issue of code-as-speech include *Bernstein v. United States Department of Justice*<sup>20</sup>, and *Junger v. Daley*<sup>21</sup> – two cases dealing with national security-related export restrictions for cryptographic software.

*Bernstein* was the first case to explicitly take on the question of whether computer code itself qualified as speech.<sup>22</sup> Daniel Bernstein was a doctoral student at the University of California, Berkeley, when he sought to publish a paper and the associated source code of an encryption software program. “Source code” refers to the format in which programmers write software. Software called “compilers” are

---

<sup>20</sup> *Bernstein v. United States*, 922 F. Supp. 1426 (N.D. Cal. 1996) (motion to dismiss); 945 F. Supp. 1279 (N.D. Cal. 1996) (summary judgment); 176 F.3d 1132 (9th Cir. 1999).

<sup>21</sup> *Junger v. Daley*, 209 F.3d 481 (6th Cir. 2000).

<sup>22</sup> See also *Karn v. U.S. Dep’t of State*, 925 F. Supp. 1 (D.D.C. 1996). Arguably, *Karn* was the first case to deal with the issue of computer code as speech, however the U.S. District Court for the District of Columbia only addressed *Karn*’s First Amendment theories in hypothetical terms and dismissed the case on justiciability issues.

then used to convert this source code into “machine code” or “object code,” the string of ones and zeros that interfaces directly with the computer’s CPU.<sup>23</sup>

Bernstein requested permission from the State Department under a procedure known as “commodity jurisdiction determination.” The point of the procedure was to determine whether the code was a defense article subject to certain export controls and licenses. The State Department responded that the source code was munition under the International Traffic in Arms Regulations (“ITAR”) and that Bernstein would in fact need to acquire a license to publish the paper and the source code.

Bernstein ultimately challenged the constitutionality of the ITAR determination, arguing that the regulation infringed on his First Amendment rights. Bernstein’s initial step, however, was convincing the court that the First Amendment was implicated at all – in other words, that source code was actually a form of speech. The State Department asserted that the First Amendment did not apply. It argued that the code itself was a functioning product not intended to convey any particular message.<sup>24</sup> The State Department cited the reasoning behind several U.S. Supreme Court cases that distinguished speech from unprotected conduct<sup>25</sup> for the proposition that an act must be “sufficiently imbued with the elements of communication” to fall within the protections of the First Amendment. The State Department argued that although a written description of software (the paper, for example) informs the intellect and constitutes expression, source code on the other

---

<sup>23</sup> See e.g., BRUCE SCHNEIER, APPLIED CRYPTOGRAPHY 1 (1994).

<sup>24</sup> *Bernstein v. United States*, 945 F. Supp. 1279, 1286 (N.D. Cal. 1996).

<sup>25</sup> *Texas v. Johnson*, 491 U.S. 397 (1989); *Spence v. Washington*, 418 U.S. 405 (1974).

hand is primarily functional – it is akin to a set of directions telling a computer what to do.

The U.S. District Court for the Northern District of California dismissed the State Department’s arguments, and reasoned that since the source code was written, it was speech entitled to protection. “There is little about this functional writing to suggest it is more like conduct than speech...defendants’ reliance on the conduct cases is misplaced,” wrote the court.<sup>26</sup> The court went on to analogize that source code was similar to foreign languages. “Language is by definition speech and the regulation of any language is the regulation of speech...This court can find no meaningful difference between computer language, particularly high-level languages as defined above, and German or French. Even object code, which directly instructs the computer, operates as a ‘language,’”<sup>27</sup> the opinion concluded. The court categorically proclaimed computer code amounted to speech for First Amendment purposes and subsequently granted summary judgment to Bernstein on his First Amendment claims, holding the challenged ITAR regulations facially invalid as a prior restraint.<sup>28</sup>

Similar to the plaintiff in *Bernstein*, Case Western University Law School professor Peter Junger challenged the Clinton Administration’s regulations regarding the export of encryption products after he had attempted to publish the source code

---

<sup>26</sup> *Bernstein v. United States*, 922 F. Supp. 1426, 1435 (N.D. Cal. 1996).

<sup>27</sup> *Id.*

<sup>28</sup> *Bernstein*, 945 F. Supp. at 1286

of an encryption program he had created.<sup>29</sup> When the Commerce Department denied Junger's application to publish the source code on the Internet without a special license Junger sued, asserting an infringement of his First Amendment rights.<sup>30</sup>

The Sixth Circuit took the same approach as the trial court in *Bernstein*, and emphasized that source code acts as an expressive specialized language. "Much like a mathematical or scientific formula, one can describe the function and design of encryption software with a prose explanation; however, for individuals fluent in a computer programming language, source code is the most efficient and precise means by which to communicate ideas about cryptography... The Supreme Court has expressed the versatile scope of the First Amendment by labeling as 'unquestionably shielded' the artwork of Jackson Pollack, the music of Arnold Schoenberg, or the Jabberwocky verse of Lewis Carroll. Though unquestionably expressive, these things identified by the Court are not traditional speech. Particularly, a musical score cannot be read by the majority of the public but can be used as a means of communication among musicians. Likewise, computer source code, though unintelligible to many, is the preferred method of communication among computer programmers," Judge Martin wrote for a unanimous panel.<sup>31</sup> Taken together, *Bernstein* and *Junger* announced a broad categorical rule: source code is protected speech. Courts that have since examined the issue have been largely in agreement.<sup>3233</sup>

---

<sup>29</sup> *Junger v. Daley*, 209 F.3d 481, 482-83 (6th Cir. 2000).

<sup>30</sup> *Id.*

<sup>31</sup> *Junger*, 209 F.3d at 484.

<sup>32</sup> See *Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 447-49 (2d Cir. 2001); *United States v. Elcom Ltd.*, 203 F. Supp. 2d 1111, 1126 (N.D. Cal. 2002).

Nevertheless, scholars have questioned the courts' conclusion since the only messages or ideas code communicates are messages about the code itself. As George Washington University Law School professor Orin Kerr emphasized in his article *Are We Overprotecting Code? Thoughts on First Generation Internet Law*, the problem with this logic is that *everything* is an expressive means for the exchange of information and ideas about itself.<sup>34</sup> “Robbing a bank provides the most instructive way to teach someone how to rob a bank; kicking someone in the shins provides an excellent way of communicating the concept of kicking someone in the shins, but clearly these actions are functional conduct, not protected speech,” Kerr wrote.<sup>35</sup>

In the physical world, courts recognize this paradox and the application of the First Amendment goes beyond what things *are* to what they actually *say*. For example, burning the American flag is protected expression, not because it communicates how to burn flags, but because it conveys a political message.<sup>36</sup> Donating money to a political campaign constitutes speech because it conveys an agreement with certain ideological viewpoints, not because it communicates a message about how to spend money.<sup>37</sup> In these cases, the Supreme Court went

---

<sup>33</sup> One case has held to the contrary. In *Commodity Futures Trading Commission v. Vartuli*, the program was to be operated “mechanically” and “without the intercession of the mind or the will of the recipient.” As the Second Circuit Court of Appeals held, “the fact that the system used words as triggers and a human being as a conduit, rather than programming commands as triggers and semiconductors as a conduit, appears to us to be irrelevant for purposes of this analysis.” This case has not been followed however. *Commodity Futures Trading Commission v. Vartuli* 228 F.3d 94 (2d Cir. 2000); see also Andrew Tutt, *The New Speech*, 41 HASTINGS CONST. L.Q. 235, 297 (2014)

<sup>34</sup> Orin S. Kerr, *Are We Overprotecting Code? Thoughts on First-Generation Internet Law*, 57 WASH. & LEE L. REV. 1287, 1292 (2000).

<sup>35</sup> *Id.*

<sup>36</sup> *Id.* See also *Texas v. Johnson*, 491 U.S. 397, 406 (1989).

<sup>37</sup> *Id.* See also *Buckley v. Valeo*, 424 U.S. 1, 39-59 (1976).



beyond what the actions actually were to what they communicated. As Kerr states, “regulation of source code presents the converse of these cases. Whereas flag-burning involves meaningful expression without the [traditional] form of speech, source code provides the form of speech [writing] without meaningful expression.”<sup>38</sup>

One could also take the “code is speech” rule as categorical in nature - emphasizing the judiciary’s desire to treat code as a medium, akin to newspapers, film, or video games. Although this method takes into account the functionality aspect, it fails to realize how cyberspace actually works. Everything on the Internet is code; code is the building block of cyberspace.<sup>39</sup> Thus, categorically determining that code is speech sets up a difficult premise: that every series of computer instructions warrants First Amendment protection. This approach denies that the application of the First Amendment should be based on “the factual context and environment”<sup>40</sup> and instead holds that it is simply the presence of code itself that drives protection. Whereas the law of the physical world distinguishes carefully between different types of communications and ideas, the current approach fails to take into account context and applies equally to all code regardless of its contents or expressions.

As a result, courts have struggled with how to apply the broad rule to other regulations regarding the circulation of code, such as the Digital Millennium Copyright Act (DMCA) and its digital rights management (DRM) measures. DRM operates by “locking” a media file or storage medium so that it can only be copied a

---

<sup>38</sup> *Kerr Supra* note 34 at 1292.

<sup>39</sup> *Id.*

<sup>40</sup> *Spence v. Washington*, 418 U.S. 405, 410 (1974).

number of times.<sup>41</sup> For example, early versions of music files on iTunes could only be copied to a maximum of five devices thus limiting circulation.<sup>42</sup> Parties who developed methods for cracking DRM software, and who then posted the source code online, invoked *Bernstein* and *Junger* and challenged the DMCA on First Amendment grounds. Although the courts that dealt with the issue agreed that the First Amendment was necessarily implicated as source code was involved, they nonetheless held that the DMCA's anti-circumvention rules were content-neutral and therefore only applied intermediate, rather than strict scrutiny.<sup>43</sup> After these cases, some scholars have argued that code constitutes a limited category of speech similar to the protections awarded to commercial speech.<sup>44</sup>

Current litigation addresses the code as speech rule within a more recent innovation –3D printing. In May 2013, the plaintiff, Defense Distributed, designed and posted on its website the computer-aided design (CAD) files needed to print “the Liberator,” the first fully printable handgun.<sup>45</sup> The State Department demanded Defense Distributed remove the Liberator and other weapons-related files from its website. Defense Distributed now argues such an action constitutes a prior restraint

---

<sup>41</sup> Digital Millennium Copyright Act (DMCA) § 103, 17 U.S.C. § 1201 (2006)*Panel II: Licensing in the Digital Age: The Future of Digital Rights Management*, 15 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1009, 1086 (2005).

<sup>42</sup> *Id.*

<sup>43</sup> See, *Universal City Studios Inc., v. Reimerdes*, 111 F. Supp. 2d, 294 at 326 (S.D.N.Y 2000) (striking, via a content-neutrality argument, a DMCA provision against trafficking in DRM circumvention technologies); *Sony Computer Entm't Inc. v. Connectix Corp.*, 203 F.3d 596, 602 (9th Cir. 2000) (recognizing that object code may be copyrighted as expression under 17 U.S.C. § 102(b) (2012); see also *United States v. Elcom Ltd.*, 203 F. Supp. 2d 1111, 1126 (N.D. Cal. 2002).

<sup>44</sup> See Kyle Langvardt, *The Doctrinal Toll of Information As Speech*, 47 Loy. U. Chi. L.J. 761 (2016)

<sup>45</sup> *Def. Distributed v. U.S. Dep't of State*, No. 1:15-CV-372 (W.D. Tex. May 6, 2015) CAD files are largely made up of code and drafting information for a 3D printer / computer.

exercised on a content-discriminatory basis against “speech about guns,” and cites *Bernstein* and *Junger* for the rule that source code is protected speech.<sup>46</sup> A decision had not yet been made on the merits at the time of the completion of this thesis; however this case and the cases addressing the DMCA highlight the trouble such a broad code-as-speech precedent yields, especially as more of society’s activities rely on code dependant technologies, either written by human programmers or autonomously.

## **B. Algorithmic Outputs**

Just as algorithmic decision-making has become more sophisticated with machine learning, so has the expression of its results. Consider the following examples of algorithmic outputs that function in arguably expressive ways: Amazon’s Alexa orally answers a question about the history of democracy, Spotify supplies daily playlists to its users, *The New York Times* uses an automated algorithm to write a sports article.<sup>47</sup> Such automated decisions are a key feature of our information ecosystem.<sup>48</sup> However, “that we are now turning to algorithms to identify what we need to know is as momentous as having relied on credentialed experts, the scientific

---

<sup>46</sup>See e.g., *Defense Distributed v. U.S. Department of State*, JOSH BLACKMAN’S BLOG, <http://joshblackman.com/blog/about-josh/defense-distributed-v-u-s-department-of-state/> (last visited Mar. 9, 2016).

<sup>47</sup>Tim Adams, *And the Pulitzer goes to...a computer*, THE GUARDIAN, June 28, 2015, available at <https://www.theguardian.com/technology/2015/jun/28/computer-writing-journalism-artificial-intelligence>; Shelley Podolny, *If An Algorithm Wrote This, How Would You Even Know?*, THE NEW YORK TIMES, March 7 2015, available at <http://www.nytimes.com/2015/03/08/opinion/sunday/if-an-algorithm-wrote-this-how-would-you-even-know.html>.

<sup>48</sup>See C.W. Anderson, *Deliberative, agonistic, and algorithmic audiences: Journalism’s vision of its public in an age of audience*, JOURNAL OF COMMUNICATION 5: 529-547 (2011)

method, common sense, or the word of God,” writes Cornell University professor Tarleton Gillespie.<sup>49</sup>

The focus here is not on whether the code of an algorithm is protected (which would most likely be the case under *Bernstein* and *Junger* above), but whether the outputs of that code – the automated decisions created by algorithms – are speech. For example, the question whether the First Amendment applies to regulation of search engine results is different from the question whether the actual algorithms used by those search engines is speech.<sup>50</sup>

So, when are algorithmic outputs considered speech for First Amendment purposes? The answer is a lawyerly “it depends,” as there is limited case law on the topic. The opinions that have emerged are primarily in the area of search results.<sup>51</sup> Two federal court decisions have held that search results, including the choice of what to include in those results and how they are ranked, constitute speech fully protected by the First Amendment.<sup>52</sup>

---

<sup>49</sup> Tarleton Gillespie, *The Relevance of Algorithms*, Media Technologies, MIT PRESS (2015) available at <http://mitpress.universitypressscholarship.com/view/10.7551/mitpress/9780262525374.001.0001/upso-9780262525374-chapter-9>.

<sup>50</sup> Stuart Benjamin, *Algorithms and Speech*, 161 U. Pa. L. Rev. 1445, 1449 (2013).

<sup>51</sup> One case has found that software that informs users that they have malware on their computer “is a form of speech” analogous to the expression of an opinion; *See New.Net, Inc. v. Lavasoft*, 356 F. Supp. 2d 1071, 1081-83 (C.D. Cal. 2003). In *Rosenberg v. Harwood*, Google raised a First Amendment defense when a woman claimed that by relying on Google Maps’ walking directions, she stepped onto a freeway and was hit by a car; *Rosen v. Harwood*, No. 100916536, 2011 WL 3153314 (D. Utah May 27, 2011).

<sup>52</sup> *See Langdon v. Google, Inc.*, 474 F. Supp. 2d 622, 629-30 (D. Del. 2007) (“The First Amendment guarantees an individual the right to free speech, ‘a term necessarily comprising the decision of both what to say and what not to say....’ [T]he injunctive relief sought by Plaintiff contravenes Defendants’ First Amendment rights.”); *Search King, Inc. v. Google Tech., Inc.*, No. CIV-02-1457-M, 2003 WL 21464568, at \*4 (W.D. Okla. May 27, 2003) (Google’s ranking decisions are “constitutionally protected opinions” that are “entitled to full constitutional protection.”).

The most prominent case discussing a search engine's First Amendment rights is *Search King, Inc. v. Google*.<sup>53</sup> Search King was a search optimization firm that promised to elevate its clients' rankings in a Google search. When Google caught wind of the business, the search engine actively demoted Search King's clients. Search King sued Google for tortious interference with contract.<sup>54</sup> Google raised a First Amendment defense and the court agreed, refusing to grant Search King a preliminary injunction.<sup>55</sup> Google argued that although it uses sophisticated computerized algorithms, those algorithms "inherently incorporate the search engine company engineers' judgments about what material users are likely to find responsive to these queries."<sup>56</sup>

In agreement with Google, the court determined that the search results consisted of some form of "opinion." "PageRanks are opinions- opinions of the significance of particular web sites as they correspond to a search query...Accordingly, the Court concludes that Google's PageRanks are entitled to full constitutional protection," the court concluded.<sup>57</sup> Similarly, in *St. Louis Martin v. Google*, the Superior Court of the State of California for San Francisco also agreed with Google's arguments that its

---

<sup>53</sup> *Search King, Inc. v. Google Tech., Inc.*, No. CIV-02-1457-M, 2003 WL 21464568 (W.D. Okla. May 27, 2003).

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Search King*, 2003 WL 21464568, at 4.

search result order and ad placement options were constitutionally protected opinions.<sup>58</sup>

To fortify their stance on the matter, in 2012, Google commissioned a white paper by prominent UCLA law professor Eugene Volokh and class action attorney Donald Falk in which the pair concluded that Google is akin to a modern day newspaper editor.<sup>59</sup> Just as a newspaper selects the most important stories of the day and presents them on the front page, Google's search engineers similarly codes the algorithm how to rank the world's web pages with respect to their relevance to various criteria and hence, according to Volokh and Falk, gain the same protections.<sup>60</sup>

These decisions have led to a vast amount of scholarship in the area of whether algorithmic outputs should be considered speech. Several have argued the rulings do not take into account the power intermediaries such as Google and their algorithms have on influencing individual dispositions and attitudes. Law professors Oren Bracha and Frank Pasquale have described search engines as the "bottlenecks of the

---

<sup>58</sup> *S. Louis Martin v. Google, Inc.*, No. CGC-14-539972, Superior Court of California County of San Francisco (2014) available at [https://www.manatt.com/uploadedFiles/Content/4\\_News\\_and\\_Events/Newsletters/AdvertisingLaw@manatt/Martinv.Google.pdf](https://www.manatt.com/uploadedFiles/Content/4_News_and_Events/Newsletters/AdvertisingLaw@manatt/Martinv.Google.pdf); See also Megan Geuss, *Court agrees that Google's search results qualify as free speech*, ARS TECHNICA (Nov.17, 2014), <http://arstechnica.com/tech-policy/2014/11/court-agrees-that-googles-search-results-qualify-as-free-speech/>.

<sup>59</sup> Eugene Volokh & Donald Falk, *First Amendment Protection for Search Engine Search Results*, 6-7 (2012), available at <http://www.volokh.com/wp-content/uploads/2012/05/SearchEngineFirstAmendment.pdf> (arguing that the First Amendment protects Google's search results); See also *Search King*, 2003 WL 21464568, at 4. This approach derives from *Spence v. Washington*, 418 U.S. 405 (1974) (per curiam). Stuart Benjamin relies on a similar standard in *Algorithms and Speech*, 161 U. Pa. L. Rev. 1445 (2013) discussed below.

<sup>60</sup> Volokh and Falk *Id.*

information infrastructure” that “exercise extraordinary control over data flow.”<sup>61</sup> Constitutional protections for these new gatekeepers gives rise to concerns about access to information and individual autonomy.

How these rulings will be interpreted in light of machine learning and the rise of AI is yet to be determined, but the standard that algorithms are capable of expressing an opinion could include a great deal within its purview. The question of whether courts have gone too far will become more salient as individuals grow to rely on algorithmic decision-making.

### **C. Data**

Perhaps the broadest vision of what exactly constitutes protected speech was put forth by the Supreme Court in *Sorrell v. IMS Health Inc.*<sup>62</sup> “The creation and dissemination of information are speech within the meaning of the First Amendment,” wrote Justice Kennedy for the 6-3 majority.<sup>63</sup> In *Sorrell*, data miners and pharmaceutical manufacturers successfully challenged the constitutionality of a Vermont statute prohibiting the “sale, license or exchange for value” of pharmacy records to marketers for the use of promotion and advertising of prescription drugs.<sup>64</sup>

Vermont’s Act 80 was accompanied by legislative findings that showed concern over data-mining and biased medical information. Vermont found, for example, that the “goals of marketing programs are often in conflict with the goals of the state” and

---

<sup>61</sup> *Id.*

<sup>62</sup> *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011).

<sup>63</sup> *Id.*

<sup>64</sup> *Sorrell*, 131 S. Ct. at 2660.

that the “marketplace for ideas on medicine safety and effectiveness is frequently one-sided in that brand-name companies invest in expensive pharmaceutical marketing campaigns to doctors.”<sup>65</sup> Detailing, in the legislature’s view, caused doctors to make decisions based on “incomplete and biased information.” Because they “are unable to take the time to research the quickly changing pharmaceutical market,” Vermont doctors “rely on information provided by pharmaceutical representatives.”<sup>66</sup> The data mining companies argued that such a statute infringed their rights to speech and access to information. The State contended that the First Amendment did not apply and argued that the law was merely a commercial regulation, not a regulation of speech.<sup>67</sup>

The United States Court of Appeals for the Second Circuit held that the law violated the First Amendment by burdening the speech of pharmaceutical marketers and data miners without an adequate justification.<sup>68</sup> The decision of the Second Circuit was in conflict with earlier decisions of the United States Court of Appeals for the First Circuit concerning similar legislation enacted by Maine and New Hampshire.<sup>69</sup> The First Circuit characterized the collected information as a mere “commodity” with no greater entitlement to First Amendment protection than “beef

---

<sup>65</sup> Act of General Assembly Vermont, S. 115 (2007) available at <http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2008/acts/ACT080.HTM>

<sup>66</sup> *Id.*

<sup>67</sup> *IMS Health Inc., v. Sorrell*, 631 F. Supp. 2d 434 (D. Vt. 2009)

<sup>68</sup> *Sorrell v. IMS Health Inc.*, 630 F.3d 263 (2nd Cir. 2010).

<sup>69</sup> *IMS Health Inc. v. Mills*, 616 F. 3d 7 (1st Cir. 2010) (Maine); *IMS Health Inc., v. Ayotte*, 550 F.3d 42 (1<sup>st</sup> Cir. 2008) (New Hampshire).



jerky.”<sup>70</sup> Recognizing the circuit split, the Court granted certiorari in 2010. *Sorrell* was the first, and so far the only, Supreme Court decision addressing the use of data mining in the First Amendment context.

Emphatically rejecting the State’s arguments the Court held, “speech in aid of pharmaceutical marketing...is a form of expression protected by the Free Speech Clause of the First Amendment. As a consequence, Vermont’s statute must be subjected to heightened judicial scrutiny. The law cannot satisfy that standard.”<sup>71</sup> Although many amicus briefs (over 40 filed<sup>72</sup>) highlighted the increasingly technological matters of data collection and information gathering, the decision lacked any discussion the impact such a rule could have on the increasing use of data.<sup>73</sup> Rather, the Court focused on traditional commercial speech aspects instead of concerns about privacy, information manipulation, and individual autonomy.<sup>74</sup> As the Court emphasized throughout the opinion, the Vermont law only prohibited the sale of data for promotional purposes. The Court took this as a specific content and

---

<sup>70</sup> *Ayotte*, 550 F. 3d, at 52–53.

<sup>71</sup> *Sorrell*, 131 S. Ct. at 2659.

<sup>72</sup> *See generally*, BRIEF OF *AMICUS CURIAE* ELECTRONIC PRIVACY INFORMATION CENTER (EPIC) IN SUPPORT OF APPELLEE AND URGING AFFIRMANCE, No. 09 – 1913 (2009), available at [https://epic.org/privacy/ims\\_sorrell/epic\\_amicus.pdf](https://epic.org/privacy/ims_sorrell/epic_amicus.pdf); BRIEF OF *AMICI CURIAE* BLOOMBERG L.P., THE MCGRAW-HILL COMPANIES, INC., HEARST CORPORATION, PROPUBLICA, THE ASSOCIATED PRESS, THE REPORTERS COMMITTEE FOR FREEDOM OF THE PRESS AND THE TEXAS TRIBUNE IN SUPPORT OF RESPONDENTS, No. 10 – 779 (2011), available at [http://www.americanbar.org/content/dam/aba/publishing/previewbriefs/Other\\_Brief\\_Updates/10-779\\_respondentamcu7newsmediagrps.authcheckdam.pdf](http://www.americanbar.org/content/dam/aba/publishing/previewbriefs/Other_Brief_Updates/10-779_respondentamcu7newsmediagrps.authcheckdam.pdf); BRIEF OF *AMICUS CURIAE* ELECTRONIC FRONTIER FOUNDATION IN SUPPORT OF PETITIONERS, No. 10 – 779 (2011), available at <http://sblog.s3.amazonaws.com/wp-content/uploads/2011/03/10-779-tsac-Electronic-Frontier-Foundation.pdf>.

<sup>73</sup> *Sorrell*, 131. S. Ct. at 2669.

<sup>74</sup> Much scholarship has been written about the meaning of the *Sorrell* decision about the future of the commercial speech doctrine, however that is not the focus of this thesis and will not be addressed here.

speaker based restriction on the face of the law and sidestepped the technological nuances.<sup>75</sup> “The capacity of technology to find and publish personal information, including records required by the government, presents serious and unresolved issues with respect to personal privacy and the dignity it seeks to secure. In considering how to protect those interests, however, the State cannot engage in content-based discrimination to advance its own side of a debate,” states the opinion.

Although some privacy scholars and organizations warn that the rule will be catastrophic to privacy regulations by requiring strict scrutiny,<sup>76</sup> others took comfort that the court did not explicitly reference data mining and felt the decision would be limited in its scope.<sup>77</sup> University of Minnesota Law School privacy law professor William McGeeveran wrote, “The Court determined, quite rightly, that the state just doesn’t like what the pharmaceutical representatives say and wants to silence them...I think [the decision] preserves the core privacy issues for another day.”<sup>78</sup>

On the other hand, many have agreed with the dissenting Justices that the information-as-speech rule that emerges is dangerously broad and could lead to a

---

<sup>75</sup> *Sorrell*, 131 S. Ct. at 2660 – 2672.

<sup>76</sup> For the potential impacts on privacy: *See e.g.*, Ashutosh Bhagwat, *Sorrell v. IMS Health: Details, Detailing, and the Death of Privacy*, 36 VT. L. REV. 855, 855-56 (2012); Neil M. Richards, *Reconciling Data Privacy and the First Amendment*, 52 UCLA L. REV. 1149, 1173 (2005); Jane Bambauer, *Is Data Speech?*, 66 STAN. L. REV. 57 (2014).

<sup>77</sup> Jane Yakowitz, *Information is Not Beef Jerky*, Info/Law Blog, available at <http://blogs.harvard.edu/infolaw/2011/06/23/information-is-not-beef-jerky/>; Agatha M. Cole, *Internet Advertising After Sorrell v. IMS Health: A Discussion on Data Privacy & the First Amendment*, 30 CARDOZO ARTS & ENT. L.J. 283, 307 (2012).

<sup>78</sup> William McGeeveran, *Supreme Court RX Records Case: Not So Bad*, INFO LAW BLOG, <http://blogs.harvard.edu/infolaw/2011/06/23/sorrell-ims-decision/>.

Pandora’s Box of deregulatory challenges.<sup>79</sup> Justice Stephen Breyer joined by Justice Ginsburg and Justice Kagan, argued in his dissent that the Court’s holding protects information at too high a level of generality and could have consequences for many areas of law. “To apply a strict First Amendment standard virtually as a matter of course when a court reviews ordinary economic regulatory programs (even if that program has a modest impact upon a firm’s ability to shape a commercial message) would work at cross-purposes with this more basic constitutional approach. Since ordinary regulatory programs can affect speech, particularly commercial speech, in myriad ways, to apply a “heightened” First Amendment standard of review whenever such a program burdens speech would transfer from legislatures to judges the primary power to weigh ends and to choose means, threatening to distort or undermine legitimate legislative objectives,” Justice Breyer wrote.<sup>80</sup> After the *Sorrell* decision, many plaintiffs have used the First Amendment to challenge commercial regulations in matters ranging from public health to data privacy. “It is no exaggeration to observe that the First Amendment has become a power engine of Constitutional deregulation,” wrote Yale Law School Dean Robert Post.<sup>81</sup>

Even if *Sorrell* may appear unrelated to the question of what counts as speech in the digital realm, Google has frequently cited the case for a First Amendment

---

<sup>79</sup> Richard Samp, *Sorrell v. IMS Health: Protecting Free Speech or Resurrecting Lochner?*, CATO SUP. CT. REV. 129 (2011), Robert Post and Amanda Shanor, *Adam Smith’s First Amendment*, 128 HARV. L. REV. F. 165, 167 (2015); Tim Wu *Machine Speech*, *supra* note 8, at 1496, 1498, 1508 (“At some point a broad theory of speech would encounter the anticanonical influence of *Lochner v. New York*, or the prescription that the federal judiciary should not strike economic legislation based on its policy preferences.”)

<sup>80</sup> See *Sorrell*, 131 S. Ct. at 2673-77, 2680-81 (Breyer, J., Dissenting).

<sup>81</sup> Post, *Adam Smith’s First Amendment*, *Supra* note 79 at 16.

defense to anticompetitive claims regarding search rankings.<sup>82</sup> “As the Supreme Court has held, ‘information is speech,’” attorneys Eugene Volokh and Donald Falk argued in a 2012 white paper. “Search engine results are in reality not simply facts: They are collections of facts that are organized and sorted using the judgment embodied in the engines’ algorithms, and those judgments and algorithms represent the search engine companies’ opinions about what should be presented to users,” the paper asserts.

By utilizing broad language and ignoring the impact such reasoning could have when applied to cyberspace, the *Sorrell* decision further muddies the waters when it comes to speech in the digital age. With the economy becoming more reliant on information computation, some scholars have argued that the case signals a shift away from First Amendment protection for information as expression and toward protection for information as competitive advantage.<sup>83</sup> This shift could have large consequences the more technologies rely on data and information to target consumers.

---

<sup>82</sup> Volokh and Falk *Supra* note 59; Noam Cohen, *Professor Makes the Case that Google Is a Publisher*, NEW YORK TIMES (May 20, 2012), <http://www.nytimes.com/2012/05/21/business/media/eugene-volokh-ucla-professor-makes-a-case-for-google-as-publisher.html>.

<sup>83</sup> Julie Cohen, *The Zombie First Amendment*, 56 WM. & MARY L. REV. 1119, 1133 (2015).

Taken together, these recent decisions regarding code, algorithmic outputs and data represent the judiciary’s current method (or rather, the lack there of) for determining the threshold speech question in technological situations. To briefly recap the rules and reasoning here:

**Code:** Courts have found that code is protected speech and triggers heightened scrutiny based on a theory that code is akin to a written language.

**Algorithmic Outputs:** Courts have found that algorithmic outputs constitute speech and trigger heightened scrutiny based on a theory that they convey an “opinion.”

**Data:** “The creation and dissemination of information are speech within the meaning of the First Amendment,” wrote Justice Kennedy, seemingly based upon a theory against signaling out access to information for certain speakers.

Over a decade ago, Dean of Yale Law School Robert Post remarked “First Amendment coverage is triggered by those forms of social interaction that realize First Amendment values.” He went on to comment that “digital media, like the Internet, are so new and have such labile patterns of social interaction that it seems to me enormously difficult to acquire reliable normative or descriptive traction on the relevant questions – it will thus be necessary to pursue this line of inquiry.<sup>84</sup> However, as others have critiqued, rather than fully take into account the context of how the digital realm operates, courts have continued to analogize to the past while making broad formulaic

---

<sup>84</sup> Robert Post, *Encryption Source Code and the First Amendment*, 15 BERKELEY TECH. L.J. 713, 716 (2000).

rules about the individual elements that create cyberspace.<sup>85</sup> The decisions here also lack any discussion on the potential impact of First Amendment values. Nor do they highlight, as one scholar puts it, “what makes speech special.”<sup>86</sup> As several have pointed out, the lack of deliberation and policy concern has similarities to the *Lochner* era of labor regulations.<sup>87</sup> Such an inclusive approach to speech may lead the First Amendment on a “tech bubble”<sup>88</sup> heading for a burst in the near future.

---

<sup>85</sup> See e.g., Orin S. Kerr, *Are We Overprotecting Code? Thoughts on First-Generation Internet Law*, 57 WASH. & LEE L. REV. 1287, 1291 (2000); Andrew Tutt, *The New Speech*, 41 HASTINGS CONST. L.Q. 235, 297 (2014); Josh Blackman, *What Happens if Data is Speech?*, 16 U. PA. J. CONST. L. HEIGHTENED SCRUTINY 25, 36 (2014).

<sup>86</sup> Andrew Tutt, *The New Speech*, 41 HASTINGS CONST. L.Q. 235, 297 (2014).

<sup>87</sup> See Cohen *supra* note 83; Langvardt *supra* note 44.

<sup>88</sup> Langvardt *Supra* note 44 at 809.

## II. THINKING CRITICALLY ABOUT ALGORITHMS AND MACHINE LEARNING

Understanding algorithms and their impact on the information ecosystem is necessary if the First Amendment is to avoid such a bubble and continue to protect the values that we hold as a nation: the marketplace of ideas, and individual autonomy/self-governance. This section begins with historical overview of the term “algorithm” and how the concept and technology has advanced. It then reviews mass communication research in this area to spotlight how our information ecosystem has changed.

### A. History

The word “algorithm” has become a household term in recent years, due to an explosion of academic study and media focus.<sup>89</sup> Yet, while the term “algorithm” is commonly understood as a set of defined steps to produce a particular solution, this is somewhat an oversimplification.<sup>90</sup> The cultural conception of algorithms tends to conflate the full spectrum- from static mathematical procedures to advanced automated learning and reasoning methods. In addition, algorithms can be contemplated in a number of ways: technically, mathematically, politically, culturally, ethically, and so forth. The truth is algorithms have evolved over centuries, come in many forms, and can be studied in a myriad of ways, one of the reasons why many scholars find their study difficult.<sup>91</sup>

---

<sup>89</sup> David Beer, *The social power of algorithms*, 20 INFORMATION, COMMUNICATION & SOCIETY, 1, 1-13 (2017).

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* As David Beer writes “perhaps the biggest single issue we have to consider when attempting to research the social power of algorithms is the potential difficulty of fully appreciating the object of study.”

The term “algorithm” has been traced back to twelfth-century mathematician Muhammad ibn Musa al-Khwarizmi, whose texts described reliable step-by-step procedures for finding solutions to equations.<sup>92</sup> In the mid-twentieth century, Alonzo Church and Alan Turing, among other scholars, incorporated algorithms into code allowing for scientific computation.<sup>93</sup> Algorithms are often understood as being the “decision-making” elements of code.<sup>94</sup> For example, computer programs structure layers of algorithms together creating decision trees that when compiled will perform the task or solve the problem.

However, over the past few years, and especially since 2015, a new type of algorithm has emerged - one that utilizes concepts from the field of artificial intelligence. Also during the mid-twentieth century, AI pioneers, including John McCarthy, Frank Rosenblatt, and Marvin Minsky, dreamed of empowering computing systems with the gift of intelligence or the ability to learn from experience.<sup>95</sup> However, it was not until recently with the one-two punch of an explosion in computational power and the big data revolution that their dreams of machine learning could be realized.

Machine learning at its most basic level is the practice of using algorithms to parse data, learn from it, and then make a determination or prediction. Rather than hand-coding software routines with a specific set of instructions, the program is

---

<sup>92</sup> Osonde Osoba and William Welser IV, *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744)

<sup>93</sup> Michael Copeland, *What’s the difference between artificial intelligence, machine learning, and deep learning?*, NVIDIA Blog, (July 29, 2016), available at <https://blogs.nvidia.com/blog/2016/07/29/whats-difference-artificial-intelligence-machine-learning-deep-learning-ai/>

<sup>94</sup> Beer *Supra* note 89 at 3.

<sup>95</sup> Osoba and Welser *Supra* note 92 at 3.



“trained” using large amounts of data and code that give it the ability to learn how to perform the task.<sup>96</sup> Big data provides the steady stream of information necessary for extracting valuable insight.<sup>97</sup> As algorithms are fed more data, the more they are able to learn and the more precise they become or so the theory goes. The code has been programmed to evolve, re-writing its algorithms as it observes, experiments, and learns independently of its creators.<sup>98</sup>

This technology is what made Google DeepMind’s AlphaGo victorious against South Korean Master Lee Se-Dol in the board game Go in 2016.<sup>99</sup> It is also employed in Google’s search engine, Facebook’s facial recognition function, and digital assistants such as Amazon’s Echo and Alphabet’s Home.<sup>100</sup> In short, these modern algorithms are no longer fixed in form, but are emergent and constantly unfolding and updating in multifarious ways. They are reactive to input, interaction, and situation and they adjudicate more and more decisions in daily life. This has lead

---

<sup>96</sup> *Id.*

<sup>97</sup> This stream will only grow as objects become more networked into the Internet of things to produce more data. See Samuel Woolley and Philip Howard, *Political Communication, Computational Propaganda, and Autonomous Agents*, 10 INTERNATIONAL JOURNAL OF COMMUNICATION, 4882-4890(2016).

<sup>98</sup> Rob Kitchin, *Thinking critically about and researching algorithms*, 20 INFORMATION, COMMUNICATION & SOCIETY 1, 14-29 (2017).

<sup>99</sup> Stephen Borowiec, *AlphaGo seals 4-1 victory over Go grandmaster Lee Sedol*, THE GUARDIAN (March 15, 2016), <https://www.theguardian.com/technology/2016/mar/15/googles-alphago-seals-4-1-victory-over-grandmaster-lee-sedol>

<sup>100</sup> Maurice E. Stucke and Ariel Ezrachi, *The subtle ways your digital assistant might manipulate you*, WIRED (Nov. 29, 2016), <https://www.wired.com/2016/11/subtle-ways-digital-assistant-might-manipulate/>.

several scholars to declare that algorithms, driven by vast troves of data, are the new “power brokers” in society.<sup>101</sup>

Although most individuals attribute an aura of objectivity and infallibility to computerized decisions (in no small part due to technology companies’ presentation of algorithms as purely formal and neutral beings of reason)<sup>102</sup> critical scholars argue that algorithms possess none of these qualities except as carefully crafted fictions.<sup>103</sup> Rather, algorithms are embedded and shaped by significant social, political, and infrastructure decisions.<sup>104</sup> Furthermore, as communication scholar Rob Kitchin noted, “algorithms are created for purposes that are often far from neutral: to create value and capital; to nudge behavior and structure preferences in a certain way; and to identify, sort and classify people.”<sup>105</sup>

Although algorithms are deployed in numerous industries from security to financial to medical, the focus here will be on how code, and its algorithms, have disrupted the information ecosystem as we knew it. By mediating how news is produced, distributed, and consumed, algorithms increasingly have a vast impact on informing and shaping individual choice. The implications of this revolution are significant on the values attributed to free expression, such as the marketplace of

---

<sup>101</sup> Nicholas Diakopoulos, *Algorithmic Accountability*, 3:3 DIGITAL JOURNALISM, 398-415 (2015); *See also*, FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (1st ed. 2015).

<sup>102</sup> Matthew Fuller, *Software studies – A lexicon*, 15–20 (1<sup>st</sup> ed. 2008); *See also* Danielle Citron, *Technological Due Process*, 85 Wash. U. L. Rev. 1249, 313 (2007).

<sup>103</sup> Tarleton Gillespie, *The relevance of algorithms*, in *MEDIA TECHNOLOGIES: ESSAYS ON COMMUNICATION, MATERIALITY, AND SOCIETY* 178, 192 (Tarleton Gillespie, Pablo Boczkowski, and K.A. Foot, eds., 2014)

<sup>104</sup> *See e.g.*, Frank Pasquale, *THE FILTER BUBBLE: WHAT THE INTERNET IS HIDING FROM YOU* (1st ed. 2011).

<sup>105</sup> Kitchin, *Supra* note 98 at 18.

ideas, individual autonomy, and an informed electorate. Understanding their impact on such values is therefore vital for the survival of the First Amendment and our democracy.

## **B. Algorithms and Information**

Perhaps the most ironic consequence of the advance of the “information superhighway” has been the devaluation of legacy news organizations.<sup>106</sup> Instead of newspapers or their website homepages, platforms like Facebook, Apple News, Google, and Twitter are increasingly the places individuals rely on to find information about their neighborhoods, nation, and world.<sup>107</sup> According to a recent study by the Pew Research Center, four out of ten adults in the United States get their news primarily from Facebook.<sup>108</sup> That number is likely to grow as nearly half of readers below the age of 35 consider Facebook and Twitter to be either an important or the most important way they get news and information.<sup>109</sup> “The idea that the press was held in the venerable houses of *The New York Times*, *The Washington Post*, the *Financial Times*, *The Guardian* has really changed,” said Kate Crawford, a principal researcher at Microsoft Research and a

---

<sup>106</sup> Meant to be those organizations that predate the Internet and hire journalists who adhere to core journalistic ethics. This includes the *New York Times*, and *The Washington Post*.

<sup>107</sup> See e.g., PEW RESEARCH CTR., STATE OF THE NEWS MEDIA, 28 (2016), available at <http://www.pewresearch.org/topics/state-of-the-news-media/2016/>. Highlighting the complexity of what is happening to the news industry by the numbers.

<sup>108</sup> PEW RESEARCH CTR., NEWS USE ACROSS SOCIAL MEDIA PLATFORMS (2016), [http://www.journalism.org/files/2016/05/PJ\\_2016.05.26\\_social-media-and-news\\_FINAL-1.pdf](http://www.journalism.org/files/2016/05/PJ_2016.05.26_social-media-and-news_FINAL-1.pdf). (showing that the percentage of Facebook users who get news on the site rose from 47 to 66 percent between 2013 and 2016, for Twitter from 52 to 59 percent and for Instagram from 13 to 23 percent); See also PEW RESEARCH CTR., THE EVOLVING ROLE OF NEWS ON TWITTER AND FACEBOOK 13 (2015), <http://www.journalism.org/files/2015/07/Twitter-and-News-Survey-Report-FINAL2.pdf>.

<sup>109</sup> *Id.*

visiting professor at MIT's Center for Civil Media. "Today we see players like Snapchat, Facebook, Twitter, Instagram, playing extraordinarily powerful roles in the dissemination and understanding of information in the world."<sup>110</sup>

The role of information gatekeeper is not just shifting to other news sources, but is being delegated to algorithms. Algorithms determine what information reaches individuals and unlike journalists who follow a code of objectivity and accuracy, algorithms and their owners are primarily concerned with relevance – the goal being to discern exactly what users want to read and to give just that.<sup>111</sup> As one scholar has described it, competing forms of logic undergird journalism and algorithms. "[E]ditorial logic," says Tarleton Gillespie, "depends on the subjective choices of experts, themselves made and authorized through institutional processes of training and certification, or validated by the public through the mechanisms of the market."<sup>112</sup> In contrast, "algorithmic logic . . . depends on the proceduralized choices of a machine, designed by human operators to automate some proxy of human judgment or unearth patterns across collected social traces."

This focus on relevance has led to what journalist and media scholar Eli Pariser coined the "filter bubble."<sup>113</sup> Filtering involves including or excluding information according to various rules or criteria. In news personalization, platforms filter news according to how that news has been categorized and associated to the user's interests,

---

<sup>110</sup> Journalism + Silicon Valley Conference, YOUTUBE (Nov. 13, 2015), *available at* <https://www.youtube.com/watch?v=0Qftw6VkDKQ> (at 52:30).

<sup>111</sup> *Id.* While these tech company employees "may not self-identify as journalists," say Kate Crawford and Mike Ananny, a professor at the University of Southern California's Annenberg School of Communication and Journalism, "they define the conditions under which news is created and circulated."

<sup>112</sup> Gillespie *supra* note 103.

<sup>113</sup> PARISER, THE FILTER BUBBLE, *supra* note 104, at 9.

prioritized for that person. As Facebook founder Mark Zuckerberg states, Facebook's hope is to build the "perfect personalized newspaper" for every person in the world.<sup>114</sup>

However, filtering decisions can either over-emphasize or censor certain information by exposing individuals to news that they already agree with, thereby amplifying biases and hampering people's development of diverse and healthy perspectives.<sup>115</sup> "Our media is becoming a perfect reflection of our interests and desires" Pariser writes.<sup>116</sup>

To see an example of the impact such a bubble could have, *The Wall Street Journal* created a tool called "Blue Feed, Red Feed."<sup>117</sup> Users could click on a variety of changing topics, which included terms like "ISIS," "Donald Trump," and "Abortion," to see how, according to the newspaper, "reality may differ for different Facebook users" depending on their politics.<sup>118</sup> The creator of the project, Jon Keenan, noted the difficulty of trying to escape the effect of the algorithm. "If you wanted to widen your

---

<sup>114</sup> Eugene Kim, *Mark Zuckerberg Wants to Build the 'Perfect Personalized Newspaper' for Every Person in the World*, BUSINESS INSIDER, Nov. 6, 2014, <http://www.businessinsider.com/mark-zuckerberg-wants-to-build-a-perfect-personalized-newspaper-2014-11>

And yet, Facebook in particular has adamantly resisted taking on the mantle of the media. Rather, it has worked hard to present itself as little more than a conduit for its users interests and desires. For example, in the immediate aftermath of the election of Donald Trump, Zuckerberg scoffed at the notion that Facebook had influenced the outcome calling it a "pretty crazy idea." He also wrote, "News and media are not the primary things people do on Facebook, so I find it odd when people insist we call ourselves a news or media company." See Mike Isaac, *Facebook, in Cross Hairs After Election, Is Said to Question Its Influence*, N.Y. TIMES, Nov. 12, 2016, <http://www.nytimes.com/2016/11/14/technology/facebook-is-said-to-question-its-influence-in-election.html>; Barbara Otutay, *Zuckerberg: "Crazy" to say Facebook influenced election*, THE WASHINGTON POST, Nov. 11, 2016, [https://www.washingtonpost.com/national/zuckerberg-that-facebook-influenced-election-is-crazy/2016/11/11/2ff14280-a822-11e6-ba46-53db57f0e351\\_story.html](https://www.washingtonpost.com/national/zuckerberg-that-facebook-influenced-election-is-crazy/2016/11/11/2ff14280-a822-11e6-ba46-53db57f0e351_story.html).

<sup>115</sup> PARISER *supra* note 104, at 12

<sup>116</sup> *Id.*

<sup>117</sup> *Blue Feed, Red Feed*, WALL STREET J., <http://graphics.wsj.com/blue-feed-red-feed>.

<sup>118</sup> *Id.*

perspective and see things from a broad range of backgrounds, you would have to go and like the pages yourself,” he said. “Facebook’s product makes it hard to do this.”<sup>119</sup>

And it’s not just social media platforms that deliver and filter information. Search engine providers often return a different list of results tailored to the individual user, thus further contributing to the “bubble.”<sup>120</sup> This has prompted scholars to contend that rather than treating a search engine as a neutral conduit objectively delivering results, search engines act more like advisors to the user by being responsive to the query and suggesting which results it deems most relevant based on knowledge about the asker.<sup>121</sup>

In addition to mediating how news is recommended and consumed, algorithms have also impacted how it’s created. Gone are the days of dramatic “Page One” meetings between journalists and their editors.<sup>122</sup> Enter coders, engineers, and data points. “Precisely because information algorithms make judgments that can have powerful consequences, those interested in having their information selected as relevant will tend to orient themselves toward these algorithmic systems to make themselves

---

<sup>119</sup> *Id.* In a related project, *The Washington Post* publishes an e-newsletter called “The World According to Facebook” in which it logs the stories that trend on Facebook, Google, and Twitter. See *The World According to Facebook*, THE WASHINGTON POST, <http://tinyletter.com/the-intersect/subscribe/validate>. The site says that the effort aims to “venture into a sobering and not-so-alternate reality, where the news of the day is picked by algorithms we can’t really see.”

<sup>120</sup> Google engages, when it can, in what it calls “search personalization.” Its search results change on a variety of criteria, including the geographic location of the search, and one’s past “search history.” See Carl Franzen, *Impersonal Google Search Results Are Few and Far Between DuckDuckGo Finds*, TPM (Oct. 15, 2012), <http://talkingpointsmemo.com/idealab/impersonal-google-search-results-are-few-and-far-between-duckduckgo->

<sup>121</sup> See e.g., Oren Bracha and Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability In the Law of Search*, 93 Cornell L. Rev. 1149 (2008); Jack Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. Davis L. Rev. (2016).

<sup>122</sup> Kyle Massey, *The Old page 1 Meeting, R.I.P.: Updating a Times Tradition for the Digital Age*, N.Y. TIMES, May 12, 2015, <http://www.nytimes.com/times-insider/2015/05/12/the-old-page-1-meeting-r-i-p-updating-a-times-tradition-for-the-digital-age/>.

algorithmically recognizable in the hopes of being amplified by them,” writes Gillespie.<sup>123</sup>

In search of the audience and the revenue that they once enjoyed, legacy news organizations are now reliant on being “picked up” or recognized by algorithms, which has meant that platforms and search engines are now able to exert control over the creation of content in news rooms. “The *Times* is now publishing articles it never would have touched before in order to stay part of a conversation that’s taking place on social media and read on smartphones,” Margaret Sullivan, the former public editor of *The New York Times*, wrote in her final column for the paper.<sup>124</sup> Facebook “dictates how resources are spent and what stories are told,” journalist Julia Greenberg wrote in *Wired*. This is “[n]ot in a sort of theoretical, hey-this-could-happen-someday kind of way, but a real, look-it’s-happening-all-around-us-already way. Facebook is setting the rules, and news organizations are following.”<sup>125</sup> Any public change in an algorithm often sets off a new round of strategizing by traditional media companies.<sup>126</sup>

---

<sup>123</sup> Tarleton Gillespie, *Algorithmically recognizable: Santorum’s Google problem, and Google’s Santorum problem*, 20 *Information, Communication, and Society*, 63, 70 (2017).

<sup>124</sup> See Margaret Sullivan, *Public Editor No. 5 is Yesterday’s News*, N.Y. TIMES, April 17, 2016, <http://www.nytimes.com/2016/04/17/public-editor/margaret-sullivan-new-york-times-public-editor.html>

<sup>125</sup> Julia Greenberg, *Facebook has seized the Media and that’s bad news for everyone but Facebook*, WIRED (Apr. 13, 2016), <https://www.wired.com/2016/04/facebook-seized-media-thats-bad-news-everyone-facebook/>.

<sup>126</sup> See Mike Isaac and Sydney Ember, *Facebook to Change News Feed to Focus on Friends and Family*, N.Y. TIMES, June 29, 2016, <http://www.nytimes.com/2016/06/30/technology/facebook-to-change-news-feed-to-focus-on-friends-and-family.html>; Damon Beres, *Facebook Just Gave the Finger to Millions of People Who Use It For News*, HUFFINGTON POST, June 29, 2016 (“Facebook’s algorithm tweaks always tend to send the media into a frenzy. And yes, that’s partially because writers rely on Facebook to reach their audience and get paid.”).

In addition, algorithms are frequently becoming the content creators themselves. Outlets such as the *Associated Press* and *Los Angeles Times* are pioneers in “robot journalism” or “automated journalism” in which algorithms actually write stories.<sup>127</sup> The *Associated Press* announced in 2015 that it was automatically generating more than 3,000 stories per quarter about corporate earnings.<sup>128</sup> The *Los Angeles Times* created “Quakebot,” which utilizes data from the U.S. Geological Survey’s Earthquake Notification System to automatically generate stories about earthquakes.<sup>129</sup> However, in several instances the newspaper published algorithmically authored stories based on faulty data about earthquakes that never occurred.<sup>130</sup>

In another example, on August 26, 2017, Facebook announced that its human editors would no longer write descriptions for its Trending topics nor vet the Trending topics for accuracy. That job was given over to the company’s algorithms. However, three days after removing the human eye, Facebook’s algorithm chose a factually incorrect headline regarding Megyn Kelly.<sup>131</sup> The headline claimed the Fox News channel had “Kicked her out for backing Hillary.”<sup>132</sup> It had not. Over two weeks, *The*

---

<sup>127</sup> See *Guide to Automated Journalism*, TOW CENTER FOR DIGITAL JOURNALISM, Jan. 7 2016, <http://towcenter.org/research/guide-to-automated-journalism/>; Damian Radcliffe, *Did a robot write this article? The upsides and downsides of automated journalism*, BBC ACADEMY BLOG, June 23, 2016, <http://www.bbc.co.uk/blogs/academy/entries/e327bbb3-4bf8-4083-82ae-2153665535b1>

<sup>128</sup> Radcliffe, *supra* note 127.

<sup>129</sup> *Guide to Automated Journalism*, *supra* note 127.

<sup>130</sup> *Id.*

<sup>131</sup> Abby Ohlheiser, *Three days after removing human editors, Facebook is already trending fake news*, THE WASHINGTON POST (Aug. 29, 2016) [https://www.washingtonpost.com/news/the-intersect/wp/2016/08/29/a-fake-headline-about-megyn-kelly-was-trending-on-facebook/?tid=ai\\_inl&utm\\_term=.44ddff3e32a9](https://www.washingtonpost.com/news/the-intersect/wp/2016/08/29/a-fake-headline-about-megyn-kelly-was-trending-on-facebook/?tid=ai_inl&utm_term=.44ddff3e32a9).

<sup>132</sup> *Id.*



*Washington Post* uncovered five trending completely false news stories, and three that were profoundly inaccurate.<sup>133</sup> Needless to say, since Facebook’s Trending feature is supposed to serve as a snapshot of the day’s most important and most-discussed news curreted for the individual user, the fact that it was repeatedly spreading misinformation is concerning to say the least.<sup>134</sup>

Regarding search, media scholars Latanya Sweeney and Nick Diakopoulos highlighted instances of “algorithmic defamation by association” in Google searches and ads. Diakopoulos discussed examples where Google auto-completion routines often made defamatory or bigoted associations about people or groups of people related to transgender issues.<sup>135</sup> Such algorithmic associations raise ethical concerns to the extent that they signal certainty, discourage alternative explorations, and create coherence among disparate objects.<sup>136</sup>

---

<sup>133</sup> Caitlin Dewey, *Facebook has repeatedly trended fake news since firing its human editors*, THE WASHINGTON POST (Oct. 12, 2016) [https://www.washingtonpost.com/news/the-intersect/wp/2016/10/12/facebook-has-repeatedly-trended-fake-news-since-firing-its-human-editors/?utm\\_term=.a912435ecf22](https://www.washingtonpost.com/news/the-intersect/wp/2016/10/12/facebook-has-repeatedly-trended-fake-news-since-firing-its-human-editors/?utm_term=.a912435ecf22)

<sup>134</sup> Facebook as come under real heat since the 2017 election for its hand in sharing “fake news.” See Vivek Wadhwa, *What Google and Facebook must do about one of their biggest problems*, THE WASHINGTON POST, (Apr. 12, 2017) [https://www.washingtonpost.com/news/innovations/wp/2017/04/12/what-google-and-facebook-must-do-about-one-of-their-biggest-problems/?utm\\_term=.f096ce3dd7c0](https://www.washingtonpost.com/news/innovations/wp/2017/04/12/what-google-and-facebook-must-do-about-one-of-their-biggest-problems/?utm_term=.f096ce3dd7c0)

<sup>135</sup> Nicholas Diakopoulos, *Algorithmic Defamation: e Case of the Shameless Autocomplete*, Tow Center for Digital Journalism Blog (Aug. 6, 2013) <http://towcenter.org/algorithmic-defamation-the-case-of-the-shameless-autocomplete/>; Nicholas Diakopoulos, *Accountability in Algorithmic Decision Making*, 59 *Communications of the ACM* 2, 56-62 (2016); Latanya Sweeney, *Discrimination in Online Ad Delivery*, 11 *ACM Queue* 3, 10 (2013); In addition, other countries have attempted to regulate search engine defamation. For example, Germany now holds Google partially responsible for the correctness of its auto complete suggestions. See Karin Retzer and Alja Poler De Zwart, *German court holds Google responsible for its search suggestions*, Socially Aware Blog (June 17, 2013) <http://www.sociallyawareblog.com/2013/06/17/german-court-holds-google-responsible-for-its-search-suggestions/>.

<sup>136</sup> Mike Ananny, *Toward an Ethics of Algorithm: Convening, Observation, Probability, and Timeliness*, 41(1) *SCIENCE, TECHNOLOGY, & HUMAN VALUES*, 93, 103 (2016).

In addition, political “bots” or algorithms written to learn from and mimic real people on social media are becoming a regular tool for lobbyists, activists, and political campaigns to spread information or “computational propaganda.”<sup>137</sup> Computational propaganda is the “assemblage of social media platforms, autonomous agents, and big data tasked with the manipulation of public opinion.”<sup>138</sup> Although computer scientists and policy makers often treat bots as a nuisance to be managed, others argue that they have significant social impact and are becoming more sophisticated with advancements in technology and data mining.<sup>139</sup> “Altogether, social media, political bots, and the Internet of things enable computational propaganda. Autonomous agents, equipped with big data about our behavior collected from the Internet of things, work over social media to engage with us on political issues and advance ideological projects,” cautioned media scholar Samuel Woolley and University of Oxford professor Philip Howard.<sup>140</sup>

As the examples above show, algorithms mediate information and influence our lives in a number of ways. In addition, thanks to advances in technology, the shape and character of digital communications are shifting again and newspaper homepages are no longer the primary means by which most people encounter information. It is important for courts to understand the impact and take it into account as our society evolves in the information age.

---

<sup>137</sup> Samuel C. Woolley and Philip N. Howard, *Political Communication, Computational Propaganda, and Autonomous Agents*, 10 INTERNATIONAL JOURNAL OF COMMUNICATION, 4882-4890 (2016).

<sup>138</sup> *Id.* at 4886.

<sup>139</sup> *Id.*

<sup>140</sup> *Id.*

### **III. PUTTING IT TOGETHER – ALGORITHMS, MACHINE LEARNING, AND THE FIRST AMENDMENT**

As stated above, algorithms do not adhere to any type of ethical code. They cannot intuitively vet material for truth. They are neither accountable nor transparent in their decisions to select, prioritize, and recommend information.<sup>141</sup> Yet, individuals are increasingly looking towards algorithmically mediated platforms for their information and news.

At the same time, the legal case analysis above illustrates how the court's current approach to awarding First Amendment protection fails in two main areas. First, judges often have insufficient comprehension of how the technological elements of code, data, and algorithms function together to give rise to a new information ecosystem. Second, there is a lack of understanding and discussion of how expanding speech protections to new technologies may actually hinder the values the First Amendment is assumed to safeguard as we become to rely on algorithmically mediated information. Both will be addressed here.

#### **A. Theory**

Much ink has been spilled debating the philosophical theories underlying the First Amendment and the values it is supposed to protect, the most prominent being the marketplace of ideas, individual autonomy, and democracy.<sup>142</sup> However, considerably

---

<sup>141</sup> See Society of Professional Journalists, Code of Ethics, available at <https://www.spj.org/ethicscode.asp> (last visited Apr. 23 2017). In fact, algorithms conflict with the SPJ code of Ethics, which includes four basic precepts: “seek truth and report it,” “minimize harm,” “act independently,” and “be accountable and transparent.”

<sup>142</sup> HARRY KALVEN, JR., A WORTHY TRADITION: FREEDOM OF SPEECH IN AMERICA 3 (Jamie Kalven, ed., 1988) (“The Court has not fashioned a single, general theory which would explain all of its decisions; rather, it has floated different principles for different problems.”).

less ink has been devoted to how algorithms, especially those that employ machine-learning, may challenge these values as the information ecosystem changes. This section strives to provide an overview here.

### **The Marketplace of Ideas**

“The ultimate good desired is better reached by free trade in ideas — that the best test of truth is the power of the thought to get itself accepted in the competition of the market,” Justice Holmes infamously declared in his *Abrams v. United States* dissent.<sup>143</sup> The classic image of competing ideas and robust debate is frequently used by scholars and judges to explain and justify First Amendment freedoms.<sup>144</sup> The marketplace theory posits that “truth” will eventually emerge through comparison of competing viewpoints.<sup>145</sup> However, such a metaphor seems farfetched in the current realities of the algorithm era.

The basic requirement of the marketplace of ideas is similar to that of capitalism. It only works if there is perfect competition, uninhibited by interference. However, as highlighted above, algorithms often mediate information through search and social platforms. The filter bubble effect discussed above and direct manipulation by platforms are two ways in which the marketplace is skewed.

---

<sup>143</sup> *Abrams v. United States*, 250 U.S. 616, 625-631 (1919). (Dissenting Opinion.)

<sup>144</sup> See FREDERICK SCHAUER, *FREE SPEECH: A PHILOSOPHICAL ENQUIRY* 15- 34 (1982); Vincent Blasi, *Holmes and the Marketplace of Ideas*, 1 SUP. CT. REV., 33-44.

<sup>145</sup> *Id.*

By deprioritizing challenging material, filtering discourages alternative exploration, while at the same time limits other sources and contradictory viewpoints.<sup>146</sup> Filtering may also signal an aura of legitimization and certainty. As algorithms often do not take accuracy into account, individuals may be fed information with the illusion of creditability creating a web of questionable facticity.<sup>147</sup> This has arguably led to the rise of conspiracy websites such as infowars.com and beforeitsnews.com, and more recently the phenomenon of fake news and clickbait.<sup>148</sup> The bubble makes it difficult for “truth” to be found, especially if individuals are not aware of its occurrence - which is discussed below.

While intermediaries argue that any case of direct manipulation of information would be cured by the increasing personalization of results, as legal scholars Oren Bracha and Frank Pasquale eloquently wrote in 2008 “far from solving the problem, [personalized search] seems to increase the stakes of manipulation and temptation to engage in it. The logic of this prediction is simple. Personalized search targeted at the specific characteristics of users makes possible more finely tuned manipulation and increases the potential value of each intervention in the search results.”<sup>149</sup>

Machine learning and the data revolution accelerate this concern, especially as the shift occurs from search engines that determine what people are looking for to virtual

---

<sup>146</sup> Praiser, FILTER BUBBLE, *supra* note 104.

<sup>147</sup> Cathy O’Neil, Facebook’s Algorithm vs. Democracy, Nova Next Blog (2016) <http://www.pbs.org/wgbh/nova/next/tech/facebook-vs-democracy/>?. A lot of influence has come from other nation states, including Russia.

<sup>148</sup> *Id.*

<sup>149</sup> Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1150 (2008). For a similar take, see James Grimmelman, *Speech Engines*, 98 MINN. L. REV. 868, (2014).

concierges or assistants that know precisely how to assist people with decisions. This shift is already taking place with Amazon’s Echo and Google’s Home at the forefront. *Wired* explained the cycle, “ as [our] butler surfs the web to seamlessly provide more of what interests us and less of what doesn’t, we will grow to like and trust it...The more we rely on our butler, the more data it collects on us, the more opportunities for the algorithms to learn, and the better the butler can predict our needs and identify relevant services. The more we use the butler, the more power it will have.”<sup>150</sup>

Furthermore, courts have recognized the government’s role in protecting against potential private interference before. In *Turner Broadcasting* the Supreme Court observed that the First Amendment “does not disable the government from taking steps to ensure that private interests not restrict, through physical control of a critical pathway of communication, the free flow of information and ideas.”<sup>151</sup> The *Turner* ruling highlights the responsibility of the government to act when access to information make be at stake.

### **Individual Autonomy and Democracy**

A litany of legal scholars and political theorists agree that the First Amendment’s role is central to the promotion of democracy. For example, as Robert C. Post has argued, the media provides citizens the information they need to debate the many issues being acted upon by their government and in creating this “public sphere”

---

<sup>150</sup> Maurice E. Stucke and Ariel Ezrachi, *The Subtle Ways Your Digital Assistant Might Manipulate You*, WIRED (Nov. 29, 2016), <https://www.wired.com/2016/11/subtle-ways-digital-assistant-might-manipulate/>.

<sup>151</sup> *Turner Broad. Sys. v. FCC*, 512 U.S., 622, 657 (1994).

they “preserve the democratic legitimacy of our government.”<sup>152</sup> A necessary prerequisite to an informed debate is the ability to use reason and practical judgment about the information at hand.

However, algorithmic mediation often passes individuals by without being noticed or understood.<sup>153</sup> For example, one recent study found college students were “largely unaware” of news prioritization on Facebook and Google, two sites younger individuals increasingly rely on for news.<sup>154</sup> Insufficient knowledge surrounding algorithmic influence creates a self-governance issue. If individuals are unaware how algorithms are influencing content, they cannot make critical decisions about what they choose to believe.<sup>155</sup> As media scholar Diakopoulos highlights, “in the print world, partisan media was transparent about its biases, and readers could therefore select which bias they preferred. Today, readers don’t necessarily know how algorithms are biased and how nuanced the filters they receive content through really are. Newspapers have always been able to have an editorial voice and to possibly even affect voting patterns based on that editorial voice,” says Diakopoulos. “But what we’re seeing [now] is the ability to scale across a population in a much more powerful way.”<sup>156</sup>

---

<sup>152</sup> Robert C. Post, *A Progressive Perspective on Freedom of Speech*, in *THE CONSTITUTION IN 2020*, 17-182; see also ALEXANDER MEIKLEJOHN, *The Rulers and the Ruled*, in *POLITICAL FREEDOM: THE CONSTITUTIONAL POWERS OF THE PEOPLE* 8, 25–28 (Oxford Univ. Press 1965) (1948).

<sup>153</sup> Taina Bucher, *The algorithmic imaginary: exploring the ordinary affects of Facebook algorithms*, 20(1) *INFORMATION, COMMUNICATION & SOCIETY* 30, 44 (2017).

<sup>154</sup> Elia Powers, *My News Feed is filtered? Awareness of news personalization among college students*, *DIGITAL JOURNALISM* (2017); see also *Pew supra* note

<sup>155</sup> Jihii Jolly, *How algorithms decide the news you see*, *COLUMBIA JOURNALISM REVIEW* (May 20, 2014) [http://archives.cjr.org/news\\_literacy/algorithms\\_filter\\_bubble.php](http://archives.cjr.org/news_literacy/algorithms_filter_bubble.php).

<sup>156</sup> Nicholas Diakopoulos *Algorithmic accountability reporting: On the investigation of black boxes*. A Tow/Knight Brief. Tow Center for Digital Journalism, Columbia Journalism School. (2013) [http://towcenter.org/wp-content/uploads/2014/02/78524\\_Tow-Center-Report-WEB-1.pdf](http://towcenter.org/wp-content/uploads/2014/02/78524_Tow-Center-Report-WEB-1.pdf).

Scholars have also noted that what people miss is the “unknown unknowns,”<sup>157</sup> and the standardization of information. “Recommending a search, standardizing a user’s online behaviors, and suggesting a purchase—involves unseen, categorical, computational judgments about which searches, articles, or purchases should probably come next. Users are not offered limitless options but are, in fact, given a narrowly construed set that comes from successfully fitting other people, past actions, and inanimate objects into categories—using categories to discipline action. —categorically narrowing the set of socially acceptable answers to the question of what ought to be done,” writes Mike Ananny.<sup>158</sup>

Insufficient knowledge occurs for two main reasons. First, organizations limit the details of their algorithms for fear that transparency would undermine their competitive advantage, hurt their reputation, or leave the system open to manipulation.<sup>159</sup> As such, their algorithms and code are protected from disclosure by trade secret laws.<sup>160</sup> Second, the technical complexity and opacity can hide and obfuscate their inner workings to

---

<sup>157</sup> Bracha and Pasquale *supra* note 121.

<sup>158</sup> Ananny *supra* note 136.

<sup>159</sup> *See e.g.*, Frank Pasquale, THE BLACK BOX SOCIETY, *supra* note 101

<sup>160</sup> *Id.* According to Pasquale, the opacity of algorithms makes it hard to judge correctness, evaluate risk, and assess fairness in social applications. As Pasquale states, we are living in a “black box society” where the values and prerogatives are hidden from view.



people not fluent in coding minutiae.<sup>161</sup> Such obscurity led one scholar to warn “what we generally lack as a public is clarity about how algorithms exercise power over us.”<sup>162</sup>

The judicial deference to First Amendment defenses is a natural one given the historical context of the First Amendment as a barrier to government overreach and censorship. Another reason for the lack of theoretical discussion in the current case law could be attributed to the desire to avoid an overbroad limiting theory.<sup>163</sup> However, judges and lawyers are now confronted with a First Amendment whose scope is always expanding and that lacks any identifiable justificatory principle, this approach could have real consequences as private interests and algorithms continue to hold enormous power to shape how individuals interact with information and perceive the world.

## **B. Technology**

The opinions analyzed above show how judges have determined that code, algorithmic outputs, and arguably, data, are to be considered “speech.” This current approach fails to take into account how these individual elements work together to create the digital realm. Cyberspace is an interwoven blanket of computer code and algorithmic outputs, which are increasingly autonomous and dependent on massive amounts data.

However, surely not every digital thing should be considered “speech”?

---

<sup>161</sup> See e.g., Frank Pasquale *Bittersweet Mysteries of Machine Learning*, Media Policy Project Blog (Feb. 25 2016) <http://blogs.lse.ac.uk/mediapolicyproject/2016/02/05/bittersweet-mysteries-of-machine-learning-a-provocation/>.

<sup>162</sup> Diakopoulos, *supra* note 156 at 2.

<sup>163</sup> Kyle Langvardt, *The Doctrinal Toll of Information As Speech*, 47 LOY. U. CHI. L.J. 761 (2016),

The law as it now stands strongly implies that the First Amendment will be implicated any time the government sets out to regulate code.<sup>164</sup> The code cases stand for a broad criterion for protection: if it is written in a language that someone might use to communicate anything, then it must be covered under the First Amendment. However, underlying what appears when one opens Facebook, Apple News, or Twitter is code. Code is what is used to construct the complex web of algorithms that work behind the scenes to index, prioritize, and deliver information.<sup>165</sup>

In addition to the code itself, *Search King* and *St. Louis Martin* declared that algorithmic outputs or decisions would be awarded protection provided that such output constitutes an “opinion.” However, can an output function as an opinion if it’s neither communicated nor perceived in the first place? Machine learning algorithms evolve and change as a result of being exposed to ever-increasing sets of data, thus even further obfuscating any “opinion” of its engineer. The more algorithmic outputs become based on individual data, the more such outputs seem similar to the uncovered speech in an aircraft navigational chart than to the expression protected in cases involving newspapers.<sup>166</sup>

Furthermore, the question of affording constitutional protections to data and data mining becomes even more pressing in light of machine learning. As the line between computer and user blurs, it becomes even tougher to disentangle data and speech.

Subjecting data regulations to strict scrutiny could inadvertently legitimize

---

<sup>164</sup> *Id* at 762.

<sup>165</sup> Code is powerful and the power to regulate it should not be taken lightly. *See e.g.*, LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (1 ed. 1999).

<sup>166</sup> *See, e.g., Brocklesby v. United States*, 767 F.2d 1288, 1294–95 (9th Cir. 1985); *Saloomey v. Jeppesen & Co.*, 707 F.2d 671, 676–77 (2d Cir. 1983); *Aetna Cas. & Sur. Co. v. Jeppesen & Co.*, 642 F.2d 339, 342–43 (9th Cir. 1981).

discrimination and even chill expression. Far from being impartial, many studies have highlighted the numerous ways in which algorithms produce biased results across a number of industries.<sup>167</sup><sup>168</sup> Even the White House warned about the “potential of encoding discrimination in automated decisions” in such areas as credit reporting, employment opportunities, education, and criminal justice.<sup>169</sup>

Although limited human direction may make a case for the objectivity of the algorithmic process, data generation is often a social phenomenon inflected with human prejudice.<sup>170</sup> This has led some scholars to assert that machine learning algorithms, which learn by processing more information, are especially prone to biases from their training data or “data diet.”<sup>171</sup> In addition, enhanced computation often increases processes of sorting and classifying as it becomes easier to implement in every sector of our lives, which could accelerate and deepen traditional stereotypes rather than reforming them.<sup>172</sup>

---

<sup>167</sup> A recent study found that an algorithm used in criminal justice was reporting higher recidivism risks of blacks convicts were being rated high than nonblack convicts, even when the nonblack convicts had more-severe offenses. See Larson, Je , Surya Mattu, Lauren Kirchner, and Julia Angwin, “How We Analyzed the COMPAS Recidivism Algorithm,” *ProPublica* (May 23, 2016), As of April 6, 2017: <https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm>

<sup>168</sup> Citron, Danielle Keats, and Frank A. Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 *Washington Law Review* 1 (2014).

<sup>169</sup> Executive Office of the President, *Big Data: Seizing Opportunities, Preserving Values*, Washington, D.C., (May 2014), last accessed Feb. 3, 2017, available at [https://obamawhitehouse.archives.gov/sites/default/les/docs/big\\_data\\_privacy\\_report\\_5.1.14\\_nal\\_print.pdf](https://obamawhitehouse.archives.gov/sites/default/les/docs/big_data_privacy_report_5.1.14_nal_print.pdf)

<sup>170</sup> See, e.g., Osonde Osoba and William Welser IV, *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744)

<sup>171</sup> *Id.*

<sup>172</sup> Citron, Keats, and Pasquale, *supra* note 168.

Aggressive data collection may also limit expression online. Many scholars have explored how governmental surveillance may chill speech.<sup>173</sup> As Justice Brennan states in *Lopez*, “Where such extensive surveillance occurs, or is reasonably feared, the potential for limiting speech is clear: ‘There is only one way to guard against [eavesdropping], and that is to keep one’s mouth shut on all occasions.’”<sup>174</sup> This logic can also be applied to the private sector as individuals may limit online activity out of concern that it would be tracked and analyzed.

---

<sup>173</sup> See e.g., RICHARD THOMPSON, CONG. RESEARCH SERV., THE FOURTH AMENDMENT THIRD-PARTY DOCTRINE 1 (2014); Alexander A. Reinert, *Public Interest(s) and Fourth Amendment Enforcement*, 2010 U. ILL. L. REV. 1461, 1485-91 (2010); JAMES CARR & PATRICIA BELLIA, LAW OF ELECTRONIC SURVEILLANCE § 2:58 (2014); Alex Marthews & Catherine Tucker, *Government Surveillance and Internet Search Behavior* (Aug. 28, 2014), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2412564](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2412564).

<sup>174</sup> *Lopez v. U.S.*, 373 U.S. 427, 450 (1963) (Brennan, J., dissenting)).

#### IV. A CHANCE FOR ACCOUNTABILITY

As examined above, there are several reasons to object to blanket protection for information intermediaries and their algorithms. In response, appeals for transparency, objectivity, and accuracy have intensified. Yet, currently, the law does little to hold algorithms or their owners accountable and any regulation would likely spur a face off against the First Amendment. It's easy to assume that if code, algorithmic outputs, and the "dissemination and creation of information" are all considered speech, the First Amendment will continually be used as a defense unless some limiting theory is put forth. In the meantime, technology has not stood still. The same household name Internet companies that brought us search engines and social networks have begun a large-scale pivot toward machine learning and artificial intelligence.<sup>175</sup>

This section begins by reviewing an array of proposals focused on increasing algorithmic responsibility and accountability. It specifically addresses advancements in machine learning by underlining that as a society we are shifting to more dependence on integrated devices and digital assistants. This section then analyzes different frameworks put forth by media law scholars for determining what constitutes protected speech.

Finally, by drawing on these frameworks this section concludes by offering an updated method for clearing the speech hurdle and the First Amendment's barriers to regulation.

---

<sup>175</sup> There is a veritable AI arms race as large companies have moved to invest in different AI projects. In January 2014, Google spent \$500 million to purchase DeepMind, a company that defines its mission as "solving intelligence" by combining "the best techniques from machine learning and systems neuroscience to build powerful general-purpose learning algorithms." *Google DeepMind*, GOOGLE DEEPMIND, <http://deepmind.com/index-alt.html#our-mission>; Dan Rowinski, *Google's Game of Moneyball in the Age of Artificial Intelligence*, READWRITE (Jan. 29, 2014), <http://readwrite.com/2014/01/29/google-artificial-intelligence-robots-cognitive-computing-moneyball>. Facebook and Microsoft have also invested in similar companies. *See, e.g., IBM Watson*, IBM, <http://www.ibm.com/smarterplanet/us/en/ibmwatson/>; *Facebook AI Research (FAIR)*, FACEBOOK, <https://research.facebook.com/ai>; *Introducing Project Adam: A New Deep-Learning System*, MICROSOFT (July 14, 2014), <http://research.microsoft.com/apps/video/default.aspx?id=220709&r=1>.

## A. Accountability Measures

A note on what this paper is not: it is not an appeal to eliminate platforms, digital assistants, or technology from our lives. In the information age, we all gain when algorithms can refer us to webpages, books, and other media relating to our topic of interest. Yet, we all stand to lose when increasingly authoritative algorithms and their owners do not act responsibly when publishing and disseminating the information they gather. Negative impacts can also be exacerbated by a lack of public knowledge. In response, many commentators and scholars have suggested responsibility and accountability measures. The objectives of which generally fall into three categories: transparency, objectivity, and accuracy. Each will be discussed below.

### Transparency

Much has been written about the secret and complex nature of algorithms and several have called for increased transparency of algorithmic processes.<sup>176</sup> “Self-serving and reckless behavior is surprisingly common, and easy to hide in code protected by legal and real secrecy,” writes Pasquale.<sup>177</sup> Several argue that mandated transparency

---

<sup>176</sup> See e.g., Nicholas Diakopoulos, *Algorithmic Accountability*, 3:3 DIGITAL JOURNALISM, 398-415 (2015); FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (1st ed. 2015); Oren Bracha and Frank Pasquale, *Federal Search Commission? Access, Fairness, And Accountability In the Law of Search*, 93 Cornell L. Rev. 1149 (2008); Jack Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. Davis L. Rev. (2016).

<sup>177</sup> PASQUALE, *THE BLACK BOX SOCIETY*, *supra* note 175 at 2.

policies would incentivize organizations to reduce manipulation of algorithmic outputs, lessen discrimination against certain groups, and increase accuracy.<sup>178</sup>

Transparency regarding the underlying code of machine learning algorithms may be difficult to achieve however. As the behavior of such an algorithm depends in part on its post-design experience or “data diet,”<sup>179</sup> the resulting code is ever changing and not easily discernable or entirely understood by designers and programmers.<sup>180</sup> It is this most obvious feature, that of autonomy, which separates machine learning from earlier technologies.<sup>181</sup> Therefore, transparency in terms of what type of algorithm it is (machine learning or not), the algorithm’s data diet, and the underlying goals of the organization may be more useful in remedying the issues highlighted above.<sup>182</sup>

Such transparency could enhance algorithmic literacy and create a more educated public capable of understanding that algorithms can lead to inequitable and biased outcomes. This does not require that users understand the inner workings of all algorithms—this is not feasible. Yet, instilling a healthy dose of informed skepticism could be useful enough to reduce blind reliance, thus overcoming some of the individual autonomy issues above. This might require platforms to be more forthcoming with how their algorithms mediate information. Google has arguably taken steps in the past to

---

<sup>178</sup> *Supra* note 75. One can argue that transparency polices like restaurant inspection scores or automobile safety tests have been quite effective for instance.

<sup>179</sup> *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744). Terming all of the training data the algorithm’s “data-diet.”

<sup>180</sup> See e.g., Matthew Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARVARD JOURNAL OF L. & TECH. (2016). Matthew Scherer argues for an Artificial Intelligence Development Act. That would set up an agency.

<sup>181</sup> *Id.*

<sup>182</sup> Furthermore, requiring transparency in these areas means that companies don’t necessarily have to divulge their trade secrets.

explain certain search results.<sup>183</sup> For example, when a Holocaust-denial site routinely appeared in the top ten results for the query “Jew,” Google added a headline to the top of the search homepage titled, “an explanation of our search results.” The linked webpage explained the reasons why the anti-Semitic site appeared so high in the relevant ranking and distanced Google from the result.<sup>184</sup>

## Objectivity

Although many information intermediaries and platforms portray themselves as simple and passive conduits of information, the veracity of this statement lends itself to scrutiny when the same organizations seek shelter under the First Amendment for their

---

<sup>183</sup> However, if regulation mandated a disclaimer it would most likely be held as unconstitutional compelled speech. In *Langdon v. Google*, a district court relied on *Miami Herald Publishing Co. v. Tornillo* to find that plaintiff’s insistence that several search engines must carry his ads and “honestly” rank his websites would be prohibited compelled speech. See *Langdon v. Google, Inc.*, 474 F. Supp. 2d 622, 629-30 (D. Del. 2007)

<sup>184</sup> Google gave this response: “If you recently used Google to search for the word “Jew,” you may have seen results that were very disturbing. We assure you that the views expressed by the sites in your results are not in any way endorsed by Google. We’d like to explain why you’re seeing these results when you conduct this search. A site’s ranking in Google’s search results is automatically determined by computer algorithms using thousands of factors to calculate a page’s relevance to a given query. Sometimes subtleties of language cause anomalies to appear that cannot be predicted. A search for “Jew” brings up one such unexpected result. If you use Google to search for “Judaism,” “Jewish” or “Jewish people,” the results are informative and relevant. So why is a search for “Jew” different? One reason is that the word “Jew” is often used in an anti-Semitic context. Jewish organizations are more likely to use the word “Jewish” when talking about members of their faith...” “Our search results are generated completely objectively and are independent of the beliefs and preferences of those who work at Google. Some people concerned about this issue have created online petitions to encourage us to remove particular links or otherwise adjust search results. Because of our objective and automated ranking system, Google cannot be influenced by these petitions. The only sites we omit are those we are legally compelled to remove or those maliciously attempting to manipulate our results.” See the full letter here: Loren Baker, *Google Explains JewWatch Search Results*, SEARCH ENGINE JOURNAL (May 12, 2004) <https://www.searchenginejournal.com/google-explains-jew-watch-search-results/552/>; See also Noam Lemelshtich Latar and David Nordfors, *Digital Identities and Journalism Content: How Artificial Intelligence and Journalism May Co-Develop and Why Society Should Care*, 6 INNOVATION JOURNALISM 7 (2009) (highlighting algorithms’ role in the rise of behavioral advertising); Google also came under fire more recently with Holocaust denial sites. Frank Pasquale, *From Holocaust Denial To Hitler Admiration, Google’s Algorithm Is Dangerous*, HUFFINGTON POST (Feb. 6, 2017) Pasquale writes, “These terrifying acts of violence and hate are likely to continue if action isn’t taken. Without a transparent curation process, the public has a hard time judging the legitimacy of online sources.” [http://www.huffingtonpost.com/entry/holocaust-google-algorithm\\_us\\_587e8628e4b0c147f0bb9893](http://www.huffingtonpost.com/entry/holocaust-google-algorithm_us_587e8628e4b0c147f0bb9893)



“opinions.”<sup>185</sup> As stated above, most individuals attach an aura of objectivity and truthfulness to computerized results. However, as also spotlighted above, the dissemination of information and even the information itself is increasingly targeted due in part to the rise of behavioral advertising.<sup>186</sup> With the lack of public clarity in terms of how algorithms exercise their power and influence, there have been several appeals for regulation requiring that computerized decisions such as search results be unbiased and objective,<sup>187</sup> free from manipulation,<sup>188</sup> and that advertising be clearly marked.<sup>189</sup> Some have even argued that search engines be regulated as a public utility<sup>190</sup>, an idea that has had much more traction in Europe.<sup>191</sup>

Requiring some form of objectivity in automated results may grow in importance as we move from using browser search functions to becoming more dependent on and trusting of digital assistants. The potential harms transcend “the search bias issue,”

---

<sup>185</sup> See discussion of the algorithmic output cases above.

<sup>186</sup> *Supra* note 183.

<sup>187</sup> See e.g., Oren Bracha and Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability In the Law of Search*, 93 Cornell L. Rev. 1149 (2008); Jack Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. Davis L. Rev. (2016).

<sup>188</sup> *Id.*

<sup>189</sup> Although it would be difficult for the government to demand that a search engine live up to some hypothetical and undefined expectations of abstract objectivity, the FTC has taken steps to ensure that Google has to highlight what is advertising and what is not. See Federal Trade Commission, *Native Advertising: A Guide for Businesses* (last accessed May 2, 2017) available at <https://www.ftc.gov/tips-advice/business-center/guidance/native-advertising-guide-businesses>.

<sup>190</sup> See e.g., Jeffery Katz, *Google's Money and Internet Freedom*, The Wall Street Journal (June 7, 2012) <https://www.wsj.com/articles/SB10001424052702303830204577448792246251470>; Bracha and Pasquale *supra* note 121.

<sup>191</sup> Mark Scott and James Kanter, *Google faces new round of antitrust charges in Europe*, N.Y. TIMES (July 14, 2016). <https://www.nytimes.com/2016/07/15/technology/google-european-union-antitrust-charges.html>

writes Maurice Stucke and Ariel Ezrachi in *Wired*,<sup>192</sup> especially as the distinction between human and device blurs.

## Accuracy

Proposals for accuracy apply in two contexts; accuracy in terms of the data-diet, and accuracy of outgoing information. As the outputs from algorithms become less dependent on the judgments of programmers and more responsive to individual users, data accuracy and security becomes crucial. Requiring steps to make data collection and data use more accurate could diminish discriminatory impacts. However, if every regulation of the “creation and dissemination of information”<sup>193</sup> must survive First Amendment scrutiny, meaningful governance becomes increasingly difficult and paradoxically so does meaningful protection of expressive liberty.<sup>194</sup>

In addition, several have noted the rise of misinformation or “fake news.”<sup>195</sup> One survey even found that the most popular false news stories were more widely shared on Facebook than the most popular mainstream news stories.<sup>196</sup> Currently, platforms are largely immune to any liability for misinformation claims, including defamation, largely

---

<sup>192</sup> Stucke and Ariel Ezrachi *supra* note 150.

<sup>193</sup> See *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011)

<sup>194</sup> Cohen, *supra* note 83 at 1125.

<sup>195</sup> See e.g., Jordan Cook, *Facebook will never take responsibility for fake news*, TECHCRUNCH (Mar. 19, 2017), <https://techcrunch.com/2017/03/19/facebook-will-never-take-responsibility-for-fake-news>; Josh Halliday, *Facebook and Twitter should do more to combat fake news GCHQ say*, The Guardian (March 14, 2017), <https://www.theguardian.com/media/2017/mar/14/facebook-twitter-gchq-combat-fake-news>.

<sup>196</sup> See Hunt Allcott and Matthew Gentzkow, *Social Media and Fake News in the 2016 Election*, 31 *Journal of Economic Perspectives* 211, 236 (2017), available at <https://web.stanford.edu/~gentzkow/research/fakenews.pdf>.

on account of the Communications Decency Act of 1996 (CDA).<sup>197</sup> The act provides that platforms are not to be treated as “publishers” of the information. Part of the rationale behind the CDA was to protect platforms from liability for copyright infringement<sup>198</sup> and tort claims against statements made by users.<sup>199</sup>

However, several have called for more liability for platforms.<sup>200</sup> As explained by attorney and Stanford law researcher Morgan Weiland, “Facebook's highly personalized algorithmic curation of its users' newsfeeds falls in a legal gray area with respect to CDA 230. As you know, CDA 230 provides immunity for "interactive computer services," drawing a line between that category and "information content providers." But it's not entirely clear when the former becomes the latter; in other words, it's not clear when an intermediary engages in enough editing of third-party content that it becomes an "information content provider" and loses CDA 230 immunity.”<sup>201</sup>

It is similarly unclear how an algorithmic or robot journalist would be held accountable for accuracy claims.<sup>202</sup> On the one hand it seems clear that the media organizations (if they are considered as such) would still be responsible for whatever content its algorithm produces. However, as machine learning becomes more

---

<sup>197</sup> 47 U.S.C. § 230, a Provision of the Communication Decency Act

<sup>198</sup> Copyright infringement immunity is largely due to the DMCA as well.

<sup>199</sup> *Supra* note 197.

<sup>200</sup> *Supra* note 195.

<sup>201</sup> Annalee Newitz, *It's time to get rid of the Facebook News Feed because it's not news*, ARS TECHNICA (NOV. 18 2016) <https://arstechnica.com/staff/2016/11/its-time-to-get-rid-of-the-facebook-news-feed-because-its-not-news/>

<sup>202</sup> That is, if they could be required to be “accurate.” As of now, the government cannot regulate truthfulness of human speakers, *see United States v. Alvarez* 132 S. Ct. 2537 (2012) and *Miami v. Tornillo*; However, if the speaker is not a human would this make a difference? Those questions are beyond the scope of this thesis.

sophisticated and autonomous, others have argued that such a system could be viewed as a superseding cause for tort liability.<sup>203</sup>

Unfortunately, the law as it currently stands appears to actually aid the development of partial and irresponsible algorithms. In addition, faced with the prospect of legal regulation in any form, organizations will likely claim constitutional protections as code, algorithmic outputs, and the “creation and dissemination of information” have been considered speech covered under the First Amendment umbrella. This makes any imposition of accountability extremely difficult. Fear of technological change and calls for government interference is not a new phenomenon. However, the rise of machine learning and AI has so far occurred in a regulatory vacuum behind closed doors, which leads back to the question: what poses a greater threat to free speech, the lack of regulations, or the regulations themselves?

## **B. What Is “Speech”? – A Scholarly Analysis**

This paper’s aim is not necessarily to propose any specific regulatory scheme per se,<sup>204</sup> but rather to call attention to how the First Amendment is consistently used as a deregulatory tool. Heightened scrutiny disincentivizes and raises the costs of regulation.<sup>205</sup> The development over the past two years of new algorithms, corresponding digital architectures, and resulting social practices, makes it essential that

---

<sup>203</sup> *Supra* note 175. *See also* In addition to governmental regulation, there is also a growing self-regulatory field focusing on finding technical solutions for assuring algorithmic fairness or certifying and correcting disparate impact in machine learning algorithms. *See e.g.*, Osonde Osoba and William Welser IV, *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744).

<sup>204</sup> In fact, some combination of the above would be helpful.

<sup>205</sup> Stuart Benjamin, *Algorithms and Speech*, 161 U. Pa. L. Rev. 1445, 1451 (2013).

courts reengage the First Amendment to protect its underlying values. So, what is the solution? Media law scholars Tim Wu<sup>206</sup> and Stuart Benjamin<sup>207</sup> have each wrestled with this question by analyzing what should qualify as protected speech based on past First Amendment jurisprudence and communication theory.

“Insofar as we are concerned about the expansiveness of First Amendment coverage, we may want to limit it in two areas of genuine uncertainty: editorial decisions that are neither obvious nor communicated to the reader, and laws that single out speakers but do not regulate their speech,” writes Duke University School of Law professor Stuart Benjamin.<sup>208</sup> In his influential work on the topic of algorithms and speech (aptly titled *Algorithms and Speech*), Benjamin concludes that the benchmark for determining what constitutes speech is whether the underlying communication “sends a substantive message.”<sup>209</sup> Through analyzing Supreme Court jurisprudence Benjamin argues that “the touchstone of the Court’s First Amendment cases has always been that the underlying activity entails an expression of ideas, even if it is not ‘a narrow, succinctly articulable message.’ Communication thus seems to require, at a minimum, a speaker who seeks to transmit some substantive message or messages to a listener who can recognize that message. Thus, in order to communicate, one must have a message that is sendable and receivable and that one actually chooses to send.”<sup>210</sup>

---

<sup>206</sup> Tim Wu, *Machine Speech*, 161 U. PA. L. REV. 1495, 1501 (2013).

<sup>207</sup> Benjamin, *supra* note 207 at 1449.

<sup>208</sup> *Id* at 1445.

<sup>209</sup> *Id* at 1501.

<sup>210</sup> *Id* at 1461.

This standard derives from the Supreme Court’s symbolic speech doctrine put forth in *Spence v. State of Washington*<sup>211</sup> and *Hurley v. Irish-American Gay, Lesbian and Bisexual Group of Boston*.<sup>212</sup> In *Spence*, the Court articulates that speech merits First Amendment scrutiny if the speaker has “an intent to convey a particularized message” and “in the surrounding circumstances the likelihood that the message would be understood by those who viewed it.”<sup>213</sup> This requirement was arguably limited in *Hurley* when the Court held that the Boston St. Patrick’s Day parade was speech for First Amendment purposes. As the Court stated, “a narrow, succinctly articulable message is not a condition of constitutional protection, which if confined to expressions conveying a ‘particularized message,’ would never reach the unquestionably shielded painting of Jackson Pollock, music of Arnold Schoenberg, or Jabberwocky verse of Lewis Carroll.”<sup>214</sup>

Although Benjamin’s test on its face seems to substantially limit First Amendment protection for algorithms, Benjamin finds the opposite. “The First Amendment encompasses a great swath of algorithm-based decisions.”<sup>215</sup> Even search results, according to Benjamin, necessarily “entail a transmission of ideas” in deciding what information is indexed and how it is displayed.

---

<sup>211</sup> *Spence v. Washington*, 418 U.S. 405, 411 (1974). See also *United States v. O’Brien*, 391 U.S. 367, 376 (1968); *Texas v. Johnson*, 491 U.S. 397, 406 (1989).

<sup>212</sup> *Hurley v. Irish-American Gay, Lesbian and Bisexual Group of Boston* 515 U.S. 557 (1995).

<sup>213</sup> *Spence supra* note 213 at 410-11.

<sup>214</sup> *Hurley*, 515 U.S. at 569. This rationale and precedent was later relied on by the *Junger* and *Bernstein* courts to find that code carried some type of message, and thus constitutes protected speech.

<sup>215</sup> Benjamin *supra* note 207 at 1447.

As Columbia law school professor Tim Wu highlighted, “taken generally, this standard is overboard: everything from nonpolitical vandalism through political assassination ‘sends a message,’ but not all of that can reasonably be speech.”<sup>216</sup> Furthermore, applying this logic to machine learning algorithms or digital assistants is troubling. In fact, such a broad test is similar to the logic applied in the code cases. Rather than taking into account any First Amendment values or the social context, it seems instead that communication as such is what drives protection.<sup>217</sup>

Tim Wu has been critical of Benjamin’s standard and offers a different, “functional” approach that focuses on whether the speaker in fact adopts the communication as its own.<sup>218</sup> Wu argues that a “functionality” doctrine exists in First Amendment jurisprudence which finds that “those who merely carry information” do not receive protections, and courts should not afford protections to “communication tools” that are “purely functional” in conveying information.<sup>219</sup> Such tools include navigational charts, court filings, and telephone directories.<sup>220</sup> In contrast, “speech products” that are viewed as “vessels for the ideas of a speaker, or whose content has

---

<sup>216</sup> Wu *supra* note 208 at 1529 . Wu uses humor to point out the broad logic: “In any event, even by Benjamin’s own standard, the argument that the operation of a search engine “entails transmission of ideas” is a stretch; it demands a conception of “idea” that widens the category beyond recognition. According to Benjamin, Google hopes to convey ideas like “quality” or “usefulness,” but then so too did the designers of my coffeemaker. A theory that turns the design of home appliances into a form of constitutional speech is probably overbroad.”

<sup>217</sup> Benjamin *supra* note 207 at 1481-83. Benjamin himself points to the limitation of his standard as applied to advanced algorithms that don’t necessary involve human decision making. “Extending the First Amendment to messages produced by artificial intelligence would raise the specter that may underlie Tim Wu’s concerns: we would be treating the products of machines like those of human minds.”

<sup>218</sup> Wu *supra* note 208 at 1517-24.

<sup>219</sup> Wu *supra* note 208 at 1497.

<sup>220</sup> *Id.*

been consciously curated,” should be given protections.<sup>221</sup> In a nutshell, “speech products” are protected, while “communication tool[s]” are not.<sup>222</sup> This functionality doctrine, according to Wu, is what will be the dividing line that separates speech and communication in increasingly technological situations.<sup>223</sup>

In applying the functionality doctrine to digital assistants, Wu highlights how the law applies to what he terms “human equivalents.”<sup>224</sup> “On the one hand, private advice, especially communications in the course of professional services, is treated as a form of functional communication and doesn’t usually trigger First Amendment protection.” “On the other hand, if a doctor writes a book that happens to be wrong about medical facts, his efforts are likely nonetheless to be protected by the First Amendment,”<sup>225</sup> Wu writes. “We are back, then, to the question...is the output of a concierge program merely providing some function?”<sup>226</sup> Wu offers this rule of thumb in conclusion: “The more [a] programmer puts in place his opinion, and tries to influence the user, the more likely there will be First Amendment coverage.”<sup>227</sup>

In addition, Wu argues that a necessary boundary to the First Amendment is personhood, highlighted by the famous case, *Blackie the Talking Cat*.<sup>228</sup> In that case, the

---

<sup>221</sup> *Id.* at 1498.

<sup>222</sup> *Id.*

<sup>223</sup> Wu *supra* note 208 at 1518.

<sup>224</sup> Wu *supra* note 208 at 1531-1532.

<sup>225</sup> *Id.*

<sup>226</sup> *Id.*

<sup>227</sup> *Id.*

<sup>228</sup> Wu *supra* note 208 at 1501; *see also Miles v. City Council*, 710 F.2d 1542 (11th Cir. 1983).



cat’s owners asserted that the City’s license demand infringed Blackie’s rights under the First Amendment.<sup>229</sup> Ruling against Blackie, the court held, “although Blackie arguably possess a very unusual ability,<sup>230</sup> he cannot be considered a “person” and is therefore not protected by the Bill of Rights.”<sup>231</sup> “It should be clear that a computer and Blackie are similar. Neither is human, and both have been trained to express themselves in a way that is informative or entertaining to humans. As such, Blackie is indicative of one way that courts treat nonhumans who generate what resembles human speech: not very seriously,” Wu states<sup>232</sup> In attempting to reconcile the Court’s treatment of corporations as “persons,” Wu argues that main difference centers on the “quality of the speech in question, and in particular the sense that the expression reflects intelligent choices.”<sup>233</sup> In short, there is a presumption that the identity of the speaker matters in the speech analysis and this should be no different when applied to algorithms.<sup>234</sup>

Although Wu’s standards are helpful as a starting point, there are some disadvantages to the functionality doctrine when applied to the current information ecosystem. First, as data collection of individuals becomes the driving force behind algorithmic outputs, the line between “communication tools” and “speech products” blurs. For example, is an algorithm functional in nature when it recommends “relevant”

---

<sup>229</sup> *Miles*, 710 F.2d at 1543.

<sup>230</sup> *Id.* The cat could arguably say “I love you.”

<sup>231</sup> *Id.*

<sup>232</sup> Wu *supra* note 208 at 1501.

<sup>233</sup> *Id.* at 1503.

<sup>234</sup> *Id.* at 1496, 1498, 1508. Likewise, Wu warns that “[t]oo much protection would threaten to constitutionalize many areas of commerce and private concern without promoting the values of the First Amendment,” and the results would be “both absurd and disruptive.”

information to individuals or is it influencing individuals to stay within their values, ideologies, and beliefs? Second, while taking the identity of the speaker into account may be an important step in balancing First Amendment values (see emphasis on this below) excluding all algorithmic speech may be over-inclusive and harmful. For instance, what should courts make of the articles written by increasingly employable robot journalists?<sup>235</sup> Similar to the courts in the decisions analyzed above, it seems Wu is attempting to analogize to traditional speech situations that are outdated in this algorithm era. However, both Wu and Benjamin highlight the obvious in their approaches: that we can no longer believe in a hands-off Internet-speech utopianism to safeguard the Internet as a vital and diverse speech environment.

### **C. A Method for Determining First Amendment Protection in the Autonomous Algorithm Age**

“The speech with which the First Amendment is even slightly concerned is but a small subset of the speech that pervades every part of our lives,” writes law professor Fredrick Schauer.<sup>236</sup> Simply put: the First Amendment should not apply in every situation. Rather, courts should consider a multitude of factors when awarding its protections. As the Supreme Court emphasized in 1974, whether something constitutes protected speech is highly contextual; it should depend on “the factual context and

---

<sup>235</sup> Algorithms have also made scripted movies and written songs. See e.g., Annalee Newitz, *Movie written by algorithms turns out to be hilarious and intense*, ARS TECHNICA (June 6, 2016) <https://arstechnica.com/the-multiverse/2016/06/an-ai-wrote-this-movie-and-its-strangely-moving/>; Russel Brandom, *Google’s art machine just wrote its first song*, THE VERGE (June 1, 2016) <https://www.theverge.com/2016/6/1/11829678/google-magenta-melody-art-generative-artificial-intelligence>.

<sup>236</sup> Frederick Schauer, *The Boundaries of the First Amendment: A Preliminary Exploration of Constitutional Salience*, 117 HARV. L. REV. 1765, 1777-84 (2004).

environment in which it was undertaken.”<sup>237</sup> However, as highlighted above, instead of analyzing how the new information ecosystem works, courts continue to analogize to the days of paper.<sup>238</sup> For reasons already discussed, this can no longer be the case.

So, what is the solution? Surely not everything can be considered speech in the digital era. Therefore, this thesis proposes a three-step approach for granting First Amendment protection in the algorithm era. Courts should begin by establishing whether the communication or activity in question was algorithmically created or mediated in such a way that limits the programmer’s input or opinion. If the communication in question is algorithmically mediated, courts should then apply the *Spence/Hurley* test to determine whether a communicative message exists. Finally, courts should reengage the balancing of First Amendment values with a listener-centered focus. This three-step approach avoids an unwarranted expansion of the scope of protected activities under the First Amendment and prevents the risk of excluding what could become a huge share of human communication facilitated by algorithms.

The first prong necessarily requires courts to establish whether the speaker of the communication in question is human or machine. Although companies may attempt to argue that all algorithms are the products of human opinion (see the discussion of the algorithmic output cases above), this argument is outdated with the current rise of autonomous technology that creates or selects content based on relevance or other factors attributed to its listener. Here, focus should be paid to the amount of control a

---

<sup>237</sup> *Spence v. Washington*, 418 U.S. 405, 410 (1974).

<sup>238</sup> Although it could be argued that the only reason courts continue to do this is because of the common law system in general and the need to recognize precedent. However, this is more of a call for courts to think creatively, not necessarily write new doctrine, which could be taken as judicial legislating.

programmer has over the algorithm.<sup>239</sup> If there is such minimal control that programmers cannot reasonably foresee a given result then there is no chance for whatever “opinion” of the programmer to be communicated. To determine this factor, courts should look to whether autonomy was actually designed into the system.

Although this first analysis is similar to Wu’s personhood analysis above, it does not mean that no protection will be given algorithmically mediated or machine communications. Rather, after this first step, courts should analyze whether there are communicative qualities and balance the values at stake. By not admonishing such communication from protection at first glance makes sure the test is not over exclusive. This protects human speakers who use a computer instead of pen paper to express opinions.

Furthermore, by requiring courts to first establish whether a communication is algorithmically mediated right off the bat, courts can then start to build a doctrine suited for algorithmic communication. Throughout First Amendment jurisprudence one can arguably find different categories of “speech” and corresponding doctrine. Such categories include, commercial speech,<sup>240</sup> symbolic or expressive speech,<sup>241</sup> and student

---

<sup>239</sup> Control has become a problem as there have been increasingly events where algorithms have “surprised” their engineers. *See e.g.*, Matthew Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARVARD JOURNAL OF L. & TECH. (2016). Matthew Scherer argues for an Artificial Intelligence Development Act. That would set up an agency.

<sup>240</sup> Content-based regulations of commercial speech only need to withstand intermediate scrutiny. *See e.g.*, *Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm’n of N.Y.*, 447 U.S. 557, 562–64 (1980); *44 Liquormart, Inc. v. Rhode Island* (1996).

<sup>241</sup> Also termed symbolic speech, expressive conduct, or the expression of an idea through activity, *see e.g.*, *supra O’Brien* note ; *Spence supra* note 238 ; *Johnson supra* note; *see also Cohen v. California* 403 U.S. 15 (1971) *United States v. Eichman*, 496 U.S. 310 (1990).

speech.<sup>242</sup> Although these categories are not completely mutually exclusive, they do tend to highlight different balancing approaches and values.<sup>243</sup> This first step could help to spur courts to take into account new contexts, instead of trying to fit this new type of communication into old molds.

The second step focuses on the communicative aspect of the message. Part of the analysis necessary to determining whether an activity or a type of communication is speech is deciding whether it contains any communicative value. This step applies Stuart Benjamin's and the *Spence/Hurley* approach above; "that communication should require at a minimum, a speaker who seeks to transmit some substantive message or messages to a listener who can recognize that message."<sup>244</sup> The "speaker" here would arguably be more machine than human, but for reasons stated above (over exclusivity being the most pertinent) that is acceptable.<sup>245</sup> However, emphasis should be placed on the arguably forgotten factor of analysis - whether there are enough social conventions in place such that others can understand the specific activity as conveying a message.<sup>246</sup> This does not necessarily mean that listeners would have to discern a *particular message*, as admonished by *Hurley*, but just that listeners are aware that some message *could* be articulated.

---

<sup>242</sup> See e.g., *Hazelwood School District v. Kuhlmeier*, 484 U.S. 260 (1988); *Tinker v. Des Moines Independent Community School District*, 393 U.S. 593 (1969); *Morse v. Frederick*, 551 U.S. 393 (2007).

<sup>243</sup> One can argue that the values emphasized by the commercial speech cases are slightly different from the values emphasized by the student speech cases. This is not to say that one is right and the other is wrong. After all, no one theory can explain First Amendment jurisprudence.

<sup>244</sup> Stuart *supra* note 211.

<sup>245</sup> Machines can still convey information, and as newsrooms increasingly employ algorithms.

<sup>246</sup> See Jorge Roig, *Decoding First Amendment Coverage of Computer Source Code in the Age of Youtube, Facebook, and the Arab Spring*, 68 N.Y.U. ANN. SURV. AM. L. 319 (2002).

Finally, if some communicative value could be found, the courts should weigh the consequences of attributing First Amendment protection on the listener or audience's values. Such a focus on the listener or audience aspect here is warranted as the "speaker" in question is arguably nonhuman. Current doctrine recognizes a number of speech environments in which listeners' First Amendment interests are paramount in ways that justify not only the expression's protection but also its regulation.<sup>247</sup> For example, courts have long treated commercial speech as occurring in such a listener-centered environment.<sup>248</sup> Consumers' interest in receiving truthful and non-misleading advertisements thus justifies First Amendment protections for commercial speech while leaving government significant power to protect those listeners through content-based regulations that include outright bans on false or misleading speech as well as compelled disclosures.<sup>249</sup>

Furthermore, some commentators argue that emerging communicative technologies require a refocus of free speech theory to protect democratic culture. Jack Balkin defines democratic culture as "a culture in which individuals have a fair opportunity to participate in the forms of meaning making that constitute them as

---

<sup>247</sup> See Burt Neuborne, *The First Amendment and Government Regulation of Capital Markets*, 55 BROOK. L. REV. 5, 9 (1989) (describing the development of "hearer-centered" First Amendment protection in "areas that generally lack a traditional dignitary speaker but that boast numerous hearers interested in maximizing their capacity to exercise efficient and autonomous choice").

<sup>248</sup> *Zauderer v. Office of Disciplinary Counsel of the Supreme Court of Ohio*, 471 U.S. 626, 651 (1985) ("The extension of First Amendment protection to commercial speech is justified principally by the value to consumers of the information such speech provides."); *Va. Bd. of Pharmacy v. Va. Citizen Consumer Council, Inc.*, 425 U.S. 748, 763-64 (1976) (emphasizing the value of "the free flow of commercial information" to individual consumers and the public more generally); see also Robert Post & Amanda Shanor, *Adam Smith's First Amendment*, 128 HARV. L. REV. F. 165, 170 (2015) ("The constitutional value of commercial speech lies in the rights of listeners to receive information so that they might make intelligent and informed decisions. Ordinary First Amendment doctrine, by contrast, focuses on the rights of speakers, not listeners.").

<sup>249</sup> *Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of N.Y.*, 447 U.S. 557, 562-64 (1980).

individuals.” That is, he goes beyond representative democracy justifications for free speech. His primary anxiety is that technologies promise wider participation but also carry the means of controlling democratic participation in new ways, and he argues for attention to the latter in theorizing about First Amendment constraints on regulation of digital networks.<sup>250</sup> Such balancing could allow for similar algorithmic accountability measures and hone in the use of the First Amendment as a deregulatory tool.

---

<sup>250</sup> See e.g., Jack Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. Davis L. Rev. (2016).

## CONCLUSION

We are just now learning about the impacts of algorithms on the information ecosystem. Meanwhile, technology has not stood still. Advancements in the areas of machine learning algorithms and artificial intelligence will have new impacts and consequences. However, currently, the law does little to hold algorithms of any sort accountable. Courts have long been deferential to First Amendment defenses, proclaiming that code, algorithmic outputs, and the “creation and dissemination of information” are all protected speech - any regulation of such will be subject to strict scrutiny. This begs the question: with the continued expansion of what is considered speech, will the First Amendment ironically become its own worst enemy to the values it is supposed to protect? This thesis has found the answer to that question to be a resounding “yes” and has put forth a new approach to the constitutional inquiry. This requires courts to focus on the identity of the speaker and the communicative aspects of the activity, while reengaging balancing of First Amendment values. Such an approach is neither over-inclusive nor exclusive and is essential if we want to protect the values underlying the First Amendment and this nation.



## BIBLIOGRAPHY

47 U.S.C. § 230, a Provision of the Communication Decency Act

Abby Ohlheiser, *Three days after removing human editors, Facebook is already trending fake news*, THE WASHINGTON POST (Aug. 29, 2016) [https://www.washingtonpost.com/news/the-intersect/wp/2016/08/29/a-fake-headline-about-megyn-kelly-was-trending-on-facebook/?tid=a\\_inl&utm\\_term=.44ddff3c32a9](https://www.washingtonpost.com/news/the-intersect/wp/2016/08/29/a-fake-headline-about-megyn-kelly-was-trending-on-facebook/?tid=a_inl&utm_term=.44ddff3c32a9).

Act of General Assembly Vermont, S. 115 (2007) available at <http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2008/acts/ACT080.HTM>

Agatha M. Cole, *Internet Advertising After Sorrell v. IMS Health: A Discussion on Data Privacy & the First Amendment*, 30 CARDOZO ARTS & ENT. L.J. 283, 307 (2012).

ALEXANDER MEIKLEJOHN, *The Rulers and the Ruled*, in POLITICAL FREEDOM: THE CONSTITUTIONAL POWERS OF THE PEOPLE 8, 25–28 (Oxford Univ. Press 1965) (1948)

Amanda Shanor, *The New Lochner*, 2016 WIS. L. REV. 133 (2015).

*An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744).

Andrew Tutt, *The New Speech*, 41 HASTINGS CONST. L.Q. 235, 297 (2014)

Annalee Newitz, *It's time to get rid of the Facebook News Feed because its not news*, ARS TECHNICA (NOV. 18 2016) <https://arstechnica.com/staff/2016/11/its-time-to-get-rid-of-the-facebook-news-feed-because-its-not-news/>

Annalee Newitz, *Movie written by algorithms turns out to be hilarious and intense*, ARS TECHNICA (June 6, 2016) <https://arstechnica.com/the-multiverse/2016/06/an-ai-wrote-this-movie-and-its-strangely-moving/>

Ashutosh Bhagwat, *Sorrell v. IMS Health: Details, Detailing, and the Death of Privacy*, 36 VT. L. REV. 855, 855-56 (2012)

*Blue Feed, Red Feed*, WALL STREET J., <http://graphics.wsj.com/blue-feed-red-feed>.

BRUCE SCHNEIER, APPLIED CRYPTOGRAPHY 1 (1994).

Burt Neuborne, *The First Amendment and Government Regulation of Capital Markets*, 55 BROOK. L. REV. 5, 9 (1989)

C.W. Anderson, *Deliberative, agonistic, and algorithmic audiences: Journalism's vision of its public in an age of audience*, 5 JOURNAL OF COMMUNICATION 529-547 (2011)

Cade Metz, *AI is Transforming Google Search. The Rest of the World Is Next*, WIRED (Feb. 4, 2016), <https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/>

Caitlin Dewey, *Facebook has repeatedly trended fake news since firing its human editors*, THE WASHINGTON POST (Oct. 12, 2016), <https://www.washingtonpost.com/news/the-intersect/wp/2016/10/12/facebook-has-repeatedly-trended-fake-news-since-firing-its-human-editors>.

Carl Franzen, *Impersonal Google Search Results Are Few and Far Between DuckDuckGo Finds*, TPM (Oct. 15, 2012), <http://talkingpointsmemo.com/idealab/impersonal-google-search-results-are-few-and-far-between-duckduckgo->.

Cathy O'Neil, *Facebook's Algorithm vs. Democracy*, Nova Next Blog (2016) <http://www.pbs.org/wgbh/nova/next/tech/facebook-vs-democracy/>?. A lot of influence has come from other nation states, including Russia.

Danielle Citron, and Frank A. Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 *Washington Law Review* 1 (2014).

Damian Radcliffe, *Did a robot write this article? The upsides and downsides of automated journalism*, BBC ACADEMY BLOG, June 23, 2016, <http://www.bbc.co.uk/blogs/academy/entries/e327bbb3-4bf8-4083-82ae-2153665535b1>.

Damon Beres, *Facebook Just Gave the Finger to Millions of People Who Use It For News*, HUFFINGTON POST, June 29, 2016 ("Facebook's algorithm tweaks always tend to send the media into a frenzy. And yes, that's partially because writers rely on Facebook to reach their audience and get paid.").

Dan Rowinski, *Google's Game of Moneyball in the Age of Artificial Intelligence*, READWRITE (Jan. 29, 2014), <http://readwrite.com/2014/01/29/google-artificial-intelligence-robots-cognitive-computing-moneyball>.

Danielle Citron, *Technological Due Process*, 85 Wash. U. L. Rev. 1249, 313 (2007).

David Beer, *The social power of algorithms*, 20 INFORMATION, COMMUNICATION & SOCIETY, 1, 1-13 (2017).

*Defense Distributed v. U.S. Department of State*, JOSH BLACKMAN'S BLOG, <http://joshblackman.com/blog/about-josh/defense-distributed-v-u-s-department-of-state/> (last visited Mar. 9, 2016).

Digital Millennium Copyright Act (DMCA) § 103, 17 U.S.C. § 1201 (2006).

Elia Powers, *My News Feed is filtered? Awareness of news personalization among college students*, DIGITAL JOURNALISM (2017).

Eugene Kim, *Mark Zuckerberg Wants to Build the 'Perfect Personalized Newspaper' for Every Person in the World*, BUSINESS INSIDER, Nov. 6, 2014, <http://www.businessinsider.com/mark-zuckerberg-wants-to-build-a-perfect-personalized-newspaper-2014-11>.

Eugene Volokh & Donald Falk, *First Amendment Protection for Search Engine Search Results*, 6-7 (2012), available at <http://www.volokh.com/wp-content/uploads/2012/05/SearchEngineFirstAmendment.pdf>.

Executive Office of the President, *Big Data: Seizing Opportunities, Preserving Values*, Washington, D.C., (May 2014), last accessed Feb. 3, 2017, available at [https://obamawhitehouse.archives.gov/sites/default/files/docs/big\\_data\\_privacy\\_report\\_5.1.14\\_nal\\_print.pdf](https://obamawhitehouse.archives.gov/sites/default/files/docs/big_data_privacy_report_5.1.14_nal_print.pdf).

*Facebook AI Research (FAIR)*, FACEBOOK, <https://research.facebook.com/ai>.

Federal Trade Commission, *Native Advertising: A Guide for Businesses* (last accessed May 2, 2017) available at <https://www.ftc.gov/tips-advice/business-center/guidance/native-advertising-guide-businesses>.

Frank Pasquale *Bittersweet Mysteries of Machine Learning*, Media Policy Project Blog (Feb. 25 2016)

FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (1st ed. 2015)

FRANK PASQUALE, *THE FILTER BUBBLE: WHAT THE INTERNET IS HIDING FROM YOU* (1st ed. 2011).

FREDERICK SCHAUER, *FREE SPEECH: A PHILOSOPHICAL ENQUIRY* 15- 34 (1982)

Frederick Schauer, *The Boundaries of the First Amendment: A Preliminary Exploration of Constitutional Salience*, 117 HARV. L. REV. 1765, 1777-84 (2004).

*Guide to Automated Journalism*, TOW CENTER FOR DIGITAL JOURNALISM, Jan. 7 2016, <http://towcenter.org/research/guide-to-automated-journalism/>.

HARRY KALVEN, JR., *A WORTHY TRADITION: FREEDOM OF SPEECH IN AMERICA* 3 (Jamie Kalven, ed., 1988).

Hunt Allcott and Matthew Gentzkow, *Social Media and Fake News in the 2016 Election*, 31 *Journal of Economic Perspectives* 211, 236 (2017), available at <https://web.stanford.edu/~gentzkow/research/fakenews.pdf>.

*IBM Watson*, IBM, <http://www.ibm.com/smarterplanet/us/en/ibmwatson/>.

*Introducing Project Adam: A New Deep-Learning System*, MICROSOFT (July 14, 2014), <http://research.microsoft.com/apps/video/default.aspx?id=220709&r=1>.

Jack Balkin, *Information Fiduciaries and the First Amendment*, 49 *U.C. Davis L. Rev.* (2016).

Jane Bambauer, *Is Data Speech?*, 66 *STAN. L. REV.* 57 (2014).

Jane Yakowitz, *Information is Not Beef Jerky*, Info/Law Blog, available at <http://blogs.harvard.edu/infolaw/2011/06/23/information-is-not-beef-jerky/>.

Jason Tanz, *Soon we won't program computers. We'll train them like dogs*, WIRED (May 17, 2016), <https://www.wired.com/2016/05/the-end-of-code/>

Jihii Jolly, *How algorithms decide the news you see*, COLUMBIA JOURNALISM REVIEW (May 20, 2014) [http://archives.cjr.org/news\\_literacy/algorithms\\_filter\\_bubble.php](http://archives.cjr.org/news_literacy/algorithms_filter_bubble.php).

Jordan Cook, *Facebook will never take responsibility for fake news*, TECHCRUNCH (Mar. 19, 2017), <https://techcrunch.com/2017/03/19/facebook-will-never-take-responsibility-for-fake-news>

Jorge Roig, *Decoding First Amendment Coverage of Computer Source Code in the Age of Youtube, Facebook, and the Arab Spring*, 68 *N.Y.U. ANN. SURV. AM. L.* 319 (2002).

Josh Blackman, *What Happens if Data is Speech?*, 16 *U. PA. J. CONST. L. HEIGHTENED SCRUTINY* 25, 36 (2014).

Josh Halliday, *Facebook and Twitter should do more to combat fake news GCHQ say*, *The Guardian* (March 14, 2017), <https://www.theguardian.com/media/2017/mar/14/facebook-twitter-gchq-combat-fake-news>.

*Journalism + Silicon Valley Conference*, YOUTUBE (Nov. 13, 2015), available at <https://www.youtube.com/watch?v=0Qftw6VkdKQ> (at 52:30).

Julia Greenberg, *Facebook has seized the Media and that's bad news for everyone but Facebook*, WIRED (Apr. 13, 2016), <https://www.wired.com/2016/04/facebook-seized-media-thats-bad-news-everyone-facebook/>.

Julie Cohen, *The Zombie First Amendment*, 56 WM. & MARY L. REV. 1119, 1133 (2015).  
*Junger v. Daley*, 209 F.3d at 484-85 (6th Cir. 2000)

Karin Retzer and Alja Poler De Zwart, *German court holds Google responsible for its search suggestions*, Socially Aware Blog (June 17, 2013)  
<http://www.sociallyawareblog.com/2013/06/17/german-court-holds-google-responsible-for-its-search-suggestions/>.

*Karn v. U.S. Dep't of State*, 925 F. Supp. 1 (D.D.C. 1996).

Kyle Langvardt, *The Doctrinal Toll of Information As Speech*, 47 LOY. U. CHI. L.J. 761 (2016),

Kyle Massey, *The Old page 1 Meeting, R.I.P.: Updating a Times Tradition for the Digital Age*, N.Y. TIMES, May 12, 2015, <http://www.nytimes.com/times-insider/2015/05/12/the-old-page-1-meeting-r-i-p-updating-a-times-tradition-for-the-digital-age/>.

Larson, Je , Surya Mattu, Lauren Kirchner, and Julia Angwin, “*How We Analyzed the COMPAS Recidivism Algorithm*,” *ProPublica* (May 23, 2016)  
<https://www.propublica.org/article/how-we-analyzed-the-compass-recidivism-algorithm>

LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1 ed. 1999).

Margaret Sullivan, *Public Editor No. 5 is Yesterday's News*, N.Y. TIMES, April 17, 2016, <http://www.nytimes.com/2016/04/17/public-editor/margaret-sullivan-new-york-times-public-editor.html>

Mark Scott and James Kanter, *Google faces new round of antitrust charges in Europe*, N.Y. TIMES (July 14, 2016). <https://www.nytimes.com/2016/07/15/technology/google-european-union-antitrust-charges.html>

Matthew Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARVARD JOURNAL OF L. & TECH. (2016).

Maurice E. Stucke and Ariel Ezrachi, *The Subtle Ways Your Digital Assistant Might Manipulate You*, WIRED (Nov. 29, 2016), <https://www.wired.com/2016/11/subtle-ways-digital-assistant-might-manipulate/>.

Megan Geuss, *Court agrees that Google's search results qualify as free speech*, ARS TECHNICA (Nov. 17, 2014), <http://arstechnica.com/tech-policy/2014/11/court-agrees-that-googles-search-results-qualify-as-free-speech/>.

Michael Copeland, *What's the difference between artificial intelligence, machine learning, and deep learning?*, NVIDIA Blog, (July 29, 2016), available at <https://blogs.nvidia.com/blog/2016/07/29/whats-difference-artificial-intelligence-machine-learning-deep-learning-ai/>

Mike Ananny, *Toward an Ethics of Algorithm: Convening, Observation, Probability, and Timeliness*, 41(1) SCIENCE, TECHNOLOGY, & HUMAN VALUES, 93, 103 (2016).

Mike Isaac and Sydney Ember, *Facebook to Change News Feed to Focus on Friends and Family*, N.Y. TIMES, June 29, 2016, <http://www.nytimes.com/2016/06/30/technology/facebook-to-change-news-feed-to-focus-on-friends-and-family.html>

Neil M. Richards, *Reconciling Data Privacy and the First Amendment*, 52 UCLA L. REV. 1149, 1173 (2005)

Nicholas Diakopoulos, *Accountability in Algorithmic Decision Making*, 59 *Communications of the ACM* 2, 56-62 (2016);

Nicholas Diakopoulos, *Algorithmic Accountability*, 3:3 DIGITAL JOURNALISM, 398-415 (2015)

\  
Nicholas Diakopoulos, *Algorithmic Defamation: e Case of the Shameless Autocomplete*, Tow Center for Digital Journalism Blog (Aug. 6, 2013) <http://towcenter.org/algorithmic-defamation-the-case-of-the-shameless-autocomplete/>

Noam Lemelshtrich Latar and David Nordfors, *Digital Identities and Journalism Content: How Artificial Intelligence and Journalism May Co-Develop and Why Society Should Care*, 6 INNOVATION JOURNALISM 7 (2009)

Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1150 (2008).

Orin S. Kerr, *Are We Overprotecting Code? Thoughts on First-Generation Internet Law*, 57 WASH. & LEE L. REV. 1287 (2000)

Osonde Osoba and William Welser IV, *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence*, Rand Corporation (2017), available at [www.rand.org/t/RR1744](http://www.rand.org/t/RR1744)

*Panel II: Licensing in the Digital Age: The Future of Digital Rights Management*, 15 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1009, 1086 (2005).

PEW RESEARCH CTR., NEWS USE ACROSS SOCIAL MEDIA PLATFORMS (2016), [http://www.journalism.org/files/2016/05/PJ\\_2016.05.26\\_social-media-and-news\\_FINAL-1.pdf](http://www.journalism.org/files/2016/05/PJ_2016.05.26_social-media-and-news_FINAL-1.pdf).

PEW RESEARCH CTR., STATE OF THE NEWS MEDIA, 28 (2016), available at <http://www.pewresearch.org/topics/state-of-the-news-media/2016/>.

Richard Samp, *Sorrell v. IMS Health: Protecting Free Speech or Resurrecting Lochner?* CATO SUP. CT. REV. 129 (2011)

Rob Kitchin, *Thinking critically about and researching algorithms*, 20 INFORMATION, COMMUNICATION & SOCIETY 1, 14-29 (2017).

Robert C. Post, *A Progressive Perspective on Freedom of Speech*, in THE CONSTITUTION IN 2020, 17-182

Robert D. Hof, *Deep Learning – With massive amounts of computational power, machines can now recognize objects and translate speech in real time. Artificial intelligence is finally getting smart*, MIT TECHNOLOGY REVIEW (May 2014), <https://www.technologyreview.com/s/513696/deep-learning/>.

Robert Post & Amanda Shanor, *Adam Smith's First Amendment*, 128 HARV. L. REV. F. 165, 170 (2015)

Robert Post, *Encryption Source Code and the First Amendment*, 15 BERKELEY TECH. L.J. 713, 716 (2000).

*Rosen v. Harwood*, No. 100916536, 2011 WL 3153314 (D. Utah May 27, 2011).

Ross Miller, *AP's 'robot journalists' are writing their own stories now*, THE VERGE (Jan. 29, 2015), <http://www.theverge.com/2015/1/29/7939067/ap-journalism-automation-robots-financial-reporting>

Russel Brandom, *Google's art machine just wrote its first song*, THE VERGE (June 1, 2016) <https://www.theverge.com/2016/6/1/11829678/google-magenta-melody-art-generative-artificial-intelligence>.

Samuel C. Woolley and Philip N. Howard, *Political Communication, Computational Propaganda, and Autonomous Agents*, 10 INTERNATIONAL JOURNAL OF COMMUNICATION, 4882-4890 (2016).

Jeffery Katz, *Google's Money and Internet Freedom*, The Wall Street Journal (June 7, 2012) <https://www.wsj.com/articles/SB10001424052702303830204577448792246251470>; Bracha and Pasquale *supra* note 121.

Shelley Podolny, *If An Algorithm Wrote This, How Would You Even Know?*, THE NEW YORK TIMES, March 7 2015, available at <http://www.nytimes.com/2015/03/08/opinion/sunday/if-an-algorithm-wrote-this-how-would-you-even-know.html>.

Society of Professional Journalists, Code of Ethics, available at <https://www.spj.org/ethicscode.asp>

Stephen Borowiec, *AlphaGo seals 4-1 victory over Go grandmaster Lee Sedol*, THE GUARDIAN (March 15, 2016), <https://www.theguardian.com/technology/2016/mar/15/googles-alphago-seals-4-1-victory-over-grandmaster-lee-sedol>

Stuart Benjamin, *Algorithms and Speech*, 161 U. Pa. L. Rev. 1445, 1449 (2013).

Taina Bucher, *The algorithmic imaginary: exploring the ordinary affects of Facebook algorithms*, 20(1) INFORMATION, COMMUNICATION & SOCIETY 30, 44 (2017).

Tarleton Gillespie, *Algorithmically recognizable: Santorum's Google problem, and Google's Santorum problem*, 20 Information, Communication, and Society, 63, 70 (2017).

Tarleton Gillespie, *The relevance of algorithms*, in MEDIA TECHNOLOGIES: ESSAYS ON COMMUNICATION, MATERIALITY, AND SOCIETY 178, 192 (Tarleton Gillespie, Pablo Boczkowski, and K.A. Foot, eds., 2014)

Tim Adams, *And the Pulitzer goes to...a computer*, THE GUARDIAN, June 28, 2015, available at <https://www.theguardian.com/technology/2015/jun/28/computer-writing-journalism-artificial-intelligence>

Tim Wu, *Machine Speech*, 161 U. PA. L. REV. 1495 (2013)

Vivek Wadhwa, *What Google and Facebook must do about one of their biggest problems*, THE WASHINGTON POST, (Apr. 12, 2017) [https://www.washingtonpost.com/news/innovations/wp/2017/04/12/what-google-and-facebook-must-do-about-one-of-their-biggest-problems/?utm\\_term=.f096ce3dd7c0](https://www.washingtonpost.com/news/innovations/wp/2017/04/12/what-google-and-facebook-must-do-about-one-of-their-biggest-problems/?utm_term=.f096ce3dd7c0)

Volokh and Falk *Supra* note 59; Noam Cohen, *Professor Makes the Case that Google Is a Publisher*, NEW YORK TIMES (May 20, 2012), <http://www.nytimes.com/2012/05/21/business/media/eugene-volokh-ucla-professor-makes-a-case-for-google-as-publisher.html>.

William McGeeveran, *Supreme Court RX Records Case: Not So Bad*, INFO LAW BLOG, <http://blogs.harvard.edu/infolaw/2011/06/23/sorell-ims-decision/>.

Zuckerberg: "Crazy" to say Facebook influenced election, THE WASHINGTON POST, Nov. 11, 2016, [https://www.washingtonpost.com/national/zuckerberg-that-facebook-influenced-election-is-crazy/2016/11/11/2ff14280-a822-11e6-ba46-53db57f0e351\\_story.html](https://www.washingtonpost.com/national/zuckerberg-that-facebook-influenced-election-is-crazy/2016/11/11/2ff14280-a822-11e6-ba46-53db57f0e351_story.html).



## CASES CITED

- Abrams v. United States*, 250 U.S. 616, 625-631 (1919) (Dissenting Opinion).
- Bernstein v. U.S. Dep't of State*, 922 F. Supp. 1426, 1436 (N.D. Cal. 1996).
- Bernstein v. United States*, 945 F. Supp. 1279 (N.D. Cal. 1996) (summary judgment).
- Bernstein v. United States*, 922 F. Supp. 1426 (N.D. Cal. 1996) (motion to dismiss).
- Brown v. Entertainment Merchants Ass'n*, 131 S. Ct. 2729 (2011).
- Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of N.Y.*, 447 U.S. 557, 562-64 (1980).
- Def. Distributed v. U.S. Dep't of State*, No. 1:15-CV-372 (W.D. Tex. May 6, 2015).
- Hazelwood School District v. Kuhlmeier*, 484 U.S. 260 (1988).
- Hurley v. Irish-American Gay, Lesbian and Bisexual Group of Boston* 515 U.S. 557 (1995).
- IMS Health Inc. v. Mills*, 616 F. 3d 7 (1st Cir. 2010) (Maine).
- IMS Health Inc., v. Ayotte*, 550 F.3d 42 (1<sup>st</sup> Cir. 2008) (New Hampshire).
- IMS Health Inc., v. Sorrell*, 631 F. Supp. 2d 434 (D. Vt. 2009).
- Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495 (1952).
- Langdon v. Google, Inc.*, 474 F. Supp. 2d 622, 629-30 (D. Del. 2007).
- Lopez v. U.S.*, 373 U.S. 427, 450 (1963) (Brennan, J., dissenting).
- Miles v. City Council*, 710 F.2d 1542 (11th Cir. 1983).
- Morse v. Frederick*, 551 U.S. 393 (2007).
- Mutual Film Corporation v. Industrial Commission of Ohio*, 236 U.S. 230 (1915).
- Recording Indus. Ass'n of Am., Inc. v. Verizon Internet Servs., Inc.*, 351 F.3d 1229, 1231 (D.C. Cir. 2003).
- Reno v. ACLU* 521 U.S. 844, 853(1997).

*S. Louis Martin v. Google, Inc.*, No. CGC-14-539972, Superior Court of California County of San Francisco (2014) available at [https://www.manatt.com/uploadedFiles/Content/4\\_News\\_and\\_Events/Newsletters/AdvertisingLaw@manatt/Martinv.Google.pdf](https://www.manatt.com/uploadedFiles/Content/4_News_and_Events/Newsletters/AdvertisingLaw@manatt/Martinv.Google.pdf)

*Sable Commc'ns of Cal., Inc. v. FCC*, 492 U.S. 115, 126 (1989).

*Search King, Inc. v. Google Tech., Inc.*, No. 02-1457, 2003 WL 21464568 (W.D. Okla. May 27, 2003).

*Sony Computer Entm't Inc. v. Connectix Corp.*, 203 F.3d 596, 602 (9th Cir. 2000).

*Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653, 2667 (2011).

*Spence v. Washington*, 418 U.S. 405 (1974).

*Texas v. Johnson*, 491 U.S. 397 (1989).

*Tinker v. Des Moines Independent Community School District*, 393 U.S. 593 (1969).

*Turner Broad. Sys. v. FCC*, 512 U.S., 622, 657 (1994).

*United States v. Cassidy*, 814 F. Supp 2d 574, 577-78 (D. Md. 2011).

*United States v. Elcom Ltd.*, 203 F. Supp. 2d 1111, 1126 (N.D. Cal. 2002).

*Universal City Studios Inc., v. Reimerdes*, 111 F. Supp. 2d, 294 at 326 (S.D.N.Y 2000).

*Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 447-49 (2d Cir. 2001).

*Va. Bd. of Pharmacy v. Va. Citizen Consumer Council, Inc.*, 425 U.S. 748, 763-64 (1976).

*Virginia State Pharmacy Board v. Virginia Citizens Consumer Council*, 425 U.S. 748, 758, 770 (1976).

*Zauderer v. Office of Disciplinary Counsel of the Supreme Court of Ohio*, 471 U.S. 626, 651 (1985).

