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Everything Is Not *Terminator*

Personal Information Is the Industrial Byproduct of the 21st Century

John Frank Weaver*

Samuel Slater opened the first cotton mill in the United States in Pawtucket, Rhode Island, on December 20, 1790, essentially beginning the Industrial Revolution in America.[1] In doing so, he inadvertently created one of the primary health hazards of modern America: hazardous waste that is the byproduct of manufacturing. That waste was never the primary concern of American industry. Mills in Pittsburgh created steel; mills in Lowell created cloth. They also created waste, but that was not the point, and for decades the general public in America largely associated factories with their intended production, not their unintended production. The problem, of course, was that the unintended production created unintended consequences, including health problems and damaged ecosystems.

Personal information has become the industrial byproduct of the 21st century. Most of the general public does not think critically of the personal data generated when they use their phones, communicate via social media, or browse websites. The utility they obtain from their phones, social media platforms, and websites is the intended production; the data collected during that use is unintended. To the extent that American consumers consider the data they generate, they frequently think of it as a mostly harmless commodity to trade for the access they get to applications and services: Facebook, Google searches, web content, etc.

But as the Cambridge Analytica scandal demonstrated, the collection and use of personal information generated as the byproduct of other uses is not harmless. And in the same way that members of the public came to realize the extent of the dangers posed by hazardous waste created as a byproduct of manufacturing,[2] Americans are slowly realizing that technology use byproducts—personal

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data and information—can be dangerous, too, particularly when analyzed and manipulated by artificial intelligence ("AI").

Hazardous Waste as a Byproduct of Manufacturing

There is ample evidence in the historic record of the hazardous waste and toxic materials that were produced and discarded as part of making manufactured goods in 19th and early 20th century America. I do not see the need to recreate that here, but one particularly colorful quote about the pollution of the Industrial Revolution is worth repeating:

> There were myriads of dirty things given it [a river] to wash, and whole wagonloads of poisons from dye houses and bleach yards thrown into it to carry away; steam boilers discharge into it their seething contents, and drains and sewers their fetid impurities; till at length it rolls on—here between tall dingy walls, there under precipices of red sand-stone—considerably less a river than a flood of liquid manure.[3]

It is not fair to say that the effects of toxic materials on the public health, water quality, and surrounding properties was entirely unknown. As early as the mid-19th century, plaintiffs began bringing litigation against industrial defendants, arguing that the discharge from their factories polluted and damaged their properties,[4] and numerous activists began publicly identifying the connection between industrial waste and public health crises.[5] In 1878, Massachusetts became the first state to attempt to govern stream pollution, when legislation gave the State Board of Health the power to control the river pollution caused by manufacturing wastes.[6]

But it is also true that these conclusions were not as widely known or publicized as they would later become. Although most cities in the United States with a population over 30,000 had a board of health, a health commission, or a health officer, most were only concerned with human or livestock waste. The majority did not have specific regulations addressing the disposal of manufacturing waste.[7]

Poor understanding of hazardous wastes' harmful effects continued into much of the 20th century. Scholars who did not understand the topic as well as they thought they did contributed to

that, as did people associated with industry who wanted to ensure the companies producing the waste could continue doing so. A study from 1938 noted that, "Few [industrial] wastes . . . are present in most streams in sufficient quantities to become poisonous." Engineers argued that mine-acid drainage and steel mill pickling actually had a "germicidal effect" on sewage and therefore should not be excluded from streams.[8] Professional and public responses to legitimate warnings about industrial waste in drinking water was limited.[9] It was not until the passage of federal laws such as the Clean Water Act, the Clean Air Act, and the Solid Waste Disposal Act that there was a national strategy to regulate and remediate the billions of tons of industrial waste that American manufacturers create every year.[10]

The manufacturers who created industrial waste between the beginning of the Industrial Revolution and the advent of government efforts to curtail the release of industrial byproducts had little financial incentive to disclose information about their byproducts. Until government regulation was introduced, manufacturers "emptied their wastes into the nearest stream because that was the easiest and cheapest means of disposal. In doing so, they externalized part of the environmental costs of their production process."[11] Those costs included disease from contaminated air and water; destruction of food from unusable farmland and dead livestock and fish; and reduced quality of life in the form of dirty cities, clothes that were never clean from smokestack soot, and public waters that were unusable for recreation and navigation.

Personal Information as a Technology Use Byproduct

Personal information has become the industrial byproduct of the internet, mobile communications, and social media industries. Where manufacturers produce hazardous waste as an incidental part of creating manufactured goods, we, as consumers, are producing potentially dangerous personal information incidentally while we search the web, use apps on our phones, and post on Facebook and Twitter.

And just as manufacturers had a financial incentive to conceal the dangerous effects of their hazardous waste, internet, mobile app, and social media companies have a financial incentive to conceal the

extent of the personal information they collect. In 2018, American companies were estimated to have spent over $19 billion acquiring and analyzing personal information.[12] An individual's Facebook profile has been valued at anywhere between $.20 and $100.[13] Given that Facebook has approximately 190 million users in the United States and more than 2.2 billion users outside the United States, the total value of the personal information the company maintains is substantial.[14]

Similar to the public's awareness of industrial hazardous waste coming out of the Industrial Revolution, there is a poor appreciation of the dangers associated with personal information. "Many people who are not tech savvy will give up privacy for convenience and better services, not realizing the consequences as long as nothing happens to their personal accounts," said Professor Ahmed Banafa, a cybersecurity expert at San José State University.[15] That observation is supported by a Center for Data Innovation survey showing that 58 percent of Americans are willing to trade their "most sensitive personal data" (*i.e.*, biometric, medical, and/or location) data for convenience and services.[16] "We are acutely aware of data breaches impacting our personal data," said Tim Mackey, a cybersecurity expert with Synopsys, "but until and unless it becomes personal, the problem is largely an academic one which is safely ignored."[17]

But just as the people living nearby or downstream from factories were unable to choose to avoid the waste generated by those factories even when they could observe the effects of the factories' pollution on people, animals, water, and land, consumers today have little choice about sharing their personal information. As Marc Rotenberg, president of the Electronic Privacy Information Center, has pointed out, "the question [of whether consumers are at fault for giving away personal data] reflects a profound misunderstanding of the Internet economy. . . . Consumers do not have meaningful choices."[18]

Ryan Faber, co-founder of Bloom, a blockchain-based digital ID and credit scoring platform, has expressed a similar opinion: "For many, giving up your data is simply required to interact in the modern world. This is true at work and also to engage in basic services. Even worse, sometimes, their information is taken without their knowledge or consent. For example, in the case of the credit bureaus, nothing you can do will protect you from these businesses profiting off of the back of your daily habits. You can't opt out."[19] Industry studies back this up. Cybersecurity firm Ghostery found

that 79 percent of all websites worldwide track their users' movements online, even when the users are browsing elsewhere.[20] An academic study revealed that over 70 percent of smartphone apps report personal data to third-party tracking companies.[21]

AI as the Reaction Between Hazardous Waste and Natural Resources

The release of hazardous waste in the 19th and 20th centuries was as damaging as it was because of how much was released and how it reacted with the environment and the people it encountered. Personal information is similar in that the existence of our information is not necessarily a problem, but rather the problem is how AI can analyze and manipulate it. The Cambridge Analytica scandal revealed some of the more insidious ways AI can abuse our personal data—potentially brainwashing us or controlling human behavior[22]—but just as it was decades before the general public learned many of the dangers of the toxic byproducts factories released, it might be decades before we discover many of the ways AI is using our personal information to manipulate us into behavior that is against our best interests.

Although there are frequently reports that members of Congress are working on federal personal information privacy legislation, both the realities of how AI can manipulate personal information and the history of regulating toxic industrial byproducts demonstrate that more than one law is necessary. Not only will there need to be multiple privacy acts, but there will also need to be legislation to govern AI. Anything less will leave personal information as an unintended liability rather than a carefully governed and beneficial asset.

Notes

* John Frank Weaver, a member of McLane Middleton's privacy and data security practice group, is a member of the Board of Editors of *The Journal of Robotics, Artificial Intelligence & Law* and writes its "Everything Is Not *Terminator*" column. Mr. Weaver, who may be contacted at john.weaver@mclane.com, has a diverse technology practice that focuses on information security, data privacy, and emerging technologies, including artificial intelligence, self-driving vehicles, and drones.

1. Dec 20, 1790 CE: First American Cotton Mill Opens, *National Geographic*, https://www.nationalgeographic.org/thisday/dec20/first-american-cotton-mill-opens/. I recognize that academics have long discussed the Industrial Revolution in three or more distinct parts, generally with the first spanning from about 1760 to 1840 (introducing railroads, the steam engine, and mechanical production), the second spanning from the late 19th century to the early 20th century (introducing electricity and the assembly line), and the third spanning from the 1960s to the 1990s (introducing semiconductors, personal computers, and the internet). *See* Klaus Schwab, *The Fourth Industrial Revolution* (World Economic Forum, 2016), 11-13. The lay public typically refers to the first industrial revolution as the "Industrial Revolution," and this article does as well.

2. *See, e.g.*, Nathaniel Rich, "The Lawyer Who Became DuPont's Worst Nightmare," *New York Times* (January 6, 2016), https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html; Gary Ruskin, *Seedy Business: What Big Food is hiding with its slick PR campaign on GMOs* (USTRK, 2015), 11-15.

3. Lewis Mumford, *The City in History* (New York: Harcourt Brace Jovanovich, 1961); 459-60.

4. *See* Jouni Paavola, "Water Quality as Property: Industrial Water Pollution and Common Law in the Nineteenth Century United States," *Environment and History* 8, no. 3 (August 2002), 303-310.

5. *See* John T. Cumbler, *Reasonable Use: The People, the Environment, and the States, New England 1790-1930* (Oxford University Press: 2001), 49-102.

6. Joel A. Tarr, "Historical Perspectives on Hazardous Wastes in the United States," *Waste Management & Research*, vol. 3 (1985), 96.

7. *Id.*

8. *Id.*, at 97.

9. Joel A. Tarr, "Industrial Wastes and Public Health: Some Historical Notes, Part I, 1876-1932," *American Journal of Public Health*, vol. 75, no. 9 (September 1985), 1060.

10. "Industrial Waste Management: Waste Stream Statistics," *Recover Blog* (February 28, 2017), https://recoverusa.com/industrial-waste-management/.

11. Cumbler, *supra* note 5, at 60.

12. U.S. Firms to Spend $19.2 Billion on Third-Party Audience Data & Data-Use Solutions in 2018, Up 17.5% From 2017, Interactive Advertising Bureau (December 5, 2018), *available at* https://www.iab.com/news/2018-state-of-data-report/.

13. Samuel Lengen, "How much is your data worth to tech companies? Lawmakers want to tell you, but it's not that easy to calculate," *The Conversation* (July 11, 2019), https://theconversation.com/how-much-is-your-data-worth-to-tech-companies-lawmakers-want-to-tell-you-but-its-not-that-easy-to-calculate-119716; Shobhit Seth, "How Much Is Your Personal Data Worth

to Facebook?" *Investopedia* (November 10, 2019), https://www.investopedia.com/tech/how-much-can-facebook-potentially-make-selling-your-data/.

14. Seth, *supra* note 13.

15. Simon Chandler, "We're giving away more personal data than ever, despite growing risks," *Venture Beat* (February 24, 2019), https://venturebeat.com/2019/02/24/were-giving-away-more-personal-data-than-ever-despite-growing-risks/.

16. Daniel Castro & Michael McLaughlin, "Survey: Majority of Americans Willing to Share Their Most Sensitive Personal Data," Center for Data Innovation (January 22, 2019), https://www.datainnovation.org/2019/01/survey-majority-of-americans-willing-to-share-their-most-sensitive-personal-data/.

17. Chandler, *supra* note 15.

18. *Id.*

19. *Id.*

20. Thomas Konrad, "Ghostery Study: 79 Percent of Websites Globally Are SECRETLY Tracking Your Personal Data," Ghostery (December 6, 2017), https://www.ghostery.com/press/ghostery-global-tracking-study/.

21. Narseo Vallina-Rodriguez & Srikanth Sundaresan, "7 in 10 smartphone apps share your data with third-party services," *The Conversation* (May 29, 2017), https://theconversation.com/7-in-10-smartphone-apps-share-your-data-with-third-party-services-72404.

22. Carole Cadwalladr, "Robert Mercer: the big data billionaire waging war on mainstream media," *The Guardian*, February 26, 2017, https://www.theguardian.com/politics/2017/feb/26/robert-mercer-breitbart-war-on-media-steve-bannon-donald-trump-nigel-farage.