

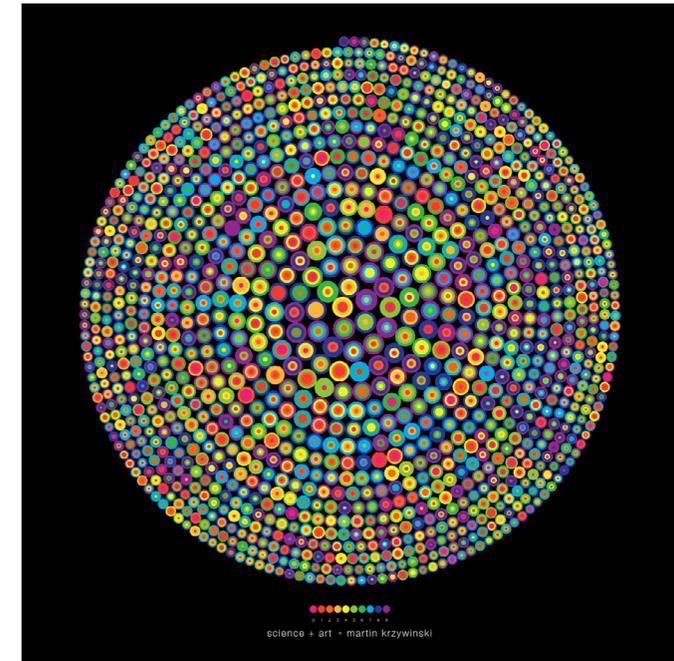
The spiral and the loop

As Julia Cameron puts it in *The Artist's Way*:

"You will circle through some of the issues over and over, each time at a different level. There is no such thing as being done with an artistic life. Frustrations and rewards exist at all levels on the path. Our aim here is to find the trail, establish our footing, and begin the climb."¹

This essay dives deeper into the research of the system. It shows a more transparent and detailed picture of the digital profiling system. My aim here is to 'find the trail, establish our footing, and begin the climb.' In other words, this essay paves the path toward my stance on why we need a more human-centered digital profiling system.

* This essay will reuse part of the content in the previous one.



[Pi Day 2014 poster](#)
— Martin Krzywinski

1: [The Artist's Way: 25th Anniversary Edition](#)
— Julia Cameron

Reference:
[The WIRED Guide to Your Personal Data \(and Who Is Using It\)](#)

150 BC	Antikythera Mechanism, Greek, the ‘First Computer’
Lat 1880s	Tabulating machine , Herman Hollerith, help process Census data.
1960s	Mainframe computers , IBM, Store and process data on nearly every American, corporation used the machines to analyze consumer purchasing habits.
1964	Vance Packard’s book, The Naked Society , which argued that technological change was causing the unprecedented erosion of privacy.
1970	Fair Credit Reporting Act
1974	Privacy Act. The regulations mandated transparency but did nothing to prevent the government and corporations from collecting information in the first place
1990	Lotus MarketPlace : Households names, income ranges, addresses, and other information, canceled
1990s	Ads economy permeating the web.
2000	Privacy groups argued that DoubleClick could have used personal information collected by the data broker to target ads based on people’s real names.
2006	DoubleClick sold the firm at a loss . The Network Advertising Initiative was created, a trade group that developed standards for online advertising, including requiring companies to notify users when their personal data is being collected.
2008	Google acquired Doubleclick .
2014	The Social Credit System is a national reputation system being developed by the Chinese government. By 2020, it is intended to standardize the assessment of citizens’ and businesses’ economic and social reputation, or ‘Social Credit’.
2016	Google revised its privacy policy to permit personally-identifiable web tracking.
May 2018	The data protection regulation GDPR that was put in place gives European users the right to verify their data, including marketing profiles generated by data brokers, internet platforms, or online media. While companies can still protect their code and algorithms as business secrets, they can no longer hide personal data they generate about their users.

Spiral

Looking back in history, there is a spectrum between two extreme conditions: Intact privacy on the left, and no privacy on the right. The ‘current’ condition slowly moves from left to right. Its pace of seesawing from one to the other is getting faster. This section is going to walk through the technological development related to digital profiling. It aims to conclude that users lack control of data collection, and the development of related suppressive, and complementary technologies and laws fall behind the development of data collection.

The list on the left is the spiral.¹

If we zoom into one single case: the Google Street View project, we can find the same pattern. This project received enormous objection when it was launched in 2007. It started out as cars with scanners when it was first discovered in Germany.² The Investigations of Google Street View by EPIC revealed that

"Google intentionally intercepted payload data for business purposes and that many supervisors and engineers within the company reviewed the code and the design documents associated with the project."³

Finally, Google paid seven million dollars to settle the case.

"In Street View, Google developed a declarative method that it has repeated in other data ventures. This modus operandi is that of incursion into undefended private territory until resistance is encountered."⁴

Like some other technology,

"Google then exhausts its adversaries in court or eventually agrees to pay fines that represent a negligible investment for a significant return."⁵

1: A process of deterioration through the continuous increase or decrease of a specified feature.
— [Spiral](#)

3: [Investigations of Google Street View](#)

2: [Germany’s Complicated Relationship With Google Street View](#)

4, 5: [Big other: surveillance capitalism and the prospects of an information civilization](#)
— Shoshana Zuboff

Three years ago, different attitudes¹ toward the Google Street View emerged among artists. It became a platform, a medium, and a collapse of the virtual and real-world that invites creative works. In 2016, Aaron Puzey, a digital games programmer, developed Cycle VR,² which is compatible with the Google Street view that allows users to cycle in virtual reality.

The seesawing pattern I see within one project on a longer timeline is a tug of war between technology and humans.

"Individuals quickly came to depend upon the new information and communication tools as necessary resources in the increasingly stressful, competitive, and stratified struggle for effective life. The new tools, networks, apps, platforms, and media thus became requirements for social participation. Finally, rapid buildup of institutionalized facts—data brokerage, data analytics, data mining, professional specializations, unimaginable cash flows, powerful network effects, state collaboration, hyperscale material assets, and unprecedented concentrations of information power—produced an overwhelming sense of inevitability."³

Technology does not always win. Amazon Ring changed its privacy setting amid concerns that it shares customer data with Facebook and Google.⁴ According to data protection regulation, GDPR⁵ requires companies to bring more transparency into tracking and profiling. But the result of the seesawing pattern is essentially a spiraling trend of technological development.

Data collection drew the most resonance from the user's side because it directly connects to privacy issues. There are two other factors in my research that matter to digital profiling. They are APIs and chips, which are relatively not as sensitive as data collection.

Giant tech is becoming more and more open to the public.⁶

"Some inside the industry think that this is because they understand how higher levels of sustained interaction (and contribution) with successful open source projects can help them set the rules of the game, in some, if not all scenarios."⁷

API is one crucial medium to the open-source feature. API (application programming interface) is a computing interface that defines interactions between multiple software intermediaries. Whether it's internal API or external API, it serves as a critical component in accelerating business in terms of driving agility, data availability, automation, business intelligence, and governance.⁸ It is a win-win move⁹ between giant techs and smaller companies. They open their API to the public, which will help other businesses developing around their current ecosystem. At the same time, it helps prevent duplication of effort because it is less likely for another team to build something from scratch when the work has already been done. From the user's side, it brings convenience. Imagining whenever you visit a new service platform, you don't have to create a new username and password.

Cheaper, smaller, and faster chips¹⁰ accompanied by sensors are the infrastructure at the front-end of the internet, cybernate devices, bodies, and places to construct the 'Internet of Everything.' There is enormous value in IoT, according to the Cisco 2013 White Paper.¹¹ Internet of Everything does not only serve the purpose of improving the convenience and agility in customer experience but also reduces the cost in the industry and eliminates waste in supply chain and logistics.¹² Sensors are tongs that grab data from the physical surroundings. Chips equipped with a WiFi module transfer data to the cloud. In the future, personal data collecting techniques will be more

1: [How Google Street View Became An Art Form](#)

3: [Big other: surveillance capitalism and the prospects of an information civilization](#)
— Shoshana Zuboff

5: [EU Privacy Law Snares Its First Tech Giant: Google](#)

8: [Why APIs are not just for tech companies](#)

10: [Smaller faster cheaper over the future of computerchips](#)

2: [Cycling the length of Britain, virtually](#)

4: [Ring to tighten privacy amid concerns it shares customer data with Facebook and Google](#)

6,7: [The Impact Of The Tech Giants On Open Source](#)

9: [APIs are the next big SaaS wave](#)

11,12: [Embracing the internet of everything to capture your share of \\$14.4 Trillion](#)
— Cisco White Paper 2013

permeative. Currently, the market already has smart speakers (Alexa, Echo), smartwatches (Fitbit, Apple watch), a smart shoe sole (Digitsole), street cameras, etc.

However, there are advantages of data sharing. First and foremost, there's research being done around the topic that sharing mobility data creates the opportunity to help city planning. Especially in the current situation - COVID-19, google reveals location data to help public health officials.¹ There was also a study in 2016 in Indonesia that showed data sharing improves urban planning.²

At the same time, technologies are under development to help data protection and deal with data privacy. There is an end-to-end encrypted communication tool such as Signal. Differential privacy "will enable social scientists to share useful statistical information about sensitive datasets."³

More and more professionals join the task of blockchain-based digital identity, or so-called self-sovereign identity⁴ and the inventor of the World Wide Web, Tim Berners-Lee, collaborated with MIT and is developing the project: SoLid⁵ (Social Linked Data). Designers are trying to hack the control of smart devices⁶ and give control back to the user.

Each application of technology needs to be proof of concept that could generate revenue through further experimentation, research, and development of policy. This collection of facts, along with derived patterns, helps me affirm that we need to embrace data sharing. At the same time, we need to develop technology in order to secure data against unauthorized access (data protection), and push forward legislation to dissolve ownership issues (data privacy).

"Surveillance capitalists have skillfully exploited a lag in social evolution as the rapid development of their abilities to surveil for profit outrun public understanding and the eventual development of law and regulation that it produces."⁷

The continually evolving surveillance economy is like the constantly growing endpoint of the spiral, driving the development of related suppression, complementary technologies, and laws.

Loop

The history of profiling shows that the emergence of this technology serves the governing stakeholder (service provider in the business, the government in society). However, it also provides enormous consequences on a user's online experience. This section is going to parse digital profiling on tech giant platforms from the user's perspective, which aims to conclude that there is a lack of feedback loop in social media platforms for transparency in data collecting and processing as well as for confirmation bias.

Profiling has a long history. Back in 1996, knowledge discovery in databases (KDD)⁸ has already become an emerging field of study. In the article "Digital Inclusion and Data Profiling of Profiling",⁹ Seeta Peña Gangadharan offered a much longer and broader spectrum view from low tech profiling (racial profiling, redlining, and medical profiling), to surveillance profiling. The 21st century's prevailing digital profiling solves the underlying problem (which is typically too voluminous to understand and digest easily)¹⁰ addressed in low-tech data profiling. The form of the profiling result

"might be more compact (for example, a short report), more abstract (for example, a descriptive approximation or model of the process that generated the data), or more useful (for

1: [Google Reveals Location Data to Help Public Health Officials](#)

3: [Harvard University Privacy Tools Project](#)

5: The ultimate goal of Solid is to allow users to have full control of their own data, including access control and storage location.
- [Tim Berners-Lee](#)

7: [Big other: surveillance capitalism and the prospects of an information civilization](#)
— page 83

9: [Digital inclusion and data profiling](#)
— Seeta Peña Gangadharan

2: [How Sharing Data and Collaboration Can Improve Indonesia's Urban Planning](#)

4: [Self-Sovereign Identity in a Globalized World: Credentials-Based Identity Systems as a Driver for Economic Inclusion](#)

6: [Alias — A teachable "parasite" for your smart assistant](#)

8,10: [From Data Mining to Knowledge Discovery in Databases](#)
— Fayyad, U.M.; Piattetsky-Shapiro, G.; Smyth, P. (1996)

example, a predictive model for estimating the value of future cases).¹

Digital profiling has a wide range of application domains from social profiling², business³, financial⁴, employment⁵ to forensic science⁶. This section mainly focuses on the business.

Digital profiling could be parsed into three aspects, each hosting different stakeholders. It helps marketing in businesses in general in terms of understanding, identifying, and building connections with their customers.⁷ For tech giants, especially those with large internet infrastructures, including shopping, social media, searching, and payment system, they not only provide services but also bridge users to other businesses. Users receive customized content packages as their information flows according to their profile from the tech giant platforms. At the same time, users' data (online tracing) is the constant fuel to maintain the whole system. We can see multiple loops here: businesses and customers, tech giants and users, and tech giants and businesses. Inside each loop, the central reciprocity is 'give and take.'

However, between companies and customers, in most cases, tech giants have the advantage of using this powerful tool. The most direct and accessible evidence is the result of the Google search 'How digital profiling benefits the users.' If the algorithm didn't mess up my searching result, you wouldn't get the answer to the question instead of responses to the question 'how digital profiling benefits your business.' Shoshana Zuboff mentioned the word 'reciprocity' 16 times in her article 'Big Other' to describe multiple levels of relationship between individuals and firms from give and take, firm and population, employees and customers, price and wage, income growth and standard of living, and trust and professional sanction. I see these reciprocities as independent

John Berger provides deep insight into his analysis of the purpose of Ads⁸ that the role-play of the stakeholder in the loops might shift according to different scenarios. In the loop such as give and take, customers are both workers and buyers, and companies are both employers and service (product) providers. The current stage is a reciprocity described as Varian's claim: exchanging private information for new information and communication tools,⁹ which are essential requirements for social participation. Shoshana Zuboff described digital profiling (surveillance capitalism) as asymmetric reciprocity because 'data assets were taken, not given and did not produce.' Users are the most, but at the same time the least, important stakeholder.¹⁰

The asymmetric reciprocity is not only reflected in unequal control but also a lack of transparency. The current visual representation is seen in the ad setting page. Google, Facebook, Instagram have different user interfaces. However, they all come down to the reality that our digital profile is an ad interest list based on our online trace and activities. They do offer options to access our data package. Other than that, it is a black box. The map "Three layers of your digital profile"¹¹ done by Panoptikon is an onion-like map which reveals the hidden layers behind the digital profiling. This map shows much more diverse types of data being collected in digital profiling, such as metadata related to behavioral patterns like your typing speed, mouse movements, location pattern, voice recognition results, internet connection frequency, etc. Furthermore, it also reveals how data is grouped differently to infer different interpretations. It is also not clear to users how data is used and sold after data exhaust.¹²

Furthermore, the asymmetry reciprocity lacks the feedback loop in the profiling system. Digital profiling on tech giant platforms serve other

1: [From Data Mining to Knowledge Discovery in Databases](#)

— Fayyad, U.M.; Piattetsky-Shapiro, G.; Smyth, P. (1996)

3: [Privacy and Consumer Profiling](#)

5: [Workplace Privacy](#)

7: [Why You Should Collect Your Customers' Digital Profiles](#)

9: [Beyond Big data](#)
— Hal R. Varian P5

11: Three layers of your digital profile
— [panoptikon.org](#)

2: [Social Profiling: A Review, Taxonomy, and Challenges](#)

4: [Profiling behaviour: The social construction of categories in the detection of financial crime.](#)

6: [Digital Profiling: A Computer Forensics Approach](#)

8: [Ways of Seeing \(section 7\)](#)
— John Berger

10: Google is 'formally indifferent' to what its users say or do, as long as they say it and do it in ways that Google can capture and convert into data.
— [Big Other Page 79](#)

12: Data exhaust refers to the data generated as trails or information byproducts resulting from all digital or online activities.
— Paul Kedrosky

What is the latest brand image that you think Instagram is trying to achieve?

Bring people more closely connected and users first.

In this report: Social media and young people's mental health and wellbeing, Instagram ranks in the last position. I wonder if you think Instagram is trying to do something to deal with the situation?

From my perspective, Instagram has been spending lots of effort on solving or at least mitigating this problem since the last year or so. In fact, Instagram has an org called [wellbeing](#), which is focused on resolving such issues. The site also has teams that review anonymous reports of posts by individuals who may need mental health support, after which they are connected by Instagram to organizations that offer aid.

Instagram also put efforts into redesigning notification system/mechanism. Some examples of solutions and measures Instagram has taken include [removing like numbers](#), [removing the following activity](#) tab where you could see the latest actions of people you are following, [anti-bullying campaigns, and measures](#).

8: One section of the Interview with former Instagram intern - Jinjing

businesses, and users. For other businesses, this tool becomes a service/product because it can bridge businesses to customers. There are multiple types of partnership marketing.¹ However, from a service/product design perspective, how the feedback loop² functions in the partnership is unclear to me due to being incapable of finding materials. When it is related to users, there is a mechanism within digital profiling which is quite similar to the feedback loop. It is continuously collecting user's online traces instead of feedback, and incorporating algorithms to customize the content for the user. Although the latter mechanism shares the same structure as the feedback loop, it is fundamentally a dopamine-driven feedback loop.³

The dopamine-driven feedback loop affects mental health. In RSPH's research report, "Social Media And Young People's Mental Health And Wellbeing",⁴ five social media platforms, YouTube, Twitter, Facebook, Snapchat, and Instagram, are the primary targets in the survey. They all more or less incorporate the dopamine-driven 'feedback loop' in their content regulator system. Fourteen factors are being asked during the survey, such as awareness, anxiety, loneliness, sleep, and self-expression. As a result, Youtube ranked first and was the only positive platform among them all. Twitter came in 2nd place, followed by Facebook, Snapchat, then Instagram took last place.

The dopamine-driven feedback loop enhances confirmation bias.⁵ Confirmation bias is a state of intellectual isolation that people tend to resonate with information that helps confirm and enhance their beliefs or hypotheses. It is hard to get rid of confirmation bias,⁶ needless to say, with the 'help' of feedback loop. This feedback loop is also capable of modifying behavior proactively by platform. At the same time, it causes bad user experiences. From the user's side, there have been complaints

about content fatigue, which is caused by the algorithm constantly pushing similar content. When Twitter applied the "while you were away" algorithm, it pushed the 'best tweets' to the top of feeds, which caused complaints about restructuring timelines.

From the user experience design perspective, it is not complicated to build a real feedback loop to counterbalance the dopamine-driven feedback loop. Tim Brown from IDEO suggested designing simple digital tools to provide feedback as an additional tip to nudge people into new behaviors. In the article "Harnessing the Power of Feedback Loop",⁷ there is a case that city engineers slow down drivers in school zones by an average of 14 percent by merely showing current speed to the drivers on a dynamic speed display. Thomas Goetz mentioned that a feedback loop involves four distinct stages: evidence, relevance, consequence, and operation. It is possible to imagine a feedback loop where there is relevant evidence that can trigger users to operate consequent behavioral adjustment. Former Instagram intern,⁸ whose main project is to optimize the type of notifications sent to Instagram users, shared that Instagram has put effort into redesigning notification mechanisms to improve user experience.

This collection of facts, along with deep-diving into the system, helps to affirm that we need a more human-centered digital profiling system. We need a real feedback loop in the system for the sake of mental health, perception, and human-centered experience.

1: [A complete guide to partnership marketing](#)

3: A dopamine-driven feedback loop is a self-perpetuating circuit fueled by the way the neurotransmitter works with the brain's reward system.

— [dopamine-driven feedback loop](#)

5: It is a type of cognitive bias. This term was coined by Peter Wason.

7: [Harnessing the Power of Feedback Loops](#)

2: The product feedback loop is the process of collecting customer feedback continuously and improving your product based on their opinions. — [How product teams can build effective customer feedback loops](#)

4: [Social media and young people's mental health and wellbeing](#)

6: [Myside bias in thinking about abortion](#)