WHO OWNS THE DATA, CONTROLS ITS VALUE!

Essay on potential property models
for personal data.

Authors: Markus Kreutzer, Sveta Goldstein

Introduction

Personal data

In 2010 Eric Schmidt, back then the CEO of Google, stated that “we now create as much data every 2 days as we did from the dawn of man through 2003.” In fact, he elaborated, “we create about 2.5 quintillion bytes of data daily and approximately 90% of all our world’s data has been created in the past 2 years.”[1] Whether the figures are accurate or not, this much is clear: the use of personal devices, implementation of technology such as Web 2.0, smart homes and the Internet of Things forces users of digital networks to participate in the generation of massive quantities of facts, texts and values. Each of these users produces this valuable data by writing posts, using chat programmes, watching videos, buying goods, driving cars, opening their smart fridges, clicking links and even just carrying a smartphone in the back pocket of their jeans.

The definition of “personal data”[2] suggests that it can only be protected if it can be identified with the person who produced it. However, even if unidentifiable with this person when stored, we will argue that the origin of data is tied to its producer – the user. Thus, throughout we use the term "personal data" to mean any data produced by an individual, even though that individual, from 2003 to today, has neither had access to, nor control over it. We understand this existing data to be a commodity. One that is currently owned, controlled and used by organizations, companies and governments.

Data Security: The Third Way

Obviously, society responds to the rapid development of information technology. Data influences, and is discussed, in the cultural and political realms. Concerning the issue of the control exercised over personal data, two main currents can be distinguished in the discourse:

1. The ability of IT and telecom corporations to obtain and use personal data gives them great power over individuals, communities and society in general. Such ability and power should be restricted by law. If the law does not protect the rights of users, new legislation is required.
2. A consequence of Data monitoring technologies is that governments are granted powerful surveillance techniques. If individuals are obliged to relinquish the rights to their data in exchange for a service, the service provider must have a right to reject unjustifiable requests from institutions to bypass data security protections. In fact, the FBI–Apple encryption dispute[3] is one of the most famous cases on this topic.

> *The third possible way to discuss and solve the ambiguities of personal data's state of affairs starts from considering the "user" to be a "producer" of personal data. To us this seems a fair and reasonable perspective. Indeed, one that represents actuality. From this perspective, the user of a product and the producer of data cannot be separated as they are in the current nomenclature. There is simply no (established) term to describe the "user-producer" entity. Henceforth, we will refer to this entity with the term "produser"*[4].

Produsage implies that data is the result of production; something that produsers must be aware of and should be able to seize. This does not contradict any of the above discussions, it only supplements them.

Conflict

Personal data is an integral part of data-driven business models. Its role can be seen in targeted ads, related and suggested content and pricing optimizations. Produsers, meanwhile, have neither access to the profits derived from data use, nor, as a rule,

do they grasp that they actually produce. Is data not comparable with property, skills, experience or ability, the application of which, by an individual, results in remuneration to which they are fully entitled? If it is, are contemporary data-driven business models unregulated exploitation?

We assume that one of the reasons why these questions arise is the fact that data is abstract. One cannot see, utilize or even fully access it – all the qualities, in fact, of the mythical unicorn. Data, however, is not a unicorn, rather a resource. Its nature has yet to be defined or correctly communicated.

Own your own data

Private property or ownership is the personal or common possessing of property: objects, land or intellectual property. Property can be purchased, traded, received as a gift, earned or produced. The owner of any property also has rights to the economic benefits of that property. Ownership is fundamental to contemporary economics. Ownership law is complex and intricate, but profound and rational. In order to gain these qualities, political and economical thought has progressed through massive historical and social processes, ethical questioning and logical reasoning. To respect the principles of ownership is, by the rules of our society, to respect the work of humanity.

"Produser": A Field or a Worker?

John Locke, one of the most influential enlightenment thinkers, argued that private property is a natural right: something to which every human being is entitled. He believed that God gave the earth to humans to hold in common, but, when a human being combines their labor with features of the earth, it becomes their private property. “As much land as a man tills, plants, improves, cultivates, and can use the product of,” Locke stated “so much is his property.”[5]

By working the land, it becomes an asset of the worker.

If we apply this argument to data-driven business models, there appears to be a conflict of data ownership. Data is produced by some and cultivated by others. In fact, when we consider that companies essentially "harvest" a user's data much like a "field", the conclusion follows, that these business models are fair. Entrepreneurs cultivate an asset, so they deserve to reap the crop. The problem is, along entrepreneurs, users are also "men", and personal data is "their property".

Means of Production

In comparison to Locke, Karl Marx's understanding of production processes was more nuanced. The result of combining labour with the earth is no longer property, rather a "commodity". One of the conditions for the production of a commodity in a modern economy is the division of labour, which makes the individual "the automatic motor of a fractional operation."[6] A commodity made by many workers is not shared between them as property. It belongs, not to workers, but, to those who own the means to produce the commodity. The means of production are the non-labour components of economic value; these include facilities, machinery and land. Concentrated private ownership of the means of production leads to the accumulation of commodities in the hands of those owners. Thus: "the rich get richer and the poor get poorer". On this basis, Marx argues that private ownership has been used throughout history to exploit the workers. While the means of production evolve, exploitation is a constant.

Who, then, are the "workers" of so-called Industry 4.0? Obviously the crowd of the Mechanical Turk, UBER drivers, Deliveroo bikers and artists on Spotify. But, why not also those whose use of technology produces valuable data which is then exploited by companies?

> *If this is indeed the case, then the exploiters of today are data-driven business companies, who put the personal data of the workers into value chains circulation.*

In his article, the journalist Sam Lavigne sums it up: "There is nothing fundamentally wrong with automations taking over human labor. In fact, it is a desirable outcome if the automations are collectively owned or controlled by the labor force they

replace. The tragedy [...] is actually just the realization of a fundamental characteristic of capitalism: those who don't control the means of production will always be excluded from the benefits of their labor."[7]

Consent at Manufacture

"All forms of social contract theory can be ultimately boiled down to this: the individual desire for security, or safety, demands fulfillment through a collective agreement."[8] As society grew, labor and private property needed to adopt institutions of law to protect these arrangements. According to Locke, it is the function, duty and virtue of the Government to enforce the rights of citizens, including property rights.[9] David Hume, a Scottish philosopher and economist, did not believe, however, that property is a natural right. Rather, that it is constructed (defined) by government decree and the consent of the governed.[10] In his view, the welfare of society rests on the foundation:

> *"... that of the stability of possession, of its transference by consent, and of the performance of promises. 'Tis on the strict observance of these three laws, that the peace and security of human society entirely depend."*[11]

On that understanding of property, to whom belongs what at the end of the process of data production is not clear. Indeed, the way property (data and information in our case) is passed from one party to another is as equally important as production.

If data is value, data is property

"In our relations with one another, we are not owners of the utility of things, but of their value, and value is the appraisal made of reciprocal services."[12] The quotation of the french economist Frédéric Bastiat links to the fact, that property is in the market value. With this opinion in relation to the assumption, that personal data has to be property, the owner of data has to own its economic value.

Types of Property for data

Having evaluated different conceptions of the definition of property, the question arises: Who has the right to profit from data, and under what conditions?

In other words, who is the owner of data? In order to understand the advantages for produsers of data, and the checks and balances with which each model protects their property rights, we will next consider personal data as possible subject to:

1. **Public ownership**
2. **Corporate ownership**
3. **Intellectual property**

Mining Data Mines / Public Ownership

Mining is an extraction of valuable minerals or other geological materials from the earth, usually from an orebody, lode, vein, seam, reef or placer deposits. Mining is required to obtain any material that cannot be grown through agricultural processes, or created artificially. Mining in a wider sense includes the extraction of any resource.[13] The term "data mining" connotes the discovery nature of obtaining value from an environment constructed of data. The knowledge and information (patterns, associations, or relationships within the data) are the extractable minerals of data mining.

Data, in this case, is a raw material in the environment of the digital world.

Data and the digital world literally grow symbiotically; from data to big data, to teradata dimensions. The amount of data grows, thus the environment grows and this environment is owned by whoever owns the data. Whether it is a good idea at all to allow such ownership of data is not a special matter. The environment (in the form of land, forests, oil or water) has been owned for centuries by individuals or private and public organizations. Society has developed agreements and rules under which ownership of the environment is possible, and the rights and responsibilities of owners and society are protected by environmental law. In order to understand how value that is derived from the asset of personal data could be distributed more equitably, the history of mining law is highly relevant.

Roman law. Cui bono? ***Cui bono? (from lat.: "To whose benefit?")***

Looking back at the history of mining law, the contemporary data mining situation is very much comparable with early days of Roman Empire. Landowners had total right over extracted minerals because minerals were seen as the “fruit of the soil”[14]. Domain owners – contemporary Romans – via gadget sensors, browser and native apps' front and back doors collect all sorts of fruits: location and intimate health related data, information about purchases, mobility and other human-computer and human-human interactions. Insurance companies, digital content and commerce platforms as well as access economy actors adjust their products and services based on collected data, to meet produsers' "needs" and purchasing power, so that they can maximize their profits.

> *The leftover role for produsers on this ancient stage is as a plebeian army of stonemasons, that mine marble in a quarry for the great constructions: the temples and statues of contemporary business models.*

Although there are laws protecting personal data, if it is stored by a company in such a way that its produser is unidentifiable, the data will no longer be recognised as "personal". Such a pragmatic application of the privacy protection law makes data generated by produsers unknowledgeable as a resource extracted from public grounds.[15]

Legal vacuum and Gold Rush Bubble

In the contemporary history of mining a similar situation occurred as a result of a legal vacuum at the time of the California Gold Rush. Due to the transition from Mexican to the USA rule, California was a peculiarly lawless place. There was no civil legislature or practical enforcement mechanisms, no legal rules regarding property rights, no licensing fees and no taxes. The gold was simply "free for the taking". A "claim" could be "staked" by a miner, but that claim was only valid as long as it was being actively worked.[16] An excellent example of John Locke’s philosophy in action.

Wealth, huge opportunities and substantial infrastructure development were the results and by-products of the rush.[17] Nevertheless the increasing difficulty of gold extraction pushed smaller players away from the business and saw them replaced them by corporations. Such centralization brought greater order to the situation, but caused concentration of profit in hands of a few.[18] During this time, mining rights in the USA were restricted so that environmental resources could contribute to the net wealth of the country.

Net Wealth

Nowadays, in many countries minerals are seen as a part of the net (national) wealth. In many countries around the world governments own mineral rights[19] - the right to profit from any mining or drilling to extract minerals. This sovereign right can only be leased, not claimed or bought by private companies. Even in one of the most monsterized sectors of manufacturing and economics, the gas and oil industries, the largest companies and the largest part of resource reserves are nationalized.[20] The widely accepted logic of economic law tells us that what cannot be artificially created, cannot be freely obtained or appropriated. The surface may belong to individual owners, but the

> *environment, be it land or data, is the subject of public interest and so should contribute to commonwealth.*

Data Value Chain

In 2006, UK mathematician and businessmen Clive Humby stated that “Data is the new oil".[21] This metaphor was used by many others.[22] Indeed, value-adding activities (value chains) of oil and data-driven industries are very similar, so the "data-oil" metaphor can be helpful in understanding how data mining takes place technically.

1. **Upstream** – exploration, collection. As oil fields are explored, raw oil is gathered, so the relevant users (environment) are defined and their data is parsed and collected.
2. **Midstream** – refinery, processing, transportation, storing and analysis. Factories add value to oil by refining it and adding various chemicals. Similarly, the labour of data scientists' adds value to the data by creating clean data sets and interpre-

ting and evaluating it. By anomaly and dependency detection, clustering, classification and summarization of the raw material, useful information is extracted from the data.

3. **Downstream** – exposition of an end-product, marketing, distribution. Information becomes commodity.

Data is Not Oil

The infrastructure of the midstream and downstream, are often not built or owned by public companies and are the accomplishment of private interests. As we see it, the environment of data produsers adds to the value chain only in the upstream. Thus,

> *profits, which are made only in the upstream, could contribute to the net wealth, in contrast to the oil industry.*

Another significant difference between oil and data is the fact that oil is a non-renewable resource. Products made of oil, such as fuel, are burned and are also not renewable. Data and the value extracted from it (information) cannot so easily be considered non-renewable.

(Non-)renewables

Though it is is ungrammatical to apply "renewable" to "information",

> *we must face the fact that information is totally renewable.*

Let us take a reverse look, from downstream to upstream, in order to see what the staging of data-driven industry can recreate, and what remains non-renewable.

Downstream: Distribution.

By giving, sharing or selling information, its possessor does not, per se, lose an amount of information. Rather, the uniqueness, a quality measurement of information, is what is on the wane after such transactions; and transaction after transaction

such information becomes common knowledge – something, therefore with less market value.

Midstream: Where the Data-Science Happens.

If information (the value) is for some reason lost, but the data set (the resource) and tools for the extraction of information are not, the information can still be extracted from the same resource. Moreover, data does not have an expiration date, as eggs or uranium do. It is also possible to extract endless pieces of information from a data set by new analysis methods, or by correlating it with ever-coming data-flows. At this stage, value is still renewable. The possible loss is made with the rubric of a different quality measurement – relevance.

Upstream: Obtaining Data.

Big data is to humanity as personal data is to a person. Big data is regenerable for humanity, exactly as personal data is not renewable for a person.

Imagine, for example, you have a friend named Alisia, who has an Uncle Joe. If Uncle Joe dies, and Alisia inherits her uncle's smartphone with all the information stored on it: e-mails, messages, accounts, profiles and information from all the sensors every phone has. A data set of Uncle Joe's is not valueless after his death, though extraction of valuable (unique and relevant) information from a dead person's data set would require additional resources in the Midstream. Also, dead uncle Joe can neither consume nor work. His data set is not applicable to the direct commerce of the Upstream. It is not a data-stream anymore, it is a static set of values.

A data-stream is a nonrenewable resource.

Hereby, some parts of the data value chain can work independently from others and renew the value from the previously obtained resource of personal data. The Downstream (as we argued before, a stage related to public interest) is the collection of a nonrenewable, non-synthesizable resource. It is important to understand what data-driven industry is working with: living and dying human beings, who are at the same time an environment, the use of which they cannot observe, control or be a part of.

Banking Data Banks / Corporate ownership

Data banks hold tables of facts and values. They are the biggest structured parts of a digital environment and are designed to accumulate and organize data. Actually, data banks are what is being mined, not an abstract "environment". This is why there is a place for another approach to use modern law in the aspiration to design for justice. As the word "bank" suggests, there might be a place for corporate law too. In contrast to a fair distribution of common goods (environment), we are dealing with the governance of corporate property (banks).

Data Share

Corporate law is “the practice or study of how shareholders, directors, employees, creditors, and other stakeholders such as consumers, the community, and the environment interact with each other”[23].

By using Uber, your new imaginary friend Isabella connects to the drivers' database, whose location is being parsed into a data set and packed into a data bank, to be retrieved, visualized and interpreted into Isabella's trip receipt, or, possibly, a model-route for a future self-driving car. Using Spotify Isabella streams a "Fight For Your Right" audio file from the Beastie Boys data base. An occurrence of streaming is stored in a data set associated with Isabella, to relate it with other streamed files, in order to create a "suggestion" for Isabella or another user. Using Google, Isabella clicks the link other people have verified as relevant by clicking it before. Her own click is also saved to the data bank of verified links, so that the relevance rank of the link grows.

> *This is how produsage works: a user of a product is a producer of the data that shapes the product and contributes to the core which is stored in a data bank.*

If corporate law is applied to data banks, data becomes a share, a “unit of account for various investments”[24], which, according to corporate law, is “an item of property, that can be sold or transferred”[25]. Isabella does not only use, click, like, repost and share, but literally becomes a shareholder of data banks by means of these interactions.

Shares as Rights

Shareholders are not a part of the company. The primary interest of shareholders (produsers) is to invest, not to control or own part of a service or product.[26] As a shareholder of a data bank, Isabella does not have a right to decide how Uber prices her ride. However, in corporate law, a certain number of rights should come with a share.

Right to dividends (or payments made by companies to their shareholders) declared by the company.

> *To a certain extent, Isabella and every user of a digital product already receives dividends: the product itself.*

Approaching data banks by way of corporate law should enhance the rights of users to profit. Isabella, as an Uber user, contributes her data to the creation of a self-driving car from our example. Spotify offers its services as an advertising space. Not all profit should accrue to the produsers. The functioning and development of the business is not conceivable without Isabella's data share. However, given the profit motivation of capitalist economies, access to Uber, Spotify and Facebook should at least yield dividends if we are to follow the paradigm of corporate law.

Rights to Any Return of Capital either upon redemption of the share, or upon the liquidation of the company. If Isabella decides to switch from Facebook to VK, or to leave social media completely, the right to returns on capital would imply:

1. "the right to be forgotten"[27], so Facebook will erase all the data they have collected about her and
2. the "right of access to data relating to her"[28], so she receive her data in the form of a beautiful .CSV table.

We would understand this as progress because:

1. Currently, Facebook does not erase data upon deletion of a profile, and
2. despite the "Download a copy of your Facebook data" button in the profile settings,

to get a full version of the generated data requires a resort to to law enforcement[29], to really get a full version of the generated data.

Inheritance Rights

Only the inheritance rights of a shareholder can force the fruition of a personal wish. In the end, we are dealing with personal data, a subject already mentioned in the footnotes Directive 95/46/EC. In daily life, a user would not give a full pack of their personal data to anyone. Only the delicate situation of dead Uncle Joe makes this part of corporate law sensible by triggering the rights to a return of capital. In this case there is a choice for Uncle Joe to

1. force Facebook to erase his profile after his death,
2. "to be forgotten" by Facebook, or
3. to allow Alisia access to her dead Uncle's data.

This is what all users should be able to decide today.

Pre-emption Rights - the right of existing shareholders to acquire new shares issued by a company[30]. This is another right that contradicts the Directive 95/46/EC. New personal data-shares can be "issued" by other individuals so others cannot claim their rights to it. Non-personal data circulation in data banks (bots, sensors, analytics, etc.) is a product of the infrastructure of a corporation and of its midstream. As we have concluded before, produsers cannot claim their rights to the product of the midstream.[31]

Voting Rights - "the right of a stockholder to vote on who will make up the board of directors and on matters of corporate policy."[32] With her voting right, Isabella would never receive an email from Facebook notifying her about changes in terms and condition suddenly. This would could not be decided without the vote and input of stockholders.

In a world where corporate law governs data banks, IT corporations become much more social/political organizations. Since the data-capital of social media networks consists only of shareholders' "investments", Facebook, for example, becomes a syn-

dicate, where its managers must be politicians, promising and engaging millions of people to vote for them. Such a situation would be a prerequisite, similar to the citizenship identity of Isabella as a user and a shareholder of Facebook.

> *Deposited personal data is a contribution and investment. The right to vote, to actually make decisions, would foster popular understanding about the importance of personal data. Something that we currently lack.*

Data as Intellectual Property

Intellectual property (IP) refers to discoveries, inventions, words, phrases, symbols, and designs "used commerce. IP is protected in law by, for example, patents [...] which enable people to earn recognition or financial benefit from what they invent or create."[33]

Is Data Intellectual?

Adil uses Amazon to buy and sell books and domestic commodities. The act of purchasing a new washing machine is not covered by patent protection. In fact, “Einstein could not patent his celebrated E=mc2”[34] either, because for patent law the speed of light is as Adil's purchase, just a description of reality.

We can argue, though, that

> *a data set is intellectual property; just as mixtures of ingredients such as medicines are.*

If the effect of a mixture is more than the effect of its components, it can be subject to intellectual property law.[35] The value of an assembled data set associated with a unique person and their personal data (such as history of purchases, delivery addresses or their browser history) is higher than a simple sum of isolated descriptions and facts.

Intellectual Slaves

The full-time Uber driver Hubert from Brighton, for example, works under conditions of non-negotiable wages and dubious security.[36] Due to a conflict between the UK and Uber, he is not sure whether he is "self-employed" or an "employee". All he knows is that he has no paid holidays or guarantee that he will get enough fares on the following day to cover his living. And, after Uber's commission of 20%, payments for petrol, insurance and other expenses, he is likely still below the national minimum hourly wage. For Hubert, Uber is, nevertheless, a fast and easy income.

In the short run, Hubert (the employee) profits from Uber and Adil (the customer) and saves money by buying on Amazon. Both companies, meanwhile, use not only communication technology to provide services, they also use data technology to adjust prices, model automation and improve particular functionalities and the system as a whole. If an individual is an employee of the data-driven economy, the system of data exploitation is contractual. If an individual consumes in the digital marketplace, the system of data exploitation is also contractual.

> *Workers on, and customers of digital platforms, and authors of data-mixtures do not have legal or technical tools to preserve the intellectual property of their contribution, so the value of their data sets is simply merged with digital platforms. In practice, workers and customers are not really aware of this value. And, therefore, they do not have a choice to not deliver it.*

Any situation in which an individual is forced to provide work without consent is technically slavery. The difference between the above cases and slavery is that produsers are not punished for not being employees or customers. But if they choose to they are forced to produce data for digital platforms.

Protect data as Intellectual Property

Of all types of property Intellectual Property is the only one, that is open for bottom-top claim. One cannot simply decide to make a piece of land, commodity or business to be theirs. Creators of “mixture of ingredients” though are free to decide to declare their creation as own property. If data would be intellectual property, it could be co-

vered as a patent, utility model, copyright, trademark or design and therefore be prevented from unauthorized usage. But, there are issues in every type of the legal rights, that does not fit to data:

1. **Patent:** A data set is a table of facts, which can not be patented and has no technical characteristics.
2. **Utility model:** A data set is no technical invention.
3. **Copyright:** A data set could be copyrighted, but it is not possible to control who, how and where a data set has been used.
4. **Trademark / Design:** Data is neither a design, nor a brand.

Data can not be covered by the existing legal rights for protecting intellectual property.

Two Stories – Two Data Sets

We already know Alisia, the niece of Uncle Joe. She is 42 years old. She lives in Stockholm where she works for a communication agency. Every Saturday she plays tennis with her best friend Isabella. Alisia uses a smartphone to stay connected with her clients, colleges and friends. Along with Uncle Joe's inherited smartphone she has a personal smartphone, a laptop, as well as a computer at work. Since she lives in the capital of Sweden, she does not need a car. For her weekly grocery shopping, she uses car2go, a car sharing service.

The Amazon shopper Adil is 46 years old. He lives in a town in northwest Pakistan called Bannu. He works as a bus driver and is constantly moving between Bannu, Multan and the capital Islamabad. At work, he uses a mobile phone to stay in contact with his family during the long travels. When he is not working, he usually spends time with his two younger brothers. One of them helped him with the order of the washing machine.

These stories describe the lives of two persons, Alisia and Adil. Their origin, jobs, lifestyle and interests are different. Adil and Alisia have very little in common: they are human beings, they were born in the 1970's, and they both produce personal data. Their data sets have different values for business companies. These companies are interested in "rich" data sets (data set which represent individuals of higher purchase power), that guarantee them information about possible customers.

In contrast to the public ownership and corporate ownership models, intellectual property model for personal data causes an important problem:

> *Common regulations must be imposed in such a way that different individuals are treated equally.*

Indeed, "intellectual property rights are like any other property right. They allow creators [...] to benefit from their own work or investment in a creation. These rights are outlined in Article 27 of the Universal Declaration of Human Rights".[37] Data sets should be patented in such a way that the Article 27[38] does not contradict with the Article 7[39].

Conclusion

The value of personal data is not distributed equitably. And:

1. The legal definition of personal data doesn't promote the way out.
2. The so called "Data protection" law, does not protect data. It protects privacy and its current design leads to the exclusion of producers from data-driven value chains.
3. User and producer of data-driven products are parts of the same economic entity (produser).
4. The capitalistic exploiters of today are data-driven business companies, who put the personal data of the workers into value chains circulation.
5. Data is raw material, a by-product and an environment of the digital world and should contribute to the common good.
6. Environment, be it land or data, is a subject of public interest and can be seen as a part of the commonwealth.
7. The deposited personal data is a contribution, investment and right.
8. A data set is intellectual property, as mixtures of ingredients such as medicines. If an effect of a mixture is more than the effect of its components, it is a subject of the intellectual property law.
9. Produsers, authors of data-mixtures, do not have legal or technical tools to preserve their data sets and its value.

To upgrade the current distribution of personal data to a fair level, we have to:

1. Give tools to produsers to preserve personal data.
2. Give the right to decide, what to do with personal data, to the produsers.
3. Create a regulation for data sets of different individuals, where this individuals are treated equitable.
4. Make data be a subject of public interest.
5. Design an ownership model, which considers data as a commodity, that is produced, owned and controlled by users of data-driven products and services.

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