Consensual Servitude and Virtual Property

Antoon Spithoven*

"One of the […] messages of the *Brave New World* is that it is possible to make people contended with their servitude." Aldous Huxley in conversation with John Morgan, BBC TV 1961.

Abstract

Thorstein Veblen and John R. Commons developed their institutional theory to address intangible property. With the rise of the Internet, virtual property arises as a specific case of intangible property whose understanding benefits from an original institutional economic perspective.

According to Veblen, intangible property is exploitative because of the differential advantage derived from private appropriation of community embedded knowledge. Applied to virtual property, the most pervasive form of exploitation of consumptive users (hereinafter abbreviated to users) of digital platforms, apps, and devices (hereinafter abbreviated to platforms) is the extraction of personal data/content (hereafter abbreviated to data) that harms various aspects of well-being, even though online services/experiences may also have positive effects on welfare.

Especially, artificial intelligence (hereafter abbreviated to A.I.) based virtual property brings us to the brink of a multi-decade economic transformation. By extracting raw material in the form of personal data/content, agents' individuality that pertains organically to them becomes consensually owned by others. Providers of platforms conceal this Veblenian exploitation mark by providing services/experiences for "free" in exchange for consensual data-servitude. From Commons' perspective, I find that disparities in legal rights and duties, and disparities in liberties, and exposures between customers and suppliers of platforms tend to favor providers and negatively influence dimensions of well-being of users.

The creation of data vaults, or data licensing for a fee are no viable options to address exploitation. If one wants to protect the well-being of customers of evolving platforms, new individual and organizational behaviors, laws, statutes, regulations, and (forward looking) international cooperation are necessary. This third option could be assisted with taxation of Big Tech to compensate or support exploited people.

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Along with the Internet (of Things) virtual property arises as a specific case of intangible property. Virtual property encompasses personal digital data that are extracted from customers of platforms (Enger and Schiefer 2024, 94), digital data in the form of blockchains—that is, (partly) fungible and non-fungible tokens (Spithoven 2023, 469-470)—and non-personal digital data to make services/experiences more efficient and effective as is literally stated in the *Microsoft Services Agreement*'s (2024) provision: "to improve Microsoft products and services, you grant to Microsoft a worldwide and royalty-free intellectual property license to use Your Content". The royalty-free condition indicates a recognition that Your Content represents value. According to the *Microsoft*

Privacy Statement (2024) this provision implies that Microsoft uses—outside the European Economic Area, the United Kingdom, and certain other countries—content of users for A.I. training, unless users disable this privacy setting.[1]

Extracting unregistered personal data is the domain of digital robber barons (Spithoven 2022, 541) and hitherto institutionally underexposed. From an Original Institutional Economics perspective, I highlight virtual property in the form of extracted personal digital data. I analyze virtual property in the Western World by applying Veblen's, Commons' and Boulding's concepts.

Property from the perspective of Commons and Veblen

The rise of intangible assets challenged the fathers of Institutional Economics (Spithoven 2023, 448, 450). In 1890, SCOTUS changed the meaning of property by recognizing intangible property in addition to corporal property.

Corporal property includes not only buildings and machinery but also enslaved persons (Commons [1934] 1990, 3, 82, 255-256). Intangible property encompasses anything that allows individuals to generate income through activities such as buying, selling, borrowing, lending, hiring, and renting. Intangible property is "the present value of future profitable transactions" (Commons [1934] 1990, 649) and refers to the ability and legal right to limit abundance to uphold prices, whereas tangible property stems from the capacity and legal right to enhance the abundance of goods through efficient production and potentially leading to overproduction (Commons ([1924] 1968, 18-19).

Property is not the physical thing or service/experience, but a "bundle of 'credits'" or "all the rights to the future uses" of the product (Commons [1934] 2009, 416). Using Hohfeld's legal rights, duties, privileges, immunities analysis of legal relations, Commons ([1934] 1990, 77-28, 419) draws conclusions about social, economic, and moral issues. According to Commons ([1924] 1968, 156) "'rights' cannot be defined except as reciprocal rights, duties, liberties, and exposures".

Rights (securities) and duties (conformities) are formal in character and encounter difficulties in enforcement. Liberties (no duties) and exposures (no rights) are informal and are undermined by neglecting respectively avoiding them (here, between brackets are the economic statuses of social

relations) (Commons ([1934] 2009, 77-78; Dolfsma 2023, 1356-1357). Reciprocity between transacting agents does not imply that agents equally benefit. An equilibrium price (Commons ([1934] 2009, 81-82, 199, 203, 331-333) is settled only if a transaction meets all theoretical conditions of the institution of "free competition and equal opportunity". If these conditions are not met, then other institutional arrangements may generate reasonable prices.

Commons' ([1934] 2009, xxx, 4, 649-677; Spithoven 2023, 467-468) legal approach contrasts Veblen's radical exploitation approach. Veblen (1898, 355-358) approached property from the perspective of an agent. For digitally extracted data it is relevant to mention Veblen's institutional approach to serfdom, slavery, or patriarchal marriage, in which someone else owns the quasi-personal fringe—that is, an agent's individuality that pertains organically to the agent—of respectively an enserfed, enslaved, or married person. According to Veblen (1899, 47), ownership of persons symbolizes social standing (status) and acts as a symbolic display that highlights power and the interplay between authority and submission. Providers of platforms may exploit users by deriving a differential advantage from private appropriation of the community embedded joint stock of (technical) knowledge (Baranes 2020, 701

Virtual property and new societal and economic relations

Providers of platforms argue the need to collect data with functional arguments: data collection is necessary to keep applications working properly, to improve services/experiences, or to help customers to change their behavior (Hill 2024a). In other words, data, or more precisely extracted personal data bits, constitute raw material. Providers of platforms process data into information (Dolfsma, Isakhanyan, Wolfert 2021, 390, 392).

Providers monetize information through selling advertisements.[2] The longer users stay on platform ecosystems, the greater the opportunities to display advertisements and the larger the potential for earnings. Therefore, providers may employ cunning techniques to tether customers to the platform ecosystems (Hein and Others 2020).

From a traditional perspective on ownership (Veblen 1898, 352), customers of platforms should own their personal data because they "produce" these data through their digital platform behaviors. However, companies and by extension owners of platforms appropriate virtual property which customers "produce" by using platforms.

Within, the framework of Veblen, in which the quasi-personal fringe of one person might be owned by someone else, and by analogy of, first, willingly enslaved people in impoverished communities to secure a basic standard of living, and, second, voluntary military assistance (by peasants (serfs)) in return for offered safeguard and upkeep (Brenner 1987, 309; Engerman 1987, 350), ownership of persons in the form of extracted personal data might be qualified as consensual servitude of individuals to companies.[3]

Rights, duties, liberties, and exposures

A tentative comparison of reciprocal "rights, duties, liberties, and exposures" of aggregated providers and aggregated customers falls in favor of providers of platforms. See Table 1 and Table 2. I have compiled these Tables primarily from articles in *The New York Times* in 2024. It would be excessive to detail all the rights and obligations of both parties at this point. Instead, I will point out only a few differences for illustration.

Providers of platforms are subject to uncertainties. Entrepreneurial revenues are unsure because of limited efficiency of advertising. Limited advertising efficiency is due to contamination of because of: data collecting failures of apps, impure (GPS) location and activity tracking, or hasty and unintentional clicks by users. Furthermore, investors in innovative (transformative or disruptive) technology are subject to failure of innovation and subject to changing regulations by governments, notwithstanding that the wealthy and ambitious Big Tech companies mitigate regulation risks by microtargeting, lobbying and hiring top lawyers.

Extracting personal data has gradually become dominated by huge companies (DMA 2022, article 25; Foroohar 2024). The more concentrated data becomes, the more the provider of a platform

or app knows about users, the easier (efficient) it becomes to tether users to platforms, to extract more data (Eger and Scheufen 2024, 95-96) and, to gain profits.

Also, customers of platforms are subject to unknowns. They do not know: which A.I. model is involved, which and how much services/experiences the customer is going to use/enjoy, which risks are involved (such as, hate speech and divulgence of personal information or online impersonation), if or how difficult it is to remove personal information, with whom personal data are shared or to whom personal data are sold, let alone that customers know how much personal information of them is extracted indirectly through complementary businesses and third parties. See Table 3.

The reason for rights, duties, liberties, and exposures to tip in favor of providers of platforms is primarily due to leaving transactions to market forces. However, services/experiences provided through platforms are neither theoretically nor factually subject to free competition and equal opportunity—that is, subject to competitive market exchanges because of: first, unknowns among users and providers of platforms and information asymmetry between users and providers (Stiglitz 2024), second, irrational decision-making (Stiglitz 2024), third, limited number of providers, economies of scale, and economies of scope (Eger and Scheufen 2024, 95), fourth, consumers preferences for specific providers or products (for example, search engines), fifth, transaction costs (Spithoven 2012, 429-430)—that is, access cost (computer requirements, app updates, learning energy to understand app changes), cybersecurity cost, storage costs (computer drives, external drive, and/or the cloud), and time/costs/payments to manage/remove data/photos—sixth, data are non-rival goods, and seventh, network, social, cultural, and environmental positive or negative externalities.

Exploitation of customers

Leaving transactions primarily to market forces enable providers of platforms to pursue profits opportunistically by extracting personal data in a way that results in negative affecting dimensions of users' well-being such as health, awareness, personal safety, equal regard, interpersonal bonds, autonomy, and financial resources. See Table 4. The well-being dimensions depend on existing socio-

economic, political, cultural, and environmental structures which might become entrenched by biases in algorithms to extract and exploit data (Rossmaier 2024, 18, 33, 44).

Exploitation in the form of reaping disproportional high profits by negatively affecting individuals' well-being is a form of the in Veblenian terms appropriating differential advantage in knowledge, and in Commons' ([1934] 1990, 302-304) terms, a form of, first, a limited number of alternative opportunities to bargaining partners and, second, of a lawful ability of companies to withhold what others want—that is, to set prices. The fact that platform providers are taking advantage of this situation is evidenced by their high profits. Disproportional high profits of Big Tech, which are partly derived from selling advertisements, are indicated by, first, the Forbes (2024b) list of Billionaire, and second, the Forbes (2024a) list of largest Tech companies "using four metrics: sales, profits, assets and market value".

Although Big Tech may indulge in exploitation, exploitation in the form of job loss, negative well-being and income effects has its limits. Users may retain their comparative advantage, unless A.I. eliminates scarcity and the pursuit of human goals. Ending the pursuit of status (inclusive personal grooming), emotionally tear-jerking life entertainment, trustful information, in addition to giving meaning, and filling void and loneliness, requires a radical cultural change which is not likely to be the impact of A.I., including chatbots.

A grant exchange

One factor of note is that platform transactions do not represent market transactions but, in line with Boulding's (1981) grant economics, the non-monetary socioeconomic exchanges on platforms might best become qualified as grant exchanges.

Boulding (1981, 30, 84, 126) distinguishes three traps within grant exchange. The first trap concerns the ignorance trap, where users are unaware of the implications of their actions. The second trap is the sacrifice trap, which implies that one may, first, altruistically share personal sensitive data for the common good (Passarella 2024, 11) and, second, expect that network externalities are improved by disclosure of personal information and privacy (Eger and Scheufen 2024, 99). Finally,

the third trap is the dependence trap, where fear of social isolation drives individuals to rely on these apps, while by not accepting the terms of use (which are often difficult to comprehend) one cannot open an account and by not complying with the terms of use one may become blocked.

The grants, in the form of licensing providers to use one's data for free, are concealingly conditioned and legitimately coerced.[4] The forced character of grants provided by users of platforms stems from especially the third of the three key traps which Boulding distinguishes.

The dependence trap or lock in is reinforced due to switching costs, behavioral bias due to habituation to the merits of a specific app (DMA 2022, 265/32), neuro-marketing and manipulative presenting of addictive content (endless scrolling), algorithmically promoting of content that generates a lot of interaction, and by users' irrational and not science-based argument of being immune for advertisements.

The value of data

Granted data are difficult to measure in money terms (Spithoven 2023, 540). The value of extracted personal data evolves in the process of collective (multiparty grants) transacting (Boulding 1981, 33-35)—that is, the ongoing process of (multiple) customer behavior on platforms. However, indirectly the value of extracted personal data is indicated by the height of expected profits of data exploitation.

The intensity and frequency of multiple customer behavior influences, together with other factors, the profitability of data (see Table 5). Therefore, the well-developed accounting rules to value unregistered intellectual property rights such as goodwill do not capture the intangible value of extracted data. Registered property rights concern developed ideas while extracted raw personal data concern undeveloped ideas.

Grant exchanges through the medium of platforms are non-monetary social exchanges which obscure negative effects on well-being and consequently the real monetary valuation of extracted personal data. Big Tech settled prices do not account for "hidden" costs of exploiting digital personal data. Among hidden costs are the cost of compensation for negative effects on well-being of users of platforms and for addressing social, cultural, and environmental negative externalities. The true value,

as advocated by supporters of a sustainable economy, is lower than indicated by the traditional measure of extracted personal data-based services/experiences—that is, paid cost of obtaining the data (De Bondt, and Others 2021).

Regulation

Customers of platforms may benefit from digital services/experiences including network externalities of data sharing. Though, confirming the Veblenian ceremonial-instrumental dichotomy hypothesis (Waller 1982, 761) which states that regulation lags technological innovation, the negative impact on overall well-being is large enough to speed-up regulation. To address liberties and exposures, politicians may initiate changes in formal laws and regulations, while individuals and institutional entrepreneurs may (collectively) change behaviors regarding liberties and exposures (Dolfsma 2023, 1355-1358),[5] and lobby on politicians to change rights and duties.

Policy in the European Union and the United States of America (abbreviated to U.S.A.)

Theoretically, there exist at least three options to tackle issues related to ownership of digital personal data: First, users could store data in a digital vault to which providers of platforms buy access. This would enable users of platforms to earn an income from data, to split the use of data, to move data between apps, and finally, to grant, sell or to destroy property. Second, assigning to users a share in the value of extracted data establishes in theory justice. This share may equal government shares in granted licenses for exploration and exploitation of raw materials such as oil and gas. However, the vault and granted license policies may reduce the ignorance trap but leave the sacrifice and dependence trap untouched. Consequently, both policies are not likely to address the negative well-being impact of using platforms. Third, politicians rely on a piecemeal approach to address problems concerning the supply and use of platforms. In the European Union, policy aims to guarantee fair market competition (pricing), protect European citizens, including by regulating how online platforms

can advertise, how they should act against disinformation, and the minimum number of people in charge of moderating content:

1) *The General Data Protection Regulation* from 2016, focuses on privacy protection (Eger and Scheufen 2024, 104),
2) *The Digital Markets Act* (DMA 2022) introduces oversight and measures for the globally operating largest online platforms,
3) *The Digital Services Act* (DSA 2022) forms the future basis for digital services and clarifies responsibilities in terms of activities and information towards customers,
4) *The European Union Artificial Intelligence Act* (2024) put stricter rules for the deployment of A.I.

In the U.S.A., a broader approach is common. In the U.S.A., not only privacy, unfair data collection and surveillance (especially from the perspective of competition), human rights, autonomy and privacy of consumer users online platforms (Biden 2024) but also other stakeholders (workers, farmers, small businesses, and start-ups) are included in proposals to curb the power of Big Tech (Biden 2021).

Meanwhile, providers of platforms continue to appropriate extracted data of users at the cost of negative effects on their well-being, while approaches neither in Europe nor in Northern America touch upon questions of ownership of unregistered personal data. Though labor-laws do not apply to data servants because there is no labor contract, negligence, unfair and deceptive practices provide handles for legal prosecution (Chhabria 2024). Lawsuits may provide some relief. Filed lawsuits address protection of children (Bolton and Others 2023; Minder, Pescia and Czeisler 2024), registered property ownership issues (copyrights), and market concentration. However, law and regulation enforcement is weak.

Conclusion and discussion notes

Virtual property arises as a special case of intangible property. Virtual property concerning extracted personal data does not constitute competitive market exchanges but grant exchanges. Given existing

laws, extracted digital personal data are, in terms of disproportional high profits and negative effects on dimensions of well-being, legally exploited by providers of platforms.

European and U.S.A. regulation of unregistered personal data is focused on unfair data collection, surveillance, and privacy protection but obviously not effective enough. In the current profit model and institutional setting, providers benefit, while users are negatively affected.

Assigning property rights of unregistered personal data to consumers of digital services/experiences may mitigate consumers' ignorance and sacrifice trap but does not touch the dependence trap. Even if one would know the value of data, the power of big tech companies is too great for being able to negotiate compensation individually or organizationally for negative effects on well-being.

Therefore, a continuation and deepening of public regulation of extracted virtual property seem to be the device, especially because of, first, sexuality, money and power, but not fairness are anchored in the course of socio-economic history, second, income disparities magnifying profit shifts from rich to poor countries (Enger and Schiefer 2024, 102), third, market failures and, fourth, lurking new challenges and foreseeable consequences (Waller 1982, 769) regarding for example quantum computers, Web3, Metaverses (prevalent risks of privacy), and (autonomous decision-making) Generative Artificial Intelligence (singularity hypothesis).

Lastly, in addition to a data vault, licensing, and regulation, there exists a fourth option to address user exploitation. Governments or geographical blocks may try to pre-empt anticipated dangers with regulation but may also tax Big Tech returns of data exploitation and use taxes to compensate users of platforms for the negative impact on well-being. However, there are caveats (Spithoven 2002, 362). Western Europeans are accustomed to smaller income disparities in comparison with North America, which makes equalizing taxation feasible. Policymakers and major U.S. investors are unlikely to support equalizing taxes. Big Tech, primarily outside Western Europe, maintains strong ties with American governments through PAC donations, lobbying, and even libertarians in federal positions. It controls information flows, influences global dynamics by pitting countries against one another, and benefits from tax havens and favorable rulings, making such taxation reforms less appealing.

Footnotes

* Antoon Spithoven (antoon.spithoven@gmail.com) is emeritus research fellow at the Utrecht University School of Economics. I want to thank Wilfred Dolfsma, Yolanda I. Muntz, and Mark C. Schramm for their comments. Any errors are the author's own.

1) "We also share data with Microsoft-controlled affiliates and subsidiaries; with vendors working on our behalf; when required by law or to respond to legal process; to protect our customers; to protect lives; to maintain the security of our products; and to protect the rights and property of Microsoft and its customers." *Microsoft Privacy Statement* (2024). Please note that, as defined under certain U.S. state data privacy laws, "sharing" also relates to providing personal data to third parties for personalized advertising purposes.
2) Quarter and Annual Reports of the different Big Tech companies (for example, Meta, Alphabet, Microsoft, Amazon) provide data regarding revenues from advertisement, cloud services, and subscriptions. Big Tech also may reap profits by selling data, by using data to improve efficiency and effectiveness of advertising, and by training apps to provide new services.
3) For an alternative approach to exploitation of virtual property, see a) the "data colonialism" theory, in which data colonialism is defined as "an emerging order for the appropriation of human life so that data can be continuously extracted from it for profit", of the sociologists Nick Couldry and Ulises Mejia (2019, xiii); b) the "digital feudalism" qualification of the lawyer Natalie M. Banta (2017, 1151) who describe a system that is characterized by "absolutism [where consumers have no real choice to manage one's property], hierarchy, and a concentration of power", and the feudal qualification of the anthropologist David Graebner (2018, 94) who underlines that "wealth and positions are allocated not on economic but on political grounds", or; c) Mick Chisnall (2020) article on "Digital Slavery" in which ownership of persons by third parties curtails liberty and causes harm. Colonialism, feudalism, and (involuntary) slavery are obsolete labels because their rights, duties, liberties, and exposures are of a significantly different order than those of consensual servitude. Consensual servitude differs from chattel slavery regarding especially freedom of choice, physical ownership, controlled movement, deference to another person, communication with outsiders and authorities, and official identification (legal documents).
4) One example of coerced grants mentioned by Boulding (1981, 84-85, 121) is slavery.
5) A concrete example of institutional change by consumers is to habituate themselves to human communication with chatbots, which prompt engineering helps prevent the normalization of rude communication with these systems from impacting social behavior, and results in empathic answers. However, it would behoove chatbot developers if they wrote algorithms that decline to respond to users who are disrespectful or who have not apologized for failing to show gratitude in prior interactions. This is unlikely to happen because it is detested in the libertarian climate in Silicon Valley.

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Table 1: Rights, duties, liberties, and exposures of consumer customers of digital platforms, apps, and A.I. devices from a legal perspective

	Right/power	**Duty/liability**	**Liberty/immunity**	**Exposure/disability**
1	To open naively in blind trust an account (ignorance trap (Boulding 1981, 126); casually discontinue the account	To enter correct personal information at creating an account; loss of privacy (sacrifice trap (Boulding 1981, 124)); accept terms of use; refrain from creating an account with fraudulent pretentions	To set up one's own networks by developing engaging content, conduct, and standards, or to end an account; install apps for self-policing information	Social isolation (dependency trap (Boulding 1981, 125)); surveillance; social stratification reminiscent to consensual servitude; "walled" wallets
2	To engage (emotionally, rationally, or transactionally) in forms of digital communication or digital intimacy; chasing content; exposing and or exchanging creative or other items, and to sidestep the anxiety of in-person social interaction	Comply with (possible changing) terms of use; accept that adds appear on the screen; obliged to employ the app or to interact in a manner that aligns with ethical standards; consent to pay (with data) (Boulding 1981, 5); conform to protection of customers rules (age-verification) while hardly enforceable	To enjoy the benefits of the chosen functionality	Moderation of user-generated content; subject to manipulation techniques, spam and A.I. slop, disinformation, intimidation, borderline content, spoofing and other harm (violent games, pornography, fake discounts, and A.I. exploitation in the form of deepfakes, either or not paired with social engineering); browsing and streaming fatigue; shortened attention span; loss of self-discipline; cell phone ban in schools
3	To enjoy different individual functionalities (tailor-made information, lifestyle improvement, symptom tracking) and social functionalities (organizational, educational, health, political) (Rossmaier 2024); privacy protection	Accepting at least functional cookies and (concerning health apps) allow (self) tracking data (Rossmaier 2024) and algorithmic driven feeds	To deploy individual or social functionalities; develop and deploy bots; permanent accessibility; prompt engineering	Hybrid functionalities and biased algorithms may entrench inequalities (Rossmaier 2024); irritating chatbots; ignorance of data extraction and its value; apps may not work properly when cookies are refused; impairment of face-to-face communication skills; loss of self-discipline
4	Whistle-blowing; freedom of speech and information; publish/reveal (classified) information	Not to endanger national security; activistic publishing of classified documents is a crime; legal accountability or casually adversarial process	Following your own conscience	Blocking of accounts; social engineering; pressure to reveal source of information; debunking disinformation

5	To gain status in the form of likes, shares, comments, or citations; to start a commercial activity in the form of influencer	Comply to (possible changing) terms of use	To engage in an expanding (cultural disentangled) network	Subject to advertisements (Dintzer 2023) and influencers; integration into a geographically expansive and smoothly functioning mega-style environment (deathblow to oral cultures); subjective assessments may be mistakenly confused with objective assessments.

Table 2: Rights, duties, liberties, and exposures of suppliers (businesses, organizations, professionals, influencers) of digital platforms, apps, and A.I. devices from a legal perspective

	Right/power	**Duty/liability**	**Liberty/immunity**	**Exposure/disability**
1	To provide a platform, an app, or A.I. devices and successively provide discoverability of products/services/ experiences, sell them, or casually discontinue the products/activities; incur debt; issue shares; negotiate tax rulings provided no state aid	Debt repayment; possible personal liability for data incidents; transparent financial statements; age-verification; play by the rules; a ban on social media apps for children in certain countries	Lobbying; technological innovation (introduce new products or features; to improve effectiveness and/or efficiency (Thomas 2024); to find more uses for (new) technologies—that is, conquer new grounds; to pre-empt competition (buy start-ups; license start-up technologies and hire the top employees of the start-up); build bot defenses	Operate carefully with introducing new products or new features; subject to monopoly power of providers of ecosystems; app safety; risk assessment; excessive costs for start-ups (necessary computer chips and cloud services); speculative valuation; bankruptcy; cooperation between scientists and organizations in the search for safeguards against the threat of A.I. take-over of humanity
2	To extract data of the customer and to "own" the customer's personality; to analyze extracted data; fair use of data; to sell data (Dintzer 2023); deploy customers as relatable promotors of products/services/ experiences; nudge users to stay on one's specific platform ecosystem	Respect geopolitical restrictions concerning sensitive personal data; pay for using an ecosystem; reasonable pricing of products/services/ experiences; respect privacy and anti-discrimination laws; abstain from doxing; remove reported illegal content	To set terms of use and to change them from time to time (to shield the company); stop updating apps if convenient for the company; free flow of data worldwide; create loopholes to circumvent rules; apply neuro-marketing and manipulation techniques; "fair" use of data	Establish greater transparency; subject to ethical and social norms (fair pricing; curb data scraping); losing social status due to perverse, unethical, and unhealthy data extraction; (improve) financial status and career opportunities; pollution of data (for example, by bots); share data of suspects with the police
3	To develop a revenue model (free downloads, addictive content, subscriptions, commission for transactions, issue tokens and set the exchange rate, selling data etcetera) and to design an organizational and marketing strategy (stakeholders' or shareholders'	Comply with national legislation (especially accounting legislation, antitrust law (requirement to break up the company in separate parts) and consumer protection laws); pay copyright fines, and/or fines for insufficient rule compliance; lawsuits; judiciary decisions	Cooperation with other tech companies to tackle harmful content, at the risk of being accused of monopolistic behavior; platformization; avoid blockages by technical tricks such as automatically updating through IP addresses of other services	Speculation (for example, singularity); social indignation; discussion in parliament; press coverage; the call for establishing more protection for whistle-blowers; requirement to publish a transparent, audited, annual impact report

	governance); to use (chat)bots			
4	To change the status of the app from open to closed source	Ensure that apps are used in an ethically responsible manner	Either or not using a subscription model	Ddos attacks, hacks ransomware)
5	Freedom of speech; to move and sort information, including displaying search results and collecting personal data	Obey constraints on moving and moderating information; use non-discriminatory language	Subdue trolls; implementation of features to prevent potential new regulations	Requirement to moderate user-generated content (editing); reasonable regulation as contemporary counterparts to newspapers
6	Press freedom; publish information; to control the feeds	Face lawsuits and comply with judicial decisions; keep classified information secret; liable for programmatic defects	Not accountable for third party posts and algorithmic driven feeds; However, illegal content is punishable	Become listed in search results; being summarized by artificial intelligence which summaries choke off original creators; bad reviews; claims for feeds accountability

Table 3: Unknowns when using a digital platform, app or A.I. device

1	Which data, how many data, for how long the data are stored, and what data reveals (in combination with the data of their network). An example of a disclosure by data is your wealth indicated by the operating system of your device (Fatehkia and others 2020) or the used search engine
2	What the default settings of apps are and which A.I. model is used
3	The "murky consent process means people may not realize what they are opting into" (Hill 2024b, 8)
4	How far permission for access to identifiers allow for tracking data (Tufekci 2023) (apps even might unlock your mobile phone at night or record audio)
5	The economic value of the data and of services/experiences one expects to enjoy
6	How good data are protected against hackers
7	The chance that personal data become by accident published in the public space
8	What privacy risks one faces (Huffelen 2022)
9	To which marketeers extracted data are sold—whereas these marketers have the intention to target customers of platforms and apps with hyper-personalized ads (Thomas 2024) and, information—or to others who target customers with extortion, scams, (QR-)Phishing, or other harm (Biden, 2024)
10	Which foreign intelligence services buy the data (Biden, 2024)
11	How the provider of the app or third parties will utilize the data in the future (Jean and Lefrere 2023, 1095)
12	What paths advertisers take to circumvent privacy rules
13	Which misuses are lurking
14	How the (long-term tracked) data opens the door for manipulation or targeted misinformation
15	How vulnerable one has become with personal information stored on digital data files
16	How to distinguish online fake platforms (shops) from real online platforms
17	Not always (fully) informed about data leaks.

Table 4: Exploitation of consumer customers of platforms and apps

1	Algorithms may entrench existing structural injustices. Namely, digital inequalities, combined with algorithmic biases, can result in data that disproportionately discriminates against certain social groups (Rossmaier 2024, 16, 18)
2	Privacy is breached through "targeting advertising and long-term tracking" (Jean and Lefrere 2023, 1095), leaks and hacks
3	One's knowledge and understanding are influenced through algorithms which are the basis of information bubbles
4	One's self-determination is limited through nudging, (political) disinformation, advertising, and algorithms that affect choices
5	Various manipulation methods are employed to keep users on the platform and apps (for example, stimulating endless scrolling). One effect is the shortening one's attention span and loss of self-discipline due to permanent accessibility.
6	Online communication, communication using chatbots, communication with artificial intelligence powered personal assistants, and platform/app addiction go at the expense of offline contacts and results in offline loneliness due to negative affecting face to face communication skills and increasing narcissism (social media stimulate to present a better or augmented self) and jealousy (Lopez 2013)
7	The consumptive use of social media and apps negatively affects health because a) mobile heath apps may negatively influence the relation patient and doctor, b) reliance on mobile health apps and associated devices (cell phones) and wearables to track data excludes the socioeconomically disadvantaged, c) algorithms discriminate against certain groups (Rossmaier 2024, 9, 89-90, 93, 98), and d) prolonged glued to screens displaces opportunity for exercise and may contributes to obesity
8	The opportunity costs, in terms of being offline, are higher the longer one is online
9	Consumptive users of apps are at the same time providers of data but not paid as employers, while data labelers—that is, gig workers—are financially exploited (Spithoven 2021)
10	A.I. services do not give creative workers the credits and or reasonable payment for their artist style, writings, and or voice. At best, creative workers are unaware of the consent terms hidden in a previously concluded contract
11	Regretting digital purchases (in games) and contacts entered into ("pig" butchering and other scams)
12	Feelings of deprivation due to bigger national income differentials, which reveal a ceremonial-instrumental dichotomy, together with falling numbers of lower skilled jobs due to the application of artificial intelligence (Goyal and Aneja 2020) in addition to negative self-esteem due to unrealistically positive images/experiences of social media contacts
13	The "immense potential to transform production processes and significantly accelerate productivity growth" by applying generative artificial intelligence (Brollo and Others 2024, 1), may benefit employers, while endangering jobs
14	Disruptive digital technologies cause social and cultural displacement for those who miss the boat.

Table 5: Hypotheses concerning the profitability of digital extracted personal data

1	Raw materials like data do not have any economic value if there are no application opportunities. The more applications, the higher the profitability of raw materials such as data
2	Personal data may not only be extracted form a persons' behavior themselves but also indirectly through the data access prompt of friends based social media
2a	the bigger one's network, the more profitable data might become because this increases the acreage of relatable products
3	If the rule is not enforced that users of apps only upload, submit, store, or send content of which they have the copyright—that is, providers may eventually indirectly benefit from stolen content that they extract from the "thieves." The profitability of data should include this factor
4	The more an agent is active on the Internet (of things), the more data may reveal about the agent and the agent's network and positively affect the profitability of data
5	The more an agent is active on the Internet, the easier it becomes for providers and their third parties to address the agent (Dintzer 2023). This increases the profitability of data
6	The more an agent is active on the Internet, and the bigger one's network, the more valuable data might become because this increases the likelihood of word-of-mouth advertising
7	The profitability of collectively generated data and the collectively exploitation of extracted data becomes settled and revealed during these congruent processes
7a	the wealthier a customer is, the more valuable personal data become because this enables the provider to promote more and especially valuable items
8	The more concentrated the data become, the more the provider of a platform or app knows about the customers through processing the data into information, the easier it becomes to exploit the extracted data (network externalities (Eger and Scheufen 2024, 95)), and the more valuable the data become
9	The wealthier the users, the more valuable digital data become because this increases the opportunities to monetize the data through advertising and/or subscription models