Meta-stasis of the Internet*

Bipin C. Desai

12 Aug. 2022

Abstract

This paper offers a brief history of the information age in order to demonstrate how the loss of user control and the increase in certain forms of automation have metastasized into imminent and ongoing threats to social order and the democratic way of life.

The internet was established after a number of developments which included the interconnection of computers without extensive need of action by the users. It led to the introduction of user communication sub-systems such as text, email, file sharing and systems for searching for files. The so called information age is said to be marked by the adaption of a hypertext transport protocol in the last decade of the twentieth century. The information age was marked by a number of meetings which included the first of the world wide web conference in April 1994 followed by the second (Oct. 1994) and the third(April 1995) in quick succession. Other, by invitation only, meetings which dealt with issue of this era were held in Denver, OH(Metadata) and (America in the Age of Information)Bethesda, MD.

However, in just under three decades this information age has *meta*-stasis-ed into a form that is a threat to our social order and democratic way of life while fostering division. Enormous wealth has been garnered by just a few corporations and individuals at the expense of the harm it is doing to people all over the globe. This is the result of the spreading of fake-news and favouring angry content that result in civil strife and loss of lives. It has led to divisiveness and autocratic governments. Some so called democracies are in name only with the same people continuing in their 'elected' position from term to term, ad infinitum. Just as in the metastasis of a cancer, until it is checked, this transformed internet will destroy some vital parts of our everyday existence: our privacy and liberty while promoting an inegalitarian spirit.

Keywords: Online Social Networks, personal data exploitation, privacy, security, smartphones, tracking, big tech, lack of legislative control, surveillance

---

1   Introduction

Humans have evolved over the millenniums, however, it is only in the last few centuries that history has been recorded in a form that could be easily reproduced and transmitted from generation to generation. This was made possible with the invention of the printing press, widely considered to be a revolution. Humans have gone through a number of revolutions: roughly, the replacement of one type of social order by another.

Most revolutions are periods in a nation when one system is replaced with another: the replacement is to oust an autocratic government with something more representative[6]. Some are successful, others not so. The revolution of the North American British colony was replaced by a democratic federal system with a constitution whose interpretation and rigidity has and continues to create problems. The Chinese, French and Russian revolutions replaced one tyranny by another after wars, suffering, and tens of thousands of fatalities.

Here we are not discussing these revolutions but those which have been called industrial revolutions through multiple generations of digital computing devices, and development of the internet from connecting a number of computers with a small number of users to connecting millions of computers and billions of mobile devices as clients. We briefly talk about the first two and then turn to the subject of this paper namely the *meta*stasis of the internet.

2   The industrial revolutions

It took thousands of years before the mechanical advantage offered by simple machines were combined ingeniously into more complex machines. The power source to drive these machines were either human or animal. Other sources such as wind was also harnessed over the years. However, a more reliable one was needed. Boiling water to show the property of steam was developed over two thousand years ago and early versions of the steam engine were invented in the sixteenth century. It became the driving force of the first industrial revolution, said to be from 1760 through 1850.

The topic of the industrial revolutions is a vast one and is covered extensively in many sources[3]. The first industrial revolution, was in an era when industrial ownership and its products created a class of wealthy entrepreneurs, It also meant a shift from rural to urban environments. Working in badly configured factories was a gruelling experience. Workers were not allowed free time and worked long hours; the work force included children and the pay was dismal.

During this period radical changes impacted not only agriculture but transportation and the social structure. The use of steam engines in mills and factories and subsequently in railways was an achievement of this period. The industrial revolution created a new source of great wealth for a handful of entrepreneurs, the owners of the factories while exploiting the workers including child labour. The industrial revolution led to an exodus

of workers from agricultural, rural settings to city slums with health issues[19].

In the first industrial revolution the source of energy was coal. Some historians quibble over the exact boundary between the first and the second industrial revolutions, that started around the mid-19th century. A primary difference is that the second was the beginning of mass production in manufacturing and consumer goods. The power sources for the second industrial revolution were oil and gas, and the internal combustion engine. One can also mention the third industrial revolution wherein the power source was electrical and subsequently nuclear energy, electric motors, assembly lines in automated factories. It has been followed by a revolution, the fourth one, in which digital communication technology and the internet changed how information and interaction are managed.

3   The digital generations

The idea of a programmable computer is often traced to Charles Babbage[13]; he was a mathematician, philosopher, inventor and mechanical engineer. (In a recent book[77], one author seems to give this honour to the Majorcan polymath Ramon Llull who designed a machine made of paper.) Humans had to wait another century before the vision of Babbage was realized, in the form of digital computers, first using electro-mechanical components and subsequently all electronic components.

The centre part of today's computing and communication technology including the internet and mobile phones is the need for digital devices and infrastructure. The first generation of digital computer systems, which replaced analog systems, were devices made from vacuum tubes. They were large in size and required a considerable amount of electrical energy. They were relatively slow and had very limited storage capacity.

The next generation of digital computing devices made use of solid state devices using diodes and transistors. Each such device was distinct; the advantage was lower power requirements and size.

The third generation of digital systems used integrated circuits and hence there was considerable reduction in size and power needs. Time sharing and remote access as illustrated here was possible. Initially, the communication system was an analog acoustic coupler and the input output was an updated teletype. A higher level of integrated circuit allowed more powerful digital computers and development in operating systems along with features including multi-tasking and multi programming. These features allowed time sharing a central computer by many users using a dedicated high-speed telecom line.

The emergence of large scale integration and its refinement and miniaturization led to the mini and microcomputers, personal computers, laptops, notebooks, tablets and smartphones. This is the fourth generation of digital computers. These could be called the fourth generation of digital devices. There was speculation about the fifth generation of computers, however, with the advent of cloud computing and a few super computers, the focus of the fifth generation has more or less dropped out of sight with the emergence

of cloud computing which, ironically, returns to the earlier generation as a form of time-sharing++!

4   The Internet and World Wide Web

As more powerful computers were introduced in the early 1960s, organizations including universities set up a central computer centres to house powerful systems. A user who wanted to execute her program was required to prepare the program using punched cards and bring the deck of these cards to the centre. Common programming languages used in the early 1960s were FORTRAN and COBOL. The program, along with any data would be in a deck of cards which would be submitted to run in batches of programs written in the same lanuguage. Once the submitted program for a user is run, its output would be printed and both the output and the deck of cards would be picked up by the users. The procedure, if required, needed to be repeated for any changes to the program or data!

Later, with improvement of the operating systems and the introduction of telecommunication facilities and an acoustic coupler it was possible to use a remote terminal to input the program and run it. This would be feasible for small programs but larger programs needed the previously mentioned manual procedure: however, satellite stations with a mini-computer, could be set up to avoid trips to the computer centre. These satellite stations were connected to the central computer with a high-speed, dedicated telecommunication line—-this was the advent of connecting computers! An example of this was the use of the central computers located in a downtown campus by users in a suburban campus[1].

Systems such as time-sharing in early 1960s allowed many users to log into a central system from remote terminals, and store and share files on the central disk. Messaging between users of the same system also became feasible. Computer-based messaging between users of the same system became possible following the advent of time-sharing in the early 1960s

The introduction of the third generation computers in the mid 1960's and the use of time-sharing was the period which prompted, in May 1964, MIT professor Martin Greenberger to write the following in an article in The Atlantic[42]:

"Computing services and establishments will begin to spread throughout every sector of American life, reaching into homes, offices, classrooms, laboratories, factories, and businesses of all kinds."

The earliest form of email was introduced on a Unix system, in the early 1970s: this allowed users to compose a message and send it to the mailbox of other users on the system. With the interconnection of computer systems over the early network such as ARPANET in the early 1980s. There were a number of dedicated networks of interconnected computers in the world until the adoption of the packed-based communication (TCP/IP) of digital

---

[1]The students and faculty members of Loyola College used the central computer located at the downtown McGill University in the late 1960s - early 1970s.

Figure 1: Remote computing

The author using an acoustic coupler to communicate with a remote main frame -early 1970s

information, standardized in 1982. This led to the emergence of a world-wide network of fully interconnected networks all using the protocol[IP]. Initially, the internet connected systems at a number of organizations (including universities) and was accessed by people at those institutes to communicate and share[91]. The Simple Mail Transfer Protocol (SMTP) protocol was introduced[90] to send mail from a user on one computer to a user on a remote computer.

The web came into existence in the late 1980s with the development of a hypertext transmission protocol(HTTP)[94], an application of the TCP/IP protocol, and the first text browsers supporting the early Hypertext Markup Language(HTML)[93] standard. With the introduction of the graphical browser in the early 1990s, data sharing was for the first time extended to the masses[94].

As noted in [20] "even before the introduction of the web, the internet had made it possible for people to communicate via electronic mail (email)[69],[88] and on-line chat, allowed sharing of files[87] using anonymous file transfer protocol (FTP), news (Usenet News), remote access of computers (telnet), Gopher (a tool for accessing internet resources), Archie (a search engine for openly accessible internet files) and Veronica (search for gopher sites). These early systems afforded the opportunity of interconnecting people (who wanted to be connected), sharing resources without requiring anything in return and providing security and privacy; there was not yet any question of monetizing; the whole concept was to share without exploitation or expropriation of user data or content. However, these systems were not adopted widely: a key limitation of these early internet tools was the need to have some computing savvy; another challenge was the lack of an infrastructure to transfer the know-how to novices. This was also a limitation for the early web with the use of user unfriendly, text-based web browsers and a lack of training facility and easy to learn tools to build and maintain hypertext documents.

Figure 2: WWWI Navigation Workshop

The author and colleagues during the WWW I - Navigation workshop in 1994 -in this forum, the author put forward the ideas of web history and search engine.

Some early attempts to create software for hypertext[98] were buried by the emergence of the early tech giants who were more interested in having their system dominate the internet and limiting users from learning the basics. This strategy of dumbing down is behind all current systems, which has contributed to a downgrading of literacy and replacement of reading by videos and sound clips.

4.1 Web of Big-techs

The web was quickly recognized by business interests as an opportunity for commercial exploitation and this led to an explosion in the creation of data. The first few meetings of the World Wide Web conferences, for example the ones in Geneva (May 1994), Chicago (Oct. 1994) and Darmstadt (Apr. 1995), were oversubscribed mainly due to participants from business. The web provided new avenues for research not only for people in computer science but also in all areas of human learning. It has changed the way we do everything! Using simple words even a naive web user can find and subsequently access a large repository of web pages through the intermediary of a number of search engines. It is worthwhile to note at this point that the early search systems developed by the pioneers of the web have all but disappeared, replaced by late arrivals. The web, one of the services of the Internet, made it possible to create the vision that Vannevar Bush wrote about in 1945[83] in less than half a century!

Marshall McLuhan[65] noted that "The medium is the message" in relation to new media, namely radio and television, introduced in the early and mid-twentieth century. AM broadcasting was established in the 1920s and FM broadcasting in the 1940s. TV broadcasting started in a small way in the 1940s. With the advent of the web and its appendages, search engines, OSNs(on-line social networks) and the popularity of the mobile phone and its integration of the internet and web one wonders what the characteristic of it before looking at its contents. Most of these OSNs want to be THE internet and try to entice its users to be glued to them and never need to use anything but their system.

For a vast majority of users of the the internet, their principal or exclusive access point is a small screen with limited user interaction. Most web browsers, meant for this restricted media have very few user controls. With a limited visio-keyboard the interaction is awkward. The traditional menu at the top of a browser display is no longer a default and for some browsers it is impossible to access, even for more robust desktop versions of the applications.

Another major application of the web has been the introduction of OSNs, and other "platforms" to allow anyone to share personal information and news and to express their opinion on any topic[2]. Users seem to have no second thoughts in posting any type of personal information. Their lack of sophistication in assigning the correct setting for privacy to these postings means that their personal information may be accessed by anyone on the system and of course by the OSN that hosts this application[3]. The use of weak or "easy to guess" passwords do not help. The privacy issue has been of secondary importance for many of these OSN operators. These operators, through their terms of service, effectively take over perpetual ownership of all information and use it for commercial purposes and/or

---

[2]These users have only to become familiar with this OSN interface and stay ignorant of the mechanisms used much less starting a text editor program such as EMACS, and type out simple compact web page.

[3]The terms of service that the user must have agreed to at the time of signing up, would make sure that the OSN is protecting itself and is able to mine and exploit the user's data.

to sell to third parties. A privacy bill, recently proposed in the US Congress, would offer little help to individuals while giving companies great leeway in determining how they collect, use and share personal data[58].

4.2   Web and Artificial Intelligence

A proposal was made by McCarthy et. al. in August 1955[62] to set up a 20 man-month study in the summer of 1956 with the following goal:

"The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves." [62]

"It is generally agreed that this was the birth of AI. Recall that at that time the first generation of digital computers were around for less than a decade and were mammoths (in size and weight) with very little memory. More recently, a century long study of AI, to be hosted at Stanford University was published[80]. Over the past seventy-five years, there has been astronomical increases in computing power and storage capacity along with miniaturization; the progress in many aspects of computer science has also been remarkable. The computing power for a given volume and weight has increased by many powers of magnitude. This has enabled more complex algorithms, data storage and analysis to be possible. With the capitalization of the internet and the enormous potential for venture capitalists, the problem of funding was solved. This allowed the application and adaption of many approaches including half-baked concepts to be realized. The players included new companies supported to extend the commercialization of computing and the internet to new applications and the replacement of established ways of doing things by new ones. Many of these have destroyed or are destroying jobs and ways of life and have created tons of discarded devices replaced by new ones with different bells and whistles. Very little intelligence, artificial or natural, is required to see the adverse environmental impact of this madness."[20, 21, 28]

Artificial intelligence in the last two decades since the advent of the web has focused on the development of intelligent agents using reasoning based on statistics collected from a learning database. With the availability of extensive databases and computing capabilities, impressive progress has been made in speech recognition, image classification, machine translation, locomotion, and query-response systems. Most of these are already on-line and used by millions. One popular application is the live driving directions used by many drivers and which has made obsolete the good old map and preplanning of trips. It should be noted that the directions given are many times not the most efficient or least polluting ones: even though they may take the least time, the directions are not the shortest and environmentally friendly.

Most machine learning algorithms learn using programmed rules; whether it be simple

or more complex neural networks. Usually, the learning algorithm and the programs for it take into account all the possible connections in the sample data and additional data that is generated by the learning. The problem is that there is always the possibility of missing some connections and of course the bugs introduced in the programming. Hackers have used the bugs and trap doors to create spyware.

Recently a tech-giant fired an engineer who claimed that the software system LaMDA (Language Model for Dialog Applications) is sentient. This was his conclusion after testing the system and according to the engineer the system displayed signs of experiencing sensation or feeling[45, 61]. According to the tech-giant the system is designed to generate convincing human language. One wonders about its use in customer support to give an impression to clients that they are talking to a human and hence needing fewer support staff.

The concept of conscience (intelligence) in a machine was conjectured by Samuel Butler, in his book Erewhon[4][12].

"There is no security against the ultimate development of mechanical consciousness, in the fact of machines possessing little consciousness now. A mollusc has not much consciousness. Reflect upon the extraordinary advance which machines have made during the last few hundred years, and note how slowly the animal and vegetable kingdoms are advancing. The more highly organized machines are creatures not so much of yesterday, as of the last five minutes, so to speak, in comparison with past time. Assume for the sake of argument that conscious beings have existed for some twenty million years: see what strides machines have made in the last thousand! May not the world last twenty million years longer? If so, what will they not in the end become? Is it not safer to nip the mischief in the bud and to forbid them further progress?"

However, this progress is going on. Businesses such as banks, utilities etc. are downloading most of the billing and payment operations to the internet or its surrogate mobile phone. They are saving all the mailing costs etc. and the cost of the internet/mobile device, plans and bandwidth is to be borne by the customers. None of the savings is passed to the customer. It is no wonder that these businesses are looking for a sentient system to replace what ever customer support they are providing and the big-tech that arrives there is going to reap the benefit. Companies are increasingly turning to chat-bots to interact with customers. The author had a bad experience with these bots and not being satisfied tried all means to get the system to get a human to interact without success. Companies are trying to make these bots more' human'. Is this what seems to be behind the recent story about a bot being, according to one engineer, sentient? These companies are developing better bots to interact with customers and hence cut their expenses[9].

A system such as LaMDA, if it could interact like a human[5] with customers would be a boon. Customer service provided by real employees, face-to-face, has been replaced by

---

[4]Published in 1872 and digitized in 2005 by the Gutenberg project

[5]Is it not the objective of big-tech?

phone calls[6]; the first is disappearing and even the second is being replaced by a repeated message to send the organization an email which would be answered in 24 hours. All this transition to save money and not to hire telephone receptionists.

Looking at the case of LaMDA, one wonders if this is the intent to provide human like robot service to customers. Victor Frankenstein created a human beast which started learning from observations and became sentient[78]. He asked Frankenstein to create a companion which Victor resisted and for which he paid by his own life. It is likely that LaMDA and its clones will continue its evolution.

The big tech companies behind these bots could replicate these systems and could easily adapt the bots for other applications. From what one observes, it does not seem they, in the pursuit of profit and market domination, have the same reluctance as Victor Frankenstein who did not create a companion for the fiend he created[78]! It is likely that the internet will continue to metastasize into bot-ruled systems that will mimic humane nature. Companies would outsource customer service to big-techs instead of the developing countries since it would likely be cheaper and garner another big bonus for the CEOs and VPs IT!

Once bots take over these jobs handled by humans, there would be more profit for the business and fewer positions for the increasing population which is to reach eight billion souls by November 14, 2020i. Anders [3] had anticipated this situation on an "overmanned" world, wondering what will become of these billions of superfluous humans.

However, looking at the number of bugs in most systems and the recent incident in Canada when an entire communication network that serves millions of users went down during an update which likely had bugs,[57] one would have to expect disasters like this with a global foot print!

5 Digital Economy Hubris and Greed in Corrupt Systems

As mentioned above, the development in the internet and connectivity has led to organization abandoning their computer and IT service for having all their data hosted on the cloud and the IT is supplied by software houses. The Government of Canada made the move to a system called Phoenix and has suffered the consequences. Universities have now taken up this initiative under the impression that there would be savings. The author's experiences with these systems have not been positive.

The chances of hacking of such systems are enormous with all the built in bugs and back-doors in all software. A recent example of this, reported in[79], occurred in the student-tracking software system that affected the confidential information of more than a million current and former school children. It appears that safeguards are not in place: one of the first things that should be considered when selecting a system seems to be missing.

---

[6]Which ends up being put on hold and subjected to inane messages.

One wonders if sleek marketing techniques had been used to sell such systems to eager VP-IT who wanted to take credit for the 'apparent' savings. We know how the tobacco industry had hooked millions of people on tobacco - a difficult dependency to overcome[37]. The opioid crisis is another example of the pharmaceutical companies, using marketing directly to medical doctors - the prescribers of drugs, and into the bodies of suffering patients and hooking them on an addictive pain relief drug[51]: yet another example of 'break things". When the patients, start dying, the same marketing and/or management consultants step in to repair their image and try to convert the evil into an opportunity. Behind the scenes, marketing and consulting organizations have guided the Opioid Crisis[48]. The investigation of tens of thousands of documents illustrates the working of consultants for opioid makers. Such firms become a trusted adviser to companies manufacturing and aggressively marketing opioids which is considered to be the cause of hundreds of thousands of lives. Such management consultants, like those for big tech, helped big pharma to develop a strategy for dealing with regulation bureaucracy to seek approval for products.

European Union authorities have been urged to investigate a former politician linked to Uber and consider stripping the cab-hailing company of access passes to the European parliament, amid growing calls to rein in tech lobbyists.[74]. The demand for an EU inquiry comes as some politicians consider tighter rules on lobbying after the publication of the Uber files, a trove of data leaked to the Guardian and shared with media in 29 countries via the International Consortium of Investigative Journalists.

Big-tech and many other businesses, using lobbying, influence peddling and the misplaced belief that the high level leaders of innovation must not be stifled with regulations have been able to ignore existing regulations, laws and practices. Their modus operandi seems to be to break things(ignore everything - and then fix things they have broken to their own advantage). This includes the time honoured copyright laws etc[7]. Some of the machinations used by some companies have been revealed by what is being called the Facebook papers and the Uber papers.

The emergence of the web as an application of the internet ushered in the fourth (or the fifth) industrial revolution. As in the very first revolution, it changed many aspects of life as new corporations were set up using venture capitals and they were able to ignore all tradition, rules and regulations using lobbying and bent politicians to get the regulations etc. changed!

The philosophy used is that of ignoring all norms, traditions, regulations and laws. By getting bent politicians and their aides on-side they either have these not applied to them or have the in-place regulations and laws changed. The many bent politicians[8] would oblige these big-tech companies! Some of them, when interviewed by the media about the Uber papers, seem to be proud of their accomplishment in this connection. They and these new tech companies can use their fortunes to hire lawyers and use the courts to defer legal

---

[7]Perhaps developing countries should ignore all patents, and copy algorithms while improving them!

[8]They used these OSN to propel themselves to their job and want to continue to keep climbing!

recourse. A case in point is the case of a Canadian woman, Deborah Douez, who has been battling one of the big tech companies now approaching a decade[14]. The bent politicians also use this very tool to raise millions of dollars from ignorant people, having nothing better to do than follow people like them and be taken in by their lies end up sending in contributions to whatever cause. Recently one of these is reported to have raised over 250, 000, 000 USD. The funds are augmented by other billionaires, some of them have been using the internet to mint a fortune.

An organization which was supposed to promote the hypermedia protocol was taken over by business. One is appalled by the sophisticated tracking incorporated in the browsers and the applications for mobile devices, all of which have access to the data on the phone instead of requesting data if and when required and getting the permission of the user for any bit of information. The design of these systems allows these breaches in the user's privacy.

The Digital Millennium Copyright Act (DMCA), signed into law in 1998, provided complete immunity to internet service providers and platforms from copyright claims when their users upload or share copyrighted material to the platform. Thus the law clears the the platform from immediate liability and it is likely that the material would stay for a considerable length of time on the platform[52].

The big tech companies [59] have big purses to hire lobbyists, finance the politicians' election campaign, use lawyers to delay and fight one and every one[10]. Their only concern is to cannibalize and monopolize and at the same time colonize using the US government to shield them and lobby the foreign governments[85]. For this they either put any competitor out of business or buy up any start-up and competition[95, 96, 97, 99]. It is likely that many of the people at the acquired company may become redundant! The successive Usain governments have not blocked any such buyouts as had happened with the long list given on the Wikipedia pages mentioned above. There seems to be easy access to decision-makers at all level of governments by big techs: this access has been used to influence the decison makers and most of them are happy to be photographed with the CEOs of these big-techs. These corrupt leaders believe that these tech giants were providing growth and innovation while in reality they were stifling competition and destroying existing infra-structure and competition which provides a choice to the consumers.

The US system has abandoned a Global Tax act, which was aimed at cracking down on companies evading taxes by shifting jobs and profits around the world and the US system is failing to raise tax rates on these multinational corporations[72]. For example, some of these big-tech companies book its profits in one country as being made in another one to minimize its exposure to corporate taxation. Most taxation agencies aggressively go after individuals and local small businesses, while ignoring major big tech companies[49].

Some of the business models used by so many Internet based companies use the "relies on privatizing profit and socializing risks"[18] and exploitation. of one kind or another. They are led by ruthless people who seem to have an unquenchable appetite to monopolize not

only their segment of the business, but looking for opportunities to expand their horizons. There are many self-serving politicians, policy makers and their aides who see personal gain. They use their connections and prestige to continue to influence the government even after their term of office end. One needs to look at some of the opulent properties some of the ex-leaders have acquired!

Not long ago, we may have believed that technology would enhance personal freedom and democratic choice. It looked to be so for a while! However, technology is starting to shift the global balance toward monopolies and autocratic regimes. Furthermore conflicts between democracies and autocracies have already started[4]. As reported by Amnesty International, the business model of the OSNs is threatening human rights[5].

6   Exploitation of the Information age

The introduction of web made the internet accessible to lots more people along with the rapid use of mobile phones integrated seamlessly to the internet. This was also the start of the spread of mis-information! The mis-information is such that it triggers emotions in the recipient, who in turn propagates this information, directly or automatically thanks to the algorithms used by the OSN! Instead of the media being the message, the aroused users become the messengers to others and hence reinforce the mis-information.

As pointed out by Gunther Anders[3], as in the previous industrial revolutions, big tech companies of the information age consistently oppose unionization efforts and use the old technique of finding jurisdictions with more favourable lax regulations, looser workplace requirements, and almost no consequences for breaking labour laws[44, 75].

The workings of these big tech companies are coming to light thanks to thousands of papers leaked by insiders from some of these digital economy based conglomerates: it is expected more would be forthcoming in the future for others of these companies in the digital economy. What we find is that the OSNs and the big-techs consider the user data, actions etc., as a mine to be appropriated, exploited and bring to light anything that is concealed or connected[3].

The trove of documents released by an ex-employee of Facebook reveal, among other things, the role of the company in the Jan. 6 insurrection in Washington, D.C. and the effect of the company around the world. While privately and meticulously tracking the hate and divisiveness magnified by this OSN platform, it has not heeded warnings from its engineers about the dangers posed by the design decisions made for its algorithms with the goal of having users stay riveted to and interacting with the site; the OSN chooses growth through maximum engagement over user safety. The public claims made by this OSN often conflict with internal research. One of these is the claim of removing 95 percent of hate speech when in reality it is only 5 percent (or did they get the figures mixed up)[8, 55].

The OSN's problems with hate speech and misinformation are dramatically worse in the developing world. Due to weaker moderation in many countries OSNs allow their platforms

to be used by maleficent actors and authoritarian regimes to propagate hateful and divisive mis-information. The head of Facebook, who controls the majority of the voting shares of the company, told Congress that it was "not at all clear" that social networks polarize people, when Facebook's own researchers had repeatedly found that they do[34]!

In an experiment in 2019, a pair of Facebook's employees set up a dummy account for a 21 year old woman in India, the company's largest market. Without any input from this dummy account, the feed to it was first filled with pornography and, soon after, it was flooded with propaganda favourable for the then prime minster[9] and anti-minority hate speech. One reason could be the "reward" changes made in this OSN algorithms. It appears that while the OSN pushed into the developing world it didn't invest in protections anywhere near the ones in the US context, themselves woefully inadequate[63, 101].

While the program called 'free basic' was initially attempted by Facebook in India, opposition forced this OSN to abandon it[21]. However it appears that Facebook did not give up this ploy and has pushed the 'free basic" program in other countries e.g., Ghana, Mexico and Myanmar. Facebook has been able to push this program allowing people there to experience this OSN to be the internet tout court. As in their failed attempt in India, Facebook partnered with local telecom operators in these countries to give free access to its own platform along with a bundle of other basic services like job listings and weather reports. This scheme has locked millions of people into a version of the Internet controlled by this single OSN [101].

In many OSN applications users are the messengers since they can forward messages to their friends and groups without checking the authenticity of the message[33]. By having users to spread the messages on many of the OSN, these companies are using free labour: in addition to having the users invite their friends and family to be part of the platform, this creates a positive feedback loop. One may understand the small mom-and-pop store using the hosting facility of the OSNs however, one wonders at the mental savvy of managers of many large public institutes, such as universities, which allow themselves to be part of these platforms by displaying the logos of these OSN on their home pages and using the OSN 'free' hosting facility.

There are essentially two operating systems for most of the computers in the world and just two operating systems for mobile phones. These OSs are derived from a version of the very same open source operating system, Linux: which is, in turn, based on Unix, an older operating system. However, after years and years of development and many releases, they are full of bugs, loopholes and trap doors. The case of the journalist who was killed in an embassy in Turkey is well known - one of the factors which led up to this was a commercial spyware from a company in the Middle East which allowed this journalist and others to be spied on through their mobile phones[54, 86]. Was the spyware possible due to some vulnerability in the the mobile operating system and has it been fixed? How easy it is to do something similar with these weak systems is further illustrated by the case

---

[9]Modi running for re-election

reported recently of a 15 year old hacker who was able to break into the mobile system to create hacking spyware. This spyware was sold to tens of thousands of domestic violence perpetrators[67].

Intrusion into the life of users and constant surveillance due to the buggy nature of the mobile phone operating systems is made by a corporation which terminate employees for giving their opinion to the world. In the case of a coffee franchise, the application tracked the user: most of the data was collected even when such an application was not being used. This is an intrusion and a loss of users' privacy. Hardly any user, knowingly, downloads and installs such applications for the benefit of the business which offers the application nor any third parties. In exchange for one's privacy, the meagre compensation offered by this chain of coffee purveyors is a cup of coffee and a donuts [7, 45, 100].

After last year's whistle-blowing revelations relating to practices at Facebook, the Uber files published, recently by The Guardian, constitute another seminal big tech morality tale[36]. The vast cache of documents –leaked by a former key public relations employee – offers an insight into a digital giant as it sought to expand at any cost. At the same time, it chronicles the complicity of a political class which, itself drunk on big-tech concoctions, went along for the ride.

The so called ride sharing service was introduced to provide in effect a taxi-service without having to own a fleet of taxis, get permits for them from the local municipal authority, pay auto-insurance or hire drivers to drive them. The fact that the livelihood of tens of thousands of taxi drivers and their licenses, which could have cost thousands of dollars would be devalued is completely ignored not only by this company but also by the politicians who championed this scheme. The scheme was to have individual drivers with cars to provide a taxi-service using an application on a mobile phone. The way this business was set up is outlined in thousands of documents from the company released by a lobbyist who was associated with the company: these are called the Uber files[35]. According to a Guardian editorial this trove of documents "offers a unique and salutary insight into the arrogance and hubris of a digital giant"[81]. The approach used by the company, consistent with those of the big techs, was to infringe on existing regulations, show the politicians the benefits of the company for their self-interest, and have them change the laws or make the laws not applicable to them. In the case of Uber, these politicians did not recognize that the local and national taxi service could be given an opportunity to devise such a software system and provide local jobs to software developers and use idle computing from local data centres.

Uber also used a a tool called Greyball, to identify officials acting as the companies client by using the data collected from their own application and others to avoid being detected in many cities and countries[50]. This tool was used to dominate this fake taxi-business. Uber also treated its drivers as contractors, not providing any benefits and by showing them goals that they could achieve which pushed them to work longer. They gave away large grants to academics to provide them with strategy of feed to the media[40].

Looking at the Uber paper, raises a question: Did the politicians take orders from the Uber executives[35]?

Some early enthusiasts of OSNs are finally waking up and uttering 'mea culpa' as they realize the evil that is being done by the meta-stised internet today. The intimacy of the Big-tech companies with the Usain leaders was one of the reasons that the mergers were allowed to happen: "Obama's regulators allowed Facebook to buy up its biggest competitors — first Instagram, then WhatsApp — and failed to crack down on its recklessness with users' private data"[60]. These same leaders used the OSNs reach to get elected, re-elected and collect funds. The fundraising bit is evidenced by the amount collected by unsavoury players who sacrifice principles, reality and their oaths for self-service and imagined wrongs[45, 64].

The metastasis of the internet has allowed a handful of individuals, exploiting the groundwork done by academicians and researchers to transform systems that were supposed to allow connectivity, in such way that is detrimental to all societies and human rights including privacy and democracy.

7   Need for a new beginning

Humans need a better web, better IOTs, better mobile devices, better software, better protection against monopolies, and of course better politicians and systems of government. Unfortunately many revolutions did not improve the lot of the ordinary person.

The internet, through the web application and mobile systems, has revolutionized the world with over 4 billion people using this media. They read news, send emails and text messages are able to have video conversations and find answers to questions. Yet when these billions participate in online-life most of them rely heavily on the services of just two corporations who control operating systems for the mobile devices. The mobile devices are used to access the services so integral that it is difficult for them to use the internet without these devices

One of the rays of hope is steps taken by the European Union[76]. Proposed EU legislation would force internet services to combat misinformation and publicize their roles amplifying divisive content and stop targeting ads based on ethnicity, religion or sexual orientation. The law is an attempt to address OSN's harm and requiring them to be more pro-active in monitoring their platform for illicit content or risk billions of dollars in fines. Tech companies would be compelled to set up new policies and procedures to rapidly remove flagged hate speech, terrorist propaganda and other material defined as illegal by countries within the European Union. This law is putting an end to self-regulation which had not previously been done since growth was put above monitoring the contents!

Laws such as the above need to be passed in other parts of the world. However what is more important is to take this time to provide a communication system as a necessary utility for all by the public authorities to complement the postal system. Failures such

as the recent one in the Canadian communication system offered by a private, for profit, organization should become a cautionary tale [57].

Currently, there are just a limited number of for-profit US-based corporations, which offer web search, email, mobile and other operating systems. Software has moved from being 'sold' to licensed to provide a steady stream of income for these companies. The existence of open source software is most likely being used as a shield to protect these behemoths from being treated as monopolies. The unfortunate thing is that many people, even IT professionals, do not use open source software!

As pointed out in [1, 29], there is an urgent need to set up a global Software Assurance Agency to certify all software regardless of its origin. The concept is similar to CSA[17], UL[82]. All software has to go through a certification by this agency.

Countries should align to put an end to having billions of mobile devices managed by operating systems controlled by just two companies. However, we have to address the duopoly of software - given that this is how people access large parts of contemporary reality, this software must be liberalized and controlled by a public agency. Also open source software must be adopted in schools and universities. The trend of using one system that seems to be in vogue must end.

OSNs and their new algorithms should be required to pass some kind of stress test with their systems before their actual deployment: this should be monitored and certified by a global agency such as the proposed SAA. Since humans are sensitive to and respond to emotional triggers: they also share messages that reinforces their beliefs: hence, algorithms must be checked to prevent creating hatred and animosity[84].

The feeble attempts of some governments, e.g., the Canadian Bill C-18, to level the playing field by making the OSNs pay for the news they use which may be produced by struggling small and medium news organizations. The charade that things are "free" must end and a reasonable charge should be put on contents that are really not free. Allow each unit of content to carry a competitive micro-price-tag. This would also allow the removal of all paywalls from all news media sites. Since the end user is paying for the use of the internet connection and the amount of data used, some portion of the charges made by the ISPs should flow back to the original producers of the news based on the micro-price-tag. As illustrated below, most users consume only a fraction of the news put out by any one publication, the micro-charges would be reasonable and could easily be built into the fees charged by the ISP. By making news accessible from the original responsible source, people will spend more time following real news rather than be fed junk by the OSNs.

It is the current practice that many large news organizations offer the digital content to a user for a modest amount such as one dollar a week. However, this is an exhorbitant amount considering the fact the most users read several news outlets. However, the amount of material used from each such outlet is relatively small. Hence, automatically transferring a portion of the internet connect monthly charge to the source of the information would solve the problem, without a multitude of digital subscriptions.
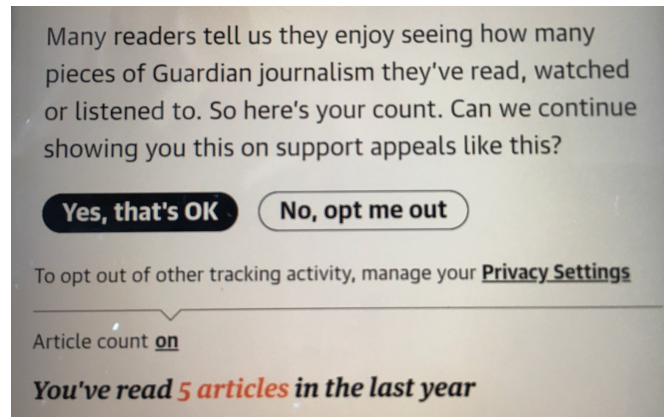
Figure 3: Number of articles read

A pay wall system for news media do not allow users to read the articles. In the case of some newspapers, the paywall keeps giving messages for supporting the media and keeps a count of articles read.

The above scheme, in addition to being simple, would allow all ads in the contents removed since the end user is paying for the contents. Eliminating the ads would save bandwidth and energy; the latter is good for the environment. This solution would mean that there would be no need for pay-walls and nagging requests to sign up or being put on a mailing list for headlines etc. Web browsers should not ever allow trackers and third party cookies to restore the web to its original spirit of sharing.

Considering the fact that the big-techs are using the ideas and even the software algorithms released by previous generation systems, and exploiting these openly accessible concepts to create systems that is exploiting the human race and amassing a fortune while the needs of millions of humans including children are not met. One looks at one of the ideas of property by Locke who considered a person's work as his property as long as enough is left for the common good of others [56].

"Sec. 27. Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it, that excludes the common right of other men: for this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others."

Figure 4: Copy Forward

The concept of CopyForward was put forward by the author to not let baron-enterpreneurs to exploit human knowledge for private gain. It depends on moral obligation with the hope that it will help the coming generations.

There are various forms for 'protecting' a person's work which is their property: the usual is copyright. In the digital age, it is becoming difficult to enforce this! The author has come up with CopyForward, given below, which allows a digital content as the property of the person creating it but also to share in the sense that could be determined by the creator as given below:

"The document/work, in digital/electronic form, could be used for personal use and/or study, free of charge. Anyone could use it to derive updated versions. The derived version must be published under CopyForward. All authors of the version used to derive the new version must be included in the updated version in the existing order, followed by name(s) of author producing the derived work. Such derived version must be made available free of charge in electronic/digital form under CopyForward. Any other means of reproduction requires that part of the profit(income minus the actual production cost), not less than a third(33.33 percent), should be shared with established charitable organizations for children. Persons who found this document/work or any derived work useful are encouraged to also make a donation to the author(s) and/or their favourite charity.

Make sure to choose a charity which has very modest administrative charges(NOT more than 20% of their entire annual budget) or some deserving children in your own community."

One of the first CopyForward items can be accessed from the Spectrum library[31].

Wonder if the people who released the software and the concept being used by the big-tech had used CopyForward!

In the meantime, the author hopes that the IT community would set up a project to realize the proposal[30] to allow an ordinary person to set up her own email and web server. The ownership of data could than be reclaimed and there would be little need of these big-techs.
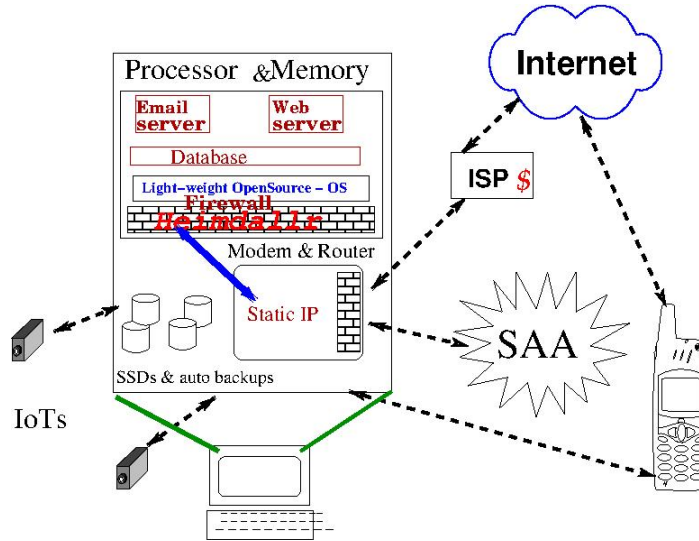

Figure 5: Heimdallr

This is a system diagram to illustrate a turn-key system that could be marketed as a replacement for a modem-router - it has built in email and web server to allow anyone to reclaim the custody of her personal data.

References

[1] Aksoy, Ayberk; Desai, Bipin C: *Heimdallr_1: A system design for the next generation of IoTs*, ICNSER2019: March 2019 pp 92–100 https://doi.org/10.1145/3333581.3333590

[2] AAI, America in the Age of Information, July 6-7, 1995, Lister Hill Center, Bethesda MD, http://users.encs.concordia.ca/ bcdesai/Age-of-Information-July-1995.pdf

[3] Anders, Günther *The obsolescence of man - Volume 2,* https://files.libcom.org/files/ObsolescenceofManVol II Gunther Anders.pdf

[4] Appathurai. James *Tech is enabling autocrats. Here's how to fight back* The Globe and Mail, 24 March, 2922 https://www.theglobeandmail.com/opinion/article-tech-is-enabling-autocrats-heres-how-to-fight-back/

[5] Amnesty International: *Surveillance Giants: How The Business Model Of Google And Facebook Threatens Human Rights*, 21 Nov, 2019, Index Number POL 30/1404/2019 https://www.amnesty.org/en/documents/pol30/1404/2019/en/

[6] Albertus, Michael; Menaldo, Victor: *Aftermath of Revolution*, NY Times, Feb. 14, 2013 https://www.nytimes.com/2013/02/15/opinion/global/aftermath-of-revolution.html

[7] Al Mallees, Nojoud: *App's data tracking resulted in loss of users' privacy, says report by federal, provincial authorities*, CBC News · Jun 01, 202 https://www.cbc.ca/news/business/tim-hortons-app-report-1.6473584

[8] Albergotti, Reed *FACEBOOK UNDER FIRE* Wahington Post, 26 Oct. 2021 newblock https://www.washingtonpost.com/technology/2021/10/26/frances-haugen-facebook-whistleblower-documents/

[9] Bogost, Ian *Googles Sentient Chatbot Is Our Self-Deceiving Future.* The Atlantic, June 2022 https://www.theatlantic.com/technology/archive/2022/06/google-engineer-sentient-ai-chatbot/661273/

[10] Brittain, Blake: *Meta hit with trademark lawsuit over new infinity-symbol logo*, Reuters, May 2, 2022 https://www.reuters.com/legal/litigation/meta-hit-with-trademark-lawsuit-over-new-infinity-symbol-logo-2022-05-02/

[11] Behr, Rafael *The Uber files tell a simple truth: democracy depends on curbing mercenary tech giants*, The Guardian, https://www.theguardian.com/commentisfree/2022/jul/11/uber-files-democracy-silicon-valley

[12] Butler, Samule *Erewhon or Over the Range* Original 9 June, 1872. Prjoject Gutenberg March 20, 2005 https://www.gutenberg.org/files/1906/1906-h/1906-h.htm

[13] *Charles Babbage*, Wikipedia https://en.wikipedia.org/wiki/Charles_Babbage

[14] CBC, The Canadian Press *B.C. court allows class-action lawsuit against Facebook to expand* The Canadian Press, 14 May, 2019 https://www.cbc.ca/news/canada/british-columbia/facebook-class-action-expansion-1.5135031

[15] Chen, Brian X.: *I Downloaded the Information That Facebook Has on Me. Yikes,* NY Times, Apr. 11, 2018,

https://www.nytimes.com/2018/04/11/technology/personaltech/i-downloade d-the-information-that-facebook-has-on-me-yikes.html

[16] Charette, Robert N.: *Canadian Government's Phoenix Pay System an "Incomprehensible Failure": That's the nicest thing that could be said for a debacle of the first rank,* IEEE Spectrum, 05 Jun 2018 https://spectrum.ieee.org/riskfactor/computing/software/ canadian-governments-phoenix-pay-system-an-incomprehensible-failure

[17] *CSA Group* https://www.csagroup.org/

[18] Cann, Vicky *Uber's privileged access to politicians shows the lobby system urgently needs to change,* The Guardain, Mon 11 Jul 2022 https://www.theguardian.com/commentisfree/2022/jul/11/uber-privileged-access-eu-politicians-lobby-system-change

[19] Desai, Bipin C. *Technological Singularities*, IDEAS 15, July 13 - 15 2015, Yokohama, Japan http://dx.doi.org/10.1145/2790755.2790769

[20] Desai, Bipin C. *The Web of Betrayals*, IDEAS 2018, June 18–20, 2018, Villa San Giovanni, Italy https://doi.org/10.1145/3216122.3216140

[21] Desai, Bipin C.: *Colonization of the Internet*, IDEAS 2021, July 2021, pp 36–45 https://doi.org/10.1145/3472163.3472179

[22] Desai, Bipin C.: newblock *Report of the Navigation Issues Workshop*, Computer Networks and ISDN Systems, Vol. 27-2, November 1994, pp. 332-333.

[23] Desai, Bipin C.; Swiercz, Stan: *WebJournal: Visualization of a Web Journey,* In: Digital libraries: research and technology advances: selected papers: ADL'95 Forum, McLean, Virginia, USA, May 15-17, 1995. Lecture notes in computer science (1082). Springer, Berlin, pp. 63-80. ISBN 9783540614104, https://spectrum.library.concordia.ca/983869/

[24] Desai, Bipin C.: *Test: Internet Indexing Systems vs List of Known URLs*, June, 1995, available on the Web from https://users.encs.concordia.ca/∼bcdesai/test-of-index-systems.html, https://spectrum.library.concordia.ca/983875/

[25] Desai, Bipin C.: *Test: Internet Indexing Systems vs List of Known URLs: Re visited,* October 1997, available on the Web from https://users.encs.concordia.ca/∼bcdesai/test-of-index-systems-revisited.html, https://spectrum.library.concordia.ca/983876/

[26] Desai, Bipin C.; Pinkerton, Brian (ed):   *Proceedings of the WWW III Work-shop on Web-wide Indexing/Semantic Header or Cover Page*,   Darmstadt, Germany,   April 1995,   https://users.encs.concordia.ca/~bcdesai/www3-wrkA/www3-wrkA-Proc.ps.gz

[27] Desai, Bipin C.:   *Search and Discovery on the Web*,   October 2001, https://spectrum.library.concordia.ca/983874/

[28] Desai, Bipin C.: *The state of data*, IDEAS2014, Portugal July 2014, 77-86, ISBN: 978-1-4503-2627-8 DOI 10.1145/2628194.2628229

[29] Desai, Bipin C.: *IoT-Imminent Ownership Treat,*, Proc. IDEAS 2017, Bristol, July 2017, pp 82-89, DOI 10.1145/3105831.3105843

[30] Desai, Bipin C.: *Privacy in the Age Of Information (and algorithms)* IDEAS 2019, June 2019, Athens, Greece https://doi.org/10.475/3331076.3331089

[31] Desai,   Bipin   C.;Kipling,   Arlin   L   *Database   Web   Programming*,   BytePress,   2020,   ISBN   9781988392066   9781988392042 https://spectrum.library.concordia.ca/id/eprint/988529/2/WebDB-Desai-Kipling-Oct-2020.pdf

[32] Desai, Bipin C.: *An Introduction to Database Systems*, West, St. Paul, MN. 1990, ISBN 0-314-66771-7, https://spectrum.library.concordia.ca/id/eprint/988586/1/An-Introduction-to-Database-Systems-Bipin-C.DESAI.pdf

[33] Dwoskin,   Elizabeth;   Owen,   Annie   G   :   *On   WhatsApp,   fake news   is   fast   —   and   can   be   fatal,*   Washington   Post,   23   July, 2018   https://www.washingtonpost.com/business/economy/on-whatsapp-fake-news-is-fast--and-can-be-fatal/2018/07/23/a2dd7112-8ebf-11e8-bcd5-9d911c784c38_story.html

[34] Dwoskin, Elizabeth; Newmyer, Tory; Mahtani, Shibani:

   The   case   against   Mark   Zuckerberg: Insiders   say   Facebook's   CEO chose   growth   over   safety   Wahington   Post,   25   October,   2021 https://www.washingtonpost.com/technology/2021/10/25/mark-zuckerberg-facebook-whistleblower/

[35] Davies, Harry; Goodley, Simon; Lawrence, Felicity; Lewis, Paul; O'Carroll, Lisa: *Uber broke laws, duped police and secretly lobbied governments, leak reveals*, The Guardian, July 11. 2022   https://www.theguardian.com/news/2022/jul/10/uber-files-leak-reveals-global-lobbying-campaign

[36] Davies, Harry; Goodley, Simon; Lawrence, Felicity; Lewis, Paul; O'Carroll, Lisa: *The Uber files* The Guardian, 11 Jul 2022 https://www.theguardian.com/news/series/uber-files

[37] Dani, John A.; Balfour, David J.K. *Historical and current perspective on tobacco use and nicotine addiction* Review Historical Perspective—, 14-7, P383-392, July 01, 2011 https://doi.org/10.1016/j.tins.2011.05.001

[38] Davies, Rob; Goodley, Simon *Uber bosses told staff to use 'kill switch' during raids to stop police seeing data* The Guardain, 10 July, 2022 https://www.theguardian.com/news/2022/jul/10/uber-bosses-told-staff-use-kill-switch-raids-stop-police-seeing-data

[39] Favreau, François-Alexis *Sonneur d'alerte chez Uber: le lobbyiste Mark MacGann se dévoile*, SRC , 11 July 2022 https://ici.radio-canada.ca/nouvelle/1897240/lanceur-alerte-uber-mark-macgann-systeme-mensonge?

[40] Lawrence, Felicity *Uber paid academics six-figure sums for research to feed to the media* The Guardian, 12 July, 2022 https://www.theguardian.com/news/2022/jul/12/uber-paid-academics-six-figure-sums-for-research-to-feed-to-the-media

[41] Guinan, Joe; O'Neill, Martin: *Only bold state intervention will save us from a future owned by corporate giants*, The Guardian, 6 Jul 2020, https://www.theguardian.com/commentisfree/2020/jul/06/state-intervention-amazon-recovery-covid-19

[42] Greenberg, Martin *The Computers of Tomorrow*, The Atlantic, 1964 https://www.theatlantic.com/magazine/archive/1964/05/the-computers-of-tomorrow/658239/

[43] Gibbs, Samuel: *Apple fixes HomeKit bug that allowed remote unlocking of users' doors* , The Guardian 8 Dec. 2017 https://www.theguardian.com/technology/2017/dec/08/apple-fixes-homekit-bug-remote-unlocking-doors-security-flaw-iphone-ipad-ios-112-smart-lock-home

[44] Greenhouse, Steven: *Amazon chews through the average worker in eight months. They need a union*, The Guardian, Feb 4, 2022, https://www.theguardian.com/commentisfree/2022/feb/04/amazon-chews-through-the-average-worker-in-eight-months-they-need-a-union

[45] Goldmacher, Shane; Haberman, Maggie: *Trump Raises $170 Million as He Denies His Loss and Eyes the Future* The NY Times, Aug. 7, 2021 https://www.nytimes.com/2020/11/30/us/politics/trump-campaign-donations.html

[46] Guardain Staff *Google fires software engineer who claims AI chatbot is sentient*, The Guardain staff, 23 Jul 2022 https://www.theguardian.com/technology/2022/jul/23/google-fires-software-engineer-who-claims-ai-chatbot-is-sentient

[47] Hern, Alex *TechScape: suspicious of TikTok? You're not alone*, The Guardian, 0 Jul 2022 https://www.theguardian.com/technology/2022/jul/20/tiktoks-privacy-problem-isnt-what-you-think

[48] Hamby, Chris; Forsythe, Michael: *Behind the Scenes, McKinsey Guided Companies at the Center of the Opioid Crisis* New York Times, June 29, 2022 https://www.nytimes.com/2022/06/29/business/mckinsey-opioid-crisis-opana.html

[49] Hager, Mike; O'Kanet, Josh: *Business groups, Tories seek changes to Canadian tax system after Amazon findings* GLobe and Mail, July 18, 2022 https://www.theglobeandmail.com/business/article-industry-groups-opposition-call-for-changes-to-canadian-tax-system/

[50] Isaac, Mike *How Uber Deceives the Authorities Worldwide* New York Times, 3 March, 2017 https://www.nytimes.com/2017/03/03/technology/uber-greyball-program-evade-authorities.html

[51] Keefe, Patrick Radden: *Empire of Pain* Doubleday Books, 2021 ISBN 13:9780385545686

[52] Knox, Ron *The copyright kille* 11 January 2019

[53] Kermani, Secunder: *Pakistan activists targeted in Facebook attacks*, BBC, May 15, 2018, http://www.bbc.com/news/world-asia-44107381

[54] Kirchgaessner, Stephanie *Saudis behind NSO spyware attack on Jamal Khashoggi's family, leak suggests* The Guardain, 18 Jul 2021 https://www.theguardian.com/world/2021/jul/18/nso-spyware-used-to-target-family-of-jamal-khashoggi-leaked-data-shows-saudis-pegasus

[55] Lima, Cristiano *A whistleblower's power: Key takeaways from the Facebook Papers* Washington Post, 26October, 2021 https://www.washingtonpost.com/technology/2021/10/25/what-are-the-facebook-papers/

[56] Locke, John *Second Treatise of Government* 1688, Gutenberg 2005 https://www.gutenberg.org/ebooks/7370

[57] Logan, Nick· *Rogers network outage a 'wake-up call' after business, essential services disrupted* CBC News 8 July, 2022. https://www.cbc.ca/news/business/rogers-outage-no-plan-b-1.6515664

[58] McCabe, David: *Congress and Trump Agreed They Want a National Privacy Law. It Is Nowhere in Sight.* NYTimes Oct. 1, 2019 https://www.nytimes.com/2019/10/01/technology/national-privacy-law.html

[59] Manjoo, Farhad *Tech's 'Frightful 5' Will Dominate Digital Life for Foreseeable Future Give this article* NY Times 20 Jan., 2016 https://www.nytimes.com/2016/01/21/technology/techs-frightful-5-will-dominate-digital-life-for-foreseeable-future.html

[60] Manjoo, Farhad *I Was Wrong About Facebook* NY Times. 21 July, 2022 https://www.nytimes.com/2022/07/21/opinion/farhad-manjoo-facebook.html

[61] McQuillan, Laura: *A Google engineer says AI has become sentient. What does that actually mean?*, CBC, 24 Jun, 2022 https://www.cbc.ca/news/science/ai-consciousness-how-to-recognize-1.6498068

[62] McCarthy. J; Minsky, M. L.; Rochester. N; Shannon, C.E.: Bell Telephone Laboratories *A PROPOSAL FOR THE DARTMOUTH SUMMER RESEARCH PROJECT ON ARTIFICIAL INTELLIGENCE* 31 August, 1955 https://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html

[63] Merrill, Jeremy B. ; Oremus, Will: *Five points for anger, one for a 'like': How Facebook's formula fostered rage and misinformation* Washington Post, 26 October, 2021 https://www.washingtonpost.com/technology/2021/10/26/facebook-angry-emoji-algorithm/

[64] McEvoy, Jemima *Trump Raised $250 Million Since Election To Challenge Outcome—Here's Where Most Of The Money Will Actually Go* Forbes, 31 Jan., 2021, https://www.forbes.com/sites/jemimamcevoy/2021/01/31/trump-raised-250-million-since-election-to-challenge-outcome-heres-where-most-of-the-money-will-actually-go

[65] McLuhan, Marshall: *Understanding Media: The Extensions of Man*, McGraw-Hill. 1964

[66] Marshall McLuhan, Bruce R. Powers, *The Global Village: Transformations in World Life and Media in the 21st Century*, Oxford University Press, 1992.

[67] McGowan, Michael *Brisbane teenager built spyware used by domestic violence perpetrators across world, police allege* The Guardain, 30 July,

2022 https://www.theguardian.com/australia-news/2022/jul/30/brisbane-teenager-built-spyware-used-by-domestic-violence-perpetrators-across-world-police-allege

[68] Niiler, Eric *How the Second Industrial Revolution Changed AmericansĹives* https://www.history.com/news/second-industrial-revolution-advances

[69] Peter, Ian: *The history of email,* http://www.nethistory.info/History of the Internet/email.html

[70] Peter, Ian: *History of the World Wide Web,* http://www.nethistory.info/History of the Internet/web.html

[71] Paul, Kari; Milmo, Dan: *Mark Zuckerberg to face deposition over Cambridge Analytica scandal,* The Guardian, 20 Jul 2022, https://www.theguardian.com/technology/2022/jul/20/mark-zuckerberg-deposition-cambridge-analytica-facebook

[72] Rappeport, Alan; Tankersley, Jim: *How Joe Manchin Left a Global Tax Deal in Limbo T reasury Secretary,* New York TImes July 18, 2022, https://www.nytimes.com/2022/07/18/us/politics/joe-manchin-tax.html

[73] Riekeles, Georg: *I saw first-hand how US tech giants seduced the EU – and undermined democracy,* The Guardian, 28 June 2022, https://www.theguardian.com/commentisfree/2022/jun/28/i-saw-first-hand-tech-giants-seduced-eu-google-meta

[74] Rankin Jennifer: *EU urged to investigate ex-politician's Uber links and rein in tech lobbyist* The Guardian, 12-Jul, 2022, https://www.theguardian.com/news/2022/jul/12/eu-urged-investigate-ex-politician-uber-links-rein-in-tech-lobbyist

[75] Samaha, Albert: *How Amazon Exported American Working Conditions To Europe,* Buzzfeed, June 23, 2022, https://www.buzzfeednews.com/article/albertsamaha/amazon-poland-slovakia-czechia-germany-labor-laws

[76] Satariano, Adam: *E.U. Takes Aim at Social Media's Harms With Landmark New Law* The New York Times, 22 April, 2022, https://www.nytimes.com/2022/04/22/technology/european-union-social-media-law.html

[77] Smith, Justin E. H.: *The Internet Is Not What You Think It Is: A History, a Philosophy, a Warning,* Princeton University Press, 2021, ISBN 13: 9780691229683

[78] Shelley, Mary W.: *Frankenstein or, The Modern Prometheus*, Henry Colburn and Richard Bentley, 1831, Gutenberg, 2013 , https://www.gutenberg.org/ebooks/42324

[79] Singer, Natasha: *A Cyberattack Illuminates the Shaky State of Student Privacy*, NY TImes, 31 July, 2022, https://www.nytimes.com/2022/07/31/business/student-privacy-illuminate-hack.html

[80] 2021 Study Panel Report: *Gathering Strength, Gathering Storms*, Standford Univeriry, Sept, 2021, https://ai100.stanford.edu

[81] Editorial: *Devastating leaked documents underline the pressing need for proper regulation of the digital economy*, The Guardian 11 Jul 2022 , https://www.theguardian.com/commentisfree/2022/jul/11/the-guardian-view-on-th

[82] *United Laboratories*, https://www.unitedlabsinc.com/

[83] Bush, Vannevar: *As we may think*, The Atlantic, July 1945, https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/

[84] Wardle, Claire: *A new World Disorder*, Scietific American, 29-4, Fall 2020

[85] Wahlquist, Calla: *US attacks Australia's 'extraordinary' plan to make Google and Facebook pay for news*, The Guardian, 18 Jan 2021, https://www.theguardian.com/media/2021/jan/19/us-attacks-australias-extraordinary-plan-to-make-google-and-facebook-pay-for-news

[86] Wikipedia *Pegasus (spyware)*, https://en.wikipedia.org/wiki/Pegasus_(spyware)

[87] Wikipedia *Timeline of file sharing*, https://en.wikipedia.org/wiki/Timeline_of_file_sharing

[88] Wikipedia *History of email*, https://en.wikipedia.org/wiki/History_of_emai

[89] Wikipedia *Linux for mobile devices*, https://en.wikipedia.org/wiki/Linux_for_mobile_devices

[90] Wikipedia *Simple Mail Transfer Protocol*, https://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol

[91] Wikipedia *History of the Internet*, https://en.wikipedia.org/wiki/History_of_the_Internet

[92] Wikipedia *Hypertext Transfer Protocol*, https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol

[93] Wikipedia *HTML*, https://en.wikipedia.org/wiki/HTML

[94] Wikipedia *Mosaic (web browser)*, https://en.wikipedia.org/wiki/Mosaic _(web_browser)

[95] Wikipedia *List of mergers and acquisitions by Alphabet*. https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions _by_Alphabet

[96] Wikipedia *List of mergers and acquisitions by Meta Platforms*. https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions _by_Meta_Platforms

[97] Wikipedia *List of mergers and acquisitions by Microsoft*. https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions _by_Microsoft

[98] Wikipedia *SoftQuad Software*, https://en.wikipedia.org/wiki/SoftQuad_Software

[99] Wikipedia *List of mergers and acquisitions by Apple*. https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Apple

[100] Young, Chris: *Tim Hortons proposes settlement in class-action suits over data-tracking app - Proposed settlement would offer free coffee and doughnut to affected users*, The Canadian Press, Jul 29, 2022, https://www.cbc.ca/news/business/tim-hortons-app-1.6536175

[101] Zakrzewski, Cat; De Vynck, Gerrit; Masih, Niha; Mahtani, Shibani: *How Facebook neglected the rest of the world, fueling hate speech and violence in India*, Washington Post, 24 October, 2021,

Acknowledgement