

The Web of Betrayals*

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Abstract

The web was ushered in with great expectations, formally in May 1994, in a conference called World Wide Web I, This event, in hindsight, is sometimes referred to as the Woodstock of the web. The web and Mosaic, the graphical browser, which was announced soon after has revolutionized the internet. For most people, the internet is the web, while one of the monopolist tech-corporations wants the world to view their platforms to be not only the web but the Internet! The web has given rise to a number of rich powerful corporations which did not exist before its advent. The easy to use graphical interface and the cell phone with its tiny screen have become the de-facto interface to all kinds of applications and have provided new methods of communication and connections. The control of all this by a small number of monopolistic corporations, who have amassed last quantities of data on people, has created a situation which has become a web of betrayal of the promise of sharing and providing information, freely. We also consider the remote possibility of a new freer web without monopolies

Keywords: *Privacy, personal data ownership, security, exploitation*

1 Introduction

While 1945 was a significant year in many ways, there are two events that have been little remarked upon but that have come to shape the world in ways almost as significant as the more celebrated ones, viz., the armistices and treaties with which the second world war ended and the cold war began. The main actor in both events was none other than Vannevar Bush[83], who is rather little known despite both his stature as an eminent scientist and the accuracy of his prophecy for the future.

Over a number of years, Bush was director of the Office of Scientific Research and Development where he oversaw the work of some six thousand top scientists tasked with applying science to warfare. In 1945 he published an essay in The Atlantic magazine [84] in which he articulated a kind of network that was to become the precursor to the world wide web. Trained as an engineer and having worked on the Manhattan project which developed the atomic bomb, he was a member of the committee which ultimately recommended bombing two Japanese cities—the only uses of atomic warfare thus far. The debate about the justification of the use of the atomic bomb has raged on ever since notwithstanding the publication of the background about this decision in 1947[45]. This devastating and epoch making decision has led other nations to race to seek atomic and hydrogen

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bombs. However, despite their existential importance for life on earth, these topics are not the subject of this paper.

The topic, rather, is the fruition of ideas expressed by Bush in his 1945 article in *Atlantic*, 'As We may Think'[84]. The successful implementation of the ideas expressed therein would have to attend the development of more powerful and affordable computers and the interconnected networking of these computers. The initial impetus to the interconnection of computing devices was the need among scientists and academics to share resources and information. This in turn led to the development of the internet. The many possible designs were narrowed down to the packet protocols, the basic building block of the internet for the transmission of data in the form of packets. This idea is credited to Donald Davies[35] along with Paul Baran[70]. The internet, thus, was the culmination of this concept in interconnecting computers and the emergence of the TCP/IP communication protocol, the concept of network addresses etc.[47], [48], [49]. The idea expressed in Bush's essay was realized by the introduction of hypertext transfer protocol (HTTP), hypertext markup language (HTML) and world wide web in the late 1980s. When the Web was introduced to the wider academic and research community in the early 1990s, there was a surge of interest to develop tools to make it easier for a greater and greater number of users to share information.

It must be noted that even before the introduction of the web, the internet had made it possible for people to communicate via electronic mail (email) and on-line chat (talk), allowed sharing of files using anonymous file transfer protocol(FTP), news(Usenet News), remote access of computer (telnet) Gopher(a tool for accessing internet resources), Archie (a search engine for internet files) and Veronica (search for gopher sites). These early systems afforded the opportunity of interconnecting people (who wanted to be connected), sharing resources and providing security and privacy; there was not yet any question of monetizing the internet; the whole concept was to share what was needed not to hoard much less exploit. However, from the perspective of widespread adoption, the problem with these first generation internet tools was the need to have computing savvy which was also the requirement for the early web with the use of a user unfriendly, text-based web browser[57].

2 The Early Years and the Priorities

Hypertext was around before the development of the web at Conseil Européen pour la Recherche Nucléaire (CERN)[75], [11]. Hypertext is the mechanism by which one can easily search and navigate through electronic documents by providing links or pointers to jump from one place to another rapidly with much greater accuracy than one could in a physical book[80]. The original HTML scheme used to markup a document with links was very rudimentary and its weakness, in spite of its many generations of its standards is still evident. To enable the accessibility of resources on Internet web applications, the introduction of the hypertext transport protocol(HTTP) was required, which uses the transport level mechanism provided by TCP/IP - the common protocol to reliably transfer data packets from a source to a destination[82].

The web was formally introduced to a receptive audience at the first world wide web conference (WWW I.) held in May 1994 in Geneva and has sometimes been called the Woodstock of the web. It was a watershed moment since, right after the announcement of the WWW1 conference, the National Center for Super-computing Applications (NCSA) announced the "Mosaic and the Web conference" in Chicago which, after some negotiations, was renamed the WWW II.

Discussion at the first WWW meeting in Geneva mainly focused on the need to set up priorities for development and provide some means of navigating the web (cf. reports of these sessions were published in[13] and[12]). One of the priorities proposed was to set up an agency to oversee the

development of web technology.

It is ironic that in a recent opinion piece Tim Berner-Lee[79] takes pride in being the “inventor” of the web. This would be similar to saying that Columbus discovered the Americas(He landed in one of the Caribbeab islands) and some one who lived there long before columbus was born! His introduction of the original protocol with all its limitations and one of its greatest weakness, including allowing third party content has defeated the free sharing philosophy. The sharing paradigm, to put it bluntly, has been prostituted by it being hijacked by the tech monsters the web has created. As we point out here, these tech monsters are the ones who have the web users personal information which they use for targeting not only adds but all kinds of social and political manipulations - for profit! Hence it is surprising that this opinion piece[79] is concerned with the government having registeries and but never utters a word about the trove of personal data held by these tech monsters. Most democratic goverenments have some kinds of checsk and balances; although one wonders looking at the state of affairs of some of the current ones! It is also a bit ironic that some of these very tech monsters are behind this “Contract for the web” smoke screen[30].

3 Search Engines and start of monetizing the web

It was recognized early on that hypertext would cause the disorientation of the user during web traversal. An example of the result of the priorities discussed in WWW1 was the WebJournal an early navigation aid[14]. Some of its features are now built into most browsers’ history function.

From the very beginning of the web era a number of pioneers of the web had recognized the need for and the development of a search and discovery system for the web[12], [13]. A number of early search systems were introduced in the mid 1990’s and their performance and co:operation were the subject of a WWW-III workshop[17]. Search engines have evolved over the last decades and have come to be something like the infrastructure through which we move around in the virtual world. Indeed, a fledgling venture capital backed company that implemented one of the later emergent search systems has now morphed to become one of the tech-monopolies of the 21st century with tentacles in almost every aspect of human life.

For the record, the results of some of the tests performed to evaluate the quality of the results in the early web era by the author while actively involved in the search and discovery problem are given below. The experiments that were conducted are by no means scientific but they do reveal the problems faced by a multitude of people and point out the strengths and weaknesses of search engines as they evolved. Here, we give the results of three of these series of tests to compare the results and see the relative effectiveness of the search engines in the first few years of the web era. We found out then and it is still true is that one of the problems of search results, though improving, is the lack of selectivity and a measure of usefulness of the results found by the search engines. A glance at the few words summary presented by the search engine is not very informative in judging the relevance of the results: following the pointers would result in a drain of the searchers time if the page was not very relevant in spite of being placed in the first few pages of the search results.

With the introduction of the first generation of web search engines, the author knowing all the web pages that existed at the time of the test with the search terms to be used in the search, did a series of tests. Figure 1 and 2 shows the results of tests done in 1995 using a search term consisting of the name of the author for the search engines existing in 1995[15]. Figure 1 is the bar charts for the hits, duplicates, mis-hits and the web pages missed. Figure 2 gives the recall and precision in percent. The figure doesn’t show the results for the nascent search engines Aliweb, DA-CLOD, Harvest, Nikos, RBSE, W3 Catalog and Yahoo since they were not able to find a single web page.

The test results, given in Figure 3 and 4, were done on the major search engines that were still

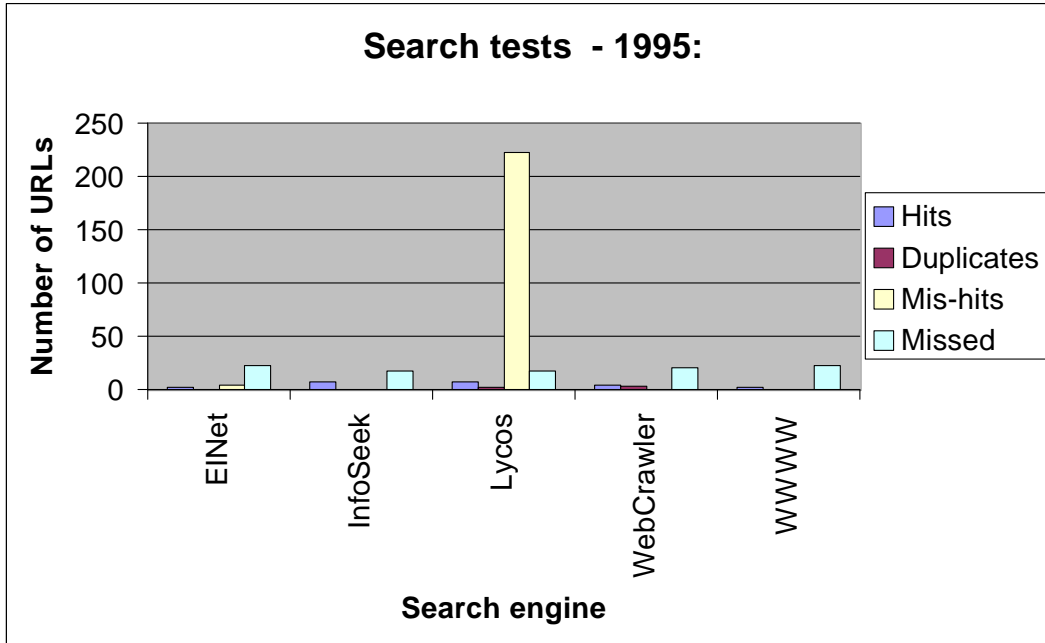


Figure 1: Test Results 1995: Hits, Duplicates Mis-Hits, Misses

around in 1997. Note that we used the then recently commercialized version of Lycos in this test. For Web search, Yahoo appears to use the AltaVista engine and its database and produces almost identical result; hence we have given a single result for both search systems in these figure.

As in the 1995 series of tests, Figure 3 gives the results by noting the number of hits produced, number of duplicates, number of mis-hits and and the number of relevant documents not listed in the result. The duplicates are either the same document being served from two sites or same document listed twice. The latter errors seem to have been corrected in most search engines and they have eliminated such obvious duplicates. Figure 4 gives the recall and precision of these search engines. The web pages missed could be due to the approximations used by engines such as AltaVista when it finds a large number of hits. However, the fact that these search engines could not locate all documents indicates the inherent problem of isolated URLs.

Tables 1 and 2 give a number of other tests, also, done in 1997. The simple search shows a high number of hits(4285 in the test reported here; there being a bit of variation due to AltaVista's method of abandoning a search after a sufficiently large number of hits is made). However the simple search produces very low selectivity and relevance. Most of the hits, in the top 160 entries are irrelevant and a large number of relevant documents are not located. Most users will not have the patience to go through more than a few pages of the results: there being some 214 pages of results for 4285 hits!

The Search expression “Bipin Desai” gives a relatively low number of hits and relevance since the author prefers to include his middle initial in the name. Most users may not be aware of such

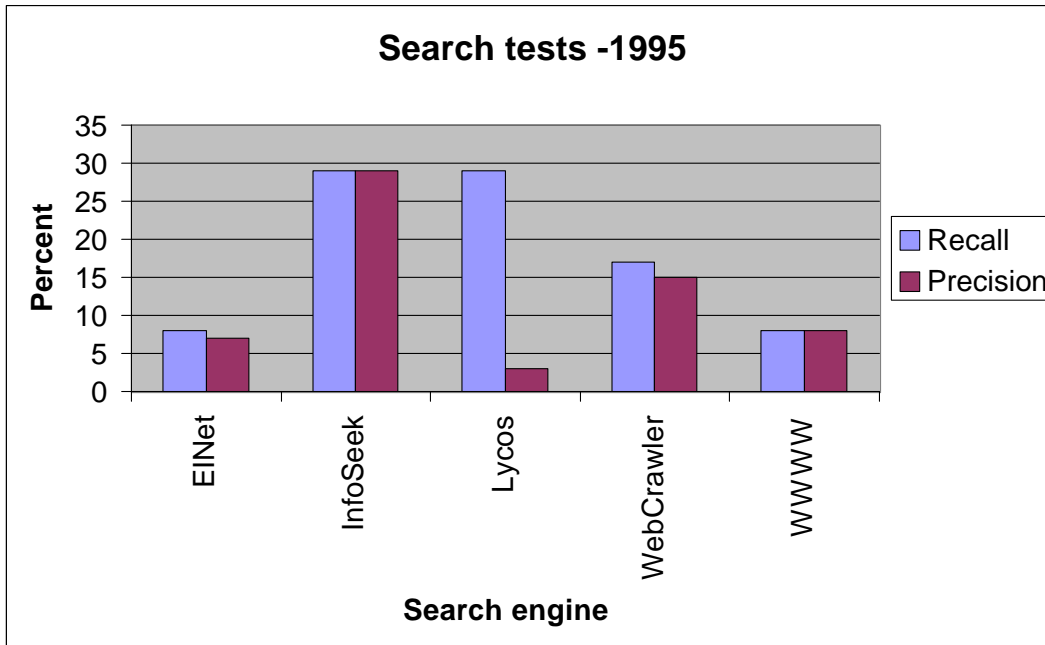


Figure 2: Test Results 1995: Recall and Precision

details.

The search expression “Bipin C. Desai” gives a relatively large number of relevant documents. Some of which are duplicates, being accessible from more than one site. Some of the defunct URLs are not deleted by the search engines pointing to the maintenance problem of the underlying database. However, this search still missed about two thirds of the documents.

After many years of the web, the search engines in 2001 had shrunk down to a few but as shown in Figures 5 and 6 none of these systems was successful in retrieving all documents sought. The reason for these results is that many of these systems continue to match the specified search terms without regard for the context in which the search words appear in the target information resource. One notes from the results that while the recall percent has increased significantly as shown in Figure 6, the precision has actually decreased.

Today, 2018, three of the search engines shown in the 2001 tests are gone or barely visible; while Yahoo used AltaVista for its search in the mid 1990s, it switched to Google when AltaVista went through many corporate changes. Yahoo developed its own search system and has purchased Altavista and the later’s search is provided by Yahoo.

From the number of tests done in the early web era and informally repeated recently, one comes to the conclusion that the search engines all do the same type of robotic search, use similar indexing schemes, provide similar suggestive methodology and give results that cannot be easily verified but are sufficient for most purposes. Even a very recently introduced search engine called DuckDuckGo has already been around for a decade but getting more exposure in the last couple of years. This

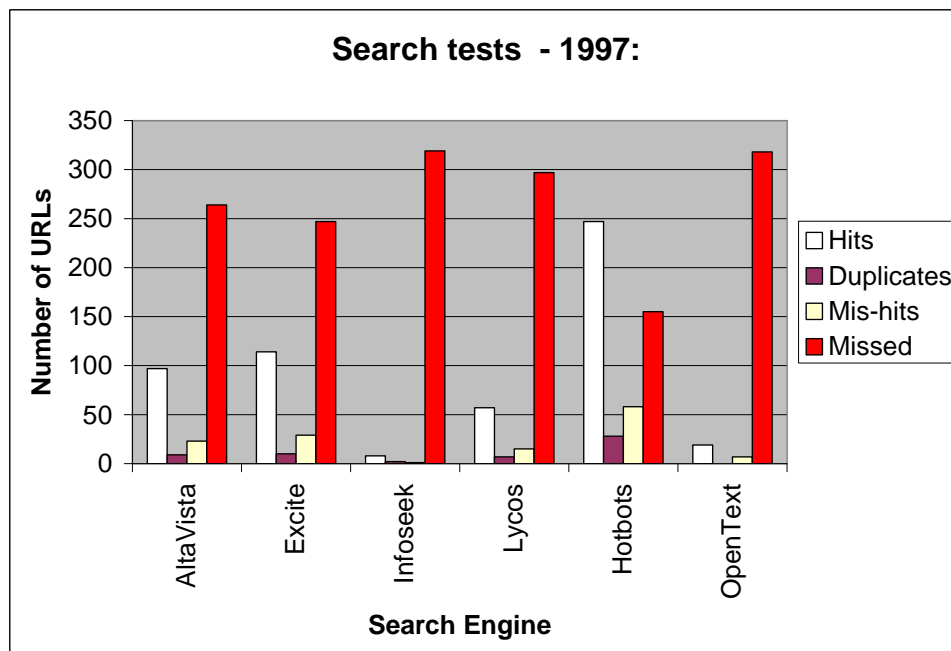


Figure 3: Test Results 1997: Hits, Duplicates Mis-Hits, Misses

relatively new entry promises not to track users and gives as good a result as the leader. The difference is how they record, track and exploit the search history, how they try to entice the user with other applications and tools to enlarge their domain for user data vacuuming points and how little taxes they pay.

The original lean search engine e.g., Altavista was displaced by a venture capital driven search system. Google which claimed to be a better search engine because the search result ranking was based on the number of 'respected' pointers pointing to the page. Google whose results in the beginning were middling as shown in these tests, soon took over the lead and has the playing field to itself. Its sheer global coverage has prevented local search engines to emerge. With the size of the web approaching 2 billion web pages[92] and the number of web sites over one and a half million today, it is a far cry from the early ages when, there were merely a few hundred web sites!

4 Monetizing Search Engines and the web

The initial attempt to attract advertising revenue as discussed during the WWWIII meeting[17] was to display the publicity in small boxes similar to classified ads, in newspapers, However, search engines found that using this scheme was ineffective because people learned to ignore them. So search engine companies started to show the target publicity along with the search results while charging higher fees for a higher placement of the publicity. Even though a number of search

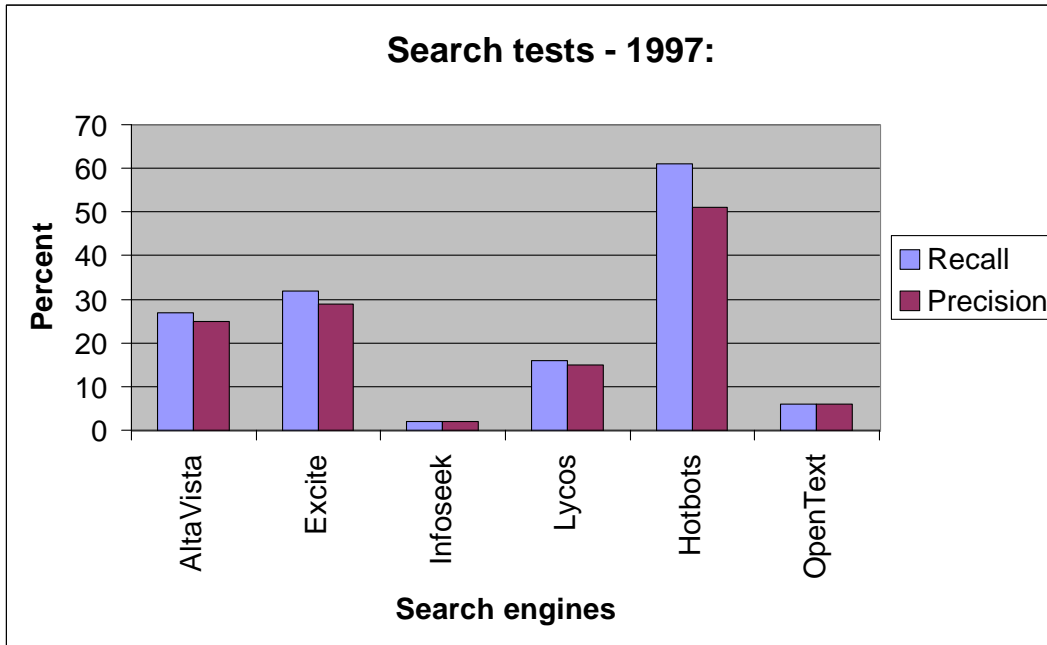


Figure 4: Test Results 1997: Recall and Precision

engines have emerged since the turn of the century, the lion’s share of the search is concentrated in a monopolistic way by one! Since searches are ‘free’ governments are not doing anything to regulate or break up the monopoly.

The harm done to the local development of a local based search system and community support is being stifled by such monopolies in not only search but also in email service, shopping and social networking of various types.

The advertising revenue in all parts of the world is being sucked up by non-tax paying USAian¹ global corporation. One recalls the recent financial crash due to the toxic financial instruments created and marketed by big USAian banks which resulted in just mild wrist slapping and no criminal indictments of any CEOs of the banks implicated. The reason being cited is that these banks were too big to fail.

The same logic seems to be applied by these same governments against these newly minted “fearsome five” [41] tech corporations. They are too big to be ruled in. One exception seems to be the European Union which has been active in looking at the anti-competitive nature of these businesses and have acted to address this as well as the privacy issue of its citizens by bringing-in the right-to-forget regulations and the General Data Protection Regulation[43]. Since USAians have been lead to believe that “it is not guns that kill people, it is the people”, so have they come

¹USAian is pronounced U-asian; it is a more appropriate term than American since USA is but one country in N & S America!

Search System	Number of Hits	Number of Duplicates	Number of Mis-hits	Number missed
AltaVista/Yahoo	97	9	23	264
Excite	114	10	29	247
Infoseek	8	2	1	319
Lycos	57	7	15	297
Hotbots	247	28	58	155
OpenText	19	-	7	318

Table 1: Test results - 1997: search terms Bipin (AND) Desai

Search System	Recall %	Precision %
AltaVista/Yahoo	27	25
Excite	32	29
Infoseek	2	2
Lycos	16	15
Hotbots	61	51
OpenText	6	6

Table 2: Test results - 1997: search terms Bipin (AND) Desai

to be brain-washed into the similar logic that the web does not harm people, it is the people.

5 The Consortium and the missed opportunity

Another early initiative unveiled during WWWI 1994 meeting in Geneva was the setting up of a WWW consortium for the web development. This consortium, now known as W3C, was proposed during the first WWW meeting held at CERN in Geneva in 1994 and a number of researchers were interested in participating in it[81]. However, the directions in the minds of some of these potential members including the author, seems to have been lost over the years as evidenced by the current state of this consortium. Many of the original aims of sharing and openness has been replaced by tracking and monetizing with large rewards being collected by a small number of giant corporations which have sprung up since the mid-1990s and have all but stifled any new players. The members of W3C are mainly, for profit, commercial organizations; it is no wonder since the fees are prohibitive and not justifiable for most educational institutes.

In 1993, CERN had put the intellectual property of its web code in the public domain[29]. However, instead of W3C monitoring and certifying web sites based on some measure of privacy, security, good citizenship and transparency it has concentrated on the technical aspects many of which seem to be for commercial purpose. Its membership is made up of commercial organizations that can afford the hefty membership fees.

The reach of these new giant corporations with their huge revenues generated by people's data that they exploit for profit without any regulations has spread in to many other areas. They include self driving cars and self piloting airplanes, human genome testing, urban planning and new applications and devices to vacuum more data for their own private gain.

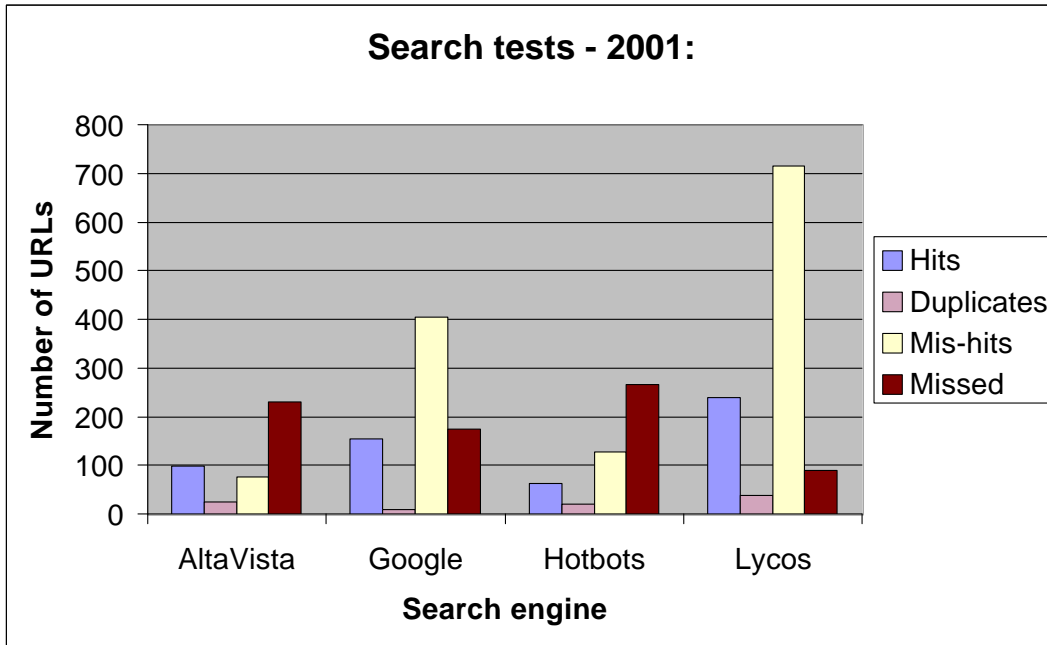


Figure 5: Test Results 2001: Hits, Duplicates Mis-Hits, Misses

6 Web of Cell Phone

The evolution of the cell phone with a screen and “smarts” implemented with a lean version of an existing operating system and software applications allowed using this device instead of a workstation or even a laptop. Cell phone which started as an emergency device has morphed into a constantly consulted pacifier along with its many addictive applications to surf the web or communicate. Many new companies were set up to provide competition in the communication based on the cell phone. With better and ‘smarter’ devices, application developers started to provide programs to do different tasks; each of which required the user to give permission to these applications and the organizations behind them to access the contents of the cell phone and even the actions performed on it. Furthermore, the location of the cell phone was known to all these applications. The fact is that these applications always give dire warning of what could happen if these permissions were not given. The result of this was that the complete contents of a user’s cell phone, all the contacts, calls, text messages and so on were now known by the organizations behind these applications. These organizations in turn had no compunction in selling, sharing and exploiting this data.

Access of web based systems was one of the first steps taken by the tech-giants. Providing access to the web and internet was very profitable for the cell companies which have sprang up all over the world, sometimes to provide competition but eventually to be gobbled up by the biggest. Such cell companies have made it possible to create another huge industry for smart-phones. Again the early

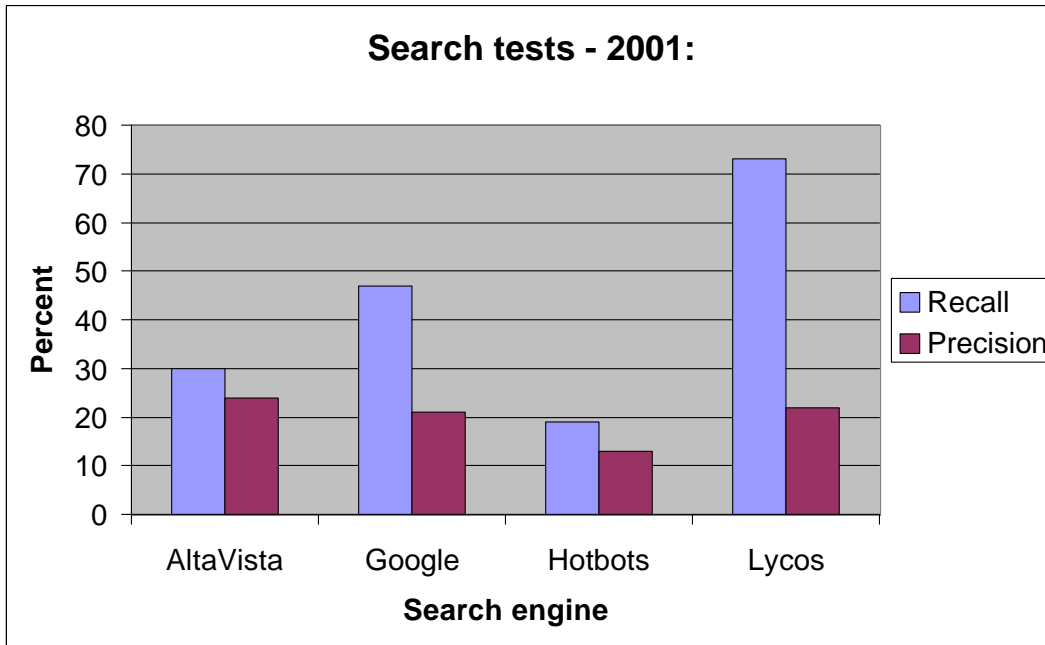


Figure 6: Test Results 2001: Recall and Precision

pioneer of the smart-phones have been replaced by newer ones with vanity appeal. In countries of the developing world, with limited telephone infrastructure, the cell phone allowed them to skip over the hurdle of this deficiency. These parts of the world gave these phone manufacturers an immense market. Some of these phone owners are also the users of many of these tech-giants applications allowing them a large portion of the publicity revenues from these parts of the world as well.

The cell phone has been adopted by even the very young and its many features include access to all forms of social networks. This resulted in all manners of new harassment and bullying incidents. Some of them have led to tragedies and some authors are lamenting the loss of a generation[50]. A number of users of smart-phone spend one third of a day on the device; glancing at the screen every few minutes and having one in the hand at all times. Solnit [74] talks about the issues with being always connected, mainly using the smart-phone, and the danger of being always dependent on instant gratification, lack of planning, lack of self reliance and abstinence of solitude while being driven by one of these tech or other monopolies. Many are dependent on these for directions, great bargains, and a livelihood either astronomical or hardly sufficient to make ends meet. Jobs are constantly being lost along with livelihood and replaced by desperate people wanting to make some money without having any benefits or security.

Another aspect of the cell phone was the merging of publicity with the contents. Since the cell phone has a limited screen size, it was not possible to put a side panel with publicity. Hence the publicity was merged with the contents. Facebook was driven by this technique to get the lions

share of the internet access by cellphone users[78] who only see the contents through the algorithms which decided what was relevant for the user to see.

The problem with cell phones is the applications that could be loaded on them which could not only access all the personal data, it can also be used to follow and stalk the person carrying/owning the cell phone[52]. Recently, hundreds of application which could access user data were removed by Facebook[59] In the meantime, there is yet another application, put out by the pushers themselves to cure one of the cell phone addictions[64]. No doubt users have one more screen to be glued to and the provider will collect and share information gleaned from this new application!

7 Web of Home data

All of a sudden we are being inundated with smart devices including smart TV and smart toys (both for children and adults[74]). Most of these devices have terms of service which has no opt-out or selective type of data to be shared provisions and choice of a limit on the use of these data. All these devices transmit data and in many cases voice to the manufacturer who is free to do what they want with it, humouring the consumer that they collect data to improve service. They regularly update their software without telling the consumer what and why it is updated[20]. The problem with these smart devices is that the data is accessible not only to the manufacturer and their 'third' parties but any hacker who decides to hack into such devices.

The same companies that have started exploiting the users data are now entering in the home control market using voice activated listening devices. Patents are being filed to get the upper hand in voice recognition for controlling appliances and lights[4], [56]. Nobody would have to get up from their easy chair! These devices, as usual would have to be given permission to have the data collected by the company that provided the device and require that the owner agrees to, let the company share any of this collected data with any subsidiary of the company or any third party, perpetually. So here goes the adage, your home is your castle with these Trojan devices!

8 Web of Targeted Publicity

The business community and a number of computer savvy users saw the opportunity to monetize the web; this was evident from the type of attendance at the first few meetings of the World Wide Web(WWW) as well as the list of potential members of the to be created W3C[79]: the first one in the list was never contacted, the second person died shortly thereafter: it is not clear if he was part of this select club. While the initial spirit was to make the system easy and free to use, there started a race to monetize the access by paid publicity. The late 1990s and the turn of the century was the era of setting up web sites to try to provide some form of service to the increasing number of web surfers. This is continuing in the crucible of the so called Silicon Valley [28].

One of the first scheme of monetizing the web was suggested by search engine developers. The initial scheme was to place clearly distinguishable small boxes on the right side of the search results; however monitoring the users search terms and following the URLs followed gave only so many 'data points' to the search engine company. Some of these organizations, using their revenue stream and venture capital money, set up free email services for the lay person using the web as the mail client and thereby making emailing much easier. The web by providing a graphical interface reduced the know-how needed to connect to the internet and start communicating! Some of these providers of 'free' emails were luring users with large storage space for their emails. Consider the fact that in the late 1990s, the author's email storage quota was about 20 megabytes provided by the cash strapped academic IT unit. At that time Google-mail and Hotmail were promising 100 or

more times this limit and it was 'free'. Now some of these free email services are offering unlimited storage space while the authors space for all storage is pegged at a few Gbytes!

Little did the unwary user know that these email service providers were mining the contents of their emails and using it to target publicity to the users. This was borne out by a radio commentator, many years ago, who was perplexed when she started getting publicity for adult incontinence supplies; she realized this and commented on live radio that it would be from some of the discussions she had with her email correspondents.

These so called free service providers do not miss an opportunity to target the publicity to the users by collecting the information of the users' browsing, remembering the web sites visited, the search terms used. Giving away 'free' email service with ridiculously large amounts of storage for email messages attracted millions of users. These emails were not only stored but monitored by software algorithms(which was OK, since it was not done by people) which have grown increasingly more sophisticated thanks to the advances in artificial intelligence, machine learning and neural networks. These tools are used for matching the user to publicity, so they tell us, which has made and is making billions in profit for these corporations.

These companies use computational advances made at universities and the companies' own research centers to come up with algorithms and modeling techniques. They buy out any competitors and useful independently developed concepts, patents and software using the large amount of funds at their disposal[87],[88],[89],[90],[91]. These acquisitions and subsequent control of the intellectual property and personnel is reminiscent of the marauding herds of yore.

Using these algorithms to the data collected, these leviathans now come up with effective, unobtrusive, unaccountable and very persuasive publicity campaigns tailored to the users that they know too well from the data that they have collected on them[96]. Some of these methods of going from a demographic publicity to one that targets individuals have been reported in the popular press[54]. The most talked about of all is the ones done in recent elections in the USA [25] and on the Brexit vote[10]. The data was gleaned by applications on the Facebook platform. Facebook also does its own commercial and political publicity. To start them young, Facebook has launched an application for children and it is going to share this information with third parties[36]. Knowing what Facebook has done recently and would likely continue to do so, any parent would stay clear of not only these apps but also from this behemoth: delete all their data, disconnect and spend more time with real people in their lives.

9 Web of Lost Jobs

Robots have been replacing human work in a number of industries over the last few decades[58]. With the development of better sensors, miniaturization and algorithms they are invading more and more fields not only in manufacturing but more recently retailing[64]. The result of this is a lopsided growth in industries supporting this type of automation but displacing workers who have no support from governments who are actively cutting taxes, allowing the tech industries to escape paying their share of taxes. Politicians of all stripes can be under the obligation of these techno-lords for their election and/or re-election. The CEOs of these corporations have a direct line to the highest level of government while not registered as lobbyists. As evidenced by the show put on by the USAian senate committee when they interviewed the CEO of Facebook they were awed by the wonder-kid and wanted to score points with their teenage children by mentioning services used by their 'prodigies' and provided by one of the companies purchased by Facebook to stifle competition[90].

Regular blue collar and white collar jobs with benefits are going to disappear to be replaced

by self employed jobs in the form of mechanical turks[7] and task bunnies[42], [37]. These provide, to the corporation, an on demand work force without having to pay benefits, provide equipment or work space. Many of the battles fought and won by the workers over the last two centuries are being undone by big money and technology; in this they are helped by libertinism driven politicians, their greed and with support from unquestioning legislators. The web and cell phones have allowed many jobs in transportation and delivery service to be grabbed up by casual workers who start by using this as a way to supplement their income and could end up having such illusory work as the only means to make a meagre living, if they are paid at all[8].

10 Web of Data hacks

Hacking and stealing of personal information is becoming frequent and one of the favourite methods is to use the weakness of the web sites. A case in point was the hacking in mid 2017 in Equifax, a credit reporting agency which handles data for over 800 million users[38]. This incident exposed 143 million user's data. The company had no system in place for users to be notified of the breach or allowing them to check if their information was compromised[39].

11 Web of Fake news

Some newly elected politicians with suspect-able moral compasses are calling anything reported on respected media (print, radio, TV) that is critical of their actions and policies or lack of it “fake news”. At the same time many unprincipled users of online social networks(OSN) exploit these media to spread any rumours that will serve their sectarian aims. Since OSN are interested in contents that will attract and keep eyeballs on their sites, they are not too eager to remove such contents. Furthermore monitoring contents and timely removal of hate mongering items require local human intervention since AI is yet to evolve to flag such contents. Recent ethnic cleansing in Myanmar (formerly known as Burma) and Sri Lanka are cases in point. One of the factors involved in the massacre of Rohingas in Myanmar was the hate news spread through Facebook by some Buddhist monks[62]. Similar Facebook false rumours were used in Sri Lanka as reported in [9] where this fragile ethnic balance is a tinderbox and all it takes is a Facebook match to create a havoc.

Recently, in a study financed by Twitter the researchers were provided the data from the platform[85]. One of the conclusions of the study was that robots spread true and false at the same rate; however, not addressing this conclusion in any meaningful way. Furthermore, the authors did not define what they called a robot and did not even consider the fact that robots could have been programmed for a particular purpose by humans. The conclusion was that humans were more prone and hence responsible for spreading false news when such items had some novelty, scandal etc. This according to the authors is a part of human nature; this in turn is used to advantage by malevolent minded opinion manipulators. Any such study, which seems to defend the OSNs for not being able to block robots, needs to be viewed with some skepticism. We need to bear in mind the action of the sugar industry which financed scientists at Harvard who in turn diverted attention away from sugar and on to fat for undermining human health. It turns out that sugar, rather than fat is the significant factor in obesity cardiac diseases, diabetics and weight gain[2], [27], [46].

12 Control of data already harvested

As mentioned above, many of the most popular web sites provide so called free service; however this involves handing over personal data under murky privacy terms [19]. The tentacles of the data sucking operation has propagated to smart phone applications (colloquially called apps). Most of these applications require users to give permission to make all information on the phone accessible to the application, all of which is transferred to the vault of these third parties. The big players have also been in on this data sucking operation. All these data are hence ready to be exploited.

The USAian population which seems to have a dread of the government having access to their data seems to be nonchalant about these giants, nurtured by robber barons of the late 21st century, exploiting their information since they have been lulled into thinking that this would be used to give them targeted notification of products and services they may need.

However these data have been used by the same giants to increase their bottom line allowing them to have enormous amounts of cash to buy any possible competitors and move into other areas. Unethical politicians, happy to be financed by these giants and their friends discourage regulations to rein in the wild west data privacy and exploitation. Further more, they hand out lucrative opportunities for them to control more data and technology[3].

As has been amply illustrated by Cadwalladr and her co-investigators [26], the data collected by Facebook was used to peddle individually tailored publicity to 50 million USAians to influence their 2016 election and likely produced unlikely winners. Other means could have been used in politics to influence elections as in the case for recent political leadership races. Unfortunately, politically correct sensitivity in some cases restricts even investigative journalists to venture into such cases. It appears that Facebook which allowed any of its application developers access to users data(and their friends as well) did not consider such data harvesting as a breach but perhaps zeal [6]!

The big tech companies, founded by geeky computer types, are trying to make sure that users stay on their platform longer and longer. They entice users to interact with the system so they have more data points to better exploit their foibles and better manipulate to what ever POV the company or their clients are advocating[67]. As an answer to a question in a USAian senate hearing, Facebook's CEO replied recently that he does not know his system too well[6].

13 Reining in the Wild Web

Web has slid from its original free sharing concept to a model which, in spite of the marketing claims of being 'free' and open, has become neither 'free' nor transparent and connects people only as a means to exploit them. The web browser and the agency that was supposed to benevolently oversee the development of the web for good and sharing has become itself a revenue generating agency in servitude to its commercial members.

One partial solution that has been increasingly used in many countries is the control of access to behemoth USAian tech companies. China was early in banning many of these sites. Even though the language barrier could have been overcome by automatic translation systems of these behemoths, the local officials did not trust these companies to be able to do the policing of the content [71]. One wonders if the flourishing home grown tech system in China is the beneficiary of such protectionism.

The amount of information being stored about users by services such as Google and Facebook is frightening. We had pointed this out in [19]. As a result of the recent exposure of massive Facebook user data siphoning used for voter manipulation carried out by data analytic companies,

many voices are added to the chorus of regulation on these search companies and OSNs. It has also lead to curious people waking up and discovering to what extent the collection of all form of data is going on [33], [24], [55], [71].

Many applications for smart phones which are controlled by the smart phone operating system (OS) companies, Apple and Google who now have the lion's share of it. These apps. require the user to give permission to access the user phone number list, location and memory. They can and are recording all communication made on the smart phone. The phone being smart and the users not so smart allow this to occur, with the result that their complete life, so to say, could be recorded by any and all applications[33].

These USAian tech companies have been having direct access to the executive and legislative branches of the, at times, dysfunctional USAian governments. This dysfunction has only become worse over the years. One USAian president has claimed that since they invented the internet, they should have the right to do what they want with it! In reality, the web was not invented in the USA; as in most inventions there were contributions by many people from many parts of the world. However, the web has been hi-jacked and even the developer has ended up in the USA. From time to time one hears from him making feeble attempts to warn about fake news etc. In the meantime, the genie has escaped.

14 Web of Targeted Publicity

Is it possible to prohibit targeted ads saying different things to different people based on how best to influence them using the data harvested from the users. When a politician says different thing to different constituents, the journalists are there to report on the discrepancies. The practice used by despots is to either suppress free press and in the case of the current breed of opportunists politician, lacking a moral compass, and to call everything that they do not like “fake news”. Repeating this mantras ad- infinitum would sway a large percent of people who do not have time to make the distinctions. By not making sure that unskilled and even skilled workers are paid living wages, they keep these poor people busy with two three or even more part time jobs with very low hourly rates.

When tens of thousands of targeted ads are used, it is humanly impossible even for most journalists much less voters to look at them and much less judge the subtle differences. Such ads should be illegal but who is going to do it when the current bunch of elected representatives seem to be in the pockets of tech-giants.

15 Web of Colonialism and Imperialism

Salt is a staple food item, and for a long time it was taxed in India[93]. The tax was increased by the East India trading company, which started as its name implies as a commercial trading endeavour, but gradually started ruling a large swath of India. The British government took over the ruling of India from the company and the Raj was born after the mutiny of 1857[95]. The tax was continued so that imported salt, from England would have a market. The salt march was organized as one of the first non-violent struggles for independence from the British by the Indians [94].

The large internet companies, using the advantage of the early start, the protection of the USAian government and the guise of net freedom have been enjoying a non-level playing field in web technology. The presence of a colossal corporation in search, and ease with which most people with very little computing savvy can set up their personal home page and communicate with family

and friends and pick up others has been a road-block for personal and community based sharing systems.

The problem has been the in-action of most western governments, postal services and telecom utilities to provide the tools. These giants have become too large to regulate, and they have a large network of lobbyists and lawyers and have access to the legislative and executive bodies of the USAian government. This is reminiscent of how the British government in the previous centuries protected, with its army, the commercial enterprise of the East India Company, the Hudson Bay Company etc. In the case of the East India Company, they nationalized it and started over a century of colonialism of the Indian sub-continent. These giant USAian corporations have in effect colonized the web and the internet. There is not a single international search engine of any size that is not headquartered in the USA. The subsidiaries do not count.

Another example of this imperialist push is the recent attempt by Facebook to have a completely controlled service, with the moniker internet.org provided under the guise of 'connecting' people. This service, provided free by Indian telecom carrier would have Facebook as the center of the service with few other services chosen by Facebook. There was a lot of resistance to this fake free service, completely controlled by Facebook and a resistance to this was set up in favour of net neutrality. Frustrated by this resistance led to the comment "Anti-colonialism has been economically catastrophic for India for decades. Why stop now?" is supposedly a twit by one of Facebook's board members². The moniker Internet.org was replaced by the term "Free Basic" which has been described as a walled garden[86] where essentially Facebook decides who can enter and the internet was limited to Facebook and what it allowed. In spite of a lot of lobbying and currying favour with the top politicians(who were thrilled to be seen with the boy wonder), Facebook had to retreat and try China[72]. In the meantime, Indians net neutrality activists celebrated a victory over a powerful USAian corporation intending to colonize the Indian internet.

Most governments have not come around to adequately tax these foreign companies. In the meantime they are losing all the tax revenues and sacrificing local companies. Recently, La Presse, a well respected Canadian newspaper, not being able to survive on publicity, first went from print media to on-line only. Since over eighty percent of all advertisement revenue goes to foreign on-line[60] corporations even on-line publication was difficult. Recently the owners gave up control of the paper and converted it to a not-for-profit organization, and donated a seed fund to make the venture a success. As a non-profit organization, the newspaper could raise funds through donations. It appears a similar fate may await The Toronto Star yet another respected Canadian institution. Interestingly, the Washington correspondent for the Toronto Star has been keeping tabs on the wild tales the current USAian president utters day in and day out[34]. The Guardian, another respected paper has not put up a paywall; but invites readers to make voluntary contributions.

In the meantime, inexperienced and bent politicians make asinine deals with these giants; a case in point is where the Canadian Federal government gave up having Netflix charge and collect federal taxes for Canadian subscribers and perhaps tax the company for the income so generated from Canadian users. They were given a deal of a paltry sum of \$500Million to be used by Netflix in contents production over a long period of time in Canada. Incidentally, many such deals are not monitored closely and failure to live up to the deal often has no penalty. This did not seem to be such a good deal since not all players seem to agree to this kind of sweet deal[44]. Did the Canadian rookie minister, inexperienced and perhaps a bit naive, who negotiated this brilliant agreement realize that Netflix would own the contents and make money by using it for as long as they could not only in Canada but elsewhere as well? The other aspect was that part of the funds spent is likely to be actually be refunded for producing local contents.

²Said to be Marc Anderssen, one of the persons involved in the design and implementation of the Mosaic Browser

There has been an under-playing of the brutality and impoverishment of the colonies by the ruling empires and an emphasizing of the positive effects. One scandalous article about this has received a justifiable thrashing. However, recently a book lauding the positive effect of the empire and underplaying the occasional brutality has been rather well received by critics in TLS[51]!

The giant corporations driven by the web seem to feel that they have a positive effect on the people. However, they have stifled competition and prevented smaller countries from developing their own systems. Many crafty politicians have been able to use these same giants to exploit them and perhaps influence the results of recent referendums and elections.

16 Ownership of data

The financiers, the management and some of the key employees of tech companies have been able to amass great wealth at the expense of the data siphoned off from users and connected with other data ; the users who are targeted with ads etc, are left to pay bills for the computing devices, bandwidth and the internet connection. In the meantime, by using contents that make these poor souls addicted to the platform, they rob them of true human contact with family and friends.

A typical use of personal data to target publicity to users is described in patents filed by Facebook. An example of it discussed in [73]. A patent filed by the social network outlines how personality characteristics, including emotional stability, could be determined from people's messages and status updates.

A recent article [54] outlines how OSNs such as Facebook learn a lot about its users not only from the user interaction on its site but also follows them around using the likes that an unsuspecting user clicks: sometimes this click is the only way to reach some contents the user is researching. By letting organizations such as banks, government agencies, news outlets etc. to allow the user ID and password of these tech giants to log into the above organizations' site; this allows the tech giants to know where the users are going and perhaps determine what they are doing. Allowing companies to upload the data they have about their customers or data bought from data brokers allows the OSN to create finer details about its users.

17 Freeing from the web

It is time that we recognize that the internet and one of its applications, the web, has changed the way we live and communicate. Communication mechanisms such as email, SMS and getting information and news is now done using one of the channels/applications introduced in the last couple of decades. It is time that these be publicly maintained and the 'free' access which was used by the newly minted robber barons be replaced by a scheme where a part of what the consumers pays for the network connection and the bandwidth be used to compensate locally owned organizations which put up this information. So instead of allowing these new tech giants to colonize the world, currently under the protection of the USAian government, each country should start by setting up a publicly controlled(post office) to offer the basic email and SMS services. Instead of having colossal OSNs, each community should set up local systems that can connect the population who are aware of the local issues and could guide the community to a better society, not a dystopian one. All these would need financing and one can start by taxing the current tech giants out of existence. For instance. instead of allowing companies such as Netflix to create and market their own contents rather than taxing their services and income, the governments could thus channel the funds so collected to local artistic communities to create contents locally owned and marketed[66].

The free access should be replaced by a scheme of bandwidth provided by the information source and be charged to the end user as mentioned above. There could be non-profit content providers who may offer free contents and others who may have competitive charges. Example of the former is a service such as Wikipedia: an open web encyclopedia updated and checked by volunteers.

In the meantime, the hope for some way of reigning in the tech giants sheltered by successive USAian governments seems to lie with the European Union[61], [69]. So while the USAian politicians are scoring blanks in their, what looks like, quixotic charges against the tech giants, EU is forging ahead chastening the fearsome five. Ironically, the EU itself is under attack not only by some USAian billionaires and a segment of the British population who is missing the days of the Raj, but also some recent additions to the EU.

The way to control the rape of personal data has been laid out in the General Data Protection Regulation [43] initiative which comes into effect at the end of May 2018. This regulation was the result of the defeat of the Safe Harbour agreement, which allowed USAian companies to transfer data of EU citizens to the USA and self regulate how it is used. Safe Harbour was challenged and made inoperative in the European Court of Justice [76].

The salient point of the GDPR regulation is the protection of natural persons which requires that any processing of the data about the person would only be for a limited purpose and amassing, classifying and exploiting any such data and using data to merge with other data obtained for another purpose should be prohibited. Another aspect of GDPR is that it protects all 'data subjects' which is a natural person whose personal data is used by the controller of processor of this data. The later covers all algorithms and the former anyone who has a natural person's data[1]. Furthermore such data must not be used for commercial, political or promoting products and services (targeted publicity of any kind). Non-compliance to the GDPR involves administrative fines up to 20 000 000 EUR, or in the case of an undertaking, up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher. Even before the coming in to force of GDPR, Germany has required Facebook to set up a giant deletion center to monitor and delete unacceptable contents[53].

The introduction of the GDPR regulation is forcing the USAian tech giants to offer similar protection to all of its users[31]. How well they would live up to it remains to be seen. As in the case of the aerospace industry, it is only a cooperation of nations that could lead to a challenge of the USAian giants. The Airbus is a case in point which is now able to compete with the USAian air frame maker. The later had taken short cuts to catch up with Airbus new aircraft! The fatal result of these short cuts is evident in two recent crashes and subsequent grounding of these passenger aircrafts[22].

One final solution may be to come up with a new protocol for the web - a new web; where user data is under control of the user; there would be alternative suppliers of the services provided by current tech giants which are paid by the amount of bandwidth used and not publicity driven. A distributed consortium could be responsible for 'truly' policing the suppliers of information and licensing these new web sites. Penalties similar to the GDPR should be levied and repeat offenders be de-certified!

It may be that a certified new web with decentralized control and a level global playing field could be the one that the visionaries, not only Bush but some who initiated the hypertext dream and who tried to set up the priorities during the Woodstock of the web, had in mind. Another alternative has been proposed in [21] which involves a certification authority and the ultimate in a distributed system.

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