0 Thesis

The Ideal, of collecting the worlds knowledge drove the evolution of the World Wide Web or
The web cheated on me

This thesis aims to answer the question how the ideal of collecting the worlds knowledge drove the evolution of the World Wide Web.
The desire to gather the world's knowledge in one place is not an idea of the internet era. The idea of a world encyclopedia existed since the beginning of the 20th century. I am interested in the question how the World Wide Web adapted this idea and how it was realized technically.
This thesis is presenting this evolution based on 5 different people, who have pushed the realization of collecting the worlds knowledge.

1 Motivation

When I was 16 I gave a talk about Franz Kafka in front of my class in High school. Of course at this time I was more interested in hanging out with my friends than reading ‚Das Urteil‘, one of the most famous novels of Kafka. Fortunately Wikipedia was flourishing in Germany in this time. And because my teachers were pretty slow in getting along with the internet, we, as students, had an easy life for the next two years. It was the time when I copied all information from WIkipedia and probably stopped thinking myself. I still haven't red the novel yet, but a lot about it.

Some time ago somebody asked me if I red 'Das Urteil' what I answered with a yes. Although I have never read the novel, I got the feeling to know it. The internet made me believing of being possible to understand everything. The idea that I can find every information was established because I thought this is the place where all knowledge comes together. In front of my eyes there was opening up a new world of knowledge and I just had to take it. The world's knowledge seemed to come together on the internet - always only a few links away from me. The link seemed to be the wheel of the information age. Technically, the link is a simple guide, but textual the link symbolizes the idea that the web brings together all information. For the time in High school that was enough. I was satisfied with what I got from the web. The era of punditry began.

When I am looking back I realize that my high school time was the time when I started looking up every information on the web. The web became this all-knowing machine to me. It seemed smarter than my father and so far I only met a few people who were smarter than my dad. I believed in the idea that the web will revolutionize our politics, economy and society. I very much liked the idea of a self-sufficient society – an ideal society that Fred Turner describes in his book ‚From Counter Culture to Cyberculture‘ (2006) as decentralized, egalitarian, harmonious and free. Furthermore I was fascinated by the possibility to communicate around the world and being able to express ideas. I thought that state borders and individual borders will disappear. I thought the internet will democratize the world, makes it a better place because access to knowledge was possible for everyone and it seemed to be the key for every problem. Personally I thought it makes me a very smart person because it will answer all my questions. By chance I was born into the right time - it has never been easier to inform yourself.

After ten years believing that I can find every information on the web I start realizing that the knowledge on the Web is very limited and I don't get my questions answered. Now, people comment articles, share data, exchange knowledge on blogs, Twitter and Facebook. I experience the Web as a structure where everyone is horizontally connected, where everyone can be a writer, an editor, a critics, an expert – but the overflow of information overstrains myself and I don't get my questions answered which leads to disappointment. I feel betrayed. My initially enthusiasm and my confidence in knowledge the web spits out has disappeared. I

feel disappointed and I have the feeling that the web cheated on me because it didn't't kept its promise of knowing everything. I want to answer if the web promised to know everything and where this promise has its origin and why adapted the belief.

It is true that it has never been so easy to inform ourself but why do I have the feeling to live in a society that has never been so badly informed? What went wrong?

2 Hypertext

The technological concept behind the World Wide Web is hypertext. It is the organization of hypertext that makes me believe that all knowledge is connected and I just have to click another link that would bring me to the information I want to know.

It is a system that I can enter by means of the internet. To be able to retrieve data from the internet I need a web browser that downloads the data I am asking for from a Web server and shows me on my screen in the form of a website.

In a hypertext you can link to other hypertexts, images, videos, etc by hyper links. By following a link the underlying resource invokes. The user moves from document to document. This is the process we call surfing the web (haven't heard this term a while) that I will investigate in my thesis.

2.1 Introduction

First of all I want to say that this thesis is not claiming to write the truth about the history of the World Wide Web. During my research I found out that there are an incredible number of different versions and mythical stories about the Web evolution. In the beginning I was willing to find out the truth but after a while I capitulated. If even Al Gore is calling himself the father of the internet - I have to admit that there is not THE inventor of the World Wide Web, but several dozen fathers of the Internet. This thesis examines five of them. Five fathers that identify five major trends in the development of the WWW and the ideal of bringing together the world knowledge. I partly adapted this idea Manuel Castells book ‚The Internet Galaxy' but decided to start a bit earlier than he did - I will start with Paul Otlet and his invention of the Mundaneum. I will continue with Vannevar Bush, Douglas Engelbart, Ted Nelson and Tim Berners-Lee.

Both, the ideal of collecting the worlds knowledge and the ideal of linking together the world's knowledge is not an idea of the Internet era. Both have been known for a long time. The first ideas of collecting the worlds knowledge therefor were analog.

Since the early 20th century the utopian idea of a universal library emerges again and again especially in literature. Mainly in science fiction. One of the science fiction pioneers H.G. Wells(Wikipedia) had the vision of the world Brain that he describes as "a new, free, synthetic, authoritative, permanent world encyclopedia that could help world citizens to make the best use of universal information resources and make the best contribution to world peace.' The ‚Idea of a permanent World Encyclopedia' is a collection, indexing, summarizing and release of knowledge by a centralized world organ working on a planetary scale to pull the mind of the world together. Also other science fiction authors such as Kurd Laßwitz who published a short story, called Universal Library or Douglas Adams The Hitchhiker's Guide to the Galaxy as well as Jorge Luis Borges short story ‚The library of Babel' take up the question how a library, that consists of all existing books, looks like and also how they could be ordered to find them back. But this was all utopia. One of the first technical implementation of a hypertext system was the book wheel of Agostino Ramellis that was developed in the 16th century, or the reading machine of Roussel, a kind of change wheel for notepads. In literature, Michael Joyce's ‚Afternoon' is considered to be as the archetype hypertext book. All these inventions were objects that should make it easier to reference between different sources. We also can find this idea in linear text. Actually any help to develop a linear text, such as indexes, cross-references and footnotes, are implementing the idea of hypertext.

These hypertext systems are all location-dependent - the reference targets have to be on site and further more the tracking of references is not automated.

i started to begin with Paul Otlet and take a closer look to his invention of the Mundaneum because it is one of the most beautiful because most complex and idealistic concepts of creating an analogue hypertext system.

2.2 Paul Otlet - *By the reorganization of information, classification and documentation Otlet wanted to establish an international organization of knowledge - a world center of knowledge*

Paul Otlet is born in 1868 in Brussels as a son of a wealthy industrial family. His childhood he spent in libraries and private teachers. During his law studies he got frustrated by the disorganization of technical literature - he recognized the weaknesses of the library system of

19th century what prompted him to create the the Office International de Bibliography in 1895 together with Henri La Fontaine. The office' aim was to create a universal library - The Mundaneum

His Motivation vas very clear: in all texts about Otlet you can read that he became a pacifist because he lost his son in the First World War. Well, I am not convinced that you have to experience this tragic fate to be a pacifist - however most important is that he was. He detested violence and believed in peaceful, verbal altercation what made him becoming one of the masterminds of the League of Nations and the Unesco. He hoped that his archive of the world's knowledge will help to secure peace because it will promote the reason.
Otlet was convinced that the global spread of knowledge and the exchange of it would promote world peace.
His dream was to create an universal network that allows the distribution of knowledge without any restrictions. For a peaceful understanding the worlds knowledge need to be accessible for everyone. Therefor his vision was to create location-independent access to knowledge, thus making knowledge widely available no matter where it was located.

At the beginning there is the plan that Paul Otlet and Henri La Fontaine had taken 1895 in Brussels - to create a repertory of all knowledge, the "Répertoire Bibliographique Universel". It represents nothing less than an attempt to document all publications available worldwide, so to create a kind of meta-level to the flood of publications.

The idea was discussed at an international bibliographic conference and institutionalized to a central unit, the "Institut International de Bibliographie". It is aimed to create the technical basis for the new organization of information, classification and documentation. The goal of the "Institut International de Bibliographie" was to create a world center of knowledge. The Palais Mondial later called Mundaneum, that opened its doors in 1920 on the occasion of the worlds fair. It looked like a mixture of a book museum and a meeting place for intellectuals. By means of the archiving system that was developed especially for the Mundaneum, all publications were indexed and connect with each other. This storage system consisted of 16 million handwritten indexing cards that were ordered by themes. Thus he invented a system to navigate through all publications. It was a very advanced analog hypertext system.

Maybe the Mundaneum can be considered as the first search engine. The Mundaneum worked as a paper Google. By mail or telegram users could do a request. The librarians who were working at the Mundaneum would than search for the right answer and send it back to the requestor, handwritten, via mail for 5 Centimes per indexing card. This could take weeks.

The more the political situation darkened in the years before WW II the more fantastic and visionary Paul Otlets vision of education became. He developed multimedia concepts to develop the cooperation opportunities for researchers. He planned multi media machines that would connect the phone with the book, television and radio. More and more he tried to replace books by other media because information could be conveyed easier and faster via sound and film. For example, he developed multimedia furniture that would work without paper. Via a telephone network the user could call related books and films. Also he outlined the idea to transfer scientific conferences via phone or video transmission. He wanted to achieve what now a days each computer can provide - the location-independent exchange of information. Also he prepared a lot of charts that were burned on microfilm. It was a method to universalize information- as diagrams are readable internationally. The more his vision grow, the less understanding he got. In 1934 he was thrown out of his knowledge palace. The Mundaneum and a lot of his plans were destroyed during WW II

Today all of this sounds familiar: a kind of world network of knowledge, through which you can easily conjure every movie, recording and every book on your computer screen. Amazing, that he published this plan already in 1934. There was no Internet, no MP3s, no computers. But this lack could not prevent Paul Otlet of his vision of a knowledge network, which he spread in the book "Traité de documentation" on more than 400 pages.

In some ways, his "mechanical brain" was not only ahead of his own time, but even ahead of today. For example, Paul Otlet didn't want to just link pieces of information as the World Wide Web does now. He suggested intelligent links that would in addition also include information about veracity and context. This is what we now call Semantic Web - but its practical implementation still is not completely fulfilled yet.

In the documentary ‚Alle kennis van de wereld (Biography of Paul Otlet)' from 1998 the narrator Boyd Rayward, who is Otlets biographer says in the end: ‚I could imagine Otlet on the one hand being rejoicing about the creation of the internet and the web and being terribly upset by the lack of organization of it on it and suggesting: we better have a classification system of this sort to avoid cyberspace debris'

His whole life Paul Otlet worked on a organizational and technical realization of documenting the worlds knowledge and became the first who translated the utopian idea of collecting the worlds knowledge into reality.
He created an analog hypertext system that could navigate through all publications

Ten years after the Mundeaneum closed, Paul Otlet died. A few months after his death,

Vannevar Bush published his famous essay on the knowledge store of the future - and thus became immortal.

2.3 Vannevar Bush – *In 1945 Vannevar Bush was the first person who designed the concept of a digital hypertext system. In his legendary article 'As we may think' he writs about the Memex, a machine that would allow readers to create personal indexes to documents and to link passages from different documents together.*

The engineer was born in 1890 in Massachusetts. He worked at the MIT before he advised President Roosevelt as "Science Advisor". In 1941 he became the Director of the Office of Scientific Research and Development. It was his job to organize the knowledge of Roosevelt's scientist as effectively as possible for military use. He had the overview of all technology projects that were funded by the White House. During the Second World War, the Office of Scientific Research coordinated all military research programs, including the Manhattan Project to develop the atomic bomb. Bush promoted the political decision to build the atomic bomb in the spring of 1941, whose technical development has been accelerated as a result of the Japanese attack on Pearl Harbor in December of the same year. At the same time, however, Bush has already warned of a nuclear arms race, because it was to be expected that the U.S. would only have nuclear monopoly for a short time.

Bush also worked on "proximity fuse" a special proximity fuze for shells, that could by radio technology control the detonation more precisely. Bush was also responsible for enhancing the development of radar and sonar, and he was involved in the founding of the American defense contractor Raytheon.

Since the beginning of the WW II he enjoyed a certain celebrity status. Colliers Weekly presented him in early 1942 as "the man who will win or lose the war" and in 1944 his face was printed on the cover of Time magazine, which represented the engineer as "general of physics."

In July 1945, Bush published the essay As we may think in the Atlantic Monthly , in which he imagined a device "in which an individual stores all his books, records and entire communication that may be consulted with extraordinary speed and flexibility. It is an enlarged, personal supplement of his memory", called Memex (memory extender).

Probably Bush's motivation to write the essay was his own frustration about the previous forms of scientific management. At the beginning of his essays, he writes: "There is a growing mountain of research" but the methods for coping with this flood of information are out of date. At the same time, however, there were new techniques in order to process information quickly and reliably, such as photocells, microfilm, steel cathode tubes and relay connections.

Bush tried to find an answer to the question how research could be used to help the post war era - somehow he felt obliged to. he said that the same scientist who helped to win WW II have to use the "cheap electronics" (From CC to CC p. 106) to develop a new form of information development. The knowledge the scientist used to produce nuclear weapons that theoretically could have wiped out humanity, must be used to unite "the great record of human activity" (From CC to CC p. 106). What to me sounds like a kind of justification or compensation, seemed to be a logical conclusion for Bush. He always adapted science to the human needs. Technological conduced no longer to win the war, therefor to create the best possible war technology. But in the post war years, technology conduced to promote humanity on an intellectual level.

The sticking point for Bush lies in the storage of data. "A record, if it is to be useful to science, must be extended Continuously, it must be stored, and above all it must be Consulted."
In the U.S. nobody knew about Otlet's referencing system.There, data so far was ordered alphabetical and numeric and to find something you had to follow exactly this schematic. Bush was convinced that this contradicts the human brain because the mind works associatively. "With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts". The future in technology would be in the ability to mechanize association.
To illustrate exactly this idea, Bush designed a machine called Memex - it was a thought experiment.

The Memex looked like a desk on which two screens are mounted, each on one side. Inside the desk are electromechanical controls and microfilm equipment. The operator of this machine is allowed to enter text and drawings through a photocopier which will be projected on the screens. This data is than stored in a microfiche filing system. With levers the operator can scroll back and forth between information, and save and recall documents. Also, there is the possibility to refer between different sites through links. Texts and extracts from texts can be stored and later linked to other information.
The memex encompassed data compression, internal information exchange and information exchange with other users. ,Most importantly Bush introduced the notion of 'associative indexing', enabling the user to make trails through the mass of information and record those

trails, which can be followed and annotated by other users. It is this capacity in particular that would later come to characterize the areas known as hypermedia and multimedia'

His mission was to increase the effectiveness of human research. With his utopian idea of creating a knowledge management system, as the Memex was, he wanted to change the way people archive and document knowledge.

Even if there wasn't a technology yet that could realize his utopian network of knowledge, he gave a brilliant and influential preview of some of the features Ted Nelson would attempt to realize Xanadu.

The Memex was a local, analog computer that was capable to combine all knowledge of one user. Even if he was planning to exchange data, the Memex didn't implement the idea of linking knowledge in different places, this was the next step. Ted Nelson took.

2.4 Ted Nelson – *In Computer Lib Manifesto (1965)he envisioned a hypertext of interlinked information. He worked on XANADU, an open, self-evolving hypertext system aimed to link all the planets information in the past, present and future*

Ted Nelson was born in 1937 and grew up in Greenwich Village. After he left college with a BA in philosophy he went to Harvard. There he got passionate about finding a system that would help him, not only to write his essays but also to insert the sources at the same time. Fore a course in Harvard he invented a writing system that allowed users to store their work, change it and print it out. Nelsons system included features for comparing alternate versions of texts, backtracking through sequential versions, and revision the outline. Because he failed to finish the coding, he failed the course.
Even if it was his intention to get his PhD in social relations, his attempt to finish this project became much more important to him. In 1965 he submitted a paper to the Association of Computing Machinery (ACM) in which he explained his vision of hypertext. However, his speech had little impact. Although his ideas were intriguing, Nelson lacked the technical knowledge to prove that it was possible to build the system he envisioned. Therefor the non-specialist researcher was not taken serious in the computer science scene.
But he was not discouraged and kept working on his hypertext system. In 1967 he named it Xanadu, after a poem by the poet Cold Ridge. Xanadu was a software framework that would "enable access to all the wolds textual information and make it possible to link and examine texts in parallel and to produce new versions" (Digital Culture p.133).
Xanadu was the first global hypertext publishing system. It was meant to be an universal library, a worldwide hypertext publishing tool, a system to resolve copyright disputes (the idea was that every author who published hypertext via Xanadu, has to admit certain quotation rights, but the author can ensure the references to his authorship. For further exploitation the author get paid automatically via a micro-payment system) and a meritocratic forum for discussion and debate. Nelson was convinced that by putting all information within reach of all people, scientific ignorance would be eliminated and political ignorance would be cured. Xanadu was just the right tool to spread the worlds knowledge what would save the world.

Maybe it is due to the fact that Ted Nelson was a scattered man with a short attention span that he wanted to develop a computer program that could keep track of all his divergent paths of thinking and writing. He was convinced that only technology could prevent the destruction of life on earth. Because technology wouldn't forget like the human mind it could preserve and link the worlds knowledge in the past, present and future.

In "From Counter Culture to Cyber Culture" Fred Turner writes that "for this generation, to which I count Nelson, computing was a form of political rebellion. Computers may have been large and centralized, they may have always been guarded by institutionalized experts and they may have been used to organize the war in Vietnam, but this generation would put them to new uses"
Xanadu was neither developed in the computer labs nor has Xanadu been commissioned by the military. Ted Nelson's urge toward global improvement was highly Influenced by the counterculture and the Whole Earth Catalogue, that cured computing from the military and technical aura.

The atmosphere in the 60s in the United States was characterized on the one hand by optimism and prosperity but on the other by fear of nuclear terror, atomic weaponry, the invasion of american troops in Vietnam in 65, racial discrimination and the increasing pollution. The growing unease resulted in different movements like the Anti Vietnam movement, women's liberation, civil rights movement, nuclear deterrence. Alongside all this activities, The early development of personal computers was happening. And Ted Nelson has been just as impressed by new technology as well as the alternative thinking of the counter-culture.
Nelson was socialized in this technology/alternative culture that created the circumstances in which the personal computer and the current digital culture was born. Expression of this movement was the Whole Earth Catalog, that was founded in 1986 by Stuard Brand.

The Whole Earth Catalog (WEC) was a printed catalog that listed tools and ideas that where important for an alternative lifestyle. According to Brand a symbiosis of technology and alternative lifestyle. Among others, the Catalog listed ideas of alternative thinking, sources for agricultural implements, building/craft tools, musical instruments, aids to physical and mental self-help, care of animals and philosophy. The Whole Earth philosophy was always to support the idea of community and to enable a free exchange of ideas through networks.

It was the Whole Earth Catalog that inspired Ted Nelson to write Dream Machines, his most famous publication - a 300.000 word manifesto of the digital revolution.

Computer Lib contains of everything enraged or inspired him during the month he wrote it including: population statistics, hacker psychology, the evils of IBM, holograms, musical notation, Watergate and how to program in Trac.

Dream machines, the literal flip side of Computer Lib, was about the transformation of the arts through computers. It included a description of Xanadu.

Xanadu has never been realized. It will probably go down in history as the longest-running vaporware project in the history of computing. Unlike Bush, Nelson thought much more global.
The Memex was a sort of analog computer that would enable the user to link different texts. When Nelson developed Xanadu, the personal computer was invented already - he was not interested in designing a machine like the Memex was, Nelson however was working on a program that should be working from any computer in the world. But how should that be possible without the world wide web and without the internet? His realization of Xanadu had to wait for the development of the internet and for Tim Berners-Lee who realized much of what Ted Nelson promised. Thus Nelsons influence has been felt more at the conceptual than the practical level" (DC, p133)

2.5 Douglas Engelbart – *In 1968 he developed the NLS, a System that offered different users in different places to work on one document on the same time*

Engelbart was born in 1925 in Oregon. In 1942 he began his studies in electrical engineering at Oregon State University, which he had to interrupt in 1944 because he was drafted into military service where he was trained to a radar technician. Towards the end of the war he was stationed at the Philippines. As a GI he first got in touch with the idea of hypertext when he red Vannevar Bush's 'As We May Think'. Bush's idea of hypertext Should become one of the most inspiration sources in his life. From on this moment he turned his whole life to the technical realization of the Memex.

For Engelbart, technology so far had experienced three phases:

1) The american military had developed technology with which it might destroy the world

2) In the post war years, technology was used to eradicate disease and increase food production

3) Engelbarts present - he realized that technologies efforts of phase 2 often backfired. Rapid food production caused the depletion of soil and the eradication of insects causes ecological imbalances.

Engelbarts conclusion was that mankind must solve extremely complex problems. Therefore it was necessary to Improve the management of information and the control of human organizations.

He felt confident about revealing the solution in the man-machine integration, on which he worked throughout his life.

After the war Engelbart made a second degree at UC Berkeley in Engineering. The young scientist joint the Stanford Research Institute (SRI) in 1957 where he managed the Augmentation Research Center (ARC). "ARC was dedicated to research how computers might be used to augment human intelligence.In its twelve years of existence ARC developed many of the techniques we now take for granted in computing. These included word processing, cutting & pasting, separate windows, hypertext, multimedia, outline processing computer conferencing and even the mouse". For the latter he became really famous but For this thesis his development of hypertext is far more interesting. He promoted the WWW, since Vannevar Bush's idea was not put into practice yet.

Between 66 and 68 ARC developed a collaborative office computing environment, called On-line System or NLS. NLS offered different users in different places to work on one document on the same time.The user were able to connect texts and text fragments via hyperlinks. Also they could create indexes of keywords that could be searched. It actually worked as a now a day intranet.
NLS was the technical realization of the Memex - it allowed the user to call up and manage

information. And beyond that, it would allow the user to work simultaneously with other users on the same text. ARC elevated the process of collective feedback to a principle of social organization. In Engelbarts view, „each individuals comprehension would be increased by the participation of others through a process of collective feedback facilitated by the computer".

ARC was founded by ARPA and became one of the first four nodes of the Arpanet.
With the ideas of Bush, Engelbart and Nelson the idea of distributing knowledge through a network was born long ago on a theoretical level. The technical realization of a network in the sense of the word started to be realized with the Arpanet in 1968 - Exactly 100 years after Otlet's birth.

ARPA (Advanced Research Projects Agency) is now DARPA (Defense Advanced Research Projects Agency - the ‚defense' was added in 1996). The agency was founded in 1958 by president Dwight D. Eisenhower as a result to the Sputnik crises in 1957. ARPA initiated research projects to push the development of space technology and military technology. But when the NASA undertook this task, ARPA concentrated on the exploration of computer technology.

The ARPA- or DARPA-Net was developed in 1967 of a small group of researchers led by the Massachusetts Institute of Technology (MIT) and the Department of Defense. It is considered as the first network in the sense of the word. In 1969 It connected the SRI where Engelbart worked, with the University of Utah, University of California, Los Angeles and the University Santa Barbara. The compounds were made via telephone lines. This revolutionary decentralized concept already contains the basic aspects of today's internet.

It was Robert Taylor who was a researcher at ARPA at this time and supervises the ARPAnet project who had the idea of connecting computers that they could transmit data not only between all ARPA computers but also from computers outside the pentagon, where his office was. Together with Larry Roberts, he developed the concept that the transmission of date should take place in data packages.
The transmission of data in chunks goes back to the idea of the engineer Paul Baran. In 1962 he wrote a paper concerning strategies for maintaining communication in event of a nuclear war. In the 60s, in the middle of the cold war, the fear of a nuclear threat felt very real in the United States. Due to this fear, Paul Baran had the idea to create a network that waive a center, so that should any part be destroyed , messages could continue to flow along other routes. His idea was to send data in small ‚chunks' and to bring them together at their destination.

If the ARPANET was used this chunk version because technology was driven by military needs as Charlie Gere describes in his book ‚Digital Culture'. Or if they worked in the spirit of Vannevar Busch as Robert Taylor says in the film ‚The Net': „that they build the Arpanet to enable people in different places who had common interests to share those interests." or if it was build to finding a method to take advantage of the bare computing resources of the universities through better data exchange?
It is one of the big myth" around the internet.

If Ted Nelson designed the Web on a theoretical level, it was Engelbart who created the technical circumstances to realize it technically on two different levels:

The first was that he made it possible to exchanged information through a network.
And the second level was, his participation in the development of the Internet. He helped, creating the technical basis to link information not only within a closed network, but to create a global network that could exchange data worldwide.

At a time when the most people thought a bout computers as calculating machines, the NLS offered a vision of computers as text processors and tools for collaborating and communication devices.

Engelbart helped developing a network that can send data from one to another computer within a closed network. What still was missing, was a network that could link all data of all computers. Actually a combination of his NLS and the internet. This crucial step was first made by Tim Berners-Lee

2.6 Tim Berners-Lee – *The development of the World Wide Web*

Tim Berners-Lee was born in 1955 in London as the son of two mathematicians. He studied physics and worked as a software developer after he graduated. In the 80s he worked at the Centre Européenne pour la Recherche Nucléaire (CERN) where he developed the World Wide Web.

In March 1989, Berners-Lee published a paper describing the World Wide Web. He designed a digital information network, which he developed in the following years together with his colleagues. The paper begins with the sentence :"he WWW project aims to allow links to be made to any information anywhere"

His intention to build the WWW was to enable particle physicists to exchange data, news and documents without the loss of time. But from on the beginning his aim was to extend the WWW to other areas and to connect more servers to the network, servers that would bring in other information.This world wide intention was the reason Berners-Lee called his program World Wide Web (first WorldWideWeb)

In December 1990, the first web server went online, which he developed in cooperation with Robert Caliau. And on August 6th 1991, he invited his colleagues to a discussion forum where they were supposed to click on a hyperlink that led to the first public web server.

As long as a computer is both, connected to the internet and has the right software,Berners-Lee's WWW allowed you to access documents from all computers that were also connected to the internet and had the right software. The program made this connections by hyperlinks and URL (Universal Resource Locato).

For many, the Internet had long served as a system for the exchange of text messages. With the arrival of the Web, it became a way to publish information, to incorporate multimedia formats, and to quickly and easily connect previously discrete clusters of information.

However, when CERN released their browser software, it wasn't such a success in the beginning because it was too difficult to use the software that was necessary to access the WWW.

For business and for society at large, the internet was born in 1995 when Netscape developed the first user friendly browser, that was able to show not only text but interactive elements and graphics without loading them separately. It's technical and open architecture allowed the connection of all computer networks anywhere in the world!

3 And where are we now?

Otlet, Bush, Nelson and Engelbart have created the conditions that enabled Tim Berners-Lee to realize the World Wide Web and therefor to link the world's knowledge.
Am I, by using the WWW, only one click away from finding the right information? Has the World Wide Web really linked the world's knowledge?

3.1 Wikipedia - *never before there has been so much knowledge in one place. The eternal human dream to gather the world's knowledge in one place comes a little closer.*

This exactly is Wikipedias intention - and probably no other web structure has come so close to this target.

Who and what is Wikipedia?
Jimmy Wales, the founder of Wikipedia, made a fortune from speculations at the Stock Exchange in Chicago. With this money he founded Bomis in 1996. Bomis was a search engine for cars, celebrities, sports and the special category "babes". The money he made with advertising revenues at Bomis, provided the financial basis for Wikipedia. Wikipedia was first called Nupedia and was a free specialized encyclopedia. Wales dedicated experts to write articles that were checked in detail. After one year the encyclopedia consisted of 20 articles. Wales made the decisive step and opened the lexicon for the general public. Now, everyone was allowed to write and edit articles. Authority was replaced by democracy. In the beginning of 2002 thousands of volunteers had already written more than 20.000 entries. From on this moment the number of new articles exploded. In 2007 there were added 1500 new articles every day. In the mean time the rapid growth slowed down but the amount of articles still increases incessantly.

To write about Wikipedia, to me feels almost impossible. Much has been said about it in the last few years - rarely about the holistic brilliance, mostly about its mistakes and gaps. And there are a lot of gaps - to write about them is easy but important.
During the recent years we have witnessed that the "wisdom of crowds" sometimes fails, that companies such as Daimler and BP rewrite their articles, or ,in the case of Chevron-Texaco and Microsoft, entire passages, that have been critical, disappeared. Also I think Wikipedias hierarchical structure is questionable* and the rule of neutrality, that implies that all articles must adopt a neutral position, very flexible. Still, paid advertisers and people on a hateful mission, are editing articles. Therefore volunteers constantly going through the current changes, delete nonsense and distortions from the knowledge pool. Control by the vandalism police. Sometimes that works, sometimes not. The discussion about facts and opinions can take months and produces sometimes an epic amount of text - arguing about neutral language, facts need to be proven by referencing to sources. Whole texts can be deleted or the editing page is blocked because it comes to mind bashing. There is so much bad in Wikipedia.

But still I maintain that Wikipedia saved my life. What would we do without it? I wouldn't have been able to survive my High school time, neither to graduate from my bachelor or to write this thesis.

Wikipedia is a wonder of the world - never before so many people have been created something like it together. Never before there was so much knowledge in one place. People order their knowledge together, global and free.

4 Conclusion

In my practical work I am researching how we acquire, participate and process knowledge on the web. I often find visual answers to the questions I have. For my graduation project "Vincent" I researched our reading behavior on the Web by analyzing peoples web browser histories. For my graduation project now I am again analyzing web browser histories - but this time my own to find out what kind of information I am looking up. I want to find out where this disappointment in the web comes from.

I noticed the following:
Most of the information I am looking up on the Web are really banal.
I am using the web to:

- stalk all people I meet
- learn how to play Back Gammon
- downloaded music
- to watch countless episodes of Grey's Anatomy, Girls and The Wire
- buy an incredible amount of train tickets
- witness the rise and fall of Julian Assange
- learn how to cook "Germknödel"
- find out what the best dutch film is, the most erotic film or the best film of all times
- learn everything about the european aristocracy
- check how the weather will be tomorrow, if the Albert Heijn is still open and to find out about the cinema program

The amount of different pages I am using is quite limited. The ideal of myself is better than the reality is.
I don't use the Web to:

- understand the financial crisis
- learn programming
- take a serious look into Wikileaks
- write one single comment
- inform myself better about the situation in Libya
- understand what is actually meant by the word post-humanism
- form an opinion about Barak Obama
- find out if i am a better person if I buy fair trade products
- find out how serious I should take the political situation in north korea

But I could have done that. Why don't I inform myself, why don't I use the web to become a smarter person?

As I said in the beginning I grew up believing that the web knows everything. I believed that the web would help me in finding answers to all questions I have. And now I am realizing that of course my questions can not be answered because I don't raise them.

I have to admit that it is not the web that is cheating on me - it's myself.
When the web conquered my life - it was directly connected to knowledge - I used the Web as an information tool. But now it has shifted from an knowledge tool towards an entertainment tool. Still I use it to look up information, but the kind of information has changed. (needs to be specified)

Just because knowledge is so easily accessible, it doesn't mean that I take it. This was the misconception. That I don't understand the financial crises is not due to a lack of information or that it is too complex for me to understand. I have to try to understand it and I am not. Because I don't want to.
For a simple reason: It is much more easy to watch an episode of "Game of Thrones" than to inform myself about a complex topic like the financial crises. This has always been the case and was promoted by every mass media. But I do have the feeling that distraction became more essential in the internet era. I want to look up one apple cake recipe - end end up reading 30 different because there is always another link to another apple pie recipe, one more, and one more and one more.

The link that gave me so much possibilities restrict myself on the same time because it pulls me into this infinite world of internet debris. Always only one klick away from another apple pie recipe, of another series of photos, of another music video, of another portfolio. The link

became my personal enemy - the enemy in the battle for banality. The banality multiplies to infinity on the web. I don't want to spend my time reading another apple pie recipe, to check another profile of a bored art-loving Berliner in his late 20s, I don't want to see another oscar speech. I actually want to inform myself!