Participation Literacy
Part I: Constructing the Web 2.0 Concept

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Abstract

The licentiate thesis is a piece of academic work under the theme of /Participation Literacy/. The thesis concerns the Web 2.0 concept construction. Web 2.0 is a new mind-set on the Internet. The main characteristics include "Web as a Platform", Collective Intelligence, Folksonomy and interfaces build with lightweight technologies such as Ajax. Web 2.0 is not only a technique, but also an ideology – an ideology of participation. A Web 2.0 service is completely web based and generally draws on open access. It includes tools for people to interact within areas such as encyclopaedias, bookmarks, photos, books or research articles. All Web 2.0 services are web communities. A web community is a group of individuals, linked together by a network of social relations with some degree of continuity. Community members learn from each other and the knowledge base of the community grows for every interaction. The core values of Web 2.0 are democracy and participation. The licentiate thesis is divided into four main parts and two appendixes.

The four parts constitute a foreword, a reading guide, a conceptual and empirical introductory discussion to the Web 2.0 concept; finally a series of constructions based on the Web 2.0 concept and the cyborg figure. Appendix I is a short conference paper called Technologically Navigating Cyborgs. Appendix II is a very short piece of fiction, written in Swedish. These appendixes comprise a background to the focus on the Web 2.0 and the cyborg concept.

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First of all I want to thank my wife Susanne and my supervisor professor Lena Trojer. You have both been a big help to me in different ways.

I also want to thank my family, friends and colleagues for all support: All of you at Technoscience Studies because of our invaluable discussions and you at the Library because you create an inspiring environment for new thoughts.

But I also want to thank all of you out there on the World Wide Web who participate in the creation of our new world. Among you I especially want to thank the people who work for open source and open access and you who actively produce intellectual material for me and everyone else to experience.

In twenty years or so,
We might have funerals in two worlds
Peter Giger 2006

Prologue

The licentiate thesis is divided into four main parts and two appendixes. The four parts constitute this foreword, a reading guide, a conceptual and empirical introductory discussion to the Web 2.0 concept; finally a series of constructions based on the Web 2.0 concept and the cyborg figure. Appendix I is a short article called *Technologically Navigating Cyborgs,* presented at the EASST conference 2004 in Paris. Appendix II is a very short piece of fiction, written in Swedish. These appendixes might be read as a background to my interest in the Web 2.0 and the Cyborg concept.

The following story is about me and my way to the concept Web 2.0. In this story there is a thread you could call the history of Social Software. The thread begins in the 1940's and ends in the Web 2.0 concept. It is not my goal to give an exhaustive and neutral history.

In his article *Tracing the Evolution of Social Software*, Christopher Allen traces the start of the evolution of social software with Vannevar Bush's vision of the memex machine (2004). Bush wrote: "A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory" (Bush, 1945). Bush's words sounds like my own effort to store all media in my computer. In 1945 though, media was mostly books, since the music and film industry were just in its infancy and computer games, audiobooks and the Internet-era's mountain of documents were still far away. It is interesting to note that the hardest thing to store is in fact books. One reason is difficulties in finding an acceptable DRM-model for e-books; another has to do with our endemic habits related to our long love for the book as a thing and not only a channel for information and knowledge. Few of us can imagine curling up in the sofa by the fire with a computer and some sort of a reading device, instead of the good old idea of a book we love so much. Still, media is

a very important factor in social software, as much of the socialising is about communicating navigational structures to different kind of media. Books are still the black sheep of digital media. All efforts so far have failed to integrate books - in a large commercial scale - in the family of digital media.

But now – in the beginning of 2006 – we might be on the verge of a paradigm shift in the distribution and reading of books (Helm, 2005). The success of the Ipod concept has inspired Sony to do something similar in the world of books . The reason I have for my belief is due to several different, but cooperating phenomena. In a technical perspective there is an emerging technique called E-ink, which promises great things for the printing industry. The E-Ink technique creates text by electronically arranging thousands of tiny black and white capsules, creating an experience remarkably similar to reading a printed page. The only time it drains power from the battery is in turning pages, which means a battery will last for a very long time – Helm says 15 books. In a social perspective we have a generation with new, digital habits. For them, the e-book is probably going to be a natural step in the evolution of digital media. The rest of us will also cave in to the digital alternative, since computers and other communication technologies have grown to be a big part of our lives, compared to just five years ago. Lastly, we have the Ipod marketing experience fresh in mind. The Ipod – Itunes distribution chain has succeeded in a great task in convincing buyers that their new digital product has 'invisible' benefits to the old analogue one, despite some seemingly convincible advantages for the analogue product – you can rip it to your computer and have a digital copy free of any restrictions. The price though is a heavy argument here. In Sweden, January 2006, a digital cd costs approximately 50% of the price for a cd in one of the cheaper Internet shops. This price depends on the competition to Itunes raised in the digital music industry around the shift of 2005/2006. Helm says e-books in the Sony project are going to cost like a mass market pocket book, and the reading device will be at the same price level as the Ipod. Only time will tell if this project is going to find the key to unlock the consumers' good old reading habits. We could talk about a new era when the digital book sale surpasses the sale of the more than 500 year old Gutenberg book, though it is not impossible that the role of the text has already passed and that the future belongs to other narrative forms. In twenty years or so, a thesis might not consist of a single letter. Perhaps new academic forms will develop with images and voices as point of departure.

Books and other traditional text formats have always played a big role in the evolution of social software. Books are the blueprint of storing information and communication. Sending letters is the blueprint for long distance communication. Books and reading experiences, along with music, film and games, have always been an important subject in the messages of social software. I have dealt with e-book's since the end of the 1990's.

Returning to the 1940's and Vannevar Bush's memex device, there are parts in the text reminding of social software and the hypertext nature of Internet:

> Wholly new forms of encyclopaedias will appear, ready-made with a mesh of associative trails running through them, ready to be dropped into the memex and there amplified. The lawyer has at his touch the associated opinions and decisions of his whole experience, and of the experience of friends and authorities. The patent attorney has on call the millions of issued patents, with familiar trails to every point of his client's interest. The physician, puzzled by its patient's reactions, strikes the trail established in studying an earlier similar case, and runs rapidly through analogous case histories, with side references to the classics for the pertinent anatomy and histology. The chemist, struggling with the synthesis of an organic compound, has all the chemical literature before him in his laboratory, with trails following the analogies of compounds, and side trails to their physical and chemical behaviour. (Bush, 1945)

Bush's term 'memex device' never gained wide acceptance and the whole concept was way before its time. After Vannevar Bush, Christopher Allen jumps to the 1960's and the rising of ARPA (Advanced Research Projects Agency; formed 1958), which later formed ARPANET, which in its turn led to the Internet. In 1962 Dr. J.C.R. Licklider was appointed to head ARPA. He was going to have a profound influence on the emerging academic subject of computer science. In the article *The Computer as a Communication* Device Licklider says: "There has to be some way of facilitating communication among people without bringing them together in one place" (1968, p 34). This single sentence says much about the last 50 years of endeavours in the field of computer technology.

In Sweden we had an education subject called ADB (Automatisk Databehandling), which means Automated Computer Processing. The subject was called ADB from the early stages of computer science to the Internet age in the middle of the 90's – the subject is still called ADB in some educational institutions. The concept automation originates from the ARPA researcher Doug Englebart's concept 'augmentation' from his seminal work: *Augmenting Human Intellect: A Conceptual Framework* (1962). In the introduction he explains 'augmentation': "By 'augmenting human intellect' we mean increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems" (p 7). Engelbart was among the first to argue that in order to design tools for augmenting the human intellect we must integrate psychology and organizational development with advances in computing technology. This interdisciplinary approach disappeared later when the term 'augmentation' became 'office augmentation' and later in the 70's 'office automation' (Allen, 2004).

"Yet the number of successful product lines bearing the tag 'office automation' did mean that there was increased research money for creating new tools. One of the most important was a project called Electronic Information Exchange System (EIES). [...] EIES was the first major implementation of collaborative software" (Allen, 2004). In the paper Delphi Conferencing: Computer Based Conferencing with Anonymity (1972), the founder of EIES, Murray Turoff, describes the system in terms reminding of modern collaboration systems: threaded-replies, anonymous messages, polling, etc. Though Turoff envisioned something similar to modern collaboration software, it was in the 80's the implementations took off to form today's conception of social software. In the late 70's Peter and Trudy Johnson coined the term 'Groupware' as "the combination of intentionally chosen group processes and procedures plus the computer software to support them" (Johnson-Lenz, 1989). The term groupware existed basically in academic settings until the end of the 80's, when Robert Johansen wrote the best-selling business book Groupware: Computer Support for Business Teams (Johansen, 1988). The surge from the book transformed the concept of groupware from a relatively unknown term which only lived in certain academic contexts, to a buzzword in marketing and a in a broad techno sensitive public. This led to an interest in the concept from companies such as Lotus and Microsoft; both Lotus Notes and Microsoft Outlook have been called Groupware. You can keep that in mind when you read about the concept Web 2.0 below.

In the 1970s there was the Electronic Information Exchange System (EIES). According to Christopher Allen EIES was the first major implementation of collaborative software (2004). EIES had many of the features of BBS- style community software that we see today, but in a primitive form.

From my viewpoint, it was in the 1980's everything happened at once. The PC was introduced to the world. Groupware continued to evolve. New social software approaches were developed. Among them a technique called Collaborative Filtering. The term was not actually expressed

before 1992 – that I know of. It was coined by Dave Goldberg and his colleagues at Xerox PARC (Goldberg D, 1992). It was also in the 1990's the technique became known in a wider context. With Collaborative Filtering, we have the real starting point for the Web 2.0 concept. I will follow this line of development soon, but first I want to introduce my own starting point in the world of computers.

It was in the 1980's the computer became a real concept for me. The first computer I owned was an 8088 PC in the beginning of the 1980s. This was the time just before the hard disk and the computer mouse. Advanced computer graphics was two lines crossing each other on the black screen. Still, this PC was sensational. Earlier I had used computers such as Commodore and ABC 80 and older persons I knew talked about computers with the software on punch cards. By comparison with that my PC seemed very advanced. My interest focused on art and literature in those days, and in some way I had persuaded myself that a computer would add something to these activities.

My approach to literature was to follow certain concepts through one or several authors' work. In literature research these concepts are called themes, motifs, symbols or metaphors. It would be splendid to get masses of text into the computer and do comparable searching to find spots for closer reading and thereafter find relations between different concepts over space and time. As if this was not enough, I wanted to find a way to transfer my interest for oil painting into the computer. When I had spent some time with this PC I understood my intentions were a good laugh, nothing more.

The next generation of computers I owned was called 286, after the processor name. Now the computer had mouse, hard disk and a rudimentary Windows. This was the first computer I worked on which could deliver things I did not have to program myself – objectively speaking this was not true. Perhaps the 286 computer in the end of the 1980's is the first in the generation of computers we are using now in 2006. Only 15-20 years have passed and now I feel strongly that we are on the verge of a new step in the man-computer evolution. This step is based on a wide array of things. Some of these things are about hardware and software, but the most important things are about people. Using distance as metaphor, you could say that the distance between man and computer has been closing up for every year since the first computer was "born". I use the word cyborgization process to describe this closing gap between man and computer. I feel quite assured that some day man and computer will be integrated. I am not sure the integration will be physical though. I do not think our skin and the air around us is such a strong border as you might believe. I do not think a tool is more me just because it is operated into my hand and connected to my brain. I do think feelings like love, joy and passion are at least as strong connectors as artificial connections to my brain.

In the middle of the 1990's I went on a new journey with my travel mate, the computer. I discovered the path I am onto right now; the path of Web 2.0. This was almost ten years before the concept Web 2.0 was coined. Still, the concept I met was to be the core in Web 2.0 - Collaborative Filtering. Collaborative Filtering is basically a set of algorithms, which use people's choices, habits and paths to create recommendations. If I show the system I like a certain music artist, I might get recommendations on similar artists. The point of collaborative filtering is to create relations between users with similar preferences in order to present recommendations.

I saw, and still see, Collaborative Filtering as a start of hybrid entity comprised by flesh, metal and metaphors. I saw collaborative filtering entities turning into a completely different way of life in a near future. After a time, these rather romantic notions were divided in two streams - one stream of praxis and one of theory. These streams were intertwined but none the less distinguishable. One led to a more user oriented urge to use these practices in my daily life

and one stream led to a more epistemological interest. These streams are still alive in this thesis and you will notice them.

Two of the many articles trigging my interest were David Maltz' and Kate Ehrlich's *Pointing the way: active collaborative filtering* (Maltz, 1995) *and Running Out of Space: Models of Information Navigation* (Dourish and Chalmers, 1994). Dourish and Chalmers lead to the next step in my evolution towards Web 2.0. It is not about Collaborative Filtering, but Social Navigation. These two subjects lived parallel lives for many years, and still do to some extent. My notion of the difference between these two computer science subjects is that they are two sides of the same coin. Collaborative Filtering has evolved to be mostly about mathematics and programming, while Social Navigation is mostly about interface and collaboration research (HCI and CSCW)[1]. Since I do not have disciplinary knowledge about these academic subjects, it is self-evident that these thoughts are only my personal view. Especially Social Navigation is an interdisciplinary research subject, which also includes actors from information science, artificial intelligence, social psychology and so on. The book Designing Information Spaces: The Social Navigation Approach (edited by Kristina Höök, David Benyon and Alan J. Munro) (2003) gives a very good overview of the field.

Both Collaborative Filtering and Social Navigation are at the core of the Web 2.0 mindset. But after some time I felt stuck. I could not find the political, ideological dimension I needed to nurture my interest. This was about 2002-2003. At this time I started my graduate studies at Technoscience Studies at Blekinge Institute of Technology. I already worked as a librarian at the same university college and my aim was to find a form for these practices to act together in some way. It was more difficult than I could imagine and this difficulty was only inside me. Both the Library and Technoscience Studies are into horizontal thinking. The transdiciplinary approach at Technoscience Studies was one of the things that attracted me most about going into graduate studies.

The first text I read in my graduate studies was Donna Haraway's book *Simians, Cyborgs and Women* (1991). This book includes her most famous texts *A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century and Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.* These articles are among the first of Haraway's major publications and they are still the most well known. They have got wide recognition and both articles are published on the Internet[2]. These articles echoed in me and found epistemological friends among other thoughts in philosophy and literature I had pondered on many years before. The Cyborg figure and the thought of knowledge as situated are still two of my most dear companions.

The next concept in my evolution towards the Web 2.0 concept was folksonomy. This was sometime around 2004/2005. At first it passed me by as an interesting phenomenon, but it did not really sink in. But somewhere by the end of the summer 2005 I saw the word briefly written in a mail from one of my colleagues (Thanks Anna!). It trigged something in me even though I hardly remembered what it meant. Folksonomy belonged to the same context as Collaborative Filtering and Social Navigation, but it had what I was searching for - ideology and politics. It was about democracy and non hierarchical thinking. I will return to folksonomy in more detail later.

Directly after I started to do research about folksonomy I bumped into the concept Web 2.0. Web 2.0 engulfed the concept folksonomy, but contained even more exiting possibilities. Web

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[1] HCI means Human Computer Interaction; CSCW means Computer Supported Cooperative Work.

[2] A Cyborg Manifesto: http://www.stanford.edu/dept/HPS/Haraway/CyborgManifesto.html
   Situated Knowledges: http://www.hsph.harvard.edu/rt21/concepts/HARAWAY.html

2.0 is what I wanted Collaborative Filtering and Social Navigation to be, but could not find in those concepts. It is a new way of thinking about information, knowledge and people. I am quite sure it will change the view of many of our most dear concepts such as the document and the file, but it will also have impact on more profound questions such as what is a human, what is identity and what is knowledge.

Finally in this foreword some words about knowledge production. I want my knowledge production to be created in application (and implication) contexts, and not in a framework of social norms. I always had trouble understanding the term *method*, since I interpret it as "how" in the context of a particular situation, and not "how" according to a readymade framework. In this understanding, the concept of transdisciplinarity is essential. This is important for the understanding of my work. The concept transdisciplinary does not only address academic disciplines. It is also questioning borders between academic settings and the society we are integrated in. Knowledge wants to be free. Knowledge does not want to be contained within borders like this. I do not believe that traditional borders and frameworks produce better knowledge. Neither do I think established methodological frames can filter knowledge from unnecessary context. Context is rarely unnecessary and points of context can only be removed by addressing the context as a whole. Knowledge production should be distributed by thinking of society as an integrated whole, and not as separate parts as government, industry, academy and subparts as natural science and social science. Transdisciplinary is both a working layer and a distribution system for knowledge. (Gibbons, 1994), (Nowotny et al, 2001)

Part I - A Reading Guide

Every journey needs its travel guide, but some journeys might be easier if you have a helping hand guiding you through and contributing to your experience. This reading guide is my contribution to making our relation in the reading process of this licentiate thesis as constructive as possible.

The Structure

My graduate work is a series of two parts: Part 1 is this Licentiate Thesis and Part 2 is the main work. The series of the two works is called *Participation Literacy*. The Licentiate Thesis is therefore a work in itself, but at the same time it functions as a base for the "big thing" later on. This structure seemed natural since the area I am writing about is so new that very few know anything at all about it. This called for a special structure in the licentiate thesis.

Part I – A Reading Guide is about the context of this text: my background, the texts' own background, my approach and how the structure works. It is about the roots and the surroundings of this text. This part is short but quite essential and cannot be cut off, if my intentions are going to have a chance in the communication.

Part II – A technology based analysis of the Concept Web 2.0 is a conceptual approach to an emerging trend on the WWW. This is an analysis of something you could call a new mindset. In social sciences new mindsets are often rhetorically created, like the discourse of postmodernism vs. modernism. In some senses the discourse of Web 2.0 vs. Web 1.0 is built up in the same structure as the postmodernism discourse. The difference is that the Web 2.0 discourse is limited by its natural borders: the protocols and standards building up the ICT (Information and Communications Technology) layer of the world. The Web 2.0 discourse is also very new and immature. The

participants in the discourse have just started to formulate the concept and this formulation is a critique on Web 1.0 environments. The critique is mostly implicit though, and Web 2.0 has inherited many of the negative structures of Web 1.0. First and foremost both the discourse and practises of Web 2.0 include mostly young to middle-aged western males. Since it is a about expensive technology with broadband Internet connections as the very grounds of existence, it excludes huge amounts of people with low income or people living in areas outside the "broad band belt" of the world.

Despite these problems belonging to practically all technology, I see exciting possibilities over the next decades. I will not pretend the thesis to be a detached and objective analysis. I do not believe in detached research. For me technology can never be detached. Both technology and research are ideology. See (Latour, 1998).

> Finally, technoscience is more, less, and other than what Althusser meant by ideology: technoscience is a form of life, a practise, a culture, a generative matrix. Shaping technoscience is a high-stakes game. (Haraway, 1997)

Technoscience is a game, a very serious game and gaming is not a detached activity cleansed from ideology.

My aim in this part is to start a discussion of Web 2.0, in areas where the concept is not rooted yet. My target group is both the research community in large, and professionals in the society as a whole. With professionals I mean persons working in the world of education, librarians, computer specialists etc. This part is meant to be a technological analysis and the beginning of a discussion of a phenomenon in technology and society. This phenomenon called Web 2.0 will probably change our view of ICT in the years to come.

The knowledge in this Part is absolutely essential to understand the discussion in Part III. If I had not written this part, Part III had been impossible. Still, this part is written to stand for itself.

Part III – Starting the discussion about Participation Literacy is a construction based on stories in Part II and technoscience theories and methods. In this part I construct the Native Web cyborg. This figure is very much about irony and is supposed to bridge the gap between humans and technology. My cyborg figure, though, is not based on human flesh meeting the synthetic materials of technology. My cyborg figure is more about the relation between humans and the synthetic space we construct for ourselves. My figuration does not start with the assumption that technology has to be wired to our nervous system to be called cyborg. There are other strong connectors, namely the social.

This part represents the closure of the licentiate thesis and the beginning of my main thesis. I end the construction of the Web 2.0 concept and start the discussion of its complex theoretical layers. The very last section before the appendixes deals with participation literacy more specifically.

Transdisciplinarity

As I mentioned in the foreword, the transdisciplinarity approach is essential for me. Some knowledge of the transdisciplinary is also essential for your understanding of this thesis.

There are several concepts for describing border crossing qualities in research. Trojer (1997), (2001), lines them out as follows:

Multi-disciplinarity or pluri-disciplinarity means that two or more disciplines are involved to solve a specific research problem. The level of integration and synthesis among the disciplines is sparse. This mode of research does not provoke the participating disciplines.

Interdisciplinary research means that it is impossible to divide the research problem into clearly defined disciplinarily parts. The level of synthesis is noticeable, both methodically and theoretically. This mode of research is more provoking to the mother disciplines, since the impact of disciplinary change is obvious.

In **Transdisciplinary** research, the solution of the research problem is placed beyond disciplinary thinking. Transdiciplinary research creates and maintains its own framework of methods and theories in the specific research context.

In The Potential of Transdisciplinarity, Helga Nowotny place transdisciplinarity in the context of a concept called mode-2, or a new way of thinking about research (2003). She identifies an array of attributes for the concept mode-2 and, transdisciplinarity is a key actor in this concept:

> The third attribute of Mode-2 is transdisciplinarity. If we had intended to use the term´ multi-disciplinarity or pluri- disciplinarity, we would have done so. Rather, we have chosen transdisciplinarity for a reason. What we were trying to convey by the notion of transdisciplinarity is that, in Mode-2, a forum or platform is generated and it provides a distinctive focus for intellectual endeavour, and it may be quite different from the traditional disciplinary structure. In a Mode-1 system, the focus of intellectual endeavour, the source of the intellectually challenging problems, arises largely within disciplines. This may still go on, but other frameworks of intellectual activity are emerging which may not always be reducible to elements of the disciplinary structure. Rather, it is in the context of application that new lines of intellectual endeavour emerge and develop, so that one set of conversations and instrumentation in the context of application leads to another, and another, again and again. (Nowotny, 2003)

In the *New Production of Knowledge*(1994), Michael Gibbons et al. created the concept mode-2 to describe a change in the research society. Mode-2 is not to replace mode-1 (traditional research). Mode-2 is different in most aspects. Problems are not set within a disciplinary framework, but operate in the context of application. It is transdisciplinary rather than mono- or multi-disciplinary, and carried out in non-hierarchical, transient, heterogeneously forms. Mode-2 is not carried out primarily within university structures. It involves close interaction of many actors, which means that knowledge production is becoming distributed and more socially accountable.

All this is very important for my dialogue and the mode-2 approach has many similarities with the Web 2.0 concept. These concepts have been created for the purpose of describing a change in a technosocial network. The Web 2.0 concept is also transdisciplinary as it is not confined to the computer science community, but has given birth to new thoughts and applications in many areas, such as within the field of information and library science. Web 2.0 is likewise non-hierarchical, heterogeneous and transient. For me both Web 2.0 and mode-2 are phenomena induced by a poststructuralist society.

Mode-2 knowledge production is important in my context, and can be used as an explanation to the different parts in the thesis: Part II which is aimed more to professionals and Part III which is aimed primarily for a research context, where the cyborg figure as a rhetoric tool does not seem too alien.

I wish to stress two issues. One - this text is not an argument against disciplinarity and mode-1, it is an argument for transdisciplinarity and mode-2 as a basis for the understanding of Web 2.0. My way of viewing myself and society is in the context of the contemporary and the postcontemporary. I agree that we must know the past to be able to form the future – perhaps, but I think there is an imbalance in society – and research – to deal more with the past than the future, when it should be the other way around. I think this view is a prerogative to be able to understand the mechanisms behind this text.

The other issue I want to stress is about the soapy border between science and research. Mode-2 is not about science. Mode-2 is about research.

> In the last century and a half, scientific development has been breathtaking, but the understanding of this progress has dramatically changed. It is characterized by the transition from the culture of "science" to the culture of "research." Science is certainty; research is uncertainty. Science is supposed to be cold, straight, and detached; research is warm, involving, and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions, and emotions; research feeds on all of those to render objects of inquiry familiar. (Latour, 1998)

This quotation from Latour is so important that I am actually citing it two times in this text – repetition is a rhetoric tool that is often misunderstood.

Feminist technoscience and The Cyborg figure

This thesis is a technoscience construction, which will be more explicit in Part III, where I will also discuss my approach to technoscience. In this short section I will make a note about the gender approach in the LIC.

> One of the two general focuses in gender research is the knowledge processes, theories and methodological approaches of science. It is this identification that is of particular interest at a technical faculty and which is one of the main starting points for our technoscientific gender research.
>
> The other main general focus of gender research is women / men / sex / gender / gender and power relations. However, gender and gender relations are not as self-evident as objects of study within technoscience as they are in, say, social science.[3]

As Lena Trojer writes in the quotation above, one of the main agendas for gender research within a technical faculty is about epistemology (see i.e. Wagner 1994, Barad 2003, Haraway 1997). This thesis operates within that frame. Men and Women are not primary categories here, knowledge is. The base, context and practises of that epistemology are presented and discussed in Part II. The construction is done in Part III by creating the Native Web Cyborg figure. I will be more explicit about technoscience and the cyborg figure in Part III.

Approach

I have always had a conceptual approach to intellectual material, which might be seen as a background for this text. I often think of language as a multidimensional map of concepts with material-semiotic relations connecting them in various ways. Concepts are constantly in the process of construction. A concept's denotation is embedded in a multitude of connotations. I believe this tension between denotation and connotations is very productive. My approach to the Web 2.0 concept starts from this point of view. Another researcher with a preference for concepts is Robert Young.

> Looking at the value laden aspect of scientific concepts has become a fruitful line of enquiry among critical historians of ideas. This opens the door to looking at the ways ideology — value systems representing power relations — constitute research agendas and valorise key concepts. Functionalism in the human sciences is an excellent example, as a number of scholars have shown. Donna Haraway has done so with great force and eloquence in her magisterial *Primate Visions: Gender, Race and Nature in the World of Modern Science and her essays, Simians, Cyborgs and Women: The Reinvention of Nature*. She is, in my opinion, the foremost practitioner of the analysis of scientific concepts which touch on our humanity, and her writings show the integration of science, society and ideology. They are conceptual research at its best. (Young, 1995)

[3] http://www.bth.se/tks/teknovet.nsf/pages/af598cf74a97d615c1256e2e002ed85d!OpenDocument. Viewed: 2006-03-26. Cache 0031

Reading Young's article was some sort of confirmation for me. Here I met another researcher who used the concept approach explicitly and saw Donna Haraway as one of the great in conceptual research. This is a mirror of my thoughts when I read Haraway the first time. A large part of her approach is to create concepts like the Cyborg, Situated knowledge and the Coyote and discuss them in the context of application. I view concept research as an application of semiotics.

Since I am an information professional the concept approach is closely linked with information searching. The constant search for information is a substantial part of my research process. Information searching is a *conceptual process*. Search terms are conceptual doors to the information and knowledge. Advanced (i.e. Boolean) information searching is a simplistic mimic of our rational thinking process. We identify the concepts, the relation between them and the context they belong to.

Some issues

1. This might shock you if you have a traditional view of a librarian, but **I find paper based information hopelessly dysfunctional.** Traditional ways to publish research texts are by paper and now also PDF. The PDF format acts mainly as a source for printing. Both these forms are very static. I would like to se the main form of research texts published in polylogue environments similar to wikis, where research texts are viewed more like evolving collaboration entities with the original research text as a start of collaborative knowledge. I do not mean that everyone should have rights to edit the text itself. A Web 2.0 document is much more than a traditional document with its hyperlinks, comments, rankings, trackbacks and pingbacks.

This text is a Web 2.0 document. If you are reading it in its primary environment on the Web, it will be hyperlinked and open for participation (discussion). If you are reading a closed version such as the paper book or a print out of the PDF, I urge you to read it actively in close contact with a Web environment. Links are provided in one way or another in all versions. Words you do not understand should be easy to look up in a search engine or encyclopaedia. If you are suspicious of my interpretation of a word, please look it up and participate with your own understanding. By participating in this way, you actively promote the spirit of this text.

2. This thesis works with different styles, all from the very banal to the very complex. There are two reasons for this. 1) This is how I am. 2) The Web 2.0 practices and theories move along this wide continuum. It starts with seemingly trivial functions in software practices. The usage of these practices induces a network of increasingly complex theories. I am only in the beginning of this process.

3. My argumentation might be too enthusiastic sometimes. This is also who I am and the context of this text would be diminished if I tried to hide this. I want my person to be visible in the text, since I am a significant part of the context.

4. These issues are based on my view of Situated Knowledge (Haraway, 1991). Knowledge is always contextual and situated. This means that I cannot erase myself from the text. I am always in the centre of my text.

5. Some wise transdisciplinary researchers have a **Glossary**, for example John Law (2004). I guess this is almost necessary since some transdiciplinary texts address a wide community of researchers, not necessarily with the same terminology as the author. Instead of having a glossary in the paper and PDF forms, I am going to spend my energy on the primary wiki form, which will be **hyperlinked** both within my own text and the outside world. The hyperlinked research text is a form, which is starting to mirror the nature of research texts. Research texts have always been hyperlinked in an abstract sense with its explicit quotations and references, and the implicit intertextual qualities. There will be more about Intertextuality in part III.

6. Since I am using a lot of material from the Web, I have saved every cited page in PDF format. This is because the Web continuously changes. If you want to see the original page I quoted, just mail me the **cache number**, i.e. cache 0001. The cache number is stated in relation to the reference in the footnote or in the reference list.

Disclaimer

The Web 2.0 concept and all its subconcepts work in the context of technology and obviously have the same shortcomings as other forms of technology. Web 2.0 is the front of Web technologies and therefore should have more shortcomings than more established technologies – though I am not sure that is the case. We also have to take in consideration that Web 2.0 technologies are in the front of social interaction through technology. All this gives shortcomings as:

- Broadband racism (those without broadband are out of the picture).
- Women are few.
- Elderly people are few.
- Poor people cannot afford the equipment.
- Technology in itself can be scary.
- Some examples of this technology might not be easy to use for disabled people.
- If you are a dyslexic, you might find this technology not to be perfect for automatic reading applications.
- Since participation in the Web 2.0 sense is an addition to your already packed calendar, you will obviously have to cancel other tasks. But that is the nature of life. We all have to choose :-)

I hope this thesis will inspire other researchers to address these kinds of questions, either by criticising this thesis or in Web 2.0 criticism articles. Without critique research is pointless.

Part II – Building the Concept Web 2.0

Starting a Position

Definitions are means to end discourses; someone in power is telling those with less power that the discussion is over. Since language always changes, there is no way to stop a concept in time and space, from changing, from developing. All definitions are therefore situated to the context belonging to the person or the organization standing behind the definition. As long as we do not take definitions too seriously, they can be valuable as building blocks in one's own idea of a concept. With these words in mind you might get something out of these short definitions of the concept Web 2.0

> Web 2.0 is a series of best practice oriented to assist people create dynamic websites, which allow them to easily connect with various communication, services, social and web tools. That is the foundation of what web 2.0 is. (Mann, 2006)

> Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences. O'Reilly, 2005B)

If we picked out the keywords (or tags) from these definitions we would get a starting point for a wider discussion about the concept.

```
Web 1.0                                Web 2.0
        DoubleClick    -->    Google AdSense
              Ofoto    -->    Flickr
             Akamai    -->    BitTorrent
            mp3.com    -->    Napster
   Britannica Online    -->    Wikipedia
   personal websites    -->    blogging
               evite    -->    upcoming.org and EVDB
domain name speculation    -->    search engine optimization
          page views    -->    cost per click
      screen scraping    -->    web services
           publishing    -->    participation
content management systems    -->    wikis
   directories (taxonomy)    -->    tagging ("folksonomy")
           stickiness    -->    syndication
```

Figure 1: Brainstorming session between O'Reilly and MediaLive International (O'Reilly, 2005)

The concept of Web 2.0 was coined at a conference brainstorming session between O'Reilly and MediaLive International 2004 (Figure 1)(O'Reilly, 2005). The background was a discussion about the dot-com bubble in the fall of 2001; in what way it was a turning point for the Web. They noted that far from having "crashed", the Web was more important and had more users and more exciting applications than ever. The companies surviving the dot-com collapse seemed to have certain parameters in common, which led to the thought that the dot-com collapse could have marked some kind of turning point for the Web, and the new things rising from the ash of the phoenix, could be grouped and called Web 2.0 as a contrast to companies before; which then would be called Web 1.0. The agreement among them led to the Web 2.0 conference. Since then the concept has grown enormously. Searching Google on the phrase "Web 2.0" 2006-01-28 gave 33 500 000 hits in the languages English, Swedish, Danish and Norwegian.

The chart in Figure 1 is not a dichotomy. The boundary between them is loose and some of the phenomena depicted in the left column have one or more characteristics in common with those on the right hand side. In some sense, it reminds me of the many charts of the border between modernism and postmodernism. The similarity is not only because both of them are boundary descriptions between some phenomena, which can be thought of as the old way and the new way, but because some of these phenomena coalesce. There is for example a basic thought of decentralisation in both Web 2.0 and postmodernism in relation to their counterparts. Loosely one could say Web 2.0 is the postmodernity of the Internet – though that relation has to be taken with a pinch of salt.

360° Marketing Expertise

With over 2000 successful implementations, DoubleClick is the preferred partner of leading companies worldwide for a full range of multi-channel marketing solutions.

Figure 2: DoubleClick
http://www.doubleclick.com/us
Viewed 2006-01-28. Cache nr:0002

DoubleClick is one of the main players in Internet marketing. They harness the power of software as a service and were developing Web services long before the concept got its name. But according to Tim O'Reilly they are ultimately limited by their business model. DoubleClick's business model "bought into the '90s notion that the Web was about publishing, not participation; that advertisers, not consumers, ought to call the shots; that size mattered, and that the Internet was increasingly being dominated by the top websites as measured by MediaMetrix and other Web ad scoring companies" (O'Reilly, 2005). Their website contains a proud announcement of having over

2000 successful implementations (Figure 2); by contrast Google AdSense has, according to O'Reilly, hundreds of thousands. Google themselves mention the number 150 000[4].

DoubleClick's word "implementations" and O'Reilly's and Google's information about Google AdSense might not be completely comparable. Companies like DoubleClick stands for the intrusive ads jumping upon the Internetians (people inhabiting the Internet), in the shape of banners and pop-up windows while Google AdSense stands for the context relative text ads sneaking upon you practically everywhere on the Internet. There is a way to compare these two in an evaluating way, perhaps besides the implementation statistics above. For me as an Internetian they are both, perhaps, necessary but still annoying obstacles in my quest of knowledge. Banners and pop-up ads disturb my attention, but they are at least honest. Google's strategy is more devious. Often it is hard to separate the information on a page from spam – advertising is of course a form of spam. Still, I do not believe in an entirely non-commercial Internet. The commercial and open source movements have to coexist and the best commercial services are even able to make these concepts coexist within their own business models, such as Amazon.com with their layer of user participation.

Ofoto is a photo gallery (since 2001 Kodak Gallery) according to the streamlined model: "upload your photos and share with your friends!" The whole idea with Kodak Ofoto is to sell prints – and in a wider sense marketing. They have not really invited their users to participate in the same way as, for example, Amazon.com, and their service is encapsulated besides the most obvious functions such as viewing pictures other people want you see. Flickr, now a Yahoo company, is mainly about participation. One could view Flickr as a photo sharing community. With tagging, comments, blogging-possibilities, community building tools, RSS and other connecting technologies Flickr is one of the best examples of Web 2.0.

As a single example Britannica Online vs. Wikipedia is striking. Britannica online represents the formal expert's absolute power over the masses, and absolute control over the information they distribute. Britannica online has inherited the soul from Diderot and the other French encyclopaedists at the peak of the enlightenment; the perfect hierarchy with the knowing experts at the top of the human pyramid and the rest of the people as ignorants. In the eighteenth century this was quite true, and nowadays and forever, I suppose, there is some truth in it. The difference now, however, is that information and knowledge is distributing itself in non-traditional ways. Perhaps it is not appropriate to give knowledge the role of a self organizing entity, but the fact is that the distribution of knowledge is more "distributed" now in the information era than ever before (Nowotny, 1993). There are people out there with astonishing knowledge in areas earlier generations would ascribe none but academics - just because I have a bachelor's degree in Literature history this does not mean that I know more of the works of James Joyce than the person who vacuums my office. It is not even possible to talk about autodidacts any more, due to the shifting views in both pedagogy and accessibility of information. These shifting views give non academics and non experts, (formally), the same information as experts have, and possibilities to connect to academic networks without being an academic.

Wikipedia is the ultimate image of trust. On the other hand it is important to understand there is more to it. Wikipedia has a sophisticated version of management system. As soon as someone posts something disagreeing with the collective intelligence guarding the interest of the Wikipedia knowledge community, it is placed in a kind of knowledge limbo. If it is a clear piece of abuse, or likewise, it is simply erased, sending the former state of the article to the front.

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[4] Google AdSense Case Study. https://www.google.com/adsense/wifinder. Viewed: 2006-01-28. Cache nr: 0001

Wikipedia has many problems, and probably more to come, but it is one of the best examples of participation, harnessing the collective intelligence, and thus one of the most significant examples of Web 2.0.

One of the most buzzed words on World Wide Web is blogging. O'Reilly (2005) places blogging as the Web 2.0 contrast to the personal home page. Many of us who remember the first years of World Wide Web, recall the hits we got searching AltaVista or Lycos. I remember stumbling on fearsome examples of personal home pages with disgusting "undesigns" of people's first steps with the creation of a home page for the family, or the counterparts by small companies. It was a time when design and content often seemed to choke under its own weight. Blogging is both a reaction against that and in some sense a reinforcement of it. In general thought, it might be seen as a pure communication and knowledge gaining tool, leaving the design to experts. Home pages have always been a kind of bulletin board with information shaped by short but effective traditions on the World Wide Web, such as an "about page", a "link page" etc. Gradually it became more and more disgraceful, or even shameful, to have a personal home page of the kind we saw in the beginning of the World Wide Web – i.e. private homepages with pictures of your kids, the dog and the Volvo and so on.

And then everything seemed to be reversed. Suddenly we saw the private sphere taking its place in media, and many Internetians started their own diary trying to put the private sphere forward to public. Reality TV built some kind of bridge between the stars and "ordinary" people, showing stars just like you and I, and that you and I could be a star, without having some kind of expertise or being born into the right context. We seem to leave the diary age, when it comes to blogs anyway, establishing ourselves as knowledge fighting people striving for the right to our own voice in the knowledge society. Most of the diary bloggers in early 2006 are journalists in "show business" trying to find their own voice in this sea of extremely relevant voices. The blogging community starts to gain relevancy in both journalism (this is quite known) and in academic circles (this in not so quite known). The academic community will probably change a lot the coming years because the boundary between the more intuitive blogging and the regulated academic contexts is going to be blurred. My own behaviour when it comes to reading blogs, does not follow any bloggers as persons. I have several applications helping me to harvest the more interesting parts of the academic blogging community. It stands to reason that most academics could not create showers of daily deep-thoughts. Because the blogging communities demand almost daily activity, it also stands to reason that only a part of their postings are up to normal academic standards. And still I constantly stumble over blog articles which could easily be taken as academic with a little more attention to the reference management.

The most striking phenomena in O'Reilly's Web 2.0 illustration is, perhaps participation. Participation in various communities, and in various ways, all over the world, is certainly some kind of road to the future. With participation I mean communication within some of the many communities on the Internet. It might be a person blogging current topics or commenting books on Amazon.com, or it might be a person searching in a price comparing community to save some euros on a certain product. Participation is becoming the soul of the Internet. Perhaps you could say that an Internetian is valued by their degree of participation, instead of their wealth, clothes etc.

The last phenomena I am commenting in O'Reilly's chart are stickiness and syndication. Web syndication is a form of syndication in which a section of a website is made available for other sites to use. Syndication usually means the possibility to subscribe to the information flow of a website via RSS feeds. Syndication started in the blogging community but is now spread to

most big Web sites and practically every CMS (Content Management System) has implemented RSS syndication. One way to use syndication is to read the information flow from several websites in applications called RSS aggregators or RSS readers. RSS feeds can also be used to build applications based on the information from the feeds.

Stickiness is a Web marketing term used to measure the amount of time spent at a site over a given time period. A website with stickiness as point of departure is like a spider Web, where the whole point is to catch the prey. It does not have to be a conflict between stickiness and syndication, but now in the beginning of the Web 2.0 era it seems difficult for commercial companies to balance their information flow. Amazon.com has a form of syndication where it is possible to use their album covers in other applications. Practically all commercial news papers have syndication services for their articles, which makes it possible to read small parts of each article in RSS readers. RSS services are still to find their place in the commercial part of the Internet.

A website often mentioned as some kind of symbol for Web 2.0 is Delicious (http://del.icio.us) – often together with Flickr. Delicious offer syndication to practically all information on their site, which has led to a large amount of applications and services, built on top of that information. Delicious' context (users, links etc) is becoming enormous due to their generous syndication policy. In the middle of December of 2005 Delicious was acquired by Yahoo who earlier that year also had acquired Flickr. Both of these acquisitions are interesting phenomena since Yahoo themselves had services in the same branches as Flickr and Delicious. At this time Yahoo has owned Flickr about ten months and I cannot see any negative consequences. Yahoo's actions with Delicious and Flickr will have large effects on the future of the Web. For example, will Yahoo let Delicious and Flickr remain as stand alone services or will Yahoo try to integrate them more in the Yahoo family of services. You can see it as a commercial actor buying two of the largest open source communities. How will they integrate these two actors into their business model? Flickr and Delicious have survived by being bought by Yahoo, but if they do not generate any money, what is their base of existence for a commercial actor?

Looking a bit closer at Delicious and their Yahoo counterpart (Yahoo Bookmarks), the differences are mostly about Yahoo's reluctance to let the information out of their sight. Yahoo had a Web bookmark service, according to the Web 1.0 model for some years, called Yahoo Bookmarks. But in the middle of 2005 they decided to surf the wave of the Web 2.0 concept and launched an application called "Yahoo Web 2.0 Beta". This is not a bad application and some of its functions surpass the functions in Delicious. The most fundamental difference between Delicious and Yahoo's Web 2.0 Beta is that the former views the Web as a platform for cooperation, community building and openness, while the latter still remains in the Web 1.0 container thinking: the Yahoo family container of applications and services. Yahoo Web 2.0 Beta has no export functions (January 2006). It is easy to import your bookmarks to Yahoo but it is more difficult to let them out of their container. They are not willing to take the risk of you switching bookmark application and importing your Yahoo bookmarks into the new application. This view means they have misunderstood, or more likely, misused the concept of Web 2.0. They have tried to copy the concept when it comes to the ajaxian user interface (more of that later), but missed the soul of the Web 2.0 concept. It will be interesting to follow their strategy with their two real Web 2.0 applications. Will they try to containerize these applications or will Delicious and Flickr influence Yahoo to create a balance between stickiness and syndication, a business model where user participation is a valuable layer in their information strategy, and not only a target for marketing.

The line of argument above calls for some reflections:

- Yahoo is not the only Web 2.0 application remaining in some sort of container thinking. Many companies fall in this trap.
- Perhaps you cannot blame them for trying to keep their customers. Containing your customers is a standard way of keeping your customers according to some business models. An example is Mobile phone operators. They are giving away phones for free if you sign an agreement of 12 or 24 months, and you often have to pay to unlock your phone for other operators.
- We do not know if the Web 2.0 business model works yet. Only time can tell.

Web 2.0 cannot really be defined. It stands for a kind of paradigm shift on the Web. In this case we are talking about a paradigm light, because this is not a new set of thoughts replacing the old ones, as in Tomas Kuhn's sense of the concept . I will use the term *mindset*, instead of paradigm light, to denote the Web 2.0 phenomenon. Figure 3 shows a "meme map" loosely created after an illustration in O'Reilly's article What is Web 2.0 (2005). It shows core parts of the Web 2.0 mindset. I will return to many of these phenomena below.
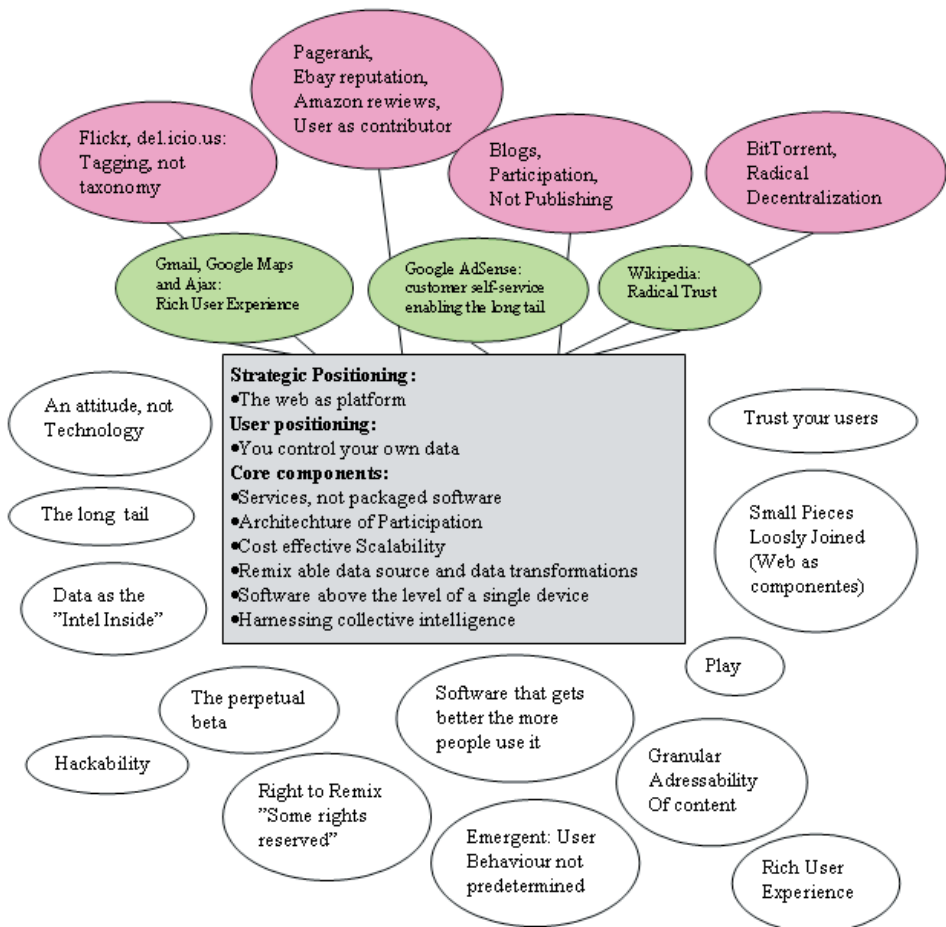

Figure 3: shows a "meme map" loosely created after an illustration in O'Reilly's article What is Web 2.0 (2005)

Main Concepts

There are four concepts building the main structure of Web 2.0. The Web as a Platform and the Ajaxian Interfaces are about the environment and construction technologies; Collective Intelligence and Folksonomy are about participation and social networks. All these are essential for the Web 2.0 concept. In the following section I discuss them one by one. The order of the sections is based on a balance between intuition and rationality. The first section is Web as a Platform as it is the physical base of the whole concept. Collective Intelligence and Folksonomy are in my meaning the most important and interesting of these concepts. The Ajaxian Interface is important, but not as important as the other three.

The Web as a Platform

O'Reilly's description of the content (Figure 3) captures some qualities in Web 2.0. His analysis follows loose thoughts I had before hearing about the concept. My own entrance to the Web 2.0 concept is via concepts such as collaborative filtering, social navigation and folksonomy. I recognized that many of the new applications and services I liked had several things in common, such as tagging abilities, design contents in the form of tag clouds, RSS, and they seemed to work together quite well. The concept works since it functions as a magnet for creativity when it comes to Web applications and services. There is by no means consensus about the meaning of Web 2.0, yet most people involved tend to point to the same concepts, phenomena and services when they use the expression Web 2.0.

One of the first concepts to be connected to Web 2.0 was *The Web as a Platform*. According to Paul Graham, Web 2.0 simply denoted to "The Web as a Platform" in the first Web 2.0 conference in 2004. With the second conference the term changed meaning:

> The story about "Web 2.0" meaning the web as a platform didn't live much past the first conference. By the second conference, what "Web 2.0" seemed to mean was something about democracy. At least, it did when people wrote about it online. The conference itself didn't seem very grassroots. It cost $2800, so the only people who could afford to go were VCs and people from big companies. (Graham, 2005)

The Web as Platform is the core in Web 2.0. Figure 3 describes it as strategic positioning. The Web is the environment for Web 2.0 applications. It was one of the large Web 1.0 companies framing the phrase "The Web as Platform", namely Netscape (O'Reilly, 2005). In their sense the phrase meant taking control over the browser in the same manner as Microsoft had control over the PC. I can see their vision of the pc application "the Web browser" as a pilot navigating over the world discovering exiting places to steer their aircraft to. Perhaps they did not see their Web platform as a means to discover places on the Internet, but more as an information and advertising channel. This was the time when certain companies, such as Netscape, tried to market the push technology, as they called it. The point being that the desktop was to be replaced by the webtop, where information was pushed from providers who used Netscape's servers. I would rather call this "the Web browser" as a platform, and not "the Web as a Platform".

As a contrast to Netscape, Google landed directly in a Web 2.0 Webscape. They started as a native Web application, delivered as a service, with paying customers, directly and indirectly. Google is a striking example of the "perpetual beta", with no scheduled software releases, just constant improvement (some might argue). Google is everything else but encapsulation and would not be able to function at all in environments with growing encapsulating strategies. The first line in Google's "Company Overview" says much about their expertise and strivings within the field of database management: "Google's mission is to organize the world's information and make it universally accessible and useful"[5]. This is similar to Netscape's goal with the "Web as

[5] http://www.google.se/intl/en/corporate/index.html, viewed: 2006-01-29

Platform", and Microsoft's unspoken goal of making every computer-thing on earth dependent on Microsoft software. There is a thin thought difference. As I see it, Google strive to be the best actor on the market, and thereby gain control; Netscape/Microsoft strived/strives to gain control by being the *only* actor on the market. This difference is one of the important markers in differentiating between Web 1.0 and Web 2.0.

In a few years "Web as Platform" will describe a world where most or all local applications move out to the Web, talking to each other and creating cooperation phenomena impossible on the PC-platform. Jason Kottke had a quite humble vision in that direction in the beginning of the Web 2.0 mindset:

> To put this another way, a distributed data storage system would take the place of a local storage system. And not just data storage, but data processing/filtering/formatting. Taking the weblog example to the extreme, you could use TypePad to write a weblog entry; Flickr to store your photos; store some mp3s (for an mp3 blog) on your ISP-hosted shell account; your events calendar on Upcoming; use iCal to update your personal calendar (which is then stored on your .Mac account); use GMail for email; use TypeKey or Flickr's authentication system to handle identity; outsource your storage/backups to Google or Akamai; you let Feedburner "listen" for new content from all those sources, transform/aggregate/filter it all, and publish it to your Web space; and you manage all this on the Web at each individual Web site or with a Watson-ish desktop client. (Kottke, 2004)

In a lecture I gave recently, at the Media Technology Programme at BTH, I asked the students if they would like to have all their applications on the Web instead on their PC or Laptop. One of the students was absolutely against it, arguing that he would feel insecure about not having control over his information. Some students were worried about security matters if someone for example would be able to read your office documents. Most students seemed to like the idea, although I am not sure if they really cared. Since I got my first PC in the middle of the eighties, I have had wishes, demands and visions about what I and my computer should be able to accomplish. These wishes, demands and visions have been quite far away from what the computer actually have been able to do, at a certain time. For many years now, since the Web became a parallel world for many of us, I have envisioned the Web as a Platform as Kottke describes above, with the difference that my vision includes all applications I use today as office applications, image editing, music editing and so on. That vision is probably some years away, but I will not be sorry when my computer has transformed into a Web portal.

> In each of its past confrontations with rivals, Microsoft has successfully played the platform card, trumping even the most dominant applications. Windows allowed Microsoft to displace Lotus 1-2-3 with Excel, WordPerfect with Word, and Netscape Navigator with Internet Explorer.
>
> This time, though, the clash isn't between a platform and an application, but between two platforms, each with a radically different business model: On the one side, a single software provider, whose massive installed base and tightly integrated operating system and APIs give control over the programming paradigm; on the other, a system without an owner, tied together by a set of protocols, open standards and agreements for cooperation. (O'Reilly, 2005)

There are of course merits with the tight API (Application Programming Interface) control in Microsoft's software family, such as speed, but these merits might be obsolete if software development on the Web platform will take over the PC platform. When software development becomes as decentralised as the anti-monopoly O'Reilly describes, then the APIs of the operating system become obsolete. A full scale Web as Platform would mean that I could use every Internet connected computer in the world to reach my digital "things". But this is not only about location. The scenario lets me choose freely among actors such as Microsoft, Mac, Linux, Palm. This is about power to the user, and democracy. The only application the operating system would have to look after would be the Web browser, which could lead to a merge between the operating system and the Web browser. In the best of worlds this could

mean lots of hardware and software (OS + Web Browser) to choose from. The scenario suggests that all hardware could have totally different OS software, as long as it follows the standards for Web communication.

Collective Intelligence

> CI means many things to many people. Here, it refers to the capacity of human communities to evolve towards higher order complexity and integration through collaboration and innovation.[6]

George Pór's definition of collective intelligence above uses words and phrases as communities, evolution, "higher order complexity", integration, collaboration and innovation. Collective intelligence is useful as metaphor in the Web 2.0 discourse. I am going to use the concept based on the words above. Collective intelligence, in this context, is thus something created in evolving communities on the Internet, which through integration, collaboration and innovation creates higher order of complexity, an understanding, experience, and intelligence larger than the sum of the participating users. A large group of people talking right into the air is not especially intelligent thus the community's intelligence increases relatively to how well the software is able to manage these voices, how well the software manages to harness the sum of the intelligence of these people..

Two of the most noticeable examples of collective intelligence are the highly commercial Amazon.com and the open access encyclopaedia Wikipedia. In January 2005 Wade Roush wrote the following in Technology Review:

> Wikipedia is the world's newest, largest, most varied, most participatory, and most controversial encyclopedia. It is composed and edited entirely by volunteer netizens; as of November 2004, there were some 29,000 "Wikipedians" writing for it in 109 different languages. The site's massive archive, including 380,000 articles in English alone, puts even Britannica to shame. If you don't see an article addressing your passion for miniature-teapot collecting, don't fret. Just write one . (Roush, 2005)

The screenshot from Wikipedia 2006-02-02 shows a massive development for 2005 (Figure 4). The number of articles has thus gone from 380,000 to 945,000 in one year.

Figure 4: Wikipedia Screenshot 2006-02-02. http://www.wikipedia.org/

One of the first Web 2.0 companies, Amazon.com figured out how to use the collective intelligence of hundreds of thousands of users, getting them to provide free reviews of books and gaining significant competitive advantage in the process. Amazon.com was founded by

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[6] George Pór - Blog of Collective Intelligence. http://www.community-intelligence.com/blogs/public/. Viewed: 2006-01-29. Cache: 0006

Jeff Bezos in July 1994. He was an investment banker who left New York and moved to Seattle with the idea of creating an online bookstore (Frey, 2004).

Amazon is a commercial business with the main goal of selling as many products as possible. But Amazon is also a community of literature lovers, music freaks, textbook users etc – more about Amazon in detail below. These communities have evolved from a few participants in the beginning to hundreds of thousands.

When discussing collective intelligence in a Web context, it might be useful to divide it into two separate phenomena in praxis: the Amazonian form of collective intelligence and the Wikipedian. Both forms have vast possibilities. The Amazonian form builds on a large amount of people participating with small pieces of knowledge. These pieces are treated by the CI machine to give the participant other pieces of knowledge in return, relating to their own knowledge. Their knowledge expands and makes them able to feed the system with more threads of knowledge. The Wikipedian form of collective intelligence is more precise and therefore more vulnerable. One participant may feed the CI machine with large, seemingly objective, and for the system noticeable and important pieces of knowledge. Other participants are then expected to interact with this knowledge either by using it, discussing it or changing it. The rationale behind includes the idea that this piece of knowledge will be enhanced as time goes on, and as more and more people invest their time and knowledge in it.

The Wikipedian form is by far the most discussed and criticized. The main critique is about the following question: can we trust this piece of information? The question is more than relevant. I am a big fan of Wikipedia, but since I never have trusted traditional encyclopaedias either, nothing is really new. Since information and knowledge are contextual, one single piece of information is very lonely. Adding more sources gives a bigger context and more trustworthy information, even if the information is contradictory.

In the Amazonian form, the physical CI machine has a more profound and complex role because the CI machine's algorithms visualize and in a way enhance the collective intelligence. Noone expects the information pouring out of an Amazonian CI machine to be objective or true in the same sense the information in an encyclopaedia suggests. Thus the truth value depends more on expectancy than something inherent in the system.

The whole Web can be viewed as an example of collective intelligence. "Much as synapses form in the brain, with associations becoming stronger through repetition or intensity, the Web of connections grows organically as an output of the collective activity of all Web users" O'Reilly, 2005). Several of the new Web companies have a deep understanding for the potential of the hyper linking features of the Internet. One of these is Google. They revolutionized the search engine market, with their PageRank technology. Before Google, search engines ranked their hit pages based on factors such as title, meta-information, headers, number of words etc. This, Web 1.0, kind of page ranking gave unnaturally high ranking to irrelevant pages, and the other way around. For Google it is not the page in itself that sets the rules for the page ranking, it is *how the context valuates* that page[7]. If I for example search for Volvo, the hits in Google are 31,200,000. On top of that list are Volvos official pages because they have more pages linking to them than pages lower down the hit list. The Internet community creates a ranking complexity, just by doing what they normally do in their daily lives. An equivalent situation in the physical world would be if every person's footsteps suddenly gave marks on the streets. The most visited restaurants would then have more footsteps in front of their door than other restaurants.

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[7] It is probably possible to manipulate Google's rankings also, but it is much more difficult.

Another example of collective intelligence is Ebay. Ebay's *about page*[8] says: "eBay is The World's Online Marketplace®, enabling trade on a local, national and international basis. With a diverse and passionate community of individuals and small businesses, eBay offers an online platform where millions of items are traded each day"[9]. Ebay's competitive advantage is due to its critical mass of buyers and sellers, but it is not only about quantity. Ebay lives on word of mouth. Every time someone buys something at Ebay, that person is asked to write if s/he is positive, neutral or negative. It is also possible to write something more in detail. This evaluation also works in reverse; the seller can evaluate the buyer. Every buyer can therefore look at the seller's aggregated evaluation. Thus both the buyer and the seller can feel reasonably assured that their business partner is honest.

Collective intelligence is a new way of looking at information and knowledge. If I wonder what an API (Application Programming Interface) is, I could search Encyclopaedia Britannica Online for an answer. This would be the Web 1.0 (and still relevant) way. I tried this and got no answer relevant to my search question: API. Instead I performed the corresponding search in Google: *define*: API. I got about 20 relevant hits. The total list was about 25, but 5 of them were other denotations of the word API such as *American Petroleum Institute*.

Definitions of **API** on the Web:

- A set of routines that an application uses to request and carry out lower-level services performed by a computer's operating system. Also, a set of calling conventions in programming that define how a service is invoked through the application.
  www.maptrax.com.au/standardscompliance/glossaryoftermsatoh/

- Application Program Interface. A set of routines provided in libraries that extends a language's functionality.
  orafaq.cs.rmit.edu.au/glossary/faqglosa.htm

- Application Program Interface. A set of calling conventions defining how a service is invoked through a software package.
  www.bitcentral.com/mainweb/support/glossary.asp

- Application Programming Interface. The interface (calling conventions) by which an application program accesses operating system and other services. An API is defined at source code level and provides a level of abstraction between the application and the kernel (or other privileged utilities) to ensure the portability of the code.
  www.data-core.com/glossary-of-terms.htm

Figure 5: A part of a hit list from a Google search: define: API. Viewed: 2006-02-05.

A quick look at the URLs in Figure 5 probably raises suspicions in most researchers. The hit list from the Google define search shows an array of definitions from sources with questionable creditability, at least at this quick look. None of the 20 hits in the whole list have the credibility of for example Encyclopaedia Britannica Online. Yet we have 20 definitions and most of them are different even though there is a core of truth in them, or if you like, a core of similarity. One day perhaps a CI machine will be able to harvest this truth in a quite reliable way, but until then it is up to the user to be that CI machine. Acting as a CI machine I scan these 20 definitions, and as my mind registers the differences and similarities in the meanings, my mind

[8] An about page has become a convention on the Internet. It is a side, or text, at the web site where one can expect a short explanation of who and what, and often even why and when?
[9] http://pages.ebay.com/aboutebay.html. Viewed: 2006-02-04.

builds an algorithm, which puts an aggregated meaning together, representing an approximate of all those definitions. We could also explain this as a hermeneutic process spiralling down to some kind of similarity core in those 20 definition texts.

I always use definitions as feeds into my hermeneutic machine. One sole definition is not worth much, even if the definition is created by men or women in power within their field. A definition should never be treated as a standard, like the XML standard, but as feeds by the power of the masses. Of course, the collective intelligence increases not only by quantity; quality is also an important factor. Humans have always been CI machines, aggregating and reconstructing information, the novelty lies within the power of ICT (Information and Communication Technology). A well crafted set of algorithms, together with databases and powerful software/hardware will perhaps rewrite the map of intelligence. Intelligence with the human as blueprint might be the perfect pair together with collective intelligence based on masses of different human voices and powerful CI machines to handle all data.

The last story about collective intelligence I will tell in this section is the information redundancy in the blogosphere. Blogosphere critics often say that the blogging community is an echo chamber. The echoes consist of the word of mouth. One blogger writes something. Another blogger believes that text to be relevant and therefore quotes the original text in his/her own article - and so on. The result is a wide array of texts echoing in a blogosphere. This echo chamber corresponds to the researchosphere and is not a bad thing at all. This is collective intelligence at work, filtering out the most relevant information (according to the group) in a wild torrent of voices. In a way, the echo chamber corresponds to Google's PageRank, where a Web page gets higher rank in the Google hit list if it has more pages linked to it, than the pages further down in the hit list. The blogosphere is also similar to Web of Science, a science Web service, which creates an aggregated index of researchers refereeing each other in scientific journals.

Several Web 2.0 companies have tried to structure these choirs of voices. One example is Digg[10]. You could call Digg a bookmark flag service. It works like this: you find an interesting page on the Internet; you add this page to Digg's database. It, so to say, lands on the bottom of the Digg repository. When users find it interesting, they click on the digg button. The digg button displays how many users clicked it. For every user clicking it, the value aggregates with 1 and when enough users have clicked it, the bookmark rises one level in the repository. The algorithm also takes into account how new the bookmark is. The fifteen bookmarks floating around on the highest level of the repository have between 50 and 1000 clicks. There are bookmarks further down with several thousand clicks, but they are older. Digg can be viewed as some sort of anti gravitation chamber where things are floating vertically depending on the weight created by the number of clicks and how new things are.

Folksonomy

In a posting in the blog Atomiq 2004-09-03, Gene Smith wrote the following:

> Last week I asked the AIfIA members' list what they thought about the social classification happening at Furl, Flickr and Del.icio.us. In each of these systems people classify their pictures/bookmarks/web pages with tags (e.g. wedding), and then the most popular tags float to the top (e.g. Flickr's tags or Del.icio.us on the right).

> Thomas Vander Wal, in his reply, coined a great name for these informal social categories: a folksonomy. (Smith, 2004)

This piece of communication was one of the snowballs leading to the Web 2.0 concept. Searching for the word folksonomy in Google returns 5,670,000 hits (2006-04-24).

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[10] http://www.digg.com/

Every time I search Swedish Google for "folksonomy", the system asks me if I would rather want to do the search on "folksång" - the Swedish word for "folksong". Thus the Google glossary in Swedish does not contain the word folksonomy. The word is quite new, attributed to the information architect Thomas Vander Wal, see the quote above. Folksonomy is a combination of 'folk' and 'taxonomy'. Taxonomy comes from the Greek *taxis* (classification) and *nomos* (management). 'Folk' comes from the Old English folc, meaning people; so folksonomy means *people's classification management*. Features later named folksonomy, probably first appeared in del.icio.us, Flickr and Annotea: "Annotea is a Semantic Web based project for which the inspiration came from users' collaboration problems in the Web. It examined what users did naturally and selected familiar metaphors for supporting better collaboration" (Koivunen, 2005, p 1). Flickr is a way to store, sort, search and share photos online; del.icio.us is similar but for bookmarks instead of photos.

Folksonomy can be discussed as the opposite of ontology. The Computer Scientist Tomb Gruber describes it like this:

> Short answer: An ontology is a specification of a conceptualization.
>
> The word "ontology" seems to generate a lot of controversy in discussions about AI. It has a long history in philosophy, in which it refers to the subject of existence. It is also often confused with epistemology, which is about knowledge and knowing.
>
> In the context of knowledge sharing, I use the term ontology to mean a *specification of a conceptualization*. That is, an ontology is a description (like a formal specification of a program) of the concepts and relationships that can exist for an agent or a community of agents. This definition is consistent with the usage of ontology as set-of-concept-definitions, but more general. And it is certainly a different sense of the word than its use in philosophy.
>
> What is important is what an ontology is *for*. My colleagues and I have been designing ontologies for the purpose of enabling knowledge sharing and reuse. In that context, an ontology is a specification used for making ontological commitments. The formal definition of ontological commitment is given below. For pragmatic reasons, we choose to write an ontology as a set of definitions of formal vocabulary. Although this isn't the only way to specify a conceptualization, it has some nice properties for knowledge sharing among AI software (e.g., semantics independent of reader and context). Practically, an ontological commitment is an agreement to use a vocabulary (i.e., ask queries and make assertions) in a way that is consistent (but not complete) with respect to the theory specified by an ontology. We build agents that commit to ontologies. We design ontologies so we can share knowledge with and among these agents. (Gruber)

One example of an ontology is the Linnaean taxonomy; the system of scientific classification now widely used in the biological sciences. The classification systems used by libraries are also ontologies. They are like hyper structured worlds, where everything fed to the system have a - ideally speaking - predetermined parking space. A librarian who is just about to classify a book has this ontology partly in his/her head, and partly in a written "manual". Let us say the book, which is going to be classified, is called "My love of Maya". Maya can stand for one of three things 1) a female name 2) the South American people called Maya 3) the 3D programming software. When the librarian catalogues this book s/he has to determine which of these Maya denotations correspond to the content of the book, and then compare this subject with a "place" in an ontology, such as the library cataloguing system, Dewy Decimal System.

In the information architect community, there is a discourse about folksonomy and ontology, discussing them as opposites:

> Ontologies are enabling technology for the Semantic Web. They are a means for people to state what they mean by formal terms used in data that they might generate or consume. Folksonomies are an emergent phenomenon of the social Web. They are created as people associate terms with content that they generate or consume. Recently the two ideas have been put into opposition, as if they were right and left poles of a political spectrum. (Gruber, 2005)

This dualist view is rather extreme. There are merits in both expert classification and social classification – folksonomy. They contextualise information differently. An expert classifies according to rules learned by a long tradition and "folks" classify on personal basis. When many non-experts classify something and this knowledge is reconstructed by a CI Machine, it is often called collective intelligence as outlined in the section above. If all these classifiers were experts, it probably would not be called collective intelligence because all experts are supposed to make the same choices - the right choices.

Figure 6: Tags in a Tag Cloud.
http://www.blinklist.com/pgiger/

Folksonomy is practically realised in the form of tags and tag clouds. A tag is a keyword describing an entity of knowledge, such as a photo, a bookmark, a music cd or a book. Tagging is non hierarchical and the tags are not picked from a classification system. Every person who tags a knowledge entity has his or her own classification system, mostly unconscious.

In Figure 6 above we see a bundle of tags shaped into a tag cloud. Tag clouds are visual representations of a group of tags, weighted after occurrence. The tag cloud above is a visual representation of the tags for my bookmarks at the Bookmark service Blinklist. The bigger and more two-coloured a word is, the more bookmarks I have created with this particular tag.

In fact, tag clouds are not entirely new phenomena. Traditionally they are known as a weighted list in the field of visual design. What is new is this particular appearance in conjunction with folksonomized Web sites. A tag is comparable to a table of contents; the main difference is that a table of contents is hierarchical, while a tag cloud is flat, non-hierarchical. The display order of the tags is generally alphabetical, thus making it possible to find a tag both by alphabetical order and by its popularity. Clicking on a tag will generally lead to a collection of items marked with this tag. The items might be bookmarks as at Delicious or Blinklist, or pictures as at Flickr.

One of the obvious problems with folksonomy is the lack of synonym control. The word Web 2.0 can for example be tagged as: web20, web2.0, web_20 and so on. The collective might handle this automatically within time, as people start to examine how other people have tagged a piece of information. But even if this problem cannot be dealt with I think it is working quite well. I doubt, though, that a solution can include some kind of influence from experts. Folksonomy is an important part of Web 2.0 and will probably be included in more official systems within time, together with expert ontologies. Folksonomy and ontology will together create important arenas for describing and discussing knowledge.

Ajaxian Interfaces

Ajax is hard to explain to a wide audience, since it is about programming, and I have to expect a wide audience since this is a transdiciplinary text. Therefore I have written two texts: one for readers with no programming knowledge and one for readers with some programming knowledge.

Version 1 – for readers with no programming knowledge
The leading Swedish IT news channel (paper and Web) wrote the following on their Web page 2006-02-02:

> Jättarna ska göra webben enklare med Ajax|
>
> Ledande programföretag går samman för att utveckla webbtekniken Ajax. Detta ska ge bättre användargränssnitt för webbtillämpningar. Men Microsoft och Sun är inte med.[11]

In English:

> The giants are going to make the Web simpler with Ajax
>
> Leading software companies work together to develop the web technique Ajax. This will lead to better user interfaces in web applications. But Microsoft and Sun are not joining.

Ajax is a programming style used to create Web interfaces with the same appearance and feeling as PC applications. But Ajax Web interfaces do not inherit the grey button based interface from desktop applications. First and foremost this means instant response when clicking a button. A standard Web interface often feels heavy compared to a PC application because every time you click on a button or link, a request is sent to the server, and an answer to that request is sent back to you. This is the basic difference between a desktop PC application and a Web page. The Ajax programming style reduces this difference somewhat. The following quote gives a certain sense of how Ajax was, and is, received in the programming world. The quote is from a text where Paul Graham, essayist, programmer, and programming language designer, tries to figure out what Web 2.0 really is about.

> One ingredient of its meaning is certainly Ajax, which I can still only just bear to use without scare quotes. Basically, what "Ajax" means is "Javascript now works." And that in turn means that web-based applications can now be made to work much more like desktop ones.
>
> As you read this, a whole new generation of software is being written to take advantage of Ajax. There hasn't been such a wave of new applications since microcomputers first appeared. Even Microsoft sees it, but it's too late for them to do anything more than leak "internal" documents designed to give the impression they're on top of this new trend. (Graham, 2005)

The fact that Web-based applications can be made to work like desktop ones, is in itself a revolution on the Internet, beside everything else Web 2.0 stands for. I am not sure if you can call these Web based software "applications". An application is normally software communicating with you through an operating system, such as Windows, Linux or Mac OS X. For the user, practically all Web 2.0 software comes in the form of a service, open source and commercial – though the nature of a Web 2.0 application is openness. Amazon.com and Google are two different examples on the fact that the openness and the commercial can work in the same service. In this sense all Web entities will be based on ajaxian interfaces eventually, but not necessarily based on the set of technologies now called Ajax.

Version 2 – for readers with some programming knowledge
Macromedia, and its open source Flash competitor Laszlo Systems, has used the concept "Rich Internet Applications" for several years, claiming the same user – Rich - experience in Web

[11] http://computersweden.idg.se/ArticlePages/200602/02/20060202141736_CS746/20060202141736_CS746.dbp.asp. Viewed: 2006-02-03.

applications as in PC applications. Proponents of Java applets and Microsoft with its ActiveX technology had similar claims. Even though all these technologies have been integrated into our Web (and Web browser) interface, none of them have yet revolutionized the Web as Platform.

Tim O'Reilly writes "the potential of the Web to deliver full scale applications didn't hit the mainstream until Google introduced Gmail, quickly followed by Google Maps, Web based applications with rich user interfaces and PC-equivalent interactivity" (2005). O'Reilly's phrasing is somewhat acute, but it says something important about Web 2.0 applications today and especially tomorrow. Rich interfaces might be produced with several technologies. The technology most mentioned as a Web 2.0 technology is called Ajax. The first time I heard the term Ajax I thought it was named after the two figures in Greek Mythology called Aias (eng Ajax). Since the two figures with the same name liked to fight together, I thought it connoted to javascript + XML, which perhaps can be called the core in Ajax. But I was wrong. Jesse James Garrett explains it like this in an essay: "Google Suggest and Google Maps are two examples of a new approach to Web applications that we at Adaptive Path have been calling Ajax. The name is shorthand for Asynchronous JavaScript + XML, and it represents a fundamental shift in what's possible on the Web" (2005). He further defines Ajax like this:

> Ajax isn't a technology. It's really several technologies, each flourishing in its own right, coming together in powerful new ways. Ajax incorporates:
> - standards-based presentation using XHTML and CSS;
> - dynamic display and interaction using the Document Object Model;
> - data interchange and manipulation using XML and XSLT;
> - asynchronous data retrieval using XMLHttpRequest;
> - and JavaScript binding everything together. (ibid)

The quoted paragraph above is the most technical part in the whole text, and many of my readers, naturally, do not understand enough to get the meaning I wish to communicate. Therefore I will try an explanation. XHTML and CSS are expansions of the original programming language on the Internet called HTML (Hyper Text Markup Language), used to render the image on the computer screen. All three of these are very basic and only about painting the computer screen: user interaction, counting, using variables etc is not possible. For tasks like user interaction we have script languages such as Javascript. Javascript can manipulate the mark-up data to get a richer user experience. Creating a calculator on a Web page, for example, needs both Markup language and Javascript (or another script language). The Markup (HTML, XHTML) language renders the visual form of the calculator together with colour, type face, size etc. Javascript does the actual calculation, based on which keys the user is pressing. The Document Object Model (DOM) can be explained as an interface between the Markup and Javascript, making the scripting easier, creating further possibilities mostly relating to user interaction or dynamically manipulating the screen objects. XML and XSLT are also Markup languages. In this context I will call both of them XML (Extensible Mark-up Language). XML is a language used to describe and transport data. It is also possible to store data dressed in XML for smooth access, instead of storing it in simple text files separated with comma or another sign. Data might be transported from a database dressed in a XML structure, to be received by a JavaScript for a structured deliverance to the XHTML (possibly through the DOM), which in its turn renders it on the screen.

A standard Web interface feels clumsier than a PC application because the Web interface has to communicate with the server for practically every little action on the screen. The

XMLHttpRequest Object enables JavaScript to make requests to a remote server without the need to reload the page. In essence, requests can be made and responses received, in the background and without the user experiencing any visual interruptions. All this together creates the possibility to produce Web applications with the same look and feel as PC applications.

Main Actors: Google and Yahoo

I remember Yahoo as one of the early players on the Internet. Yahoo was known as the directory service as opposed to the search engines Altavista and Lycos. Yahoo is an offspring of the hierarchical Gopher protocol in the days before World Wide Web. Yahoo's directory and other hierarchical taxonomies will probably always have an important role to play in the information and knowledge society, but other ways to view information and knowledge lie in front of us. When Google emerged, it was as a new fresh search engine with a clean interface without blinking banners. But it was the PageRank technology that made it the worlds largest search engine. Search engines before Google ranked their hit list on parameters such as where in a document a search string appeared, and how often. It became a sport to fool the search engines by, for example, writing search words hundreds of times at the end of the document in white text, preventing it for being displayed on the page, or writing the search words over and over again in the meta tags. Google had a sensational solution to this, they would count how many pages linked to a certain page in the hit list, and the Web site with the most pages linking to it, would end up on the top. This is one of the most profound Web 2.0 phenomena, representing the real start on the phenomena called collective intelligence (in this context). Every movement on the WWW leaves traces, and those traces are not too hard to follow. Web 2.0 thinking strives to harness those traces.

Google About text:

Google's mission is to organize the world's information and make it universally accessible and useful.[12]

Yahoo About text:

Our mission is to be the most essential global Internet service for consumers and businesses. How we pursue that mission is influenced by a set of core values - the standards that guide interactions with fellow Yahoos, the principles that direct how we service our customers, the ideals that drive what we do and how we do it. Many of our values were put into practice by two guys in a trailer some time ago; others reflect ambitions as our company grows. All of them are what we strive to achieve every day. [Excellence, Innovation, Customer Fixation, Teamwork, Community Fun].[13]

Reading the Google and Yahoo about texts, gives an insight into their mission. Yahoo are perhaps more laidback. Even though the say their goal is to be the most essential global Internet service, they are not doing it aggressively. Google's mission is short and concise. They want to gain control over all information in the world and they want to give it back to the people in a more usable package. They are not saying the package is going to be intertwined with commercials, but that is self-evident.

[12] http://www.google.com/corporate/index.html. Viewed: 2006-02-08
[13] http://docs.yahoo.com/info/values/. Viewed: 2006-02-08

A few years back, Google was only an Internet search engine, but the company has grown both vertically and horizontally. Google's role as the number one search engine with the revolutionizing PageRank and AdSense technologies has deepened. PageRank means Google is ranking the hit list according to the following rule: pages with more pages linking to them earn their place higher up in the hit list than pages with fewer pages linking to them. AdSense means text ads in the search engine and other pages, and the ads are always contextual to what you search on or what page you are visiting. Searching on the word "cell phone" for example, renders ads from companies related to the cell phone industry.

In 2004 and 2005 there was a massive expansion on the horizontal level. Google launched their mail service Gmail, which is one of the best examples for Web 2.0 ajaxian user interfaces as yet. They also launched Google Maps; often named as a blueprint for Web 2.0 services. Later they launched a service called Google Earth, which actually is a desktop application. With Google Scholar they tried to reach academic information, bounded in academic commercial databases such as Science Direct. Another goal with Scholar was to filter the academic information from irrelevant Web pages (what ever that means).

Yahoo has had a horizontal expansion strategy for several years, with yahoo mail, calendar, notebook, briefcase and other tools, but perhaps not as forceful as in the recent year. Yahoo has a base of Web 1.0 services mentioned above. Recently they have moved towards the Web 2.0 mindset, partly by creating new services such as the new bookmark service conveniently called myWeb 2.0. It has not gained a widespread attention though – it is currently on place 16 on the list of social bookmark managers at Listble[14]. Yahoo's main move into the Web 2.0 mindset has up till now been through the purchase of both Flickr and Delicious – the two most popular and most talked about Web 2.0 services in all categories.

Google's horizontal expansion has lead to speculations about a war against Microsoft. If it happens, or if it is already a reality, it will be a war between business models: the service company Google against the software company Microsoft. It is not too farfetched to see it as a war between Web 2.0 and Web 1.0, although Microsoft has another view . In recent years Google has actually become a software company with Google Earth and the purchase of the image organizer application Picasa, but they have also purchased the world leading blogging service Blogger[15]. Other services they have launched recently are Google Reader (RSS reader) and the Google Talk (Instant Messaging (IM)) client. If a war between Google and Microsoft is emerging, we might see Yahoo as one of the combatants. In the beginning of 2006 there are a lot of texts in the blogosphere, mentioning Yahoo and Ajax - and also Microsoft and Ajax. Even though the Ajax programming environment does not say directly that it is about Web 2.0 services, it does indirectly. According to my experience many programmers use the word "Ajax" almost in the same way I use "Web 2.0"

A comment at the frozen moment, when this thesis is written, is that there have been a lot of rumours about an upcoming Google browser and its possible impact on Microsoft. It is hard to predict what will happen. Microsoft has the advantage of being the leading provider of Operating Systems, i.e. MS Windows, but I guess Google has the advantage of being some sort of mycelia reaching every square inch on the Internet. They can have a fresh view of how to build the proper application (that is the Web browser) for lodging the next generation of Internet services. The team behind the Flock browser has already showed the possible to view the Web browser in different terms than Microsoft and Mozilla do. The Flock browser relies heavily on third part folksonomy applications, see more below.

[14] http://www.listible.com/list/social-bookmarking-sites. Viewed: 2006-02-16

[15] http://www.blogger.com

Google also functions as a symbol for some negative aspects of Web 2.0. Google is one of the actors in the computer industry who accept censorship in Kina. This act reminds us about the commercial drive in Web 2.0. It is easy to forget the commercial underpinning in the computer industry when talking about Web 2.0. The Web 2.0 discourse has generally an air of openness, but this urge to be open and communicative should be positioned against the instincts for money and power.

Since Web 2.0 builds on openness and participation there will be integrity and security problems. Google's marketing strategies with text ads forming after your navigational context can be viewed as devious compared to flashing commercials directed to everyone. It can be argued that Google Desktop 3 increases the integrity problems. Google Desktop is software for searching your computer in the same fashion you search on the Internet. Version 3 includes the possibility to store the search index on Google's servers. Having the index on Google's servers means you can search your own computer from anywhere in the world. This also means that Google knows a lot about you. If someone hacks Google they might get information about you. The government or even rivals could subpoena the search engine for the information stored on the Google servers and automatically get information about you and your actions on the Web.

My intention was to introduce the concept *Participation Literacy* in the last section as a beginning for my post-Lic research. But maybe the context calls for a quick introduction. Participation Literacy means learning to share and participate in a *Native Web* world where participation and sharing is going to be an important feature in our lives. It has always been important, but the native Web environment calls for participation and sharing as one of its basic features. To be participation literate you have to be equally skilled at sharing your knowledge and letting others share their knowledge with you, but it also includes knowledge of when it is safe to share and when it is not. It is not wise to share your bank account in insecure settings, but it is usually no danger in letting other people know your shoe size. Everything between those polarities calls for a certain amount of knowledge about how to share and participate in Web environments. This knowledge together with firewalls, spyware detectors and antivirus software will be required ingredients in our life from now on.

The Web 2.0 Document Model

When I write *Web site* I mean a place on the Web represented by an URL. Consequently both blogs and wikis are Web sites. But in another sense a Web site is not a blog and it is not a wiki. A Web site is thus a superior term while blog and wiki are subordinate terms, and still there is the "ordinary" Web site which actually is on the same level as wikis and blogs. This strange relation is illustrated in Figure 7, top of next page.
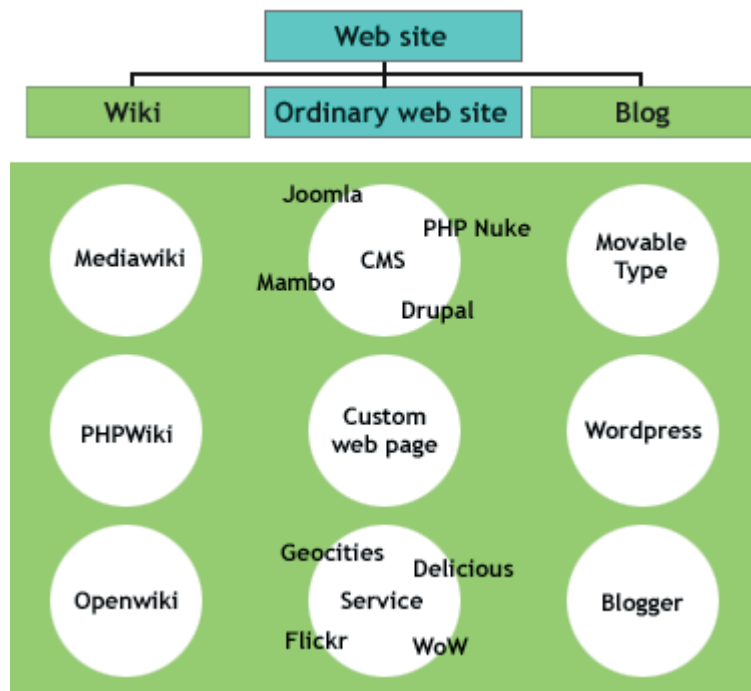
Figure 7: Illustration showing the hierarchy of the concept 'Web Site'

There is a lot of wiki software. Practically all of these are open source. You just need to download the software to your computer, upload it to a server (Web host or your own server) and install it. Most of them are very easy to install and do not need any programming skills. After it is installed on the server it has to be customized. The Mediawiki software, for example, has to be transformed into the form you had in mind: Wikimedia, Wiktiktionary, Wikiquotes, and Wikibooks – all these wikis or Web sites are based on the Mediawiki software. PHPWiki and Openwiki are also examples of wiki software.

If we look at the right side of the figure, we have blog software. Movable Type and Wordpress are both open source software you can install on your Web host's server. The installation process is even simpler than for the wiki software. When it comes to Wordpress, it is both software and a Web service. On www.wordpress.org you can download the software and find all kinds of information about installation and maintenance. On the URL www.wordpress.com we find a blogging service which has the Wordpress software preinstalled, which means that you only have to create an account (it is free), choose a layout and start to blog. The most well known service of this kind is Blogger. Blogger is owned by Google.

In the middle part of the illustration, under "ordinary Web pages", I have written CMS (Content Management Systems). The nature of the CMS software is the same as the wiki and blog software. Many CMS are open source, but there are also commercial ones. A commercial CMS is chosen by many companies due to better support. A CMS is a framework for creating Web pages in a more ordinary fashion, which makes it easier to position details on the screen in a relatively simple way. Every document is also connected to the menu in a way rarely found in blogs and wikis.

With a custom Web site I mean a Web Site created from scratch in HTML (Hyper Text Markup Language). This can be done either by coding directly or using editors such as Microsoft

FrontPage or Macromedia Dreamweaver. These kinds of Web sites are becoming rarer as CMS, Blogs and Wikis make it easier to publish on the Web.

The last circle on the illustration is about Web services. A Web service is a Web site, which allows you to use some part of it, either free of charge or for a fee. An example is Flickr, one of the earliest Web 2.0 sites. At Flickr, you can create an account, load up pictures and share them. The basic service is free, but it is also possible to get a more advanced service if you pay a yearly fee. Another example is Delicious bookmarks, which let you create bookmarks you can reach from every computer, and share them with the world. Other Web services are the shopping community Ebay, the money transfer service PayPal and the phone service Skype.

A special kind of service which has been possible in recent times is called Mashups. A mashup is a Web service hybrid, created on top of other Web services.
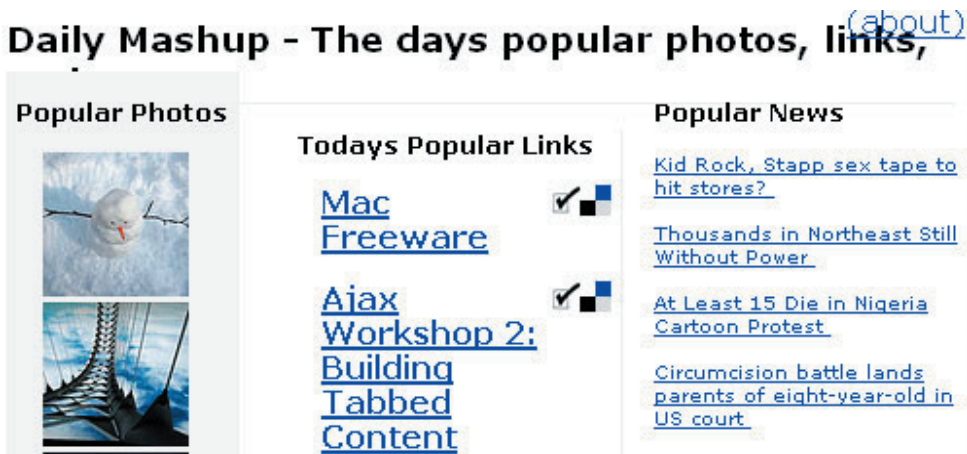

Figure 8: Daily Mashup. http://dailymashup.com/.

A simple example is Daily Mashup, Figure 8. The Web site displays photos from Flickr in the left column, Bookmarks - or links – in the middle column and news from Yahoo in the right column. This is a very simple example, but there are a lot of more complex hybrids and we are only at the beginning of this trend. A mashup is possible because the services it is built on top of have an API (Application Programming Interface). A system, application or service with an API has a programmable connection to the outer world. Daily Mashup uses the APIs form Delicious, Flickr and Yahoo to create something new. More and more mashup services will be launched as more and more Web 2.0 services are born.

Web 2.0 in Figures

The first time the tag "Web 2.0" was used at Delicious was in February 2004. As of "October 31, 2005 there have been over 230,000 separate bookmarks and over 7,000 unique tags associated with the term "Web 2.0" by del.icio.us users"[16]. It is stated that 230,000 Web pages have been bookmarked as dealing with Web 2.0. To describe these 230,000 pages people have used 7,000 unique tags, besides the "Web 2.0" tag.

Sometimes only one tag is used to describe a bookmark; most often however, the description will be more effective if you use more than one tag. The following bookmarks are the ones mostly used together with "Web 2.0" (ibid):

ajax (9.9%), blog (6.1%), social (4.2%), tools (4.1%), software (3.3%), tagging (3.3%), javascript (2.8%), internet (2.6%) programming (2.5%), rss (2.5%), rubyon-rails (1.8%), del.icio.us (1.6%), folksonomy (1.4%), community (1.1%), wiki (.9%), flickr (0.8%), free (0.7%), trends (0.6%), flock (0.4%), googlemaps (0.3%).

This array of terms might be seen as a kind of definition in praxis. These are the terms tagged together with the term "Web 2.0" and might therefore be viewed as the conceptual definition of Web 2.0 by the Delicious community. You can compare these figures with my conceptual analysis above. Of my four main concepts in the discussion of Web 2.0 only two appear in the listing above. The concept I named as the least important of the four - Ajax - is the most important here. Folksonomy is on place thirteen, although *tagging* in itself is a synonym for folksonomy. The Web as Platform and Collective Intelligence are not in this list. One probable reason is that all the words in the list are without spaces and Delicious uses spaces to separate between tags. Thus if someone would tag a bookmark in Delicious with The *Web as Platform*, there will actually be four tags. Another explanation could be that I as an expert have a more rational behaviour when I tag than most people. The list above is as good a representation of the Web 2.0 concept as mine; it is only different in a contextual sense.

Web 2.0 Off Shots

The Web 2.0 concept constructed above is general. It does not apply to a special kind of service or field of expertise. During 2005 words like identity 2.0 or library 2.0 popped up on the Web. These concepts were derived from the Web 2.0 concept but applied on a particular field. I discuss some of the concepts I found on the Web, in variable length and depth, and construct some myself. The off shots I discuss are just a selection. Other examples are Media 2.0 (Haque, 2005), Advertising 2.0, (Evans, 2005), and Democracy 2.0 (Graham 2005).

Identity 2.0

When I was about to write this piece of text I had Dick Hardt's concept in mind (below) but still thought it would be worthwhile to check what the encyclopaedias say about the concept *identity*. As I expected there is no single entry for the word identity in for example Encyclopedia Britannica, since the concept is too diverse. The Wikipedia entry has what they call a disambiguation page[17]. A disambiguation page is a list with all the articles which would naturally be called the same word, but actually has different denotations. For the word *identity* the disambiguation page looks like this:

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[16] http://blog.del.icio.us/blog/2005/11/there_has_been_.html#more. Viewed: 2006-01-30. Cache: 0008

[17] http://en.wikipedia.org/wiki/Wikipedia:Disambiguation

Identity may refer to one of the following:

In creative works:

Identity is a novel written by Milan Kundera.

Identity is a movie starring John Cusack.

Identity (music), a transformation of pitches in music.

In business:

Corporate identity is the physical manifestation of a business brand.

Identity theft is the deliberate appropriation of someone else's identity (without that person's permission) for criminal purposes.

In social science and psychology:

Identity (social science) (or "social identity"). In the social sciences, identity has specific meanings, stemming from cognitive theory, sociology, politics, and psychology. See also identity politics.

Ethnic identity is a person's self-affiliation (or categorization by others) as a member of an ethnic group.

Gender identity is the gender with which a person identifies (or is identified by others).

Digital identity is the representation of identity in terms of digital information.

Online identity is the digital identity established by computer network users.

In philosophy:

Identity is the sameness of two things (also see law of identity).

In the philosophy of mind, the identity theory of mind holds that the mind is identical to the brain.

Philosophy is also concerned with personal identity.

In mathematics:

An identity is an equality that holds regardless of the values of its variables.

An identity object is an entity that does not change other objects: see identity function, identity element, identity matrix, and identity morphism.

In computer science:

Identity (object-oriented programming), a property of objects that allows those objects to be distinguished from each other.[18]

All these terms are both concepts in themselves and subordinate to the identity concept. As I see it, the word identity is in itself empty; though it of course has a definition entry in every dictionary. Oxford Reference Online writes "the fact of being whom or what a person or thing is"[19]. This dictionary entry *identity* is practically useless in most settings – such as the academic

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[18] http://en.wikipedia.org/wiki/Identity. Viewed: 2006-02-26

[19] "identity n." The Concise Oxford English Dictionary. Ed. Catherine Soanes and Angus Stevenson. Oxford University Press, 2004. Oxford Reference Online. Oxford University Press. Blekinge Tekniska Högskola. 26 February 2006 <http://www.oxfordreference.com/views/ENTRY.html?subview=Main &entry=t23.e27466>

– so it is almost necessary to use one of the more precise terms. When Dick Hart writes and talks about Identity 2.0 – he is the father of that concept – he uses the general term but what he really means is one of the concepts above – or a reconstruction of one of these.

Several of these identity concepts would be interesting to give the suffix 2.0, such as philosophy of mind, identity morphism or gender identity – though, practicalities as time and space force me to leave these concepts to my future research. If I was to pair one or several of these terms or concepts with Dick Harts Identity 2.0, it would be digital or online identity. I will expand the discussion somewhat after an introduction of Dick Hart's concept of Identity 2.0.

Dick Hart's notion of Identity 2.0

The concept of Identity 2.0 is mostly linked with Dick Hardt. Dick Hardt is founder and CEO (Chief Executive Officer) of Sxip Networks, developers of SXIP, the Simple eXtensible Identity Protocol.

Dick Hardt founded Sxip (pronounced: "skip") in October 2003 with a vision of a simple, secure and open identity network that enables individuals to create and manage their online digital identities.

> Sxip was conceived several years earlier while Dick was CEO of ActiveState , a leader in anti-spam technologies and tools for Open Source programming languages. He recognized that a lightweight, user-centric, Identity Management solution was a critical missing piece of Web infrastructure. The paradigm of digital identity needed to evolve beyond single-entity user accounts and authentication systems into an expressive identity platform, as ubiquitous, multi-purpose and fail-safe as the Internet itself. [20]

Dick proposes that aspects of an individual's identity should be disaggregated so people or organizations needing to identify the individual only see those characteristics they need in order to support a decision (Hardt, 2005). Those characteristics could be that you are old enough to buy a drink, rather than exactly how old you are, where you live, etc. Further, he outlines the notion of trusted 'home sites', with which an individual might entrust aspects of their identity, and to which those in need of identity validation would then address appropriate requests for fulfilment.

Identity 2.0, and similar thoughts, could be a solution to some of the security and integrity problems talked about in media the last few years. Perhaps we do not need to dispatch our identities on the Internet or anywhere else. Perhaps it will be enough to give a company, the authorities, or even other individuals, parts of our identity; the only parts needed in that particular situation. Perhaps we will turn into fragments of our selves. And perhaps many people we meet in different situations will only get to know a situated part of our selves.

Dick Hart has written a short text called *Multiple Personas in Identity 2.0*. In this text he uses the concept persona:

> A goal of Identity 2.0 is to mimic aspects of identity transactions that work well in the physical world. We all have different personas depending on context. I present different aspects of myself depending on wether I am interacting with my mother, my friends, my employees, a server at a restaurant, or my banker. In the online world, we will need the same way to compartmentalize our identity in ways so that we present subsets depending on context. There is no need or desire for a single, global identifier. A logical progression of this is the ability to have a 1:1 relationship, where a given persona is used only at one site, providing anonymity between sites. (Hart, 2006)

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[20] From Sxip's "Background pages". http://www.sxip.com/background. Viewed: 2006-02-02

I interpret Hart's usage of the word persona as a person's social role, which is the most common usage of the concept. Normally we (or more exactly I) see *identity* as a stable entity and the *persona* as more or less instable. Dick Hart's concept would lead to a kind of instability and fragmentation in both identity and persona.

I do not think it is too far fetched to draw a parallel to some of the stories in Allucquére Rosanne Stone's book *The War of Desire and Technology at the Close of the Mechanical Age* (1995).

Rosanne Stone and Multiple Personalities

One of the stories in Stone's book is called *Risking Themselves: Identity in Oshkosh* (p 45ff). It starts with a quote from an article in the San Francisco Chronicle:

> On July 23, 1990, a 27-year-old woman filed a complaint in Oshkosh, Wisconsin charging that Mark Peterson, an acquaintance, raped her in her car. The woman had been previously diagnosed as having Multiple Personality Disorder (MPD). She claimed that Peterson raped her after deliberately drawing out one of her personalities, a naïve young woman who he thought would be willing to have sex with him.

The trial ended with Peterson's conviction. The verdict upholds Wisconsin law – and probably most law systems – as the woman was treated as mentally ill and it is against the law to have sex with a mentally ill person. Stone's line of arguing draws on the question if this woman was really mentally ill. The name Multiple Personality disorder says it is an illness, and most mental health professionals agreed with the verdict, but not all of them. A few of them had wished the outcome to be the reverse since that would lead to the opportunity to "decriminalize" MPD (p 62). One of the most distinct subtexts of Stone's story is a question: What if all personalities in a person with MP(D) are normal "good" citizens, no murderers and robbers and things like that, in what way is it a disorder; and how strong is the line between an embodied person with – possibly nontraumatic - MP(D) compared with something we could call MWP (Multiple Web Personalities)[21]?

The Identity Bank

In a podcast about Identity 2.0, Dick Hardt speaks about trusted "home sites" which could function as an identity manager. He reflects on the possibility that Amazon.com could function as that homesite or identity manager. He mentions Amazon since they are one of the few companies in the world with the possibility to realize the idea in a near future. If I understand him right, Amazon would store a person's whole identity – or a substantial part of it, and distribute only parts of it to other companies. Identity transactions would be on "need to know" basis. If a company needs to know if you are a man or a woman that is the only information the identity manager would give to the requesting part – I assume that the identity owner has to give his or her permission before an identity transaction takes place.

Many of us might get a little bit nervous about this central identity storage. These identity warehouses will be flytraps for identity thieves - but on the other hand, we already have more sensitive goals for criminals, such as banks, so nothing new. People working at these places might misuse the information, and the whole company could become too powerful. Can we trust them, and if not – can we control them?

A comparison with a related praxis is a bank. We trust our bank with a very substantial part of our identity, and the bank makes daily transactions with information, which are even dearer to us than our identity – our money. Of course, identities and money are connected. If someone gets our bank identity, they can also get our money. Our banks seem to be "quite" good at guarding our identities. Most banking problems occur when we are incautious with our identities, i.e.

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[21] The concept MWP is not in Stone's book. I made it up...

we ourselves are the worst keepers of our identities. On the other hand, we are still somewhat on top of our identities – but only somewhat – and it is me myself who has to be incautious if someone is going to get my identity, and from that my.

I do not think the idea of an identity bank or warehouse is too wild. Our identities are already spread in cyberspace. Dick Hart's idea is very controversial, and I am not sure that I like it, but it might still be the best idea, if someone does not come up with a better one.

The Urge for Anonymity

Dion Hinchcliffe also made reflections about Dick Hardt's Identity 2.0. He reads it more as a control mechanism:

> So, controlling anarchy on the writetable Web might be as simple asking that folks flash their Identity 2.0 credential right before they change something on the Internet. This ensures their personal identity is attached to the change. And creating a verifiable chain of evidence might be all it takes for people to act more responsibly. Wiki vandalism, comment flaming, and other forms of anonymous mischief on the writeable Web may be eliminated forever when you know that your ID will be attached to it in perpetuity, affecting your hireability, possible suitability for public office, and more, forever.

> Of course, there will be attendant problems with this approach including a rapidly vanishing anonymity on the Web. But that just might remain a nice artifact of being a read-only Web user. (Hinchcliffe, 2006)

Dion Hinchcliffe interprets Identity 2.0 as a control mechanism. Every time someone makes a change on the Web, they have to identify themselves. In that case vandalism can be traced back to the person who made the change. I can understand his wish for a "clean" and more trustable Web. His view of Identity 2.0 would certainly render a lot of input for future CI machines. In one respect the huge amount of input to the CI machines is an exciting thought, but in another respect it is kind of frightening. In an anonymous comment to this article, the commenter argues that there are many reasons to keep an untraceable identity. He or she writes that they have been harassed and stalked IRL (In Real Life). because some people were upset about some articles. Hinchcliffe answered the anonymous commenter the following: "I agree with you that anonymity is very important in some situations. However, many times (the majority even?) the motivations for being anonymous are to cover up poor behaviour" (Hinchcliffe, 2005).

Collective Intelligence builds on, and feeds on, traces. Traces are one of the most fundamental parts of Web 2.0, but traces can also be a potential threat, either if you have controversial views on politics or similar things, or if you are well known and therefore can be thought of as a prey for certain groups in society – the controversial thoughts might even just be in "the eye of the beholder".

In one way Hinchcliffe is right in his answer to the commenter above. But there are many reasons why people would want to be anonymous, such as every part of a person's life where he or she might be counted as other than normal, health problems for example. Even though Identity 2.0 might have possibilities, there are many problems, and I think it is hard to envision an implementation in the near future.

The discussion above is based on the idea of the democratic society. In an undemocratic society, every central control of identities would be devastating. We do not even have to go to totalitarian states to get an idea of the outcome of a central Web identity control. The US government, and others, has proved the word democracy to be stretchable in the hunt for terrorists.

Intelligence 2.0 or Hybrid intelligence

"Thanks to TV there is a dance fever in the country" was the headline in our local newspaper on a Saturday morning in the beginning of February 2006[22]. The article was about the "Swedish"

[22] Blekinge Läns Tidning, Saturday 2006-02-11, part 1, page 20 f

dance show Let's Dance and how it influenced people over the whole country to take up dancing. In that article there was a section about a dance style called Lindy Hop and in relation to that a fact box with text about the history and nature of Lindy Hop. But what got my attention was the source of that fact box: Wikipedia, the free Encyclopedia. How did they dare to publish an article based on facts from an anonymous author? And still, I think that Wikipedia is the best Encyclopedia, without any real competition. The thing is this though:

If I rely on facts in Encyclopedia Britannica and that fact turns out to be wrong, Encyclopedia Britannica is the stupid part since they are the "owner" of the information. If I rely on facts in Wikipedia, and that fact turns out to be wrong, I am the stupid one, since Wikipedia does not take the role of ownership and the author is anonymous. The ownership is moved over to me when I rely on information in Wikipedia, since the information producer is a product of collaboration and a group of people cannot be held responsible. I do not think this is a negative side of Wikipedia, since it forces us to collect more than one source if we need information, which can be viewed as right or wrong. Most information is not about right or wrong though, but the point is rather if the information is packaged in an intelligent way. If this "subjective" package is good enough is decided by a group of people viewed as experts in that particular field. I am, for example, an information professional and academic, and is therefore counted as an expert in my field. My expertise is by no way objective, but grounded on groupthink. The tradition of the group gives the frames for my learning and teaching, and it also functions as a frame for my expertise.

Wikipedia is important and interesting in many respects, not the least because the knowledge speaks for itself. The knowledge in Wikipedia is not framed by expertise. Some of the most influential authors in the Wikipedia world might be someone that would never come near an article in Encyclopedia Britannica. But the articles this person writes might actually be better than those in Encyclopedia Britannica. I do not say Wikipedia is better because the articles are better – because often they are not. Wikipedia is better because of the thought of participation and collaboration and because it contains articles EB would never write. EB and Wikipedia work well together. Together they are a strong knowledge body.

The collective intelligence represented by Wikipedia and the blogosphere has got its share of criticism. One of the critics is Nicholas Carr. He talks about the *The Cult of the Amateur* and, for example, points out that Wikipedia is not trustworthy because it includes a lot of articles, which are both badly written and are in fact wrong (2005). In addition he presents some striking examples regarding the blogosphere. He describes the blogosphere likes this:

> I'm all for blogs and blogging. (I'm writing this, ain't I?) But I'm not blind to the limitations and the flaws of the blogosphere - its superficiality, its emphasis on opinion over reporting, its echolalia, its tendency to reinforce rather than challenge ideological extremism and segregation. Now, all the same criticisms can (and should) be hurled at segments of the mainstream media. (Carr, 2005)

He is absolutely right. When it comes to the blogosphere, as he calls it, big parts of it fits to his description. The problem is not in the blogosphere itself though, but rather in the big part of the intellectual society, which does not understand and participate in this kind of communication. This direct way of communicating through blogs, podcasts and videocasts is in my meaning perfect for all intellectual communication, and it is hard to understand the walls, which obviously are keeping most of today's intellectuals out. It is quite safe to say that Carr's critique of the blogosphere might be moved to several parts of the intellectual community (i.e. people who express themselves in public).

Carr's comments about Wikipedia are also right; many articles are badly written and incorrect. The point though, is that these negative aspects are integrated in the Wikipedia system, and have to be balanced against the positive aspects. The world is becoming immensely complex and we

cannot hope to have control over information and knowledge in the same way as before. We have to learn to live in this world. People have to learn not to invest their trust so easily. We at the top of the learning system should communicate in a way that is sensitive to *given* information and knowledge, and instead rely more on the ability to *take* and produce knowledge. I also think this relation to information and knowledge is one of the main ingredients of the Web society and it will be more and more important in the future development of the Web.

Intelligence 2.0 is hybrid intelligence. First of all this kind of intelligence goes outside the individual and becomes a feature of the collective. This intelligence is integrated in the technology; the better technology, the more intelligent system. When more and more experts – besides computer professionals – take part in the collective intelligence, the CI machines will have an immensely broader and deeper information base to work from and the notion of collective hybrid intelligence will get a profound role in our society.

What about Law 2.0?

> What is needed to make Law 2.0 applicable to legal research is for standards to emerge: how courts and agencies will preserve their work (html or pdf?), how they will announce it (RSS?), how they will categorize it (tags?), and how we will search it (guess who?).[23]

The quotation above is from a blog "published by a general counsel in the Midwest"[24]. Even though many Web pages mention the concept, there are no serious discussions or analyses about what it means. The quote above is from one of the highest ranked pages at Google, which means many other pages linked to it – it is a good example of how banal it might seem when Web 2.0 is starting to get attention in an old practice. Besides the Web 2.0 notes in the quote above, I often see concepts and phrases like "open source law" and "participatory law" on the Internet.

I miss a discussion of how Web 2.0 will influence laws regarding the life on the Web, for example: the Web as platform and collective intelligence. When people start to use native Web software in a large scale, another step is taken towards the international netizen (or what we are to call them). It will be more and more absurd to have people from the same community connected to different law systems. Another problem which we have not seen yet, is when collective intelligence starts to do things, which can be regarded as being outside the law. Who is to be held responsible when the criminal is a collective with inseparable individuals?

Still, it will be very interesting to follow what law can make of concepts such as *participatory* the next few years. Who are being allowed to participate? Is it between lawyers? Is it participation in the whole law community, i.e. both lawyers and prosecutors and judges? Or will they even invite people outside the law community to participate, and what about criminals – and in that case, why?

Is it impossible to envision an international law model on the Web where embodiment is beside the point? This would demand a world wide agreement on Web laws, and an agreement among countries to enforce the punishment stated in the Web Law. These kinds of thoughts counteracts the freedom philosophy of the Web stated by for example John Perry Barlow and his cult text *A Cyberspace Independence Declaration* (1996). It is even possible to think of a native law system. A Web native law system would mean that both cause and effect is situated to the Web. In ten years or so, it might be a sufficient punishment for most law violations to be locked out from sections of the Web.

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[23] From, The Wired GC Blog» *Web 2.0, Heading West to Law 2*. http://www.wiredgc.com/2005/12/06/web-20-heading-west-to-law-20/. Viewed: 2006-02-02- cache 0010.

[24] http://www.wiredgc.com/about/. Viewed: 2006-02-02

Library 2.0

My background as a library professional could have directed me to emphasise the section about Library 2.0, but I will not. One reason is that I plan to dive into the library systems later and another is that it might be sufficient to use the Web 2.0 concept in Library environments. Library 2.0 is Web 2.0 applied to library information systems and how we think about them, especially when it comes to participation. Participation is the key to the future in practically everything related to ICT and not the least in the library world. I am just going to mention one example.

A library system contains two main parts, the database and the interfaces. The public interface displayed on the Internet is called an OPAC (Online Public Access Catalog). The most innovative Web 2.0 thinking I know of in the library world as yet is done by Casey Bisson at North Carolina State University. He has made a suggestion to separate the OPAC from the database, i.e. the supplier of the OPAC does not have to be the same as the company behind the database and the core interface. Jenny Levine describes it quite well in the ALA Techsource[25] blog:

> One of Casey's theories that resonates with me is a fundamental mistake librarians make: assuming that the OPAC *has* to be part of the Integrated Library System (ILS). In other words, if you buy a specific vendor's product with which to do your cataloging, acquisitions, serials, etc., then you are stuck using that vendor's online catalog. Unless, of course, you have one or more programmers to completely rewrite the catalog—and let's face it, there just aren't that many libraries with those kinds of resources.[26]

What Casey Bisson has done is to create a model of an OPAC-plugin for Wordpress blog software. Since he is using one of the leading blog software, he can use all Web 2.0 features in the system, such as comments, tagging and RSS. This line of thinking is very much the Long Tail, see below. All new features are user centred and they are an important part in the participation interface. This is an example of near future development in the library world: to harness user intelligence and integrate their participation in the system.

Author 2.0

Several structuralists and poststructuralist critics have addressed the question "what is an author?" (Barthes, 1977), (Foucault, 1984). The *author discourse* is most often about intertextuality and originality questions. All texts are intertwined, rendering some sort of collective text where originality is questionable.

What is an author in the Web 2.0 environment? The question is both linked to the structuralist/poststructuralist discourse and the business models in the Web 2.0 concept. The author in this sense is a participant, a collector, a collage artist, a person who collects meanings and from those meanings constructs new meanings, which in its turn will be reconstructed into new meanings by other authors in the next layer of knowledge.

But an author has never been just a producer of originality; an author has always been some sort of business person with the goal of making a living. Modernity separated the author from the publisher and later we also had agents specialised in marketing. In a Web 2.0 environment the author has merged and now has all three functions again.

One example of a Web 2.0 author is Chris Anderson, editor-in-chief of Wired Magazine. His

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[25] ALA TechSource is a unit of the publishing department of the American Library Association. ALA TechSource publishes *Library Technology Reports* and *Smart Libraries Newsletter* (formerly *Library Systems Newsletter*). The American Library Association is located in Chicago.

[26] http://www.techsource.ala.org/blog/2006/01/library-20-in-the-real-world.html. Viewed: 2006-02-27

blog *The Long Tail* is "A public diary on the way to a book"[28]. People can participate in the creation of this book, through comments in his blog. They can link to the book and reference it in the making, before it becomes a prison cell of text behind its cover. When it is published like an ordinary book, the information layer from his blog is still there to enrich the knowledge, making the text a hybrid between Web 1.0 and Web 2.0.
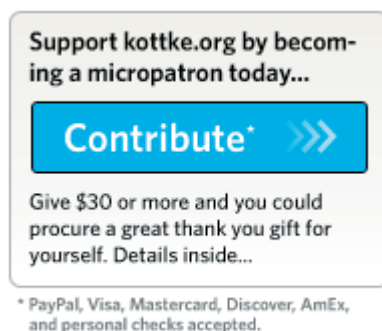

Figure 9: Contribute to the author. http://www.kottke.org/05/02/kottke-micropatron. Viewed: 2006-02-10.

A more pure (or extreme) Author 2.0 example is Jason Kottke with his blog kottke.org. Figure 9 shows how he asks his readers to contribute to his authorship. This author-reader flow is reverse to the usual way of viewing the relation between author and reader. Traditionally the author, via an agent or publisher, markets the text whereby the reader buys it unread and reads it. Perhaps the reader likes it, perhaps not. Still, the text is already bought and paid for. This means the author, via 3rd part, can fool the reader to buy the book. Therefore we have reviewers, professionals or friends - and nowadays also collaborative intelligence as in Amazon.com. Another way is to have faith in the reader – if he or she likes the text it might not be so far fetched to think he or she actually would like to pay for it after delivery, so to say. In this scenario one always risks that the reader does not like what they read, and therefore deny paying. It is also a question of morality. How many patrons are willing to contribute, and is that enough for the author to make a living? But in the Web 1.0 very few of us will ever be published. In the Web 2.0 mindset everyone at least has the chance of being read. This kind of authorship has escalated in recent years, much due to smoother financial systems such as PayPal. PayPal has contributed a lot to the growth of the Long Tail.

Research 2.0, Science 2.0?

I suggest a research 2.0 concept to include:

- Open access to information created by public authorities (Universities and the like)
- Open Peer Review
- Collective Intelligence in research environments
- The Web as platform (paper journals is not of much use in the Web 2.0 era, only e-information can be true objects to collective intelligence)

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[28] http://www.thelongtail.com/. Viewed: 2006-02-10

1990, Richard Stallman said "I believe that all generally useful information should be free. By 'free' I am not referring to price, but rather to the freedom to copy the information and to adapt it to one's own uses" (Denning, 1990). Stallman's statement is a more balanced version of Stewart Brand's poetic words "Information wants to be free" from 1984 (Clark, 1999). It is possible you could say that information wants to be free, but it is also a fact that pigs and cows want to be free (I think). But we do not let them.

It is self-evident that all information cannot be free. Stewart Brand's poetic words might be true if information would be counted as organisms with free will. I guess every entity with free will wants to be free. The problem here is how we categorize and group things. Is it really possible to create a group called information and give it a common set of properties? I do not think so. Commercial information cannot be free in every sense of the word. Amazon.com, for example, would not exist if all information the company is housing would be free – at least not in a substantial form. It is also a fact that Amazon.com probably would not be the icon, as it truly is, if they did not understand the poetry of Stewart Brand's words. It is a truism that collective intelligence would not work if we had to pay for it. The rise and fall of Web companies will to a great deal depend on their ability to create a balance between commercial and free information. Free information is an asset for all commercial organizations and an absolute must for some of them. In the future a substantial part of this free information will be about user participation.

There are some forms of information corresponding especially well with Stewart Brand's and Richard Stallman's word – academic information. With academic information and knowledge, I mean information and knowledge produced in research by government financed resources. To this category I count most information and knowledge produced by universities and other forms of higher education institutions. I do not count information and knowledge produced by private companies. The form of information and knowledge produced by companies such as Microsoft and Sony belongs to another discussion.

Before the digital era, before Web 1.0, publishing companies had a substantial role since those kinds of resources were needed to select, distribute and spread information about the information created in research institutions around the world. In the Web 1.0 era there has been a growing resistance against the very nature of research publishing companies. Most of these voices are based on the notion that "information wants to be free". Many universities have built their own publishing environments. The reason is not only because they want the information to be free. It is because they have realised that the business model in the academic publishing industry is out of date. A university produces large amounts of high quality information and knowledge and much of that information and knowledge is collected by publishing companies, printed on paper and/or locked in expensive digital suites and sold back to the university in the form of very expensive Journals and database subscriptions. The only reason this business model still works is because the academic norm is very conservative. The model is strongly linked to academic quality and ranking system. I do not think most researchers are so conservative though; the conservation mechanism mostly lies with the research funding and career system in the academic society. That system is still extensively focused on how many articles or books a certain researcher has published in a defined set of well known academic journals or by academic publishers.

The first point to make for a research 2.0 concept would be to free the academic information and knowledge from commercial slavery - if you publish an article in a journal, or likewise, always keep the right of reasonable usage, like a creative common license. In a connected research environment, we cannot make valuable information invisible.

Open Peer Review

> What is the nature of intellectual work in the peer review process? Reviewing a submission involves drawing on certain criteria (e.g. theoretical content; empirical content; presentation quality; appropriateness for the publication) to evaluate the quality of reasoning and evidence provided, to probe for weaknesses, acknowledge strengths, and question background assumptions. In effect, reviewing is an argumentative process where reviewers are engaging in an imaginary debate with distant authors who are not present to respond to their analysis. This paper-based review model has shortcomings in that questions go unanswered; confusions go unclarified; criticisms go undefended. The dynamic cut-and-thrust of debate normally found in face-to-face contexts such as workshops or conferences is not supported by the paper-based review processes, nor is it yet being realised in the new electronic media.

> We are currently rethinking the review process to use new technologies in order to recapture the best features of a dynamic scholarly debate. This rethinking is guided by existing research into hypertext-based, computer-supported collaborative argumentation. Argumentation research is concerned with developing notations and tools to facilitate public debate and negotiation. (Sumner, 1996)

The text above was written 1996 by Tamara Sumner and Simon Buckingham Shum of the Knowledge Media Institute of the Open University. If I would try to analyse the Open Peer Review discourse, the result would not be so flattering for the academic society (from my viewpoint). A search on the Internet for sources of "open peer review" articles resulted in the fact that the open peer review discourse seemed to have had its peak around 1996. Since then Open Peer Review has had a steady stream of voices, such as João Pedro de Magalhães (2004) and Richard Smith (1999).

The problems with the traditional peer review system are linked to the question of how authority is created and distributed. This question is raised by Elisabeth Gulbrandsen, Albert Nsengiyumva, Birgitta Rydhagen and Lena Trojer in *ICT, innovation systems and the role of universities in societal development - a (post)colonial strain?* (Gulbrandsen et al., 2004):

> One important aspect of informal knowledge is the notion of authority or lack of authority in a text. The ability to recognize such authority is hard to make explicit and thus difficult to achieve. "Very few scientists can answer questions about why certain texts give an impression of 'competence' while other texts don't" (op. cit., p. 25, my translation). Gerholm and Gerholm describe this ability as a feeling for how authority is created in a text or a lecture, for what counts as an argument, for the common attitude towards the surrounding world and for the personal style accepted by colleagues. What we want to leave behind as outdated conceptual models may live on as cultural frameworks, showing itself spontaneously in practice as a "theory-in-use".18

> This is not a call for any old or new liberalism, but I think Wendy Hollway makes a point by stating that: "Science as we know it could only become dominant because it was preferred" (Hollway, 1989, p. 11).

This text questions the idea of formal authority as valid judge for knowledge claims. In the Open Peer Review discourse, the word *open* is a key word, but open can, and does, mean different things. Most often it means *transparent* as opposed to *hidden or closed*: "The primary argument against closed peer review is that it seems wrong for somebody making an important judgment on the work of others to do so in secret. A court with an unidentified judge makes us think immediately of totalitarian states and the world of Franz Kafka" (Smith, 1999). As Magalhães says "Anonymity is based on the principle that anonymous reviewers will be more honest and objective. For example, open peer review may hinder junior scientists from rejecting works by more senior colleagues. This cowardly behaviour is nearly exclusive of science. In the arts and even in politics criticism is open and serves an important role in making ideas stronger" (2004). Most voices in the Open Peer Review discourse want to have a transparent peer review process. Starting from a Web 2.0 perspective, *open* should mean Open in the words every sense. The peer review process should not only be transparent, it should also be open for participation.

Why willingly create borders at all in the review process? For a transdiciplinary mind, this is really hard to understand. In more closed and highly specialised disciplines, such as medicine or physics, the walls are kept to keep the ignorant people out. We all know these explicit walls are unnecessary, because most of us ignorant people would never think of the idea of making a contribution to the discussion, since we know we are ignorant, and we would not want it to be otherwise. But the walls also stop possible critique regarding research methods.

Open Peer Review in the spirit of Web 2.0 would mean complete openness in the research process. No researcher has to be hesitant of "The cult of the amateur" in the researchosphere. In 9 cases of 10, the amateur does not have the right words to understand a research discourse and even less to make a contribution. When an amateur raises his or her voice it is most often wise words worthy of attention. We are fools if we do not take them / us seriously, and still more fools if we try to stop them / us from entering the conversation. We are all amateurs when it comes to most issues, and we are all experts when it comes to some issues.

An Open Peer Review research facility could be realised in many different ways. I am going to sketch a Web 2.0 inspired publishing environment for the transdiciplinary field of Technoscience Studies.

The website would of course be developed on top of an open source environment. The interface would preferably be ajaxian lightweight with instant responses when a link or button is clicked. Anyone could join this community. You would not have to join just to read texts, only to write, but the point is that the communication would be bidirectional so hopefully most of the users would register with the community. The community would have to be open for reading so the search engines could index the site. Your identifier in this community would be your real name, not an avatar or something like that. Your identity is connected to an "about-page", where you are requested to write about your context. This context is very important, since the context is integrated in everything you write, both your own texts and your comments of other texts.

Everyone has the same right to write articles and comment on other participant's texts. Both writing texts and making comments are viewed as valuable kinds of participation. An important fact is that commenting on other author's texts has the same potential value as writing your own. The Web of comments in which a user has participated should be collected by the system and displayed in the same obvious way as the articles of the person in question. The network of a person's articles and comments is a person's Web of participation.

Every participated item can be valued by everyone. In practice, this evaluation might be realised by putting an evaluation box in connection to all articles and comments. In this box you could give a quick response to the text, and also see an aggregated view of how other readers have evaluated this article or comment.

With all this user participation the CI machine could be created to do several interesting tasks. You could, for example, let the CI machine work out the most useful users and mark their name with an icon separating them from the others. This kind of hierarchy creation would simulate how hierarchies are created in real academic situations – in the best of all worlds. In real academic life it is not only the value of your texts that places you in the hierarchy. It could for example be more difficult to gain recognition if you are a woman (Wennerås and Wold, 1995) (Wennerås and Wold, 1997) , or belonging to some kind of minority. It is also an advantage if you know people in strategic positions. Open peer review and collective intelligence could create a more text related hierarchy – research democracy.

Open Peer Review is the obvious review system for research 2.0, and for future development of research communication.

Collective Intelligence in Research environments

The Open Peer Review system I have sketched out very briefly above relies heavily on the kind of hybrid intelligence called collective intelligence. Researchers have always communicated at seminars, conferences and staff meetings, and technology has been involved for a long time now. Technology mediated conversations have been extensive with tools such as phone, email and Usenet. Technology mediated Collective Intelligence is hybrid intelligence. The CI machine and all the voices create the intelligence together. Most research environments would probably gain by moving some of the interaction to the Web - such as in the form I sketched above. It is important, though, that the design of the CI machine includes other researchers than hard core mathematicians and programmers, such as psychologists and gender researchers.

The Web as Platform

Thinking about the Web as a native environment for research will lead to more information within reach for the CI machines. Let us say, for example, that you prepare a PowerPoint presentation for a lecture series. You probably want your students to be able to download the presentation instead of splitting their attention by writing notes. Perhaps you do not want to "publish" your presentation for a wider audience. Perhaps you do not think your presentation is good enough to be published. This line of thinking belongs to the time before the Web. We have to move away from thinking about research texts as "paper sheets with thousands of well grounded and thoroughly researched thoughts". Publishing is everything from making a bookmark in Delicious to commenting on a blog article to writing long articles. That insight is the heart of thinking about the Web as Platform.

Journals published only in paper format do not belong to this time. Academic knowledge in this time wants to be found and integrated. This time belongs to search engines, CI machines and researchers with an urge to participate. Google Book Search has shown that it is possible to gain a semi transparent view of commercial information (you can perform full text searches of books even though they are not accessible for reading in their complete form). A problem in the academic sphere is that the act of searching in itself is commercial and it is (partly) the companies hosting the information that perform the search. Their business model focuses on finding and getting the information as a package.

Web 2.0 Services

In order to contribute to a more substantial understanding of the concept and practice of Web 2.0, I need to go into particularities. The detailed presentations below must not be interpreted as manuals but as empirical presentations for the purpose just mentioned. The software and Web services I write about here are selected on behalf of my own experience. My goal has been to describe and to a certain degree analyse a wide array of systems attributing somehow the term Web 2.0 software. In most cases the systems I have selected for my empirical work are not the only ones in its field. I do not say these software examples are in any way better than corresponding software.

You might think this section is banal, and it is, but the choice of services is based on a selection of several hundreds of similar services. Every feature I describe is in its turn selected from the rich set of features these services contain. These features are the best ones to describe Web 2.0 in praxis. This analysis – the selection of services and features - can of course be criticized.

Every chapter starts with a screen shot from an essential, or fundamental, part of the Web site and a likewise essential part of its text, usually the site's *about text*. An *about text* is, most often, a short text explaining the essence of the site. The *about text* or *about page* is one of the many unspoken conventions created on WWW. Someone sometime came up with the idea to put

their most essential text in a wrapper called *about page*. Some Web designers were influenced, intentionally or unintentionally, by the word and called their own most essential text an *about page*. The phenomenon spread and the word became a concept.

This is a highly empirical part of the text and some of you might think it is boring. Especially if you do not have the same passion for technology and music as I have. This part has an essential role in the text though, because it is impossible to construct Web 2.0 knowledge if you do not understand its practices. These texts are also discussions of Web 2.0 practicalities. The analysis, which leads to the choice of these services and the discussed details, are by no means neutral but partial translations (ref. Haraway). All of these texts have important points to add to the big discussion, and in the construction of the concept Web 2.0.

Ebay

> About text:
>
> eBay is the world's online marketplace - a place for buyers and sellers to come together and trade almost anything!
>
> Here's how it works:
>
> * A seller lists an item on eBay - from antiques to cars, books to sporting goods. The seller chooses to accept only bids for the item (an online auction) or to offer the Buy It Now option, which allows buyers to purchase the item right away.
>
> * In an online auction, the bidding opens at a price the seller specifies and remains on eBay for a certain number of days. Buyers then place bids on the item. When the listing ends, the buyer with the highest bid wins!
>
> * In fixed price listings that offer Buy It Now, the first buyer willing to pay the seller's price gets the item.[28]

Ebay is a shopping community with 180 000 000[29] users, which might be compared to a super gigantic mall the size of central Europe. In this mall you can buy everything between heaven and earth, both new things and second hand. You can buy things directly or by bidding, making Ebay an antique shop, an auction house, and a mall; all in one package. The sellers are private persons, selling something like their old TV, or a store with thousands of products. All sellers have one thing in common – they are exposed to a gigantic mind which decides if they are pleased with the seller or not. Every time someone has bought something on Ebay, they are asked to evaluate the buyer and the seller is asked to do the same.

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[28] http://pages.ebay.com/help/newtoebay/questions/about-ebay.html. Viewed: 2006-02-16
[29] Seattle Times January 29, 2006. http://seattletimes.nwsource.com/html/nationworld/2002769182_ ebay29.html. Viewed: 2006-02-16

Figure 10: Ebay – seller preference badge

Figure 10 shows a seller preference badge on Ebay. The badge is situated at the page of every product item - this particular badge was on a product page for an Ipod charger. Before I place a bid or buy the charger directly I check the seller preference badge to see if the private person or the store can be trusted. This product is sold by the user "bluetoooth_direct_2010"; this user also has a shop on Ebay called First2Save. Clicking on the First2Save-link takes you to the seller's Ebay store. The store might have hundreds or thousands of items. A big difference to an ordinary Internet store is that you can bid on the products. Therefore, the items are not aggregated, which means there is one list post for each product item. This makes it more difficult to browse than an ordinary Internet store.

Under the sellers ID you find the feedback score. This seller has a feedback score of 18264, which means that 18264 buyers have placed an evaluation after the purchase and 99.8 % of these buyers had a positive experience. If you want more detail you can read the feedback comments.

If the seller seems OK you just bid on the item or buy it directly (if both choices are available). Payment can be done in several ways. The most usual way is to use PayPal, which is owned by Ebay. PayPal is an Internet money transaction service which is free of charge when buying. With PayPal it is possible to buy things on the Internet without having to give anyone your credit card number – besides PayPal of course. PayPal also stores your shipping address making it very fast and easy to buy things.

Ebay clearly has its limits – everything has shipping costs and they might be substantial if the product is big or heavy. It might also be difficult to return a product if it does not work as expected. This is really not shortcomings of Ebay; it comes with their business model. Some products are suitable for Ebay, some are not.

As with other big Web 2.0 companies their API is open for Mashups (a service based on information from other services). There are for example several Mashups enhancing the Ebay search interface and comparing prices of for example Ebay, Amazon and Yahoo[30].

[30] For Ebay Mashups, see for example: http://www.programmableweb.com/api/eBay.
Viewed: 2006-02-17

Amazon.com Becomes a Tagging Community

> About text:
>
> Where We Started
>
> Amazon.com opened its virtual doors in July 1995 with a mission to use the Internet to transform book buying into the fastest, easiest, and most enjoyable shopping experience possible. While our customer base and product offerings have grown considerably since our early days, we still maintain our founding commitment to customer satisfaction and the delivery of an educational and inspiring shopping experience.
>
> Where We Are Today
>
> Today, Amazon.com is the place to find and discover anything you want to buy online. We're very proud that millions of people in more than 220 countries have made us the leading online shopping site. We have Earth's Biggest SelectionTM of products, including free electronic greeting cards, online auctions, and millions of books, CDs, videos, DVDs, toys and games, electronics, kitchenware, computers and more.[31]

Amazon.com was one of the first services with features which are now described with the concept Web 2.0. I have used Amazon as librarian and as private person for many years, and the feature I cherish mostly, is the network of voices creating an intelligent shopping community.

Visiting Amazon can be a bewildering experience, bordering on information overload. The first 5 seconds of the first time you are visiting Amazon's Web site are extremely clear and understandable. The search field hits you right in the eye. It screams out to you to write something in it and hit the submit button. Writing a word in Amazon's search field is like feeding the beast with pure energy. The Amazon beast is one of the most impressing CI (collective intelligence) machines in the world, partly because it is the blueprint for most of the Internet's commercial CI Machines. The machine tracks your searches and clicks, and tries to feed you with contextual information, which is collected from users' traces through the system.

On the screen you can see Listmania and different kinds of rankings. Listmania is top-lists where users list their favourite products in a certain category or subject. A person who likes Kafka might list his best books or someone who is into jazz music could list their favourite jazz CDs. Listmania is an old function at Amazon and as an isolated phenomenon it is quite Web 1.0 since the lists are personal and static. A Web 2.0 variant would probably let other users interact with the list. In a way this is the nature of the whole of Amazon. Amazon is grounded in the 1.0 mindset, but at the same time the company represents the start of 2.0. Most of the 2.0 dimension lies within the layer of collective intelligence making their product database come alive as people start to have relations to it. Amazon is quite special in the Web 2.0 company farm. Their economy is based on sales, not commercials, and their products are real things, not services. This makes Amazon an outsider, as well as some kind of big brother (not in the Orwell sense though). If Web 2.0 would come to be experienced as some kind of bubble, I guess Amazon would not be affected.

Listmania is very useful if you are subject browsing. Let us say you are curious about contemporary jazz, but do not have a clue about how to find that kind of music. If you found category listings of contemporary jazz, and picked some music; it would be at random. Amazon's Listmania could help you find lists of a person's favourites in the field of contemporary jazz, and you could use those suggestions as starting points for your own explorations.

If you click one of the albums in the list, you land on the product page, a page filled with information. You might want to listen to some examples, which can be done by reading the editorial review and after that browsing the user reviews. Every user review has a ranking in form of 1 to 5 stars, thus for every user review you know what that user thought of the cd in terms of bad / not so good / good / very good / excellent, or something like that. With this preliminary evaluation in mind you can start reading the reviews. If you want help to filter the reviews; you can look at the number of people who marked the review as useful. If 59 of 63 users marked a review as useful, it probably is for you too.

Figure 11: The tag feature on Amazon.com

Recently, Amazon has also picked up the folksonomy thought, Figure 11. It is possible for users to tag the product. If you think a CD is contemporary jazz but nobody has tagged it yet, you can help others by tagging it. But even if someone has tagged it already, it can be useful to tag it with the same tag since the number of people, who tagged the CD with the same tag, is aggregated and displayed within parenthesis. The CD in the figure above is Jan Garbarek's "In Praise of Dreams". This tagging feature is new, from the end of 2005. Most CDs do not have that many tags, but in a year or so when more people have tagged them, it might be very useful. Let us say the tagging in the screen shot looked like this instead: folk music (2), Scandinavian jazz (8), contemporary jazz (3), smooth jazz (10), world music (19) – this scenario is quite possible. I added the tags smooth jazz and world music after I took the screen shot. These numbers would mean that few people seemed to regard it as folk music, and that people who tagged it after me thought it to be smooth jazz rather than contemporary jazz, but most people regarded it as world music. This could really help me, if I never had heard about the artist.

The exploration of possibilities starts here. If I click on the contemporary jazz tag, I get a list of CDs tagged with contemporary jazz and could therefore go on to explore the genre further – actually I was the first one to use the tag "contemporary jazz" in the whole Amazon.com and Jan Garbarek was therefore the first artist to be tagged with this tag. Searching Google on the phrase "contemporary jazz" gives 1,510,000 hits; "smooth jazz" gives "3,070,000" hits (2006-02-18).

Delicious and other Bookmark Managers

I use several computers and several Web browsers. Every time I am trying to access a Web site with a non guessable URL and bad googlebility, I feel lost in a world without reason. The World Wide Web can be extremely difficult to navigate in. The first time I used Delicious was early in 2004. Delicious was maximum 6 months old by then, and I did not really study it enough, so I could not see its advantages. It did not seem as smooth as my browser bookmarks, even though I never found those. When I returned to Delicious in the middle of 2005, everything came together. Now it seemed to suit me perfectly.

Delicious was created by Joshua Schachter and came online in late 2003. The site is a social bookmarking Web service for storing and sharing Web bookmarks:

About text:
del.icio.us is a collection of favorites - yours and everyone else's. Use del.icio.us to:

* Keep links to your favorite articles, blogs, music, restaurant reviews, and more on del.icio.us and access them from any computer on the web.

* Share favorites with friends, family, and colleagues.

* Discover new things. Everything on del.icio.us is someone's favorite - they've already done the work of finding it. Explore and enjoy.[32]

"Everything on del.icio.us is someone's favorite", is a powerful statement. Of course, it is only true in a semantic sense. Every tagged page is a favorite if you call these database posts of Web pages favorites. I use the word bookmark, since a few of my "bookmarks" are truly my favorites. A bookmark is a way of marking a page so that I can easily return to it. A great many of my bookmarks are far from favorites, but still I think it is important to remember the Web site and be able to return to it if I need or want to.
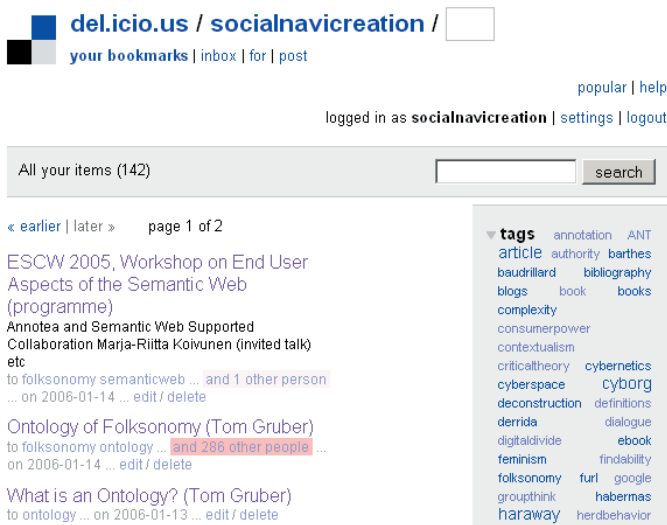

Figure 12: Screen capture of the user socialnavicreation's user page at del.icio.us;
http://del.icio.us/socialnavicreation, viewed: 2006-01-17

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[32] http://del.icio.us/about, Viewed: 2006-01-16

The figure is showing a screen capture from my (former) user page at Delicious. The page is similar to the main page with the difference that the main page is a compilation of all users' bookmarks instead of just mine. As you can see in the banner, they contradict themselves when it comes to the terminology for their most important word. Here they call the bookmarks "bookmarks" and not "favorites", as in the *about text*. It might be because they want to address both Firefox etc. and Internet Explorer users. It might also be that they actually se their bookmarks as some kind of favorite Web pages and not just as "remember-marks".

This view contains my bookmarks. My username is (or rather was) socialnavicreation. The URL to my delicious page is http://del.icio.us/socialnavicreation. This page is open for everyone. It is like my own Web page, the difference being that I have no power over the layout or anything else besides which bookmarks and tags it contains.

For every bookmark you see the title, the tags belonging to it, the date it was created and how many other people have bookmarked this page. For example "Ontology of Folksonomy" is bookmarked by 286 users, including me. If I click on this figure, I get a list on all those 286 people and might go further and see what other bookmarks they have, knowing that we have at least one in common.

On the right side you have the Tag Cloud. It is a visual representation of the occurrence of each tag. If I click on a tag, I get a list of all bookmarks tagged with this tag. The tags can also be visualized as an ordered list.

The *inbox* link in the head is like an RSS-reader. I can subscribe to another Delicious user's bookmarks or I can subscribe to a certain tag. If I subscribe to another user's bookmarks, I get every bookmark that user creates sent to my inbox, and if I subscribe to a certain tag, I get all bookmarks all users create that contain this certain tag. The inbox is effective if I want to keep track of a user with the same interests as I have, and the tag subscription is useful to get every bookmark the aggregated Delicious users create on my favorite subjects. There is also the possibility to subscribe to compositions of users and tags. Someone could for example subscribe to all bookmarks I create with the tag *folksonomy*, or bookmarks from me containing both *folksonomy* and *cyborg* (folksonomy+cyborg).

I can in addition subscribe to both user bookmarks and tags through an RSS reader with the following syntax:

- **Main** - del.icio.us/rss/
- **User** - del.icio.us/rss/joe
- **Tag** - del.icio.us/rss/tag/bananas
- **User/Tag combo** - del.icio.us/rss/julian/science
- **User/Tag intersection** - del.icio.us/rss/alan/music+dance
- **Popular** - del.icio.us/rss/popular
- **URL** - del.icio.us/rss/url?url=http://www.example.com[33]

This means I can have a certain person's bookmarks with tags of my interest in the same interface as my other subscriptions outside of Delicious. A special feature in Delicious RSS service is the possibility of subscribing to a certain URL. This can be used in several ways. I could for example subscribe to the URL of my own Web site, so that when someone on the Internet creates a Delicious bookmark of my site I get a message in my RSS reader. This URL can be external to Delicious or it can be internal. Thus I can get a message in my RSS reader when someone creates a bookmark for my Delicious site, i.e. http://del.icio.us/socialnavicreation.

[33] http://del.icio.us/help/rss, Viewed: 2006-01-19

The *for* link in the header is a recommendation system. All Delicious users can send recommendations of Web sites to other users. If someone sends me a recommendation of a certain Web site, I find the bookmark in my for-page. I click on the link, which takes me to that website where I can choose if I want to create a bookmark for myself or ignore it. To send a recommendation to another user is easily done by attaching the tag "for: username" when bookmarking a site. Then the site becomes both one of your own bookmarks and at the same time is sent to another user as a recommendation. This can also be done with bookmarks you already have by adding the for:username tag.

The *post* link in the header is used to post or create a bookmark. The link leads to a page where you can write a URL and other meta information. Meta information is information about information. In this context the most important meta information is a title and one or several tags. This function has some usefulness if you want to create a bookmark on a computer other than your own. The preferred way of creating a bookmark, however, is to use Delicious browser buttons. The browser buttons are a link to your Delicious user page and a special link with a javascript called a bookmarklet. The bookmarklet is a quick way of creating bookmarks; the javascript contains your username and password so you do not have to log in somewhere to create a bookmark. Just navigate your browser to the preferred page and click the bookmarklet link, type one or several tags and save the bookmark. I use these buttons in a Firefox plugin which puts two distinctive buttons at the left side of the address bar, see Figure 13. The white, blue and black square button links to my Delicious bookmarks and the Tag-button is the bookmarklet, which I press when I want to bookmark a page.
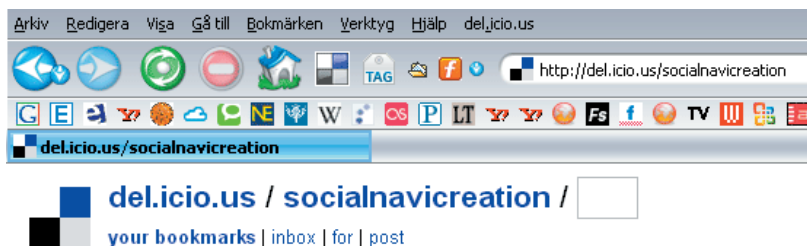

Figure 13: Firefox plugin buttons for Delicious: the white, blue and black square and the button named TAG.
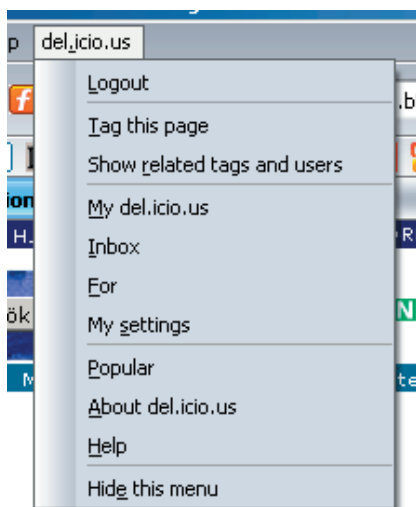

In the menu above the browser buttons there is an entry called del.icio.us, see Figure 14. Most entries in the menu I have dealt with above, but not the *popular* link. The popular link is both on the tool menu of the plugin and on the user page. The popular page is interesting but has a bad layout. It is difficult to understand the context of the popularity, for example: how long is the time span of the list. There are other sites which have the same information, but with a better interface. Since Delicious can deliver most of its information via RSS it is quite easy to build sites which use their information to display for a certain purpose. There is for example a Web site called populicio.us[34] which has taken the information from del.icio.us and compiled a better *popular* page

Figure 14: Delicio meny item

[34] http://populicio.us

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where it is possible to change the view of the page in order to have it displaying the most popular links of the last 24 hours, 48 hours, 1 week, 1 month, or the most popular of all time[35]. Some day I will do a thorough analysis of these entries, but for now I am just pointing to some trends I see. The most bookmarked page is Slashdot with 13798 bookmarks (2006-01-20).

Slashdot's title and subtitle say much of the content on the Web site: "News for Nerds. Stuff that matters"[36]. Slashes and dots are strongly identified with the URL, as URLs are structured through slashes and dots. I am curious about the word 'nerd' though. I have always looked upon it as a positive and cool word, as they must do at Slashdot. But indications I got from students in the Media Technology Programme at BTH strongly suggest that this is not the case. They do not see nerds as the heroes of the dot.com era, but as strange outsiders, bullied by the cool people. The students seem to have a more complex view of the word nerd than depicted in Hollywood movies. Stuff that matters is of course stuff that matters for nerds, which means computer freaks. The most popular bookmark is like an icon or logo of Delicious, because it is mostly people interested in computer related matters who use this site. The same kind of tendency can be noticed for Wikipedia, which includes more computer related words than a traditional Encyclopaedia.

Neither Delicious nor the person behind populicio.us give any information about how they create the popular lists. Thus you cannot be certain that the facts are accurate. Since this reluctance to reveal the "recipe" of their application is quite general on the Web, I cannot ignore every site that does not stand up to traditional standards for research sources. If one is to perform a detailed study of these applications and systems, one has to take this into account. In this study, I have decided to take the facts with a pinch of salt. They are just small pieces in a complex Web of knowledge, and every piece does not have to be entirely accurate for the knowledge Web to be useful in a research context.

Pos	Page	Total
1	Slashdot: News for nerds, stuff that matters	13824
2	Quick Online Tips: Absolutely Del.icio.us - Complete Tool Collection	9532
3	Welcome to Flickr - Photo Sharing	8082
4	Wikipedia, the free encyclopedia	7826
5	script.aculo.us	7378
6	The 46 Best-ever Freeware Utilities	6577
7	Pandora	6454
8	digg	6191
9	Web Developer's Handbook: developing web-sites, exploring own imagination | C ...	5814
10	Lifehacker	5693
11	digg	5557
12	:::ENGADGET:::	5445
13	Technorati: Home	5378
14	css Zen Garden: The Beauty in CSS Design	5337
15	43 Folders	5078
16	I want to - a page of utilities that help you do stuff you want to	5030
17	A List Apart: A List Apart	4868
18	adaptive path » ajax: a new approach to web applications	4833
19	[ws] Color Scheme Generator 2	4719
20	Essential Fonts For Designers | 300 Free Truetype Fonts You Should Have	4677

Figure 15: Excerpt from Most popular del.icio.us sites of all time. http://populicio.us/fulltotal.html, Viewed: 2006-01-20

[35] http://populicio.us/, Viewed: 2006-01-19
[36] http://slashdot.org/, Viewed 2006-01-19

As you can see in the excerpt in Figure 15, the 20 most popular bookmarks in Delicious are all computer related. The places 2-4 are folksonomy related Web sites. The other big theme is Web development. As I mentioned above the Slashdot is like a symbol at the top of this nerd (as Slashdot say) mountain. I belong to this crowd, but in a mild sense, meaning that I am not as intuitive as many of my younger nerd companions.

Bookmarking and Blogging with the Flock Web Browser

> We started Flock to build tools that empower people and smooth out some of the more hairy parts of living and working online. As it is, we live and breathe this stuff everyday and wanted better tools to do the things that we love doing online.[37]

Flock[38] is a Web browser with built in capabilities for folksonomy. This means that they have integrated Web services such as Delicious and Flickr in the browser as well as smooth ways to blog. Flock is really built on the Firefox engine, so all Web sites that work with Firefox will also work with Flock, and they render pages in the same way.

Figure 16: Flock Web browser. http://www.flock.com/

Figure 16 shows the main navigation area in the Flock browser. Most menu items are the same as in Firefox, but there are some interesting differences. The blue button with one single star is the bookmark button. When this is pushed a dialog box turns up giving you the chance of naming and tagging the bookmark. Afterwards the button turns orange. Every time you visit a Web page you already have in your bookmark collection, the button is orange, otherwise it is blue. The bookmark you just created will turn up in your Delicious account on the Web.

The button with three stars opens a bookmark manager. This function is actually a manager of Delicious bookmarks, integrated with the Flock browser. The manager uses the Web bookmarks but adds several layers of functions. The Bookmarks can be divided into collections, and RSS feeds are seamlessly integrated. Clicking on an RSS link displays the posts on a well formatted Web page.

The button that looks like a feather pen switches on a blog editor, which can be configured to work with most blog services and software on the market. Blogging is also easily done by marking some interesting text on a Web page, right click and choose "Blog this". Then the blog editor, which looks like an email client, turns up and the text you marked is already in the editor with the link to the Web page. Just write something and press Publish to send it to your blog. There is also integration with Flickr photo sharing service. Drag a picture from Flickr into the blog editor and send it to your blog with just a click.

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[37] http://www.flock.com/about/. Viewed: 2006-02-11
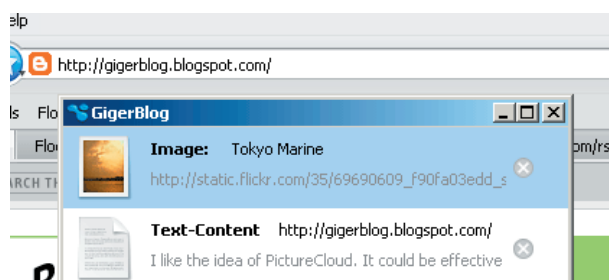
[38] http://www.flock.com/

Figure 17: Flock Web browser: The Shelf

The most exciting feature, perhaps, is called *The Shelf*, Figure 17. It is like a scrapbook to where you can drag Web contents like images, text or URLs. From the shelf it is easy to drag things to the blog editor. Flock gives the blogger a workflow very far from traditional Web page editing. The blogger becomes a knowledge synthesizer, who surfs the Internet, picking up interesting pieces of knowledge, putting them into a new context and in that process creates new knowledge.

Last.fm and Pandora – or What is the Connection between Esbjorn Svensson Trio and Goldfrapp?

> About text:
> Last.fm is the flagship product from the team that designed the Audioscrobbler system, a music engine based on a massive collection of Music Profiles. Each music profile belongs to one person, and describes their taste in music. Last.fm uses these music profiles to make personalized recommendations, match you up with people who like similar music, and generate custom radio stations for each person.[39]

I have used a music service called Last.fm. It is a social, folksonomy, music application and radio. The first thing I did after having created an account was to install the plug-in for Itunes - which is the music player of my choice. I have my computer connected to the stereo so you could say that my stereo is an advanced music player containing all of my music. In Itunes, I installed the Last.fm plug-in. When I play something on my stereo (from the computer), Itunes' plug-in sends the music to Last.fm's Web site. When the music is received by Last.fm's engine, their algorithms start to execute tasks like aggregating everything I play and building top-lists like: "Weekly top artists, Top artists overall, Top tracks overall" see Figure 18.
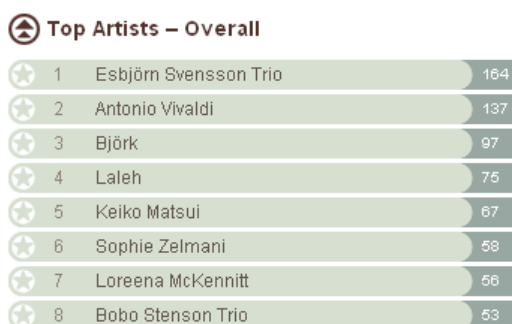

Figure 18: Top List at Last.fm. http://www.last.fm/user/vikingman/. Viewed: 2006-02-10

[40] http://www.last.fm/help/, Viewed: 2006-01-16

These lists are published on my profile page and they are public. It is also possible to tag music and from the tags reach other users with the same music taste. You can also reach other people if they listen to the same artists, and you can participate in communities with people who have the same music taste.

One night when I was visiting my Last.fm profile I clicked on a link to one of my neighbours. I understood that the CI machine had made this person my neighbour because of our mutual interest in the Swedish jazz-rock band Esbjorn Svensson Trio. When I saw this person's top list I recognized some musicians from my own favorites, some not. I was a little bit curious when I saw that a group called Goldfrapp was in second place on the "Top Artists - Overall". I know of that group, but I saw it as an electro trance group, played on the discothèques, and danced to by teenagers – not at all my taste. But had I really listened to their music or had I just formed an unfounded, uncontextualized view?

I went to the music store and bought the latest Goldfrapp album with the intention of really listening to it – and I did. I recognized the heavy sound, a perfect match to a high-quality stereo or headphones, and still it was the electro thing I expected, and yet... The more I listened, the more I liked it. But where was the connection? I was certain, there was no connection between E.S.T and Goldfrapp, I thought. It could be that this person's wife or husband or children had listened to something, and the question was therefore out into the blue. And still, on my list (Figure 18) Vivaldi is second, and is there really any relation between E.S.T and Vivaldi.

I could try to answer that by listening to another music project called **Pandora**. Pandora is driven by the Musical Genome Project:

Pandora about text:

For almost six years now, we have been hard at work on the Music Genome Project. It's the most comprehensive analysis of music ever undertaken. Together our team of thirty musician-analysts have been listening to music, one song at a time, studying and collecting literally hundreds of musical details on every song. It takes 20-30 minutes per song to capture all of the little details that give each recording its magical sound - melody, harmony, instrumentation, rhythm, vocals, lyrics ... and more - close to 400 attributes! We continue this work every day to keep up with the incredible flow of great new music coming from studios, stadiums and garages around the country.[40]

Pandora is the equivalent of the human genome project, but in music. The task they have before them is to describe music as rational parts, which together can create a whole, like musical DNA.

Pandora is a radio. It has no social functions. I can create my own radio station by naming an artist like E.S.T. The station then plays a lot of music I like, based on the structure of E.S.T's songs, such as Jan Garbarek and Pat Methany. The problem is that I already listen to these artists. Pandora is excellent as an analysing machine, but it is predictable. When I listen to the radio station of Last.fm, it plays a lot of music I can hardly stand, but it seems like it learns and becomes better and better each time I listen to it. Last.fm is social software, a Web 2.0 service. It is participatory and gets better the more participants there are. Pandora is Web 1.0 when it is at its best. What I would like is something in between, something with the power to address both the music in itself and the connection between music listeners.

And finally to answer the question in the header: yes, there is a connection between Esbjorn Svensson Trio and Goldfrapp. This connection is *me*, and the person I got the unintended

[40] http://www.pandora.com/. Viewed: 2006-02-10

recommendation from, and probably a lot of other music listeners. I am the junction where the different music styles come together and form a whole.

coComment[41] (Blog Comment Tracker)

> About text:
>
> coComment is a service to simplify of one of the most painful and ineffective processes on the Web: blog commenting. coComment is free, and will help you keep track of the comments and conversations you and others are making on blogs. Did you ever lose track of a conversation because you lost the URL of the post you've commented on? Have you ever wished to be informed when someone responds to your comment, rather than frantically refreshing the page looking for a reaction to your latest comment? How much would it improve your life if you could see all our conversations in one easy and simple page? coComment will address these issues by giving you an easy and seamless way to track and follow your online comments and conversations.[42]

coComment is a Web service for tracking comments. It works like this:

1. Write a comment in a blog article.
2. Press the coComment bookmarklet in your browser. A small logo beside the submit button shows that the comment will be added to your coComment account.
3. Press the submit button and the comment is simultaneously added to the blog article and your coComment account.

Blog: Article	Comments	Latest comment
MindValley Blog: BlinkList introduces advanced	1 CO	17 minutes ago
Rough Type: Nicholas Carr's Blog: Gmail attacks	1 CO	53 minutes ago
TechCrunch: Preview of 3Bubbles	4 CO	10 hours ago
Alex Bosworth's Weblog: Social Software - Viral	2 CO	12 hours ago

Figure 19: A table of the comments in my coComment account.

Visiting your account at coComment, you see the table in Figure 19. To the left are the blogs I have commented in, followed by the title of the article. The column in the middle points to the number of comments written on the article – after I made my comment. Three persons have commented on the TechCrunch article, after I made my comment. Comments made before I commented, are not in this list. The point is that I would see the comments that followed my own, which are possibly in dialogue with me. Commenting is about dialogue, both with the author of the article and other people commenting on the article.

Commenting is participating, one of the core values of the Web 2.0 concept. If you are integrated in a very tight blogosphere, where everyone knows each other, commenting is no problem. Your comment is noted and for every comment you write, you connect yourself tighter to your blogosphere. For example, I am a member of a Swedish photo community called *Fotosidan*[43], like

[41] When this is written, CoComment is still in a beta phase and is not open for public. I am one of the beta testers. I hope it will be in public when this is published.

[42] http://www.cocomment.com/help#about-whatis. Viewed: 2006-02-12

[43] http://www.fotosidan.se/

Flickr. Last summer I was very active and uploaded about 150 pictures, got over 500 comments on them and commented on about 750 pictures myself. But Fotosidan is quite limited in space (the space made up by its users) and all users share a common interest, photography.

Widening our participation arena to the whole Web creates an almost fathomless space to navigate and create in. CoComment and similar systems can make this fathomless space seem more manageable. In addition our culture is about making traces. The most noticeable way of leaving traces in the author-world is still the writing of books, or if you are a journalist, writing in a well known paper or journal. Some researchers and scientists create very noticeable traces in their own community, and since a big part of the research community is international, the traces might be substantial. Now you have Bloggers and Gamers and Wikipedians and they might also leave substantial traces in certain communities.

At the bottom of the trace pyramid are the Commenters. Blogging + commenting are effective ways of leaving traces in the blogosphere. Few people are Commenters, without also being bloggers, but as an isolated phenomenon, commenting leaves scarce traces. CoComment and similar systems might raise the position of the Commenter. Now I have a home page where my mycelia of comments can be displayed to the world. The sum of the small traces might be an artwork in its own right.

Writely – Online Word Processor

About text:

Share documents instantly & collaborate real-time.
Pick exactly who can access your documents.

Edit your documents from anywhere.
Nothing to download -- your browser is all you need.

Store your documents securely online.
Offsite storage plus data backup every 10 seconds.

Easy to use.
Clean, uncluttered screens with a familiar, desktop feel.[44]

Writely is an online word processor with the most important features corresponding to desktop word processors such as Ms Word and Open Office Word, including tables, images, and a spellchecker. Documents can be imported from and saved (exported) to the most common document formats: Ms Word, Open Office, RTF, HTML etc. It is also possible to save to PDF. The native format is HTML. All files are hosted at the Writely server, which also includes images belonging to the documents.

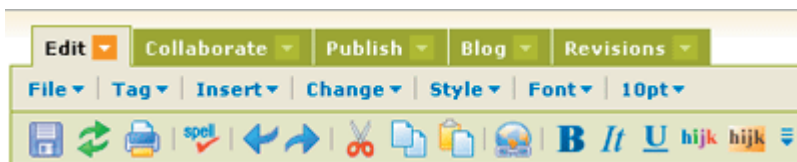
Figure 20: The most central part of the Writely toolbar.

Normally when you work with a HTML file, the included images are separated from the actual document. If you move the file to another place on the hard disk you have to change the path to the image or the file will lose track of the image and is unable to display it. In Writely you

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[44] http://www.writely.com/. Viewed: 2006-02-15

do not have to know where the document file or the image files are stored and in that respect it is like working in Ms Word, where the image files are embedded in the document file. The reason for this is the storing, which is not hierarchical, but based on tags. The non hierarchical tag based storing model is very much in line with the Web 2.0 concept.

As standard a document can only be viewed by yourself, but you can also mark the document as published. If the document is published it can be viewed by everyone, or just the friends and colleagues you specify. You can also share the documents in a deeper sense by inviting your friends to co edit the document.

One of the most cherished features, by me, is the ability to publish the document directly to my blog. This feature is quite excellent since blog editors are too simple for some articles. For example, blog editors have primitive spellcheckers or non at all. The spellchecker in Writely is similar to the one in Ms Word.

The most important feature in this discussion is the ability to collaborate. Many authors can work on the same document. In some sense this is old news. There have been tools for collaboration around for many years. The newness lies in this feature in this particular context. This is one of the features in Web 2.0 which is going to make big changes in the document concept in the years to come. The document as a concept will probably change from a personal entity to a social.

Summary Discussion Web Services

I have tried to be consistent when it comes to the word *service*, but why call these things services when others might use the word software or application when talking about the same thing? The word application (or application software) usually stands for software operating on top of an operating system such as Linux, Windows or Mac OS X. Examples of applications are Word, Itunes and Photoshop. The operating system is like a mediator between the hardware and the application. Both the operating system and applications are software. Software is a very general word. Everything you cannot touch in a computer is software.

Following this line of argument, Delicious, Flickr and the other Web 2.0 services outlined above are software. You might also call them applications. They are applications to the server software and the Web browser. The Web browser is in its turn an application to the client computer's operating system.

If we are taking the user perspective, the Web 2.0 software application is understood as a service. You do not need to install it somewhere. As an end user you just have to create an account, perhaps pay a fee, and start to use it.

If all application software, besides the Web browser, were services, you would probably have more to chose from when it comes to operating systems and Web browsers. A Web service like Delicious or Flickr only need a browser environment, which follows certain standards. The hardware and operating system could be whatever as long as they can harbour the Web browser.

What do these services have in common? One of the most important Web 2.0 features is an ajaxian interface. Some of these applications have Ajax driven interfaces or similar, but not all of them. Flock Web browser, for example, is not even a Web service. It is a container environment for Web services. I do not even think Ajax is important for Web 2.0. Not Ajax in itself. Lightweight smooth and fast interfaces are essential, but Ajax is only the start of this development. Others will follow.

One feature every service has in common is connectivity. Web 2.0 services are like junctions building a net of services where the sum is bigger than the parts. This is actually a self-evident

phenomenon. A native Web service is different from a PC application. For a Native Web service, connectivity is, or should be, as self-evident as a PC application's connection to the operating system. The most dramatic connectivity is perhaps performed by coComment. CoComment functions like a potential layer of cobweb covering the Web. Every time someone makes a comment on a blogpost and calls coComment to suck up the comment, the cobweb of voices thickens. You might think a word processor service like Writely does not have a need for connection. This is wrong. Writely assists you in creating documents and documents are seldom created to be put in a drawer. Documents want to be read and in Writely it is possible to connect people to work together in the document – this in itself is not new. Writely also has an API, which other services can use to connect. One example is the Web based desktop environment Netvibes, which lets you put Writely on a personal Netvibes desktop. Another example is the connection to blog software. You can write your blog post in Writely and send it to common blog services. One of the most important features for a Web 2.0 service is its openness, that it is open for connection to services. Another important feature, the most important from my perspective, is the connection of people.

One of the main points of Web 2.0 services is to make people participate. The participation does not need to be in a CI machine, it might as well be collaboration in documents. Some kinds of services might not be a natural place for collective intelligence – or you might not see the possibilities at this early stage of development. An interesting point though is the high percentage of these services that are good environments for participation.

Part II - Wrapping it all up

Sharing thoughts and information in coffee rooms, staff meetings, seminars and conferences is important, but you have to accept that our professional lives have changed. A substantial part of our work space has actually moved in recent years. It was not a long time ago my desktop contained pencils, rubbers, envelopes, heaps of papers and so on. In the middle of the 1990 it started to change. The pencils, rubbers and envelopes were conjured into my virtual desktop in the PC containing short cuts (icons) to Word, Excel, Netscape, Eudora, and so on. Now, we stand on the threshold of yet another change. The next few years our desktop is going to change enormously. Our work space is changing from using the Web for communication and information searching to really *being* our new office and/or life. The fact that our work environment (or tools if you like) is moving from PC applications to Native Web has more implications than most of us think. A native Web word processor is not the same as a PC word processor.

> In the not too distant future, we'll subscribe to a service without an address. That service will update a widget that finds other widgets, which make widgets for locating obscure jazz recordings. We're not there yet, but it's only a matter of time. Our little Web is growing up. (Saffer, 2005)

There are two words which sometimes are used in the discourse, but never in a substantial way, namely "native" and "connectable". First of all, Web 2.0 is not hype or a bubble (I mean that in a technical sense). Web 2.0 as a core of something new, is close to the concept paradigm. It is not going to be called Web 2.0. But Web 2.0 is an extensive and important step of the development in this direction. I would like to call this future phenomenon the "Native Web". In this era all indirect communication (including what usually is called information transfer) is born on the Web and lives there the whole life without ever leaving it. The native Web will render the words *file* and *printout* obsolete (from the consumer's perspective). The word file is a Web 1.0 word. The word file is an icon of the era before the Native Web. The word Web is NOT equivalent with the word WWW. Today, most of our Web communication is situated on the WWW, but the word Web includes all ICT (Information and Communication Technology) layers.

What is Web 2.0? Is it group thinking (??), a mindset, a paradigm, or a meme? Is it just some fluff or is it really hot stuff? Is it an IT-Bubble or is it the Hubble? As you know the Hubble Space Telescope is positioned outside the Earth's atmosphere which allows it to take sharp optical images of objects in the distant space. At first everyone thought is was a bubble since one of the lenses was wrongly grinded. But against all odds the NASA technicians finally managed to replace the malfunctioning lens, and suddenly the astronomers were looking into a "new" space, sharp and crisp and with wonderfully displayed details. I make this parallel trusting the reader to see the ironic beauty in it.

The Web 2.0 discussion is about semiotics. A group of people decided to call certain aspects of technology and life Web 2.0. The reason was that they saw a fundamental change in Web technology and Web thinking, beginning in the second half of 2004. They started a session to map out common features of this change. Most of these features already had a name like "collective intelligence" or Ajax. To be able to talk about these features as a group they had to give this group - or set or bundle of words - a superordinate term, a term, which did not already mean something else, a term that is strong enough to harbour the quite forceful subordinate terms. The word they chose connoted both to the software industry with their release versions and to the paradigm thought. The paradigm thought is conjured from a historical line of thinking, building on the thoughts of stages of development. Since they thought this was a new stage in the development of the Web they called it Web 2.0. Since then the concept has grown enormously. The reason for the growth is probably quite complex but would include the fact that we need bundled concepts to describe the time we live in. We cannot think without bundled concepts. The Web 2.0 word is relatively untouched. It does not have a long history filled with lurking connotations.

The concept seems to work and I would call it a *meme*. A meme is a piece of information which is transferred from person to person and develops in an evolution-like manner.

As with most technology related phenomena there are both possibilities and problems with Web 2.0. The possibilities and merits are:

- Collaborative Hybrid Intelligence, breaking down the embodiment walls between people, and the binary between the human and the technology.

- Native Web solutions might be the only way to solve the problems with digital copyright. The entity causing the problem is the "file". Files might be obsolete in a late Web 2.0 era where information does not need to be outside the Web information layer. (This requires a good broad band connection, and that will probably exclude many people for a long time causing another problem.)

- Connectivity and the long tail thought can work counter to monopoly. Services and widgets talking to each other via standard protocols and open/semi open APIs might reinforce decentralization and anti-monopoly in the digital world. Many small services connected with mashups or widgets might be as good as, or better than the big beasts of today.

- Cutting off the application layer will have a profound impact on business models. If the operating system is degraded to a communication layer between hardware and the "door" to the Web, then we probably will have a greater variety of "Web Windows". Windows, Linux and Mac could be followed by many operating systems.

There are problems too. One problem is that some people might have hard to adopt and make use of this new environment. This is the same problem we have today and it is not related to Web 2.0 or the Native Web, though this is a profound problem with all (new) technology. The

most evident problem related directly to Web 2.0 thinking, is about security and privacy.

PC applications were identified by location. If PC applications were in my computer, they were mine. Web services need registration and registration leaves traces. Traces can always be followed and following traces is particularly easy in the digital world. The whole idea about participation and collective intelligence builds on those traces. Every effort to lessen the traces for security reasons will inevitably lead to container thinking. The question about privacy and security will therefore have to be solved in terms of Web 2.0. We cannot solve Web 2.0 problems by falling back to Web 1.0 thinking.

Part III – Starting the discussion about Participatory Literacy

The idea for Part III came from Steven Warwick and his task of turning himself into a man-machine hybrid (2001). He is calling himself a cyborg, and I agree he is a cyborg. But a cyborg is much more, or other than, connecting my nervous system to a set of tools, learning my mind to control them by thought. It is strange that a piece of metal operated into a human body would render a new entity, something other than a human. Theodore Sturgeon wrote a science fiction novel with the name More than Human (1981). It was published the first time in 1953 and told the story of six child prodigies maturing to one gestalt consciousness. If we remove the tiny bit of hocus pocus holding the super brain together, and replace it with technology - then we have something, which could be called the beginning of the Native Web Cyborg figure.

At first, I tried to write about this figure in third person. I wanted to discuss certain features in the Web 2.0 mindset from the construction of the figure above. But as I wrote I noticed it was more difficult than usual to rip this figure out from myself and apply it on other persons – a Native Web Cyborg involves at least one person. The reason is that this text is not fiction, it is about truth. As Donna Haraway says in her foreword to the Cyborg Handbook:

> And, naturally, my stories are all true, or at least they aim to be, and in several dimensions at once. My hope is that this kind of truth is situated and accountable, and therefore able to be in power-sensitive engagement, with other versions and materializations of the world. (Gray, 1995)

All my stories here are true from a situated perspective in the context I operate. As I reflected on this figure I understood I had to apply it on myself for the figure to become true and accountable. I understood why Kevin Warwick is transforming himself to a cyborg. If he had used another person as object of research, he could not possibly create accountable knowledge from an outside perspective. He would be able to measure everything regarding the cyborg's physical expressions and he could also do thorough interviews. This approach could be called

mainstream science. Warwick's approach and the approach I am going to follow here is more about research getting under the skin.

Getting under the skin

What skin am I talking about? The skin belongs to the concept Web 2.0. It also belongs to me as a researcher, and it certainly belongs to technology and society as a whole. I do not know about you, but I am quite tired of the word Web 2.0 by now. I guess you also might be a bit tired if you read the text above. For me it is a sign of health to get tired of a concept after a period of enthusiasm – which you perhaps did not share. The knowledge I have created in the research process has in a way unveiled the concept. Knowledge is power. I do not think it is possible to crawl under anyone's or anything's skin without knowledge about the nature of the skin.

> In the last century and a half, scientific development has been breathtaking, but the understanding of this progress has dramatically changed. It is characterized by the transition from the culture of "science" to the culture of "research." Science is certainty; research is uncertainty. Science is supposed to be cold, straight, and detached; research is warm, involving, and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions, and emotions; research feeds on all of those to render objects of inquiry familiar. (Latour, 1998)

You have just concluded reading (or browsing through, or skipping it completely) Part II of my Licentiate Thesis. Some of you probably have many questions on your mind. One of these might be: Is this really science? My answer must be: no, this is not science, if you by science mean revealing objective, universal truth in a context of discovery. Part II above is a part of my Licentiate Thesis and could be referred to as a piece of research. As Bruno Latour writes in the quote above there is a difference between Science and Research. The major difference lies in the attitude to your activity. I do not perform science since I know with certainty I cannot be objective and detached. This is also one of the few things I know with certainty. This certainty is of course situated, which means it might not be truth from another situated perspective. I cannot escape the net of knowledge I am integrated in. My knowledge is true and accountable, because it is situated (Haraway, 1991). It is not unlimited or general. For me, my knowledge is fun and exciting and deadly serious. My time on this earth is very dear to me, thus I would not waste it by blabbering about things with no importance. This importance is of course also situated and the further you come from its source, the more faded it becomes.

One thing Bruno Latour is not explicit about in the quote above is irony. Irony is the energy in (my) life and a very important part of research. Irony shows that language is not as clear and detached as you might think or wish. The spotlight of irony illuminates the complex nature of language. Irony is like a layer of quicksand between the signifier and the signified.
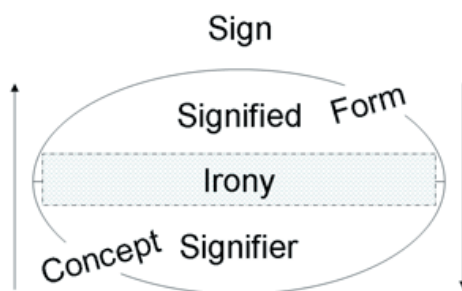

Figure 1: Modification of Saussure's Sign Model

Figure 1 illustrates a modification of Saussure's classic model of the sign (without the irony, form and concept parts, which are my additions). The signifier represents the form and the signified represents concept. If I use this model for the Web 2.0 concept, the letters forming the word are the signifier and everything it points to, as discussed in Part II, is the signified. Irony could be described as an uncertainty area between the form and the concept.

It is my belief that a large part of the researchosphere could have a broader relation to conceptual thinking. If I write "many researchers are too much politicians", then I probably would get critique such as "What do you mean by politicians? Define and specify!", "What do you mean with many?", or "All research is politics, how could it not be?". You could say all these questions are more than valid, their purpose is a clarification. But you could also say these questions are examples of an impossible need for control. These questioners throw themselves on the break when they can not control the meaning of the utterance. They have to have more input to make themselves try to interpret my message. For me though (in this situation), my utterance was an example of fairly light weight ironic communication. I just wanted the sentence to root in the other persons mind. I wanted the portions of shared meaning in the message explode in their own experience, and that all persons included would make their own knowledge connections from that. There is a huge amount of collectiveness when a group of people share a complex or ambiguous meaning. Everyone has an understanding, rooted in their knowledge and experience, but has scant control over the others' understanding. There is an intersection where the participants' understanding coincide and that intersection is connected to a network of deeper understanding. There is a collective intelligence immanent in that network of knowledge. This collective intelligence is implicit and borders on fiction. If we could make the statement "many researchers are too much politicians" transparent and see through it into the minds of the persons sharing the understanding of that statement, we would be speechless by the enormous amount of meaning rooted in these minds and connected to the statement. One day the Web 2.0 sense of collective intelligence might be able to harness the meaning constructed in these networks of silent knowledge.

I hope you did not get hooked up by the sentence "many researchers are too much politicians". Of course, all reseach is very much about politics. Politics is integrated in research. Politics is much of the good and the bad in research. Research is politics (Tham, 1995).

One of my dear colleagues once exclaimed "Collective Intelligence, what a disgusting word"! I did not ask about the deeper meaning in that exclamation. Since I had quite a good deal of contextual knowledge in the matter, my head started to spin and I made several conclusions. Most of these conclusions were implicit and difficult to use in the construction of "rational" knowledge[45]. I felt strongly that if I had asked my colleague to enlighten me, I would have been served an attempt of clarification. This clarification would land within what Habermas called "communicative action" - we must be able to take issue with or argue with a speech act for it to be communicative action (Habermas, 1987). I did not want to ask for a clarification since I felt it would narrow the understanding I constructed from the situation. For me, irony is the base for poetry in my daily life. This does not mean a nihilistic view of communicative meaning. You can not communicate with only irony. Irony is contextual. Without context, irony is worthless, or rather; the nature of irony includes a context. Without a context, irony is just empty signs. An ironic speech act must have a skeleton of clarification.

I am sorry to say that the Web 2.0 mindset is widening the gap between those who are inside and those who are outside. Web 2.0 is a cultural approach, just like phenomenology or golf.

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[45] In this context, rational knowledge means "common sense" and not rational knowledge in Descartes sense.

All reseach I have done has in some sense buried me deep into the knowledge web of this line of thinking. My hope is that this text will help to bring me closer again; both by helping other persons getting inside, and for me to get a clearer view of the outside. It is important to understand, though, that Web 2.0 is also an ideology and not just a technology. It is a promise of another kind of life and not just a new set of tools – which are not even altogether new.

Where is this is leading? It is leading right into the heart of the cyborg figure.

How I became a Native Web Cyborg

The Native Web Cyborg is an intersection and an offspring of the Web 2.0 discourse and the stories about Cyborgs told by authors and researchers like Donna Haraway and Steven Warwick. This entity was moulded by bodies, voices and technology. It was born many thousand years ago when the human race was young and recently learned how to create tools. In that moment the three main organs of the Native Web Cyborg had matured: it had a body, it had a voice, and it had technology.

Donna Haraway's cyborg figure embodies the intersection of our most dear dualisms like mind-body, nature-culture, animal-human, and fact-fiction. It is one of the most complex figures in the research community. Her criteria for the cyborg are ironic and they are not meant to be taken literally, though they are certainly meant to be taken very seriously. Donna Haraway's cyborg figure is a rhetorical trope of rare complexity. A semiotic specialist would not have a problem in writing a brick thick book on the rhetorical nature of the figure. Haraway's cyborg figure is the intersection of all tropes such as metaphor, metonymy, irony, allegory etc.

The most prominent trope is Irony. It is explicit, and she stresses that several times in the first paragraph of A Cyborg Manifesto. Irony is the most radical of the four main tropes (Chandler, 2004) [metaphor, metonymy, synecdoche and irony]. The signifier of the ironic sign seems to signify one thing but another signifier tell us that it actually signifies something very different" (Chandler, 2004). The first heading in A Cyborg Manifesto says "AN IRONIC DREAM OF A COMMON LANGUAGE FOR WOMEN IN THE INTEGRATED CIRCUIT" (1991). Literally she says that her message is a dream, but what she really says is that it is very much reality. It becomes a very strong emphasis on "real" since she chooses to use irony to raise the statement beyond the literary text. When we continue to read we have irony in mind, and tend to be more sensitive to the rest of the text. So her words are in a way a warning flag, or a reading guide, or both.

The most important feature of the cyborg figure is the deconstruction of binary opposites, and the most important of these binaries is material-semiotic, because it is some kind of blue print for most of the other binary opposites. Even the dualism good-evil (two of the most abstract entities – if you can rank such things) tells us the story about the material evil and the immaterial good, which started when the angel Lucifer was sent into exile and started to build the bodily burning hell, while God and his angels remained in their bodiless transcendent heaven. That is at least how it is usually pictured in fiction; reality and fiction perhaps being the most prominent of the material-semiotic children.

The cyborg concept is thus about border crossing. Some authors concentrate on the physical body. As I mentioned, Professor Kevin Warwick at The University of Reading has created a cyborg story about himself, by turning himself into a physical cyborg. The possibility exists to enhance human capabilities: to harness the ever increasing abilities of machine intelligence, to enable extra sensory input and to communicate in a much richer way, using thought alone. Kevin Warwick has taken the first steps on this path, using himself as a guinea pig test subject receiving,

by surgical operation, technological implants connected to his central nervous system[46]. Native Web Cyborgs are about Warwick's cyborg, but this is only a small portion of it. Warwick's cyborg might be regarded as a distant relative, while Haraway's cyborg is its parents. When I call myself a Native Web Cyborg it is about embodiment, writing, research, art and music, but most of all it is about ideology. Ideology is the glue of all these tags. Ideology is the energy. All of this is based on the border zone between the web reality and the embodied reality.

But what is a cyborg, really?

> A cyborg is a cybernetic mechanism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction. The international women's movements have constructed 'women's experience', as well as uncovered or discovered this crucial collective object. This experience is a fiction and fact of the most crucial, political kind. (Haraway, 1991, p 149)

When I read this much cited piece of text I was caught up with the word mechanism. I knew the meaning, but what did a dictionary say, more specifically?

> 1. a piece of machinery.
> 2. a process by which something takes place or is brought about.
> 3. (Philosophy) the doctrine that all natural phenomena allow mechanical explanation by physics and chemistry.[47]

The third definition is about the mechanical view of Universe from Enlightenment thinkers such as Newton and Descartes. This definition suggests a modern view of the word mechanism, while other mechanism-related words are possible within the paradigm often called postmodernism. The word mechanism is marked by the cog wheel image from Newton's Universe. But in our times where postmodern thinking is gaining on the modern view of the world, cog wheels are most often ruled by integrated circuits, which in their turn are ruled by algorithms. While cog wheels and integrated circuits are hardware, algorithms are software. Both hardware and software are human expressions. Our world in the beginning of the third millennium is mostly about hardware, such as tables, coffee machines and computer screens. This balance will probably change since the space for algorithms and interfaces is both practically and theoretically endless. Our physical universe will be more and more abstract as the space of software outgrows the space of hardware. Or in other words, Cyberspace will outgrow the space we now call reality. This is not meant in deterministic terms. It is us, the everywo/man of tomorrow, who will create this software space; not technology itself. Folksonomy is a very human way to grow this space.

All three definitions above are valid, but they seldom work on their own. The cyborg mechanism incorporates all three of these definitions. In a profane view, both humans and cyborgs are some kind of machines. The mechanistic view of the cyborg contains more from postmodern epistemology than from modern ones. The most important of these three, though, is the second. A cyborg is a process. Most people would agree that everything in our common world might be characterized as processes, but that is not so self-evident or easy to grasp. The human vision has fundamental impact on our world. Our vision tells us that most things are static. When we register an entity with our vision it is mostly static. A car for example might drive along the road. The car is involved in a process, but the car itself remains the same. It is only the location

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[46] Text on Warwick's home page. http://www.kevinwarwick.com/ICyborg.htm, cache 0032

[47] "mechanism n." The Concise Oxford English Dictionary. Ed. Catherine Soanes and Angus Stevenson. Oxford University Press, 2004. Oxford Reference Online. Oxford University Press. Blekinge Tekniska Högskola. 28 March 2006 <http://www.oxfordreference.com/views/ENTRY.html?subview=Main& entry=t23.e34560>

of the car that changes. But if you saw this car an hour later, you might notice that it was dirty, or that one of its lights went out. In some sense our vision records these versions of the car as two different entities, but the brain considers a large contextuality and creates a processual connection between these two car entities. Let us imagine you see this car one year later. It is repainted and every detail is changed besides the number plate. It is still in the same process, but is it the same car? An even more appropriate example is the human body. "Your body renews most of its cells within each seven years of your life, for instance, and its molecules are turned over far faster" (Sahtouris, 2000). What is the relation between the Me of today and the Me ten years ago? If this is a relevant way to reason, there is not anything static about me. Both Me and the context I exist in are processes.

I am a part of the cyborgization process we – mankind – embarked on the first time we used tools to enhance our lives. I feel strongly my own private cyborgization process, which has very much to do with the World Wide Web. It is much more than just learning, and using. It is becoming. In the beginning of the new millennia I wrote a piece of text to illustrate the cyborgization process. You find it in Appendix II in Swedish.

Anatomy

I am a human, I am a man. Donna Haraway's cyborg is "a creature in a post-gender world" (1991). I cannot see that world yet. The world I live in is absurdly gendered. Women have been oppressed for thousands of years, at least, and I am afraid they are always going to be that as long as the world is gendered. In a post-gender world we will still have men and woman. Haraway's cyborg is a woman, while most other cyborg figurations are men. I am a man by sex but I do not appreciate the gender category. The very existence of the category gender might very well be the cause of the oppression. The oppression has been carried by language through time and space and spread like a plague or a computer virus.

I am not only a man. I am born in the western tradition. I doubt I could be a cyborg in Haraway's sense. I do not consider myself as oppressed and her cyborg belongs to the oppressed.

My physical body is of course one of the nodes in the Native Web Cyborg I call *Me*. Another node is the technological machinery behind Cyberspace and yet another one is Cyberspace itself. My physical body includes the somewhat abstract feature often called mind. A true cyborg does not think of body and mind as two different entities.

Web 2.0 ←→Cyberspace

Web 2.0 implicates a body. The body is often called "Web as a platform". Sometimes the concept Native Web is used in a similar meaning. Native Web implies something which is born on the web and lives its whole life there. PC applications might use the web in many ways but there is a big difference between them and applications which do not know of the world outside the web.

When I say "web application" I see it from the programmer's perspective. From a user perspective, practically everything on the Web is services. But the entity called *Web 2.0 application* by computer specialists is more of a society for us who use it. But the word user is very lame; it is more like being citizens. From now on, I will call Web 2.0 applications, services *societies* and users *citizens*. For Web 2.0 as a whole, I will use the word *Cyberspace*. I use the word Cyberspace because the Web 2.0 mindset is the seed of something, which might turn into a World substantial enough to carry the epithet Cyberspace. This Cyberspace will not be

similar to the popular version coined by William Gibson (1986) (1984)[48]. Gibson's cyberspace came to life before the Internet, and a realisation of the Cyberspace thought will include the Internet in some way.

I am using the term *Society* to denote the world outside the net and *society* for the Web 2.0 Cyberspace societies. The words IR (In Reality) and VR (Virtual Reality) are not really applicable here since everything I write about is very much reality. The Cyberspace I write about is not some romantic disembodied realm. It is reality as much as the reality I meet when I listen to the nightingale a warm summer night. The word Cyberspace contains thousands of connotations and all these are valid in some sense. They give a volume to this relatively new concept.

Some of the places I mentioned in Part II use a terminology from the Society. The music community Last.fm uses the concept 'neighbour' to denote people with similar taste in music. This might be seen as an easy match, but I listen to a wide array of music styles and a neighbour to me does seldom share more than a tiny bit of my music interest. But that is enough. My geographical neighbours only share location – to my knowledge. I have much more in common with my neighbours at Last.fm than I have with the neighbours I share a fence with.

I am a producer of texts, we all are, and all these texts are connected. This endless web of texts is often called intertextuality. The term was coined by Julia Kristeva. She also used the term polylogue. The concept intertextuality cleared the way for a new way of looking at texts. Texts communicated with other texts, like a polyphony of non-hierarchical voices, a polylogue (Owesen, 2003).

Intertextuality might be said to have four primary parameters:

1. Embodied or Disembodied
2. Explicit or Implicit
3. Direct or Indirect
4. Intended or Unintended

Before printing technology most texts were carried by mouth or painted on stone or wood in the form of symbols. Most texts were disembodied. When printing became the common way to express long stories, more and more texts were embodied. Digital texts are somewhere in between. They are not without body, but the body is stored encoded. When I read the text, it is decoded and displayed in a temporary form. The text is virtual, but this view draws on the thought of material texts as a primary category. From now on, I regard printed texts as secondary. I am a Native Web Cyborg. An embodied intertextuality is more effective since it is easier to expand. Storing texts in our minds takes a lot of energy. Not much is left to make connections and expand. A disembodied intertextuality grows more slowly.

Authors have always mixed explicit and implicit interconnectivity in their texts. Literature has more implicit connections and research texts are mostly about explicit connections. James Joyce's novel Ulysses (1922) is an example of an ordered chaos of connections of various degrees of transparency. Even if the word intertextuality was not coined when Joyce wrote Ulysses, he worked intently with textual connectivity as a tool for communication with the reader. The traditional method of research builds on textual connectivity, which is both explicit and indented, i.e. the reference system. The reference system is meant to be as explicit as possible. Still, as a Librarian, I have seen numerous references which could be said to have a broken link to the original. By calling it broken, I mean it misses crucial information and therefore

[48] The stories in Burning Chrome were originally published in the sf-magazine *Omni* before it appeared in Neuromancer 1984. It was through *Neuromancer* the concept Cyberspace became widespread though.

is hard to follow to the source. The reference becomes ambiguous, since it is only indirect. There is no direct pipeline to the source. A hyperlink is both direct and explicit and cannot be ambiguous. Either it works or it is broken. The direct intertextuality of the Web is material for the CI machines. These hybrid entities take human voices, gradually spinning more complex webs for each instance of participation. This works partially as well as universally. Local CI machines at sites like Amazon.com, Last.fm and Ebay spin their local nets and universal CI machines like Google sweeps the whole net. Universal CIMs collect material untouched by Local CIMs, and material already within a context spun by local CIMs. In time, this process will render intertextuality with immense depth and complexity.

In modern and postmodern critical theory there has been a strong tension between intended and unintended intertextuality. The debate has often been about what an author means, and/ or what a text says without the author's intention – and even whether it is right to speculate on what an author might have meant without us having an explicit knowledge of it. Can a text say something by itself? In *Death of the Author* (1977), Roland Barthes suggests there is not one author of a text, no originality. All texts are connected in the intertextuality and individual expressions of texts are only instances of that intertextuality. This is an interesting thought, but I would like to switch roles in the metaphor. On the web, we all become authors. In this meaning, the word author has nothing to do with quality. An author in the Web 2.0 context is someone who participates. This participation might be ranking a book at Amazon, writing in a blog or just letting Last.fm "see" the music you play in iTunes or Winamp. This far, CIMs have only been able to work with explicit, intended information, but as the Artificial Intelligence entities become more and more effective perhaps they will be able to work with implicit material. The blogger Richard MacManus uses the concept ReadWritable of Web 2.0[549] meaning that a Web 2.0 service needs both authors and readers to participate in the creation of a particular knowledge web. It also means openness; a Web 2.0 document or entity should be bidirectional.

Participating Literacy

This section marks the end of my licentiate thesis and the beginning of my dissertation. In this respect you might call it a boundary object. I have done what I thought was necessary for my coming research. I have created a base for my epistemological journey. This journey is called Participation Literacy.

I may sound somewhat normative in some parts in this section. This approach is due to the context. I am starting a discussion about a very complex concept. Perhaps a preliminary skeleton of stability is called for, something to reconstruct when I grow up.

The Sense of Irony and the Principle of Charity
Participation Literacy suggests skills and knowledge about how to participate and how to invite participation in a Web 2.0 environment. The concept Participation Literacy is intended to be used as an Open Agora (Nowotny, et al., 2001) for the dialogue about Web 2.0 and thereafter, not as an excluding instrument in the way we often use literacy, computer literacy and information literacy. No one can point a finger at another and say: you are participation literate or you are participation illiterate. This rather relativistic standpoint has an epistemological base of contextual knowledge, more than situated. No one can decide that someone else belongs to one of the sides: partly because Participation Literacy is not a dichotomy based concept, and

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[49] http://www.readwriteweb.com/

partly because I discuss it as a general concept. It is not a dichotomy based concept because it is context relative. It is always changing and evolving within its context. When I use the pronoun you below, it is more like a rhetoric figure, not a person who is supposed to exist.

Some community might reconstruct the concept and use it as a situational instrument, thus define it and demand it of is members. But in the form I use the concept it is not dichotomizable in context of the individual. A certain community or a certain time phase (context related) is more or less literate in a participatory sense. This standpoint is based on the same ground as the difference between subjective and situated knowledge.

The concept Participation Literacy is formed as a consequence of Part II and the discussion about irony, the cyborg and intertextuality. Participating Literacy calls for some knowledge of ironic communication, a hybrid identity and a sense of belonging to a contextual environment. Participating Literacy is about learning to live in a Web 2.0 / Native Web environment. Web 2.0 / Native Web is the web of Participation.

Ironic communication is about giving yourself and other participants space to express themselves, without locking into too narrow understandings of your own or their language. I am going to use an example from outside the Web to illustrate this. In the end of the 1990's I worked in a project called BRUK. The goal of the project was to raise Computer- and Information Literacy in the region of Blekinge in southern Sweden. One evening we hosted a video conference lecture in Popular Computer Science. The lecture was sent from the Library of Blekinge Institute of Technology and was received by municipal libraries in the region. The lecturer was a young, bright and very nice professor of Computer Science at the mentioned Institute. The audience was a wide array of people, with various degrees of education – mostly at the lower end of the scale. In the middle of an explanation of robotic research, a man in one the libraries asked a question. The lecturer seemed pleased to get a question – at first. The question was about some formatting problem in Microsoft Word. The lecturer seemed stunned by the question. For him, it was completely out of context, and he clearly did not know the answer. After a long silence he got his act together and answered that he did not know the situation. There was additional silence from the audience. Then a man in the audience gave the solution to the problem. After this event, the lecturer's authority was clearly lower among the audience. A computer scientist should be able to answer questions about computer science, just like a watchmaker should be able to answer questions about watches. Ordinary people should not be able to answer computer related questions, which a computer scientist failed to answer. Most of you probably see the absurdity in this.

The concept of computer science has as many meanings, as people who are using it, but there are different group areas within the concept; there is situated knowledge constructing the concept. The man with the Word-question and the lecturer/scientist had different understandings of the concept computer science. Some may think that it is the scientists' prerogative to construct the concept, since they are the experts. Even if you agree to that, you cannot make the others' understandings disappear. Communication across borders demands a certain degree of understanding of irony. Every conception of a word is deeply rooted in a context. The degree of contextuality depends on the word, but even less contextual words have a wide net of relations in a person's, or a group's, experience. Border crossing communication and participation call for wide-zone words. Wide-zone words, and other wide-zone grammatical constructions, are language entities with a relatively large implicit zone of meaning surrounding them. If I "shoot" a word at you, I cannot expect it to hit 10 points every time. The more opaque the border is between us, the bigger the probability that the word will just hit 3 or 4, or miss the target completely. Our sense of irony is what makes the communication work, even though my words do not hit 8-10 points.

This sense of irony becomes even more important in Web environments where factors such as eye-contact and body language are not involved in communication. In the year of 2006, Web communication at large includes multimedia communication, but the practices we call Web 2.0 communication are still mainly based on text. CI machines can only handle text based communication as yet, but this restriction will not last forever. The next generation of CI machines will perhaps have tools for a primitive recognition of speech or images.

A blog is not the most obvious example of Collective Intelligence, but even blog communication is Collective or Hybrid Intelligence. A typical way of reading blogs is to subscribe to your favorite blogs through RSS. When you read an article and have a thought, which might be counted as an addition to that article, the thought of participation literacy suggests you to contribute your thoughts by adding them to the comment area of the blog article – even if it is a very famous professor who wrote the article and you just feel like a nobody in comparison. Some parts of the blogosphere can have relatively thick borders. These borders are constructed by our minds to indulge our hierarchical thinking. Hierarchical thinking is a social construction. Our minds have probably always placed phenomena in a hierarchical structure, and will probably always do so. My experience tells me this is a generalizable statement. Participation Literacy works in the process of levelling hierarchies. My voice might be a valuable contribution to a discussion even though I am viewed as being lower in the hierarchy, by myself and/or the other participants. I am participation literate if:

- I work actively to invite everyone into a discussion and count every voice as valuable as another – regarding the context though.
- I work actively to participate in a discussion which I know from experience I might be able to contribute to, irrespectively of what my self-confidence tells me.

Irony is important in this respect because it makes us aware of the fact that you have to enter a conversation with charity. Few conversations are about mathematicians throwing formulas at each other, neither in ordinary life nor in research. Most of them have wide areas of uncertainty. These uncertainty areas can be approached in different ways. My suggestion is close to a methodological approach in philosophy called *The Principle of Charity* (Se for example: (Davidson, 1984), (Grandy, 1973)Before you judge someone's utterance or just appearance negatively, you have to regard the context. This discussion is closely linked to Haraway's notion of situated knowledge (1991). In many cases this calls for wide-zoon words if the dialogue is to be constructive.

Time Loss and the Document Concept

There is one general critique of the Participating Literacy concept[50]: Time. How can I make time for participation every time I read interesting things on the Web? I do not have the time to contribute to other persons' works. This reaction (I would not call it reasoning) is a fallacy. The fallacy is due to a traditional view of the document. I mean document in a broad view, including most cultural entities made by some kind of language. But at the core of the document concept is the ordinary text document, often with embedded images. This concept of the document is moving from the attributes *readable* and *information* to the attributes *read/writable* and *communication*. The changing document concept is also connected to the idea that we are moving from an information era to a communication era. This change is also going to have an impact on the contemporary episteme. Knowledge is no longer in some kind of hierarchical relation to information, as suggested by some (ackhoff, 1989). Knowledge is

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[50] Since I am the one who created the concept 'Participation Literacy', everything I write or say about it is from my viewpoint alone.

more like communication. Knowledge is a process. Knowledge is created in action (Molander, 1996). Knowledge is contextual. WWW, and especially in the form of Web 2.0, could be viewed as a metaphor of knowledge creation. I use the word "knowledge creation" here instead of "knowledge production" since I want to stress the art-connotations.

The concept of the document is in a phase of transformation. Today, most of us tend to view the basic creation of documents as an individual process: I create my document, and others create their documents, and sometimes we collaborate. Tomorrow, the document will probably be viewed as a communication entity without physical borders. The borders between mine and yours will be more transparent in most cases, and this will also change the view of time loss in participation. Participation is an asset, not a liability. Some documents will remain private, like email, diaries and similar texts, but most documents are aimed at a wider audience. This will have a fundamental impact on our view of knowledge in the direction I mentioned above – knowledge as action.

Plural Identities
Wikipedia might be regarded as a school example of Participation Literacy, but this is just an illusion. Participation Literacy is based on respect for the other. Wikipedia is based on the thought of anonymity. This is not a contextual view of knowledge. Knowledge is deeply rooted in the identities participating in the knowledge creation. Wikipedia builds on the thought that we must fight hierarchical thinking with anonymity. This is exactly the same fallacy as the Peer Review System. Knowledge has an anchor point or a contextual node in an identity. If you hide that identity, the knowledge tied to it is stripped from its most central node.

Texts, or documents, are one form of knowledge. WWW is an entity of evolving knowledge. Meaning is constantly being produced by the relationship between texts. Will the concept of identity change in this environment?

> The polyphony of voices accounted for what I have called a subject in process/on trial, that unstable articulation of identity and loss leading to a new and plural identity. (Kristeva, 2002)

I have a plural identity on the web. Most often my identity on the web is pgiger, but in more formal settings I am identified by my full name, Peter Giger. I have a Swedish language blog called Sommarmoln, and an English one called Paricipation Literacy and I participate in several blogs and communities. All these blogs and communities reflect parts of my identity: my Flickr page reflects my photo and art identity and Last.fm reflects my music identity and so on. Viewing Web identities as parts of a whole might be regarded as a parallel to Dick Hardt's view of Identity 2.0 (2005). Dick Hardt proposed that a split of identity would make it less vulnerable. Web 2.0 identity splitting of the kind I am talking about is something slightly different. My music identity at Last.fm is not a way of hiding something about myself; it is more like a focusing lens of one side of my self. By saying one side of myself, I do not mean that in a countable sense. The one side of myself is more like a cluster of nodes in the context I call I. A cluster of nodes is in constant movement and evolvement, and cannot be viewed in isolation. These clusters are also integrated in other areas of my identity, but in a less focused way. When I am creating art, writing poetry, programming or discussing poststructuralist epistemology, my musical identity is always present. Likewise, I am not able to hide my poststructuralist epistemology identity when I listen, talk or write about music. These identities are dynamic and evolving, and in constant interaction and participation with each other. These identities and their evolution could be seen as a parallel or a metaphor of participation on the Web. Trying to exclude my music identity when I write a research text, would be like trying to exclude participants from my blog: individual- or community-based censorship. In an objective science mindset, the music identity might be regarded as some kind of spam. In a research mindset, which is accountable,

my music identity is an asset along with all other parts of my identity.

In Part II, I mentioned Rosanne Stone and a story about MPD (Multiple Personality Disorder) which I in a very loose and philosophic way related to something I called MWP (Multiple Web Personalities). Perhaps MWP is what I discussed in the paragraph above. I can use several attributes to describe this identity, such as partial, multiple, plural. Which ever I choose to use, it will be a rhetorical trope with ample scope for interpretation. Perhaps plural identity is to prefer because it implies some sort of unity. I have several identities, but they are still instances of, or constructions from, the same personality.

Hybridity

The cyborg figure is a very effective tool in discussions about technology. This is due to the "simple" fact that the cyborg reflects the hybrid nature of technology itself. Technological constructions are meltdowns of the dichotomy nature/culture, thus the hybrid construction mirrors the construction of the cyborg. Technology and cyborgs are kindred and in the process of constructing each other.

Just as the tangible world has certain prerequisites for existence, the World Wide Web has its own set of conditions and possibilities. If we are going to utilize our potential in a Web environment, we have to acknowledge the hybrid localization and try to understand our selves as Native Web Cyborgs. In a Web environment, embodiment is important, but it is not a border in the same way it is in the world we were born to act in. Participation is both a condition and a promise of the Web.

Participation Literacy as an Ideology

An ideological way into the discussion about the Web of participation can be found in the poststructuralist discource about writing. Gary A. Olson puts it like this:

> Like Jacques Derrida, Luce Irigaray, Lyotard, and others, Haraway calls for a conception of writing ("cyborg writing," in her terms) that resists authoritative, phallogocentric writing practices, that foregrounds the writer's own situatedness in history and in his or her writing practice, and that makes visible the very "apparatus of the production of authority" that all writers tend to submerge in their discourse. This is not to say that writers must "eschew" authority, but that in a truly ethical and postmodern stance they must reveal how authority is implicated in discourse. And because writing is inseparable both from its own embodied situatedness and from systems of liberation and domination, "literacy" should be a central concern of us all. As "the acquisition of the power to mark the world effectively," literacy is 'intimately implicated in projects of domination" and freedom. Literacy projects, then, are freedom projects. Citing Paulo Freire as 'the inescapable ancestor" and as "one of my fathers, or one of my brothers," Haraway stresses the importance of literacy work to contemporary liberation struggles—especially the recent work of Gloria Anzaldüa, June Jordan, and Katie King. (Olson, 1996)

In most forms of literacy, there are two sides. One side is supposed to learn and the other side already knows. But in Participation Literacy, it is not that easy. The side who already knows also has to learn. They have to learn to welcome the "illiterate" into the "club". Both sides have to learn. Both sides have to act. The hierarchy is a chimera. We are in the process together. An important point is that no one is completely on one side. All of us belong to both sides in different degrees. One feature to wish of the native web cyborg is awareness and recognition of your place in the participation stratum, recognition of your dual belonging, and action corresponding to that duality. This view of Participation Literacy can also be applied to the other forms of literacy, but it is almost self-evident in Participation Literacy.

Participating Literacy includes other forms of literacy. In order to participate, you have to be able to write, search information and use a computer. The research area Participation Literacy thus has a stake in all literacy forms and has to take them into account as well.

A few final words

Web 2.0 is not all democracy, but it is all about democracy. Its future promise is democracy, but in its infancy it is quite undemocratic. You have to have broadband. You have to be used to acting and participating in Web communities. A huge amount of knowledge has to be created within many of us to even consider or understand the profits of participation strategies on the Web. In the beginning of 2006 it seems that all features or issues connected with the concept Web 2.0 are either very much democratic or very undemocratic. The rhetoric unveils structures similar to the Marxist revolution theories: We have to endure an undemocratic society for a while, to gain a real democracy later.

> Just as Marx seduced a generation of European idealists with his fantasy of self-realization in a communist utopia, so the Web 2.0 cult of creative self-realization has seduced everyone in Silicon Valley. (Keen, 2006)

I am going to end this beginning of a discussion with the words above, not because I agree with every word of it, but because I want to remind myself of the multitude of viewpoints that live in all discourses.

Appendix I: Technologically navigating cyborgs

Presentation
Peter Giger
P.H.D student at
Technoscience studies at Blekinge Institute of Technology

I am going to start this session with two pictures, or stories, meant to illustrate the title: the Technologically Navigating Cyborg. After that the focus is on two questions: what is a cyborg and what is social navigation. Finally, I wrap this up with a concept called 'flow' which I think is a good start when trying to explain the link between cyborgity and (social) navigation.

Image 1: Surfing the woods on a Mountain bike.

Image one contains me and one of our civilization's most frequent means of transport, a bicycle. But it is not a plain old bicycle. It is one of our economic society's many refigurations, a mountain bike. A mountain bike is an artefact of advanced technology. It has at least 21 gears, is light weight, and is constructed to endure the most exacting conditions. The front fork, for example, has shock absorbers to pick up the force created when you ride in holes and hit stones or stumps. Without the shock absorbers you could easily turn a somersault and break your neck. To prevent head injuries I wear a helmet. In this picture you can see me as a sandwich between the helmet and the bike. In some sense the three layers of the sandwich melt together

and create something new, a creature that is confusingly like me on a mountain bike with a helmet on my head. But somehow it is not. It is only a wider knowledge or notion of what I usually call 'me' - a refiguration. As we will see later I think you can call this refiguration some kind of cyborg.

In this extended picture of myself, my skin has a black shiny surface resembling a track suit made of hi-tech, waterproof and breathing materials. My eyes are big and brown like a pair of hyper-modern shades and my crouching back has a hump resembling a small knapsack. I look like a cross between a human and a lizard modified by additional artefacts, tailored to challenge every possible obstacle on the trails that wind through the woods surrounding my hometown Ronneby.

Now scenery is added to the picture – and motion. I am crashing through the woods on small trails packed with obstacles like stones, arm-thick roots and treacherous small stumps. I have to focus entirely on the task of navigating, forget the details of my existence. I become one with the bike and I manoeuvre the bike as if it was a part of my self. Nature, technology and navigation melt together in the flow of performing a task that is exiting, fun and challenging.

I am navigating trails that other people have made, and the focusing 'flow' I am in makes the I, ME, melt together with the 'tools' I am using in the navigation through the woods. With the billons of traces made by people through the decades I am also performing a, rather transparent, task called "Social Navigation".

Image 2: Surfing the waves of the Internet.

Image two is situated in the field of ICT, Information and Communication Technology. I have a new computer which I am of course strongly aware of, since I built it myself. One day when I am visiting the local newspaper on the Internet I am really enjoying my new computer. The concept of the computer is very alive to me. I can feel it working through my hands. But then I came a cross a fascinating article about a huge whale that exploded when it was transported through a city in Taiwan. A decomposition process in the whale had produced gases which led to the whale exploding and intestines literally rained over the streets. When I finished the article I began to search on "exploding whales" and one thing led to another. Soon I was completely lost in the surfing experience. My awareness of my new computer faded into the navigation process, of which the only goal was to acquire knowledge about exploding whales. Practically every piece of information I got on the way was given to me by other people, intentionally or unintentionally. The whole information seeking process is in fact an act that can be described as social navigation of information resources. In this task of browsing the Internet, the sensation of my new computer fades into the focusing flow, and the computer becomes a part of me in the task of navigation.

The cyborgization process

In "A Cyborg Manifesto", Donna Haraway created a base for the feminist discussion about the cyborg identity.

The most cited part of Haraway's essay, I think, is the line where she writes:

"A cyborg is a cybernetic organism, a hybrid of machine and organism" (p 149). This hybridity is what is always in focus in discussions about the cyborg, but Haraway's intentions with the concept are definitely much more complex. But there is not time to go into that complexity. For my discussion here, the hybridity between machine and organism is sufficient.

In many discussions of cyborgs and cyborg identity two questions pop up:

Are cyborgs people and are people cyborgs?

Donna Haraway answers that question with these words:
"By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs." (p 150)

I both agree and disagree. We became something of cyborgs hundreds of thousands years ago when some of our forefathers began to use tools to enhance their lack of strength or precision. But I do not see cyborgity as a state. I rather see it as a process.

The cyborgization process started somewhere close to the birth of the human race and will go on as long as long as Homo sapiens exist. The process could also be called artifactization since the cyborg is, in fact, an artefact. Artefacts are cultivated nature and cyborgity is always the most advanced example of artifactization.

Donna Haraway writes about the cyborg as if it was a state, not a process. But there is a passage in "the Manifesto" that, in a way, sees cyborgity as a process. It is when she says that cyborgs are "our ontology; it gives us our politics" (p 150). I think Haraway wants to say that cyborgity is the key to our existence. Only by studying cyborgity we might get an understanding of who we are. And only by studying cyborgity we get relevant knowledge to create our future.

Navigation

Navigation is what makes the difference between animals and plants. Animals can navigate and move in certain directions, plants can only move when "nature pushes them". Of course there are border cases…

One of the most fundamental parts of human characteristics is to take out goals and navigate towards them. I think that navigation is a very effective metaphor in describing the human/cyborg relation to its escalating techno information surroundings.

The success of our navigation depends on our ability to accept our cyborgian nature.

Flow: the link between existence and navigation.

The concept of 'flow' was coined by the psychologist Michael Csikszentmihalyi in an essay called "Reflections on enjoyment", published in the journal "Perspectives in Biology and Medicine" 1985.

Ever since then the concept has come to be used by a wide array of researchers in different research areas. Csikszentmihalyi explains 'flow' like this:

> IMAGINE THAT YOU ARE SKIING DOWN A SLOPE and your full attention is focused on the movements of your body, the position of the skis, the air whistling past your face, and the snow-shrouded trees running by. There is no room in your awareness for conflicts or contradictions; you know that a distracting thought or emotion might get you buried face down in the snow. The run is so perfect that you want it to last forever.

> If skiing does not mean much to you, this complete immersion in an experience could occur while you are singing in a choir, dancing, playing bridge, or reading a good book. If you love your job, it could happen during a complicated surgical operation or a close business deal. It may occur in a social interaction, when talking with a good friend, or while playing with a baby. Moments such as these provide flashes of intense living against the dull background of everyday life.

> These exceptional moments are what I have called "flow" experiences. The metaphor of flow is one that many people have used to describe the sense of effortless action they feel in moments that stand out as the best in their lives. Athletes refer to it as "being in the zone," religious mystics as being in "ecstasy," artists and musicians as "aesthetic rapture." (Csikszentmihalyi, 1997)

For me, Flow is when existence melts together with navigation. In a flow experience you forget about who you are and where "YOU" - as a being - start and end. You become a cyborg in the sense that artefacts that are with you in the experience lose their alien-ship. The mountain bike, the skis or the computer become a part of you as much as your legs or arms. You can also say that technology has to become transparent for the flow experience to occur. As soon as a tool or some other kind of artefact becomes opaque the flow experience fails. You return to the view of yourself as an entity that ends with your legs and arms. If you are asked, you say that the mountain bike, the skis or the computer is just another tool you use to perform a task.

Csikszentmihalyi writes that the feeling of flow comes easier if the activity has clear goals (Csikszentmihalyi, 2003, p 41). For me, every activity with a goal is navigational in the sense that it is constituted by positioning and taking bearing in order to navigate towards that goal.

In flow experiences that include social navigation, people around you are most important for your navigation. But their function as a tool also fades in flow. The people around you who give the advice or tips also become transparent

I think cyborgity is about transparency. It is when our great dichotomies becomes transparent, like nature-culture, I-you, subject-object, man-woman, human-animal etc. These dichotomies will never be completely transparent, I think, and therefore cyborgity is a process, not a state. Flow is a state though, and when we are in a state of flow, it gives us a peek into the future of how it can be when our present technology becomes more or less transparent.

Appendix II – Cyborgistoria (Swedish)

En människa reser sig ur bädden. Hon glider in i en klädnad av djurhudar och slår sig ned vid matplatsen med elddonet. En gnista lyser upp skogsdungen och snart jagar eldsflammorna varandra medan dagen gryr.

Paddeln träffar ytan med jämna framåtdrivande rörelser. När han är framme vid fiskestället tar han fram det egenhändigt tillverkade metspöt och sätter på masken på benkroken, så som hans förfäder gjort under tusentals år.

Fisken puttrar i grytan på den elektriska spisen. Hon har satt klockan på 10 minuter och fördriver tiden genom att bläddra igenom en tidning, medan hon slött tittar på nyheterna och lyssnar på en schlager. Telefonen ringer och hon svarar lite drömskt "Hallå...".

Efter middagen sätter han på sig flerfunktionskläderna och pulsklockan och ger sig ut i löparspåret. Han joggar mekaniskt några varv i dungen omgiven av en skog av himmelshöga betonghus. Ur fönstren strömmar en kaskad av färger och ljud. Som multimediala raketer på rampen mot en annan värld.

Den nya pacemakern slår stadigt i bröstet. Numera tänker hon inte ens på den främmande tingesten. Den har blivit lika självklar som datorn hon använder när hon loggar in på det nya spelet "Den Andra Verkligheten". Hon har just stängt av mobiltelefonen och bilden av modern försvunnit som om den spolats ner i avloppet. Nu kan hon äntligen göra sig i ordning för att gå till jobbet som tv-producent i den "Den Andra Verkligheten".

Spelet förändras. Till en början är det textbaserat men polygonerna som bygger upp den visuella miljön förändras gradvis och blir alltmer levande. Färger och former dyker upp och börjar likna representationer för hus, båtar, städer, berg, skog, djur och människor. Snart är den andra verkligheten både verkligare och mer levande än den första verklighen.Varken människa eller djur bär på minsta spår av illusion.

Hon har bytt kön och blivit en Han men ångrat sig och bytt tillbaka igen. Men otillfredställelsen kvarstår. Varelsen drar sig tillbaka och lägger sig återigen på operationsbordet för att byta ut magsäcken mot en depå för energitabletter. "Den Andra Verkligheten" tillfredställer alla behov av lukt, smak och känsel. Kroppen har förvandlats till ett överflödigt bihang, en potentiell värdkropp för virus, bakterier och andra onödiga sjukdomsbärare. Varelsen suckar och försöker glömma köttmassan i den första verkligheten.

Äntligen har gränsen mellan den första och andra verkligheten suddats ut av forskarna. Varelsen gör sig redo för transgression. Medvetandet lämnar sin trånga fängelsehåla och fyller en syntetisk behållare av gränslös synapsmassa. Varelsen håller transgressionsfest i den andra verkligheten och hyllas av alla som den tappre kaptenen på det sjunkande skeppet. Varelsen var den sista i sin ras.

Den första verkligheten är nu ett självgenererande teknologiskt maskineri med ett enda syfte: att sköta om synapsmassorna. Alla intellektuella processer har flyttats över till den andra världen för att påbörja arbetet med att nå den tredje verkligheten.

Glossary

This glossary is not intended to define anything, just give you an idea of what I mean when I use these words. All entries are supposed to explain what I mean in a simple way. In most cases, the entry is over-simplified and should not be removed from this context.

Ajax

A set of web programming tools often associated with Web 2.0. Basically Ajax makes Web applications behave more like PC applications.

CI Machine

The set of algorithms and technologies rendering the Collective Intelligence.

CMS (Content Management System)

A Web system used to create and manage web pages.

Collective Intelligence

When voices from a large quantity of people are collected and used by technology and algorithms to render relations between people. These relations might be something like musical interest or that several people are about to buy the same product. The purpose is often to help people choose or find something in a large collection of information.

Contextual Knowledge

The thought that knowledge cannot be separated from its context. All knowledge includes its context.

Cyberspace

The concept Cyberspace was coined before the Internet, and describes a digital space with various features; often mentioned in fiction. I use the concept as something between how the web works today, and how it might be tomorrow.

Cyborg

A cyborg is a hybrid creature. The basic understanding is that the hybridity is a fusion between human and technology, but Donna Haraway's examples include animals and even the earth . The hybridity can also be between fact and fiction, which the cyborg is an example of. For me, this hybridity does not necessarily have to physical.

Delicious

Delicious is a bookmark service. Together with Flickr, Delicious is one oldest and most well known Web 2.0 services.

Document

Something tangible like a paper, canvas or a computer screen containing some kind of media like text, images or sound. Perhaps you could say that a computer file is a document, but in another sense it is only a structure of data before it is decoded and usable to human senses.

DRM (Digital Restriction Management)

Using technique to enforce pre-defined policies controlling access to software, music, movies, or other digital data and hardware.

Entity

Something that has a distinct, separate existence, though it need not be a material existence. I use this word sometimes when I want to avoid creating a specific image in the readers mind.

Flickr

Flickr is a service where you can store your pictures and communicate, build photo communities and more. Together with Delicious, Flickr is one of the oldest and most well known Web 2.0 services.

Folksonomy

Folk + taxonomy: people classifying information and knowledge. The classification is done with tags. Folksonomy is non-hierarchical as opposed to many expert classification systems.

Groupthink

When people share a set of thoughts, the term is almost synonym with Mindset. I see Groupthink as the pejorative synonym to Mindset. Mindset is about sharing thoughts in a mostly positive way, while Groupthink is to be lead by a group. The difference is thin and not everyone agrees upon it.

Hybrid

Se Cyborg

Hybrid Intelligence

I use this concept to stress that Collective Intelligence is hybrid. It is a fusion of humans and technology.

Identity

A part of myself I show others.

Irony

Irony is an uncertainty area between the form and the concept in the linguistic sign. It can be unintended or intended. If it is intended it can have many functions. In this context it is always used constructively.

Long Tail

The Long Tail describes a business model and a line of thinking in Web 2.0 environments. The basic idea is that many people who participate (or buy) a little bit, each might be more valuable that a lesser number participating much.

Mindset

Se Groupthink

Native Web

I use this concept to denote software, services and activities born on the web and living all their lives on the web. This is very similar to the Web 2.0 concept, but is not limited by number. The native web is Web 2.0 in a larger context. The native web concept starts from Web 2.0, but also includes the following versions.

Native Web Cyborg

A hybrid between a human and native web services, merged together by some kind of dependency. I use this figure to discuss how the Web 2.0 environment affects me, and in some sense how it affects the society surrounding me.

Objective Knowledge

When someone thinks they can disregard themselves and their context from the knowledge they create.

Open Agora

An open room for discussion.

Paradigm

Paradigm is like Mindset and Groupthink, but the context is only science and reseach. Paradigm is mostly used about a more or less distant period in the history of science, regarding the methodology and theory of that time period.

Personality

The process which I call I, the instance my identities are constructed from.

RSS Feeds

You can subscribe to Web Pages through RSS Feeds - also called syndication.

Situated Knowledge

The view that knowledge must be situated in a context in space, time or social structure. Situated Knowledge is always a construction between two or more persons.

Social Software

Social Software means software with an intention of communicating rather than just holding information.

Subjective knowledge

Subjective knowledge is knowledge construction within one mind.

Syndication

You can subscribe to Web Pages through syndication - also called RSS Feeds.

Tag, Tag Cloud

Tags are keywords. A Tag Cloud is a visual table of contents of systems tags. The tags in a Tag Cloud are usually sorted alphabetically and weighted after occurrence: Frequently used tags are displayed in bigger fonts and a more conspicuous colour.

Web as Platform

WWW is viewed as an operative system. Applications use the Web as a base for its functions. I stress that PC applications reconstructed as Web applications operate under totally different conditions, of which one of the most important is participation.

WWW, World Wide Web, the Web

A space with the address suffix http://

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According to the Harvard reference style, an electronic source is written with the title first instead of the author, which is standard for printed sources. Many of the web articles I use are equivalent to printed ones and I do not see why I should treat them otherwise. Thus all web sources start with the author, followed by the title instead of the year which is standard for printed sources. This makes them easier to read if the author is omitted.

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