The wiki phenomenon

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1   Introduction

„Please, grant me the serenity to accept the pages I cannot edit,
The courage to edit the pages I can, And the wisdom to know the difference.“[1]

The wiki[2] (or WikiWiki or WikiWikiWeb) is a relatively new phenomenon on the internet. Although its origins date back to 1994/95[3], the most important growth has taken place since 2001, when in january Wikipedia[4] was born. Since then, there have been several articles on the wiki phenomenon, most of which give a short introduction to the idea of wikis and then present Wikipedia as the most important one. Although wikis and the use of wikis have grown in importance over the time, it seems that not very much else has been written them. As a conclusion there are two consequences for this paper: First, it is time for further investigation of the wiki phenomenon. Second, as the basis of printed material on the topic is very sparse, the foundation for this paper has to be close observation of the wikis themselves, as well as mostly online sources. David Mattison states in Searcher Magazine in April 2003, that „the online literature has not begun to focus on wikis yet“ although he thinks of them as an extremely useful tool with high potential for „libraries, both behind the scenes where they are being used, and in public customer service areas where you could create a librarian-administered, self-serving knowledge bank.“[5] Later he gives the example of Jenny Levine who speaks of wikis as „stationary information“ and therefore does not think of them as fitting for the needs of the library of the future.[6]

As the topic is closely related to many online sources, there is a website to support this paper and simplify the use of links and online examples. The complete text with examples and weblinks can be found on http://www.schwall.de/thewikiphenomenon/.

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1   The WikiWikiWeb, The „Wiki Prayer“, http://c2.com/cgi/wiki?WikiPrayer, 27.08.2003
2   As there is no official way of capitalizing „wiki“, in this paper „wiki“ will be used for the general term whereas „Wiki“ can occur in reference to a specific wiki software or wiki site as well as in quotations.
3   WikiHistory, http://c2.com/cgi/wiki?WikiHistory, 27.08.2003
4   Wikipedia – The Free Encyclopedia, http://www.wikipedia.org/, 27.08.2003
5   David Mattison, „Quickwiki, Swiki, Twiki, Zwiki and the Plone Wars – Wiki as PIM and Collaborative Content Tool“, In: *Searcher: The Magazine for Database Professionals, Volume 11, Number 4, April 2003, page 32.*
6   Jenny Levine, „The Shifted Librarian“, http://www.theshiftedlibrarian.com/2002/03/19.html#a887, 27.08.2003

2   The wiki phenomenon

2.1   The wiki idea

As Lars Aronsson puts it, „A Wiki website is a hypertext on steroids."[7] He draws this conclusion from the fact that the basic idea behind a wiki website is that it is editable by any visitor and therefore makes it even easier to create links, the bondings of hypertexts. Or, as Ward Cunningham and Bo Leuf explain: „A wiki is a freely expandable collection of interlinked Web 'pages', a hypertext system for storing and modifying information – a database where each page is easily editable by any user with a forms-capable Web browser client"[8]. Thus, as a special form of a normal website, a wiki website has of course inherited the main characteristic of a normal hypertext: It is web-like interconnected and therefore represents a hypertext as defined by Vannevar Bush and Ted Nelson.[9] But where the typical webpage has to be created by the page's owner using a special software and is static afterwards, the wiki page, once installed, gives every visitor the opportunity to either add or edit pages with a simple mouse click.

The concept of the wiki was invented and implemented for the first time by Ward Cunningham. As a software developer he is known to be pioneering in the development of new programming techniques and methodologies like Design Patterns and Extreme Programming. In this context Cunningham was looking for a new documentation system that would better fit to the programmers' needs than the word processor that was used as the typical tool back then. This new tool had to be able to trace a document's history as well as support revision control in order to check for previous changes. Furthermore it had to be easy to use and highly automated.

These requirements led to the development of a script, that enabled any member to make changes to the online documentation at any time. As the script also comprised a logging mechanism that made the review of previous

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7   Lars Aronsson, „Operation of a Large Scale, General Purpose Wiki Website", *elpub2002. Technology Interactions*, Eds. Carvalho, João Álvaro; Hübler, Arved; Baptista, Ana Alice. pages 27 – 37.

8   Cunningham, Ward; Leuf, Bo. „The Wiki Way". Addison-Wesley 2001. page 14.

9   Zimmer, Dieter E., „Bibliothek der Zukunft. Text und Schrift in den Zeiten des Internet", Ullstein, München 2001. pages 79 f.

versions and version comparisons possible, the system soon became very popular, first within Cunningham's group of developers and later throughout the internet through his company's website[10] where the system still is used for discussing topics of software engineering[11]. Because of its speed, Cunningham named the system „wiki-wiki", the Hawaiian term for very fast or quick.

Since its beginnings the wiki idea has spread faster and faster and uses have been found that Cunningham surely would not have thought of in the 1990s. But today he talks of it as a new way of learning or understanding („Le Wiki est maintenant une façon d'être, une façon d'apprendre.")[12]: „An area where open collaboration and exchange of ideas is both natural and important is education. Wiki technology is a useful tool in this context"[13]. Of course wikis are still extremely popular and widely used within the software development communities around the world, but use has spread in other directions as well and wikis are growing everywhere on the internet. Most are small projects consisting of a few dozen or hundred pages, but some even have several thousand articles with up to more than some thousand letters.

As Lars Aronsson explains referring to his own experiences with susning.nu, wikis need some effort to get this far: „It seems that an active core of at least five regular contributors are needed to keep a wiki alive. The first or first few must be very determined in getting this process started."[14] Aronsson's susning.nu is Sweden's largest wiki with today more than 30.000 pages (August 2003)[15] and therefore also the worlds second largest[16] according to Meatball[17], a so-called metacommunity that deals with online culture. Today the largest wiki by far is Wikipedia.org which announced its 100,000th article in January 2003[18] and had reached a size of more than

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10 Cunningham & Cunningham, Inc., http://c2.com/, 27.08.2003
11 The Portland Pattern Repository, http://c2.com/cgi/wiki?WelcomeVisitors, 27.08.2003
12 Raphaële Karayan, Le Journal du Net, 20th August 2003,
     http://www.journaldunet.com/0308/030820cunningham.shtml, 27.08.2003
13 Cunningham, Ward; Leuf, Bo. „The Wiki Way". Addison-Wesley 2001. page 343.
14 Lars Aronsson, „Operation of a Large Scale, General Purpose Wiki Website"
15 Susning.nu/statistik, http://susning.nu/Susning.nu/statistik, 26.08.2003
16 BiggestWiki, http://www.usemod.com/cgi-bin/mb.pl?BiggestWiki, 27.08.2003
17 MeatballWiki, http://www.usemod.com/cgi-bin/mb.pl?MeatballWiki, 27.08.2003
18 Wikipedia2003:PressRelease, „It seems surprising that it works, but it does",

152,000 articles at the end of August.

With the formation and evolution of wikis new requirements came up and more and more programs where written to implement the wiki idea. Meatball states that there are around 200 different types of wikis today.[19] These programs are called clones, as they imitate the original wiki's functions and add some specific ones.[20] Most of them carry the term „wiki" in their name, e. g. PhpWiki or TwikiClone.

2.2 Features and technical aspects of wikis

As there are numerous wiki clones today, the underlying techniques are diverse. Data is either stored in databases or in plain text files, e. g. in XML format. In any case wiki pages are produced dynamically by the web server using a wiki script. These scripts can be written in different scripting languages like Perl or PHP and they can implement different functions to be used in the wiki. The script works in the background and remains invisible to the user. Only the wiki programmer is confronted with these details.[21] Independent of the underlying wiki script, all wikis share the same core functions like creating or editing a wiki page.

Each visitor contributes to the wiki in his own personal way: whereas one will only read and use the wiki as a reference from time to time, some will return to the list of changes regularly, others might add texts or do some markup like linking texts. On his first visit to a wiki the visitor is greeted with a welcome page, a normal wiki page that has been made the wiki's homepage. From there the users have different possibilities to navigate through the wiki pages, depending on their personal preferences. For new visitors most wikis have a so-called WikiWikiSandbox[22], a wiki page like any other except for the fact that it is resetted to its original state regularly.

http://www.wikipedia.org/wiki/Wikipedia%3A2003_Press_Release, 27.08.2003
19 MeatballWiki: MeatballWikiFaq, http://www.usemod.com/cgi-bin/mb.pl?MeatballWikiFaq, 27.08.2003
20 WikiClone, http://www.usemod.com/cgi-bin/mb.pl?WikiClone, 26.08.2003
WikiWikiClones, http://c2.com/cgi/wiki?WikiWikiClones, 26.08.2003
21 Cunningham, Ward; Leuf, Bo. „The Wiki Way". Addison-Wesley 2001. page 15.
22 C2 WikiWikiSandbox, http://c2.com/cgi/wiki?StartingPoints, 27.08.2003

Here the unexperienced users can take their first steps and test the wiki's core functions. Afterwards the user can forward to the StartingPoints page[23] where they are provided with ideas to where to proceed.

More experienced users will probably start their visit on the RecentChanges[24] page, a page that presents a list of all wiki pages that have been changed lately. The RecentChanges page is a special wiki page which is produced in real time and cannot be changed by the users. From here users who are interested in a specific wiki page can go on and have a closer look at the changes to the page using the page's history. In each history all changes are documented and can be reviewed or undone, a concept that goes back to Cunninghams concept of revision control and now works also as a defense against unfriendly visitors who might have the intention of destroying wiki content. As stated in WhyWikiWorks[25]: „There's always the previous version of a page available" and with the page's history at hand the first user to find a destroyed page can easily restore it to its previous state with just one mouse click. So if deleting a wiki page is easy, restoring it is even easier.

Sooner or later every wiki user is confronted with how to use the constructive functions: editing existing and creating new wiki pages, whereas editing a page is the most simple thing in using a wiki. If a visitor finds some information he wants to edit for some reason, e. g. because he has additional information on the topic, he simply uses the „Edit Page" link that can be found on every wiki page. He is then presented a web form in which he can edit the content in the intended way and submit it to the wiki by confirming the changes. All changes appear directly on the wiki page.

All articles can refer to other articles and build up a net structure this way. To create a link to another article, the author inserts the title of the article referred to in form of a WikiWord, a word written with at least one capital letter inside, or, in some cases, with square brackets around it, e. g. [[WikiWord]], and the script then creates the link. New wiki pages are

23 C2 StartingPoints, http://c2.com/cgi/wiki?StartingPoints, 27.08.2003
24 Wikipedia RecentChanges, http://www.wikipedia.org/wiki/Special:Recentchanges, 27.08.2003
25 C2 WhyWikiWorks, http://c2.com/cgi/wiki?WhyWikiWorks, 27.08.2003

created the same way: If a WikiWord is used that does not refer to an existing article, the first mouse click on the WikiWord then creates the new page. This way, the wiki web grows with every link, and no stand-alone pages can occur because there always has to be a link to a page to create it.

2.3   Legal and social issues

At first glance, the idea of a website editable by anybody at any time „seems to mean total anarchy"[26]. Of course, if a system is as open as wikis are, problems cannot be avoided. It seems amazing that the wiki concept works at all, but Cunningham does not think of it as anarchistic and says that „Wiki is inherently democratic – every user has exactly the same capabilities as any other user. It allows Web collaboration without dealing with accounts and passwords."[27] Thus, anybody with internet access is able to destroy a wiki page without further difficulties. But as no wiki has been closed because of a major deletion, there must be a reason why hackers do not aim at wikis. In WhyWikiWorks it says, that „Wiki gets hit by the great unwashed as often as any other site – but to make an impact on Wiki, you need to generate real content. Anything else will be removed. So anyone can play, but only good players last."[28] And it really seems, that nobody has ever tried to delete as many wiki pages as possible, the main reason being the enormous number of wiki writers contrasting very few wiki erasers. Another explanation could be that most wikis do not represent an interesting enough target, because if there is no real challenge in something, only very few people give it a try. In other words: there is no thrill in cracking a system that has no security in the first place.

Of course, from time to time some vandalism occurs. But mostly these cases are limited to flamewars, which are often settled by an outsider. Only in extreme cases people are banned from the wiki, which in case of Wikipedia has happened only a few times over the last two years and needs the consent of wiki-owner Jimbo Wales. As the banned wiki-hooligans can easily return using false nicknames a ban can never be very effective. Nevertheless,

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26 Lars Aronsson, „Operation of a Large Scale, General Purpose Wiki Website"
27 Cunningham, Ward; Leuf, Bo. „The Wiki Way". Addison-Wesley 2001. page 17.
28 C2 WhyWikiWorks, http://c2.com/cgi/wiki?WhyWikiWorks, 27.08.2003

unfriendly behaviour seldomly makes sense for wiki users because of the reputation the vandalist gets: other wiki members will be very careful trusting your articles in the future. Users who are returning to destroy wiki content nevertheless can be stopped with other technical means: IP blocking prevents the access from computers using a special internet address, also the number of posts from a visitor in a given time period can be limited. Ultimately the wiki can be secured with a login, requiring every visitor to be recognisable by his user name. Unfortunately all of these means have their disadvantages, either in excluding users or in making access more difficult.

If an argument occurs, it mostly concerns the content of a specific wiki page when different views on a topic exist. This leads to an editing war that then is taken to the mailing list discussion which exists parallel to most wikis. This way arguments can often be avoided inside the wiki itself and wiki users tend to search for a consensusfor the article. In the original wiki no rules had to be followed, but today most wikis are based on the principle of consensus to secure the efficiency and effectivity of collaborative work and for Wikipedia the neutral point of view (NPOV)[29] was created. NPOV does not prevent the authors from having their own opinions but avoids that these are presented in Wikipedia articles as the only opinion possible. Often this leads to the building of an argument tree with pro and contra branches to have the article give information on both sides and present links to pages of both opinions, e. g. like in the Wikipedia article on Holocaust denial[30]. WhyWikiWorks summarizes the main idea: „Wiki pages represent consensus because it's much easier to delete flames and spam than indulge them. What remains is naturally meaningful.“[31]

As Lars Aronsson puts it „Perhaps a more intriguing issuee is that of copyright“[32]. This way he asks who is to claim copyright to an article that has several authors. The same question applies to newspapers or commercial encyclopedias but is easily answered there because typically the employer owns all rights to the product. In case of a wiki, especially in case of

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29 Wikipedia NeutralPointOfView, http://www.wikipedia.org/wiki/NeutralPointOfView, 28.08.2003
30 Wikipedia Holocaust denial, http://www.wikipedia.org/wiki/Holocaust_denial, 28.08.2003
31 C2 WhyWikiWorks, http://c2.com/cgi/wiki?WhyWikiWorks, 27.08.2003
32 Lars Aronsson, „Operation of a Large Scale, General Purpose Wiki Website“

Wikipedia, there is no employer. Here, Wikipedia replies with the GNU Free Documentation License (GNU FDL)[33]. The wiki grants the authors the rights to their own contributions but also makes clear that when the text is saved to Wikipedia, it is made available under the FDL. Basically, the consequences are that all Wikipedia texts can be copied and used freely but have to stay free in their new environment.

2.4 The most prominent wiki: wikipedia.org

With more than 152,000 articles today by far the largest and most important wiki is Wikipedia, a free online encyclopedia which has already reached the size of standard commercial encyclopedias months ago. Wikipedia is successor to another online encyclopedia, Nupedia[34], which has had problems growing because of very strict regulations regarding quality control and still has only about 30 articles after several years of existence. In contrast to that, Erik Möller observes in a comparison of Wikipedia to the German CD-ROM dictionary Microsoft Encarta that the free encyclopedia has already overtaken the commercial one in several categories. He sees the strong points especially where controversial topics are concerned, because the neutral point of view policy secures the neutrality even if the topic is sensitive one, whereas these are often left out in commercial products.[35] Additionally Wikipedia articles are extremely well equipped with links to websites related to the topic, e. g. on Global Warming where over 20 links are sorted in seven categories. Graphics and photographies are not unsual as many Wikipedians, as the Wikipedia users call themselves, contribute their own photographies. Maps and diagrams are being quickly created if necessary. Also, the government of the United States has to put all publications at the disposal of the public and therefore huge archives of NASA, military and ministries are freely usable.

In his examination Möller finds some childhood diseases of Wikipedia, too. According to his research, the encyclopedia's problems have the same cause

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33 GNU Free Documentation License, http://www.gnu.org/copyleft/fdl.html, 27.08.2003
34 Nupedia, http://www.nupedia.com/, 28.08.2003
35 Erik Möller, „Tanz der Gehirne: Teil 2. Alle gegen Brockhaus. Wikipedia funktioniert.",
    http://www.heise.de/tp/deutsch/inhalt/te/14802/6.html, 27.08.2003

as its strengths: The same way the open source concept secures the interest and participation of many users, it allows the missing of articles if nobody is able to or interested in writing them, so that Wikipedia has gaps in highly unsual topics which are only at the interest of experts.[36]

Wikipedia's success has led to the foundation of sister projects: Today around 40 spin-off projects that implement Wikipedia in other languages are in existence. Additionally other wikis have been founded: the free dictionary Wiktionary[37] , the textbook project Wikibooks[38], the online quotation compendium Wikiquote[39] (started on June 27, 2003) and the September 11 Memorial Wiki that defines „the inclusion of a neutral and complete history of the attack"[40] as its aim. In August 2003 six of the 10 largest wikis[41] were part of the Wikipedia community each consisting of several thousand pages.

36 Erik Möller, „Tanz der Gehirne: Teil 2. Alle gegen Brockhaus. Wikipedia funktioniert.",
   http://www.heise.de/tp/deutsch/inhalt/te/14802/6.html, 27.08.2003
37 Wiktionary, http://wiktionary.org/, 27.08.2003
38 Wikibooks, http://textbook.wikipedia.org/, 27.08.2003
39 Wikiquote, http://quote.wikipedia.org/, 27.08.2003
40 September 11 Memorial Wiki, http://sep11.wikipedia.org/, 27.08.2003
41 BiggestWiki, http://www.usemod.com/cgi-bin/mb.pl?BiggestWiki, 27.08.2003

3   Conclusion

With the phrase „Les wikis sont en mutation."[42] Christophe Ducamp describes the movement of the wiki world perfectly. Since its early beginnings the internet as a whole is constantly changing. Now that a new phenomenon has joined the web movement, the wiki experience will add new ideas and new directions. As the wiki is a relatively new development, more changes can be expected in the future. Already programmers work on a way to merge wikis with other technologies, for example with RSS[43], a protocol for syndicating news and exchanging headlines between content-prone websites: „Various experiments are underway on integrating the RSS protocol for both aggregation (subscribing to and reading a news feed) and syndication (exporting of wiki content as RSS content so other sites can subscribe to it)."[44] Furthermore, wikis are growing closer as the InterWiki concept tries to link several wikis together to increase the sharing of the knowledge base. Wikis are also tested on their use with weblogs (blogs).[45]

Today, wikis are still limited in some extends: For example the way to edit a wiki page can surely be made more simple in the future. Also the inclusion of other media and techniques can be improved. The use of well-known web technologies is still new to wikis and scripts and programs like java, java applets, javascript, ASP, PHP, DHTML, etc. are not in use very often. Here, wikis have many possibilities to expand their abilities.

Also, some problems like the non-existent standardization for wikis are still to be coped with: platform migration from one wiki to another is extremely difficult and requires good programming skills. As well, standards are missing for data storage in wikis and for design and communication principles. For example rules for markup are implemented differently in many wikis: Whereas some support HTML, others have their own, mostly easy way of highlighting and linking. Both ways have their advantages but as long as there is no standardization, migration remains difficult and consequently very expensive.

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42 Christophe Ducamp, „Bientôt le wikiweblog mobile?", In: elanceur, http://www.elanceur.org/, 27.08.2003
43 Wikis with RSS, http://ourpla.net/cgi-bin/pikie.cgi?WikisWithRss, 27.08.2003
44 David Mattison, „Quickwiki, Swiki, Twiki, Zwiki and the Plone Wars – Wiki as PIM and Collaborative Content Tool"
45 Wiki Weblogs, http://www.ourpla.net/cgi-bin/pikie.cgi?WikiWeblogs, 27.08.2003

Another thing that has been changing for some time now is how people communicate and the internet has taken the major role in the game. With the recent development many new possibilities have come to existence, mainly giving people easier and cheaper ways of contacting others. Several new ideas have developped nearly unnoticed, like e. g. instant messaging that has won millions of fans over the last years. There can be no doubt, that the way people work and communicate through and within wikis will have an impact on our culture as well and as the idea of open source has been increasingly discussed in Germany and other countries throughout the last years, it now seems possible that the concept of open knowledge as implemented in wikis will spread, too.

In the meantime, wikis are under heavy pressure of competition from other technologies like web content management systems (WCMS) that often comprise additional features like e. g. multimedia content. Other, highly sophisticated products exist especially in the open source market[46] but also software giant Microsoft has entered the market of browser-based collaborative work and introduced its SharePoint technology[47] which is supposed to „Share information, collaborate on documents, and collect team knowledge over the Internet or your corporate network"[48]. Of course Microsoft supports only its own Microsoft Web Server and requires the Microsoft Data Engine or Microsoft's SQL Server. Nevertheless the future of the wikis and its opponents will be full of possibilities and surprises.

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46 For further information see „Where Will Wikis Go Next?" in David Mattison, „Quickwiki, Swiki, Twiki, Zwiki and the Plone Wars – Wiki as PIM and Collaborative Content Tool", *Searcher: The Magazine for Database Professionals, Volume 11, Number 4, April 2003.*
47 Microsoft SharePoint Technologies Family, http://www.microsoft.com/sharepoint/, 27.08.2003
48 Microsoft SharePoint Team Services Home, http://www.microsoft.com/sharepoint/teamservices/, 27.08.2003

4   Glossary

BBS: Bulletin Board System, an message database system.

CamelCase: See WikiWord.

CMS/WCMS: (Web) Content Management System. A client-server application category that includes site and content management tools.

CSCW: Computer Supported Cooperative Work

Editing war/flamewar: A heated discussion about a controversial topic.

Intertwingularity: Ted Nelson stated intertwingularity as contrasting to hierarchical systems, saying that „Everything is deeply intertwingled.“, memes.net describes it as supporting „many relationships between atoms of data“.[49]

Open link: A not yet existing wiki page that is linked to from another wiki page.

RecentChanges: A wiki page listing the most recent changes to every wiki page within the wiki system.

Refactoring: In their book „The Wiki Way“ Cunningham and Leuf describe refactoring as „a technical term for iterative adjustment based on new input“[50] meaning rewriting and restructuring.

RSS: Rich Site Summary, a protocol for sharing headlines and syndicating several pages' contents and using them elsewhere.

Slashdotting: „In a perhaps inevitable generation, the term is being used to describe any similar effect from being listed on a popular site. This would better be described as a flash crowd. Differs from a DoS attack in being unintentional.“[51]

Wikiblog: A unified wiki and blog application.

WikiWord: Also known as CamelCase, a WikiWord is the result of a link created in a typical wiki. Words with capital letters inside are called WikiWords and automatically rendered as links pointing to other wiki pages.

WordJam: A conflict in a new wiki page name and real words. Accidental open links can be the problematic result occuring whenever the author creates a new wiki page with the same content like an already existing wiki page.

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49 memes.net, http://memes.net/index.php3?request=displaypage&NodeID=323, 27.08.2003
50 Cunningham, Ward; Leuf, Bo. „The Wiki Way“. Addison-Wesley 2001. page 330.
51 The Jargon File, http://www.catb.org/~esr/jargon/html/S/slashdot-effect.html, 27.08.2003

5 Appendix

5.1 Literature

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Ducamp, Christophe. „Bientôt le wikiweblog mobile?“, In: elanceur, http://www.elanceur.org/

Karayan, Raphaële, Le Journal du Net, 20th August 2003, http://www.journaldunet.com/0308/030820cunningham.shtml

Levine, Jenny, „The Shifted Librarian“, http://www.theshiftedlibrarian.com/2002/03/19.html#a887

Mattison, David. „Quickwiki, Swiki, Twiki, Zwiki and the Plone Wars – Wiki as PIM and Collaborative Content Tool“, In: *Searcher: The Magazine for Database Professionals, Volume 11, Number 4, April 2003, page 32.*

Möller, Erik. „Tanz der Gehirne, Teil 1: Das Wiki Prinzip“. In: *Telepolis. Magazin der Netzkultur. 09.05.2003, http://www.heise.de/tp/deutsch/inhalt/te/14736/1.html*

Möller, Erik. „Tanz der Gehirne, Teil 2: Alle gegen Brockhaus“. In: *Telepolis. Magazin der Netzkultur. 16.05.2003, http://www.heise.de/tp/deutsch/inhalt/te/14802/1.html*

Möller, Erik. „Tanz der Gehirne, Teil 3: Diderots Traumtagebuch“. In: *Telepolis. Magazin der Netzkultur. 23.05.2003, http://www.heise.de/tp/deutsch/inhalt/te/14855/1.html*

Möller, Erik. „Tanz der Gehirne, Teil 4: Diesen Artikel bearbeiten“. In: *Telepolis. Magazin der Netzkultur. 30.05.2003, http://www.heise.de/tp/deutsch/inhalt/te/14903/1.html*

Zimmer, Dieter E. „Die Bibliothek der Zukunft. Text und Schrift in den Zeiten des Internet“, Ullstein, München 2001.

5.2   Web links

AbbeNormal, http://www.ourpla.net/cgi-bin/pikie.cgi

GNU's Not Unix!, http://www.gnu.org/

Portland Pattern Repository's Wiki,
    http://c2.com/cgi/wiki?WelcomeVisitors

memes.net, http://www.memes.net/

Microsoft SharePoint Technologies, http://www.microsoft.com/sharepoint/

Nupedia, http://www.nupedia.com/

September 11 Memorial Wiki, http://sep11.wikipedia.org/

susning.nu, http://susning.nu/

The Jargon File, http://www.catb.org/~esr/jargon/

UseModWiki, http://www.usemod.com/cgi-bin/wiki.pl

Wikibooks, http://textbooks.wikipedia.org/

Wikipedia, http://www.wikipedia.org/

Wikiquote, http://quote.wikipedia.org/

Wiktionary, http://www.wiktionary.org/

The WikiWikiWeb, http://c2.com/cgi/wiki?WelcomeVisitors

All links were in existence on August 28th, 2003.