The Foundations of Participatory Journalism and the Wikipedia Project

Andrew Lih
Journalism and Media Studies Centre
University of Hong Kong
alih@hku.hk

Abstract

This paper investigates the evolution of many-to-many online participatory journalism, by focusing on the case of Wikipedia, a multilingual, online encyclopedia created collaboratively by thousands of ordinary Internet users. By allowing anyone to edit any page within the web site, Wikipedia has flourished by presenting a low barrier to participation, maintaining a human-centered working environment and making contributors stakeholders in the journalistic effort.

In just three years, it has gained a large following and is available in over 50 different languages. This paper analyzes its fundamental links to the open source movement, emergence as a unique online community and role in the modern media ecology. It concludes with an interpretation of participatory journalism as an ecosystem of technology, community and content.

Table of contents

The Case for Participatory Journalism

In the last few years, the advent of *participatory journalism* has allowed a new generation of Internet users to become content creators. The proliferation of web logs and wiki web sites has engaged the news audience to participate in the process of rationalizing web content, crafting the news and contributing knowledge to the media ecology.

In their work on the subject, *We Media, How audiences are shaping the future of news and information*, Shayne Bowman and Chris Willis define participatory journalism as[1]:

> The act of a citizen, or group of citizens, playing an active role in the process of collecting, reporting, analyzing and disseminating news and information. The intent of this participation is to provide independent, reliable, accurate, wide-ranging and relevant information that a democracy requires.

The role of web logs has been firmly established recently, with prominent independent "bloggers" gaining high profiles after September 11, 2001 and during the 2003 Iraq war. Many mainstream media outlets have also adopted the practice of using web logs with their own reporters.

New to the Internet ecology are *wiki* web sites, which allow users to immediately edit and directly change any page with one click of the mouse. Contrary to nearly all previous assumptions about having to maintain editorial and structural control over content in order for it to succeed, wikis have taken the other extreme – complete openness and changeability. It is this wiki technology that has produced the most ambitious form of participatory journalism to date – Wikipedia.

Individuals

A Pew Internet and American Life study performed March 12 to May 20, 2003 recently studied user contributions to Internet content[2]. The polling project, *The Material People Contribute to the Online World* is one of the few detailed studies on the number and nature of Internet users involved in content creation. Its study of web sites, web cams, web logs, file sharing and newsgroup participation found that 44% of adult American Internet users (roughly 53 million people) had contributed content online. Regarding web logs, between 2% to 7% of Internet users published one. While these numbers are particular to American Internet users, it is likely the numbers on a worldwide scale are lower. However, this is a significant shift in that individual users are gradually becoming content creators, using text, pictures and even video[3].

With citizens gaining access to the tools of publishing and distribution on the Internet, it has started to change the media ecology in profound ways. In countries with restricted press environments, participatory journalism in the form of web logs and wikis has become an important "reality check" to mainstream and state controlled media, allowing ordinary users to help craft the news and keep traditional media sources accountable. Even in open societies, it provides the tools necessary for citizens to interpret events in context and to make informed decisions on news events and the local polity.

The Knowledge Gap

Participatory journalism presents a major change in the media ecology because it uniquely addresses an historic "knowledge gap" – the general lack of content sources for the period between when the news is published and the history books are written (Table 1).

Traditional encyclopedias have typically served in this role, but their yearly publishing cycles and prohibitively high cost make them ill-suited for the task. Even conventional online encyclopedias, such as Britannica.com, work on six month to one year cycles for the creation of their articles[4]. Web logs and wikis have changed the landscape dramatically, as they provide not only timely distillation of information and generation of commentary, but do so in a hyperlinked context that allows users to explore, assess the merits of and contribute to the case before them. This is a fundamental shift in the relationship between reader and publisher, as communities have formed that have no strict boundaries between these roles.

Type	Sources	Type	Time Scope
Wisdom	Books, academic journals	Research and analysis	Years, decades, centuries, ad inf.
Knowledge	Magazines, encyclopedias	Secondary source	Weeks, months, years
Information	Newspaper, magazines, TV news, news wire	Primary source	Minutes, hours, days, weeks
Data	Stock quotes, sports scores, election results, economic statistics, interviews, press conferences	Live feed	Instantaneous, seconds

Table 1 Traditional journalistic sources and the Information Pyramid

The OhmyNews site in South Korea is a particularly good example of this hybridization, where readers craft the majority of the news articles, and are edited by a full time staff of a few dozen editors[5]. In the *Japan Media Review*, Yeon-Jung Yu reports, "Most are written by housewives, schoolkids [sic], professors and other 'citizen journalists.' " The number of citizen reporters for OhmyNews has climbed to over 30,000, and the reader audience is over 2 million. This has spawned even more

grassroots journalism in Korea which have used digital images for commentary and satire, such as Seoprise.com and DCinside.com.

San Jose Mercury News columnist Dan Gillmor sees the model as a reflection of the change participatory journalism will bring to the news industry, "OhmyNews is transforming the 20th century's journalism-as-lecture model -- where organizations tell the audience what the news is and the audience either buys it or doesn't -- into something vastly more bottom-up, interactive and democratic.[6]"

Open Content and Open Source: Brothers in Arms

Many-to-many collaborative journalism is relatively new to the Internet, but the freedom to distribute and modify collaborative content in cyberspace is not.

The open content movement draws upon the spirit of the open source software (OSS) movement, which created the increasingly popular Linux operating system and GNU software tools. The idea for OSS was to have software be free, in both senses of the word – free cost to distribute and free to be modified by anyone. With both of these factors, software could be evolved quickly and by large number of participants distributed around the globe. The result today is that the Linux operating system, packaged with a diverse set of open source software, has provided a challenge to the dominance of Microsoft Windows operating system in many sectors, especially in corporate and industrial environments[7]. Both the web log and wiki content movements have followed by using widely available free open source tools, thereby creating workspaces and online communities that provide an alternative to the influence of traditional, centrally managed content.

The concept of free electronic dissemination has its roots in Project Gutenberg[8], a well known effort dating back to 1971 to make out-of-copyright public domain texts widely available free of charge. The project took to the Internet after the

1980s and still exists as a repository for texts. However, only recently have multiple authors been able to collaborate effectively on content in a shared online forum. The development of specialized wiki software has enabled this, and Wikipedia provides the most successful and largest scale example to date.

Wikipedia Overview

Wikipedia is an Internet-based, volunteer-contributed encyclopedia that has become a popular online reference (Figure 1) in just three years of existence. It has thousands of international contributors and is the largest current example of an *open content* wiki[9]. (The Hawaiian word for "quick," WikiWiki, is the basis for the wiki name.) The goal of Wikipedia is to create an encyclopedia that can be shared and copied freely while encouraging people to easily change and improve the content. Each and every article has an "Edit this page" button, allowing anyone, even anonymous passersby, to add or delete any content on any page. What would surely seem to create chaos has actually produced increasingly respected content which has been evaluated and revised by the thousands of visitors to the site over time.

Wikipedia Traffic Rank vs. Other Encyclopedias (2003-2004)
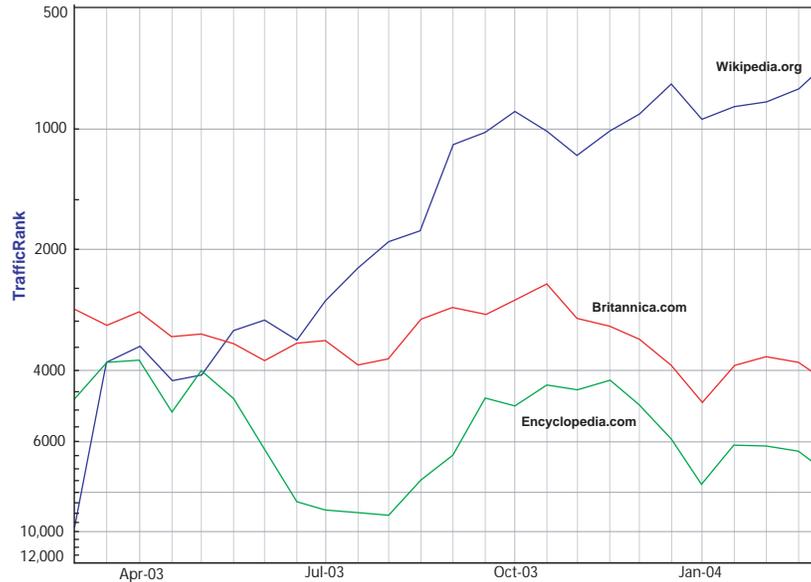
Figure 1 Alexa.com weekly Traffic Rank for major online encyclopedias

The project was started by Jimmy Wales, head of Internet startup Bomis.com, when he had a concept for a strictly controlled, Ph.D.-edited encyclopedia that would be developed by volunteers and given away for free. At the time, the project was called Nupedia[10] and in March 2000 had one full-time employee, Larry Sanger, who was editor-in-chief and co-coordinator for the project. Volunteers were solicited on the Internet, but there was a fairly complex working structure, including formal positions for writers, editors, peer reviewers, copyeditors and translators. Nupedia was built on the traditional structure of peer-reviewed academic publications, and according to their policy, "We wish editors to be true experts in their fields and (with few exceptions) possess Ph.D.'s.[11]" After operating for the better part of a year, it ran out of money and resources, and resulted in only a few hundred articles in various stages of editing. After the project failed to take off, Sanger ceased being a paid staff member and the project came towards a close with only 23 fully completed articles. In retrospect, the high bar for entry (ie. Ph.D. degree) and the highly-structured

working methodology became a barrier to recruiting enough members for the volunteer effort.

Not wanting the already-created content to stagnate, Wales and Sanger put the content onto their web site in the form of a wiki in January 2001, and invited visitors to edit or add to the collection. After gaining mentions on the influential Slashdot[12] technology community, it became a popular site in a matter of months[13]. In the first year it found a loyal following, and generated over 20,000 English language articles[14] and spawned over a dozen language translations, despite the fact that it did not fully support internationalization. After two years, it reached a milestone of 100,000 English articles and in February 2004 at the three year mark, it exceeded 200,000 articles in English and 500,000 articles in 50 languages (Figure 2). In February 2004, it was adding articles at a rate of roughly 2,000 articles a day across all the various languages.

Wikipedia Growth (English language) 2001-2004

Source: http://en.wikipedia.org/wiki/Wikipedia:Size_of_Wikipedia
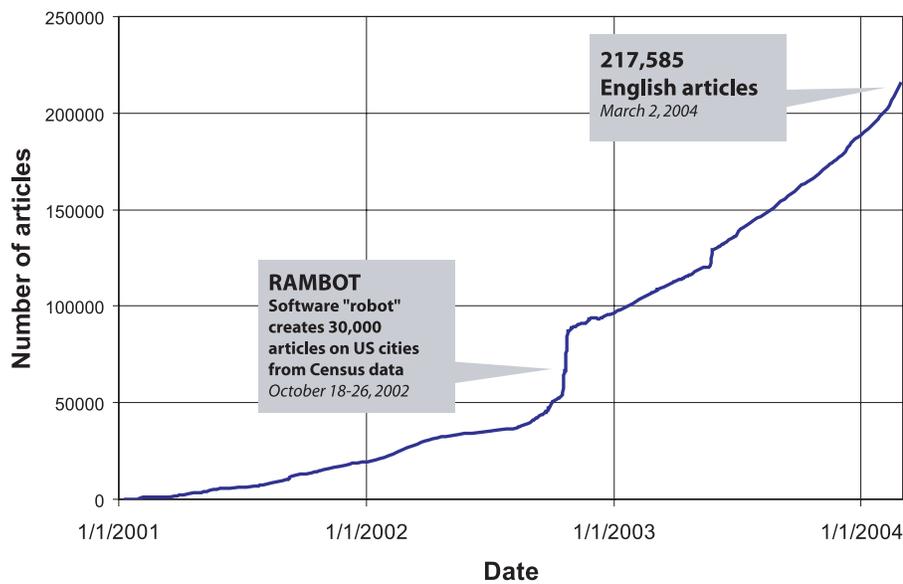
Figure 2 Wikipedia growth over its three year history

Keeping it social and neutral

The wiki concept is somewhat counterintuitive because the technical implementation itself provides no gate keeping function to ensure quality material is being contributed – no proof of identity or qualifications is needed to participate, no article quality rating is kept and a reputation tracking system is not used within the community. Given the description of how a wiki works, it is a surprise the site works at all.

What allows this completely open editing system to function is the ability to track the status of articles, review individual changes, and discuss issues within the community. Wikis function primarily as *social software* – acting to foster communication and collaboration with other users. A wiki tracks and stores every version of an article edited, resulting in an "infinite undo" trail, so no operation is ever permanently destructive. As a foil to malicious contributors, it takes much more effort to vandalize a page than to revert it back to an acceptable version[15]. While it may take five or ten seconds to deface one article, it can be quickly undone by others with just one click of a button. This crucial asymmetry tips the balance in favor of productive and cooperative members of the wiki community, allowing quality content to emerge.

However, while the technical means for managing the content and user interaction provide the mechanisms for the Wikipedia community to operate, they are not enough on their own. Founder Wales created a policy of maintaining a neutral point of view (NPOV) as the guiding editorial principle. "NPOV is an absolute non-negotiable requirement of everything that we do," he says, and according to Wikipedia's guidelines, "The neutral point of view attempts to present ideas and facts in such a fashion that both supporters and opponents can agree." Guided by this

principle, the grassroots project has implicitly adopted the same types of journalistic policies employed by modern news operations – sticking to the facts, attributing sources and maintaining balance.

Some of the decisions are strikingly similar to those of other professional news organizations. For example, the Wikipedia community's tendency to avoid the use of the word "terrorist[16]" is similar to a policy adopted by the Reuters news agency[17,18]. Whether to reveal the name of the woman involved in the rape trial of basketball player Kobe Bryant has been a subject of intense debate within the community[19]. (The mainstream media in the United States has so far kept her identity private[20] not for legal reasons, but for ethical reasons.)

Wikipedia Operations

Wikipedia's operations are fairly simple because there is only one basic object within the system – the wiki page. Editing a page is much like editing a text box in any web-based email program or online form. Special formatting "markup" (Figure 4) unique to the MediaWiki software can be used to make bold, italic, headings, hyperlinks and lists. While the markup codes are specific to the community and not an Internet standard, the markup was specifically designed to make editing documents simpler than with other traditional HTML markup.

Figure 3 Basic Wikipedia article
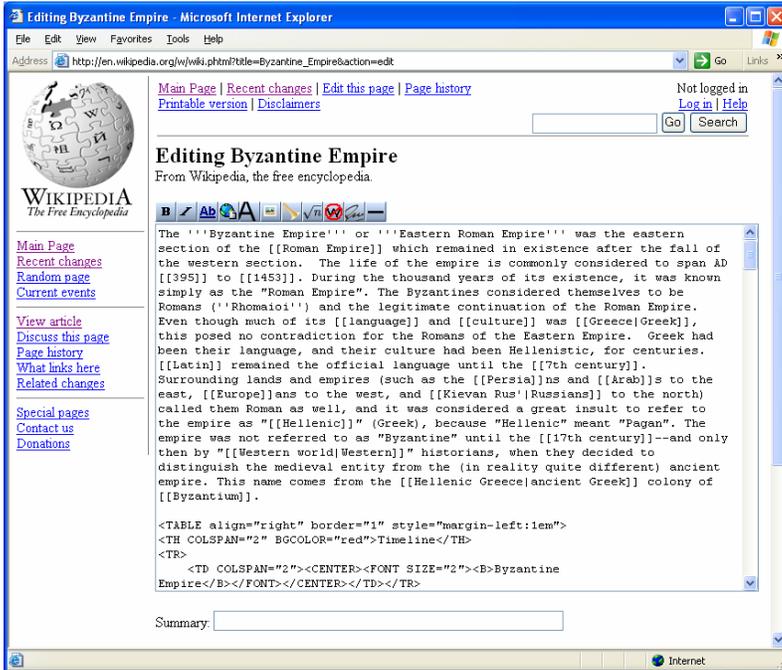
Figure 4 Editing a basic Wikipedia article, with special markup commands

The information contained in the system about a page is limited to only the most basic historical information about the content. Therefore, associated with each page are the following:

- **Edit history**. This is a chronological log of every change that has been made to the page since its inception (Figure 5). Users can select any two versions, and Wikipedia will use the "diff" utility to highlight the syntactic differences between any two versions (Figure 6). This is especially useful when trying to determine what information has been changed by others.

Figure 5 Edit history of the Giant Panda article

Giant Panda
(Difference between revisions)

Revision as of 03:50, 18 May 2003 Tannin (Talk | contribs)	Revision as of 11:56, 20 May 2003 Menchi (Talk | contribs)
Line 20:	Line 20:
`<tr><th align="center">" Ailuropoda melanoleuca"</th></tr>`	`<tr><th align="center">" Ailuropoda melanoleuca"</th></tr>`
`</table>`	`</table>`
− The '''Giant Panda''' (熊貓 [[pinyin]] xiong2mao1), "Ailuropoda melanoleuca" ("black-and-white cat-foot") is a [[mammal]] in the [[bear]] family [[Ursidae]].	+ The '''Giant Panda''' (熊貓 [[pinyin]] xiong2 mao1), "Ailuropoda melanoleuca" ("black-and-white cat-foot") is a central [[Chinese|China]] [[mammal]] in the [[bear]] family [[Ursidae]]. Its Chinese name means "[[bear]]-[[cat]]," and is one of also be read in reverse to mean the same thing. Its [[Western]] name originates in the [[Himalaya]] but its meaning is uncertain.
Despite being taxonomically a [[carnivore]], its diet is overwhelmingly vegetarian. In fact, it lives almost entirely on [[bamboo]], although, like most animals, pandas have been known to eat eggs, and they consume some [[insect]]s along with their bamboo diet.	Despite being taxonomically a [[carnivore]], its diet is overwhelmingly vegetarian. In fact, it lives almost entirely on [[bamboo]], although, like most animals, pandas have been known to eat eggs, and they consume some [[insect]]s along with their bamboo diet.

Figure 6 A "diff" between versions, showing changes in red

- **Talk page**. Because article pages are meant to contain finished copy, Talk pages are associated with each page and are used for discussing editorial issues.

Other important tools for regular users include:

- **Recent changes**. A record of all changes is written serially to the Recent changes log, and people can inspect this to find out the latest modifications to articles.

- **Watchlists**. Users can place specific pages to "watch" on their list, similar to web bookmarks. The status of these pages can be seen from one single Watchlist page particular to each user, with time, date and author information displayed. Changes are shown in reverse chronological order, so that users can track the latest status of articles.

Working as Humans

Wikipedia's stays consistent with the goals of social software by allowing human contributors to work in the most simple and straightforward manner possible. Therefore, its job is to aid them in tracking, editing and formatting documents, while

supporting communication among the users. By design, there is very little *metadata*[21] or associated "behind the scenes" information about the articles or organization of the content. So while editors within the system can manually create hyperlinks among the cities in Europe or sports of the Olympics, no additional information in the database is kept relating any two articles. All information about an article and its linkages to other articles are completely revealed and managed in the human-readable articles themselves, and not hidden among database elements.

The only metadata kept are the most basic necessary – the date, the time and the username of the person making the change. (In the case of anonymous users, the Internet Protocol address is recorded instead.) There are no strict categories or any software-enforced organization to the publication structure – that is left for human contributors to determine and to craft into the content organization. Therefore, in the parlance of systems development and workflow management, there is no strict *consistency* checking or *automation* of tasks triggered by the system[22]. By not imposing these two conditions, the wiki exists as a completely malleable workspace that maintains a human-centered approach, allowing the users to adjust the entire content organization without worrying about software-enforced policy.

It curious, then, that a low-tech solution has been the main reason for Wikipedia's success – by emphasizing social interaction over technological solutions[23], the project harnesses the creative energies of the participants, rather than forcing them to work in any strict or prescribed process. The seemingly laborious tasks that would seem to be better performed by computer programming – ordering lists, organizing tables, checking links, or formatting of dates – are instead done by users themselves. This human orientation promotes personal engagement and investment in the community, building stronger bonds and imbuing a sense of

belonging. By not being constricted by process or content management structure, users are empowered by the software system and not victims of it. Users become stakeholders in the content and in the outcome of their articles as their contributions are added to the whole.

Secrets of success

Wikis can be viewed as systems that provide the most generic and basic tools necessary for humans to compose and build a information frameworks. The success of this model can be attributed to these basic features:

- **Simple text markup and formatting.** Most web page design uses HTML, or Hypertext Markup Language, which was originally meant to be a computer-oriented code and its complexity makes web pages prone to misformatting. MediaWiki markup is friendlier and uses a simple set of commands, making text readable and less intimidating. For example, creating a link can be done by simply double bracketing a word, such as [[Genghis Khan]]. If the referenced page does not exist, it simply opens a page for adding new content.

- **Structure by convention, not enforced by the software.** Formats of articles are created by human contributors. They are not dictated by forms, templates or policy management, and can be changed at any time by users in the community, without requiring changes to the software system.

- **Soft security, ubiquitous access.** All users of the site have read and write access to the information, including anonymous and first time users. Special "administrators" have marginally more capabilities to block users or protect pages, but they have no more editorial authority than other users.

- **Transparency and edit history.** Every action in the Wikipedia environment is logged to the database and can be inspected by any user. This allows users

to easily track activity and the changes to articles of interest. That no action is

clandestine adds to the openness and accountability within the community.

Wikipedia has intentionally chosen to avoid strict processes because it would

dictate policies and procedures within the system and limit evolution in the

community. Writer Clay Shirky has observed:

> Process is an embedded reaction to prior stupidity… Wikis dispense with all
> that -- all of it. A wiki in the hands of a healthy community works. A wiki in
> the hands of an indifferent community fails. The software makes no attempt to
> add 'process' in order to keep people from doing stupid things. Instead, it
> provides *more* flexibility, a crazy amount of flexibility, and intoxicating
> amount of flexibility... [24]

Wikipedia works largely by consensus, with users discussing changes, rallying users

for certain causes, or "being bold" and making edits unilaterally. When consensus is

not clear, other means such as polling, trial periods or experiments are used. In the

worst cases, *edit wars* with constant additions and deletions may require intervention

by other community members to help mediate and arbitrate issues.

Role of Bots

Social software projects aim to keep human interaction and management at the

center of their design. However, managing more than 300,000 constantly changing

articles (in the largest Wikipedia) can be daunting, especially when modifications

need to be made throughout the entire encyclopedia *en mass*e. Therefore, when it

does need to automate tasks (such as changing all links from one language to another

or disambiguating certain passages in articles) it uses "bots", or software robots,

which are computer scripts run to simulate the actions of a human being at the

keyboard. Thus, as with physical hardware robots, they are programmed to behave

and relate to the environment in human terms, rather than requiring human

contributors to be technical experts. Many of the bots are human-assisted, with the

bots doing the repetitive searching, sorting and editing, but along the way asking for

human guidance and final decisions on modifications. By using bots, all the changes

they make are logged in the system, as if a human contributor had performed the

actions, providing a consistent audit trail and maintaining transparency in the

community.

Wikipedia Implementation

The Wikipedia open content project shares lots of synergy with the open

source software movement which is largely ascribed to Richard Stallman[25] of the Free

Software Foundation[26] (FSF). Stallman and lawyer Eben Moglen created the GNU

General Public License[27] in 1989 which initiated an effort to keep software free of

copyright restrictions, requiring developers of such projects to keep their work free to

distribute and free to modify. Similarly, open content projects make the same type of

requirement for people who replicate and extend encyclopedias, books or other works.

Wikipedia uses a style of license created originally by the FSF for software

documentation, called the Gnu Free Documentation License[28]. The two most

important stipulations of the license are that the content must be free for copying and

redistribution, and that it must also be made available in a format that can facilitate

further editing. Since the establishment of Wikipedia, alternatives such as the

Creative Commons license[29] have become much more customized to the needs of

modern open content projects[30].

Software Development

The initial software used for the Wikipedia project was a simple "script"

called UseModWiki which was designed for fairly small sites. This was actually a

single program written in the Perl programming language, and allowed for a "drop in" implementation of a wiki and remains one of the most popular used by web sites today. UseModWiki is a simple system to install and keeps persistent data in files it manages itself. However, the system was meant for small-scale sites and the lack of a robust database system was a hindrance for large-scale content management. From January 2001 to January 2002, Wikipedia operated using the UseModWiki system, but concerns about performance and scalability led to the development of a new custom approach.

Volunteer Wikipedia developers began crafting a new implementation specifically for the project's needs and eventually developed a new package, using a combination of open source programming tools and customized programs. The system, called MediaWiki, uses a combination of popular programs from the open source community for content management tasks, the so-called **LAMP** tools which are widely used by data-driven web sites:

- **Linux**. This open source operating system is a UNIX-like environment that runs on a wide variety of computing hardware. This usually also includes the Free Software Foundation GNU suite of tools, along with other open source software, which run in concert with Linux to create a functional environment for web site management.

- **Apache**. A web server program that allows an Internet-attached computer to process requests and return web pages to clients[31].

- **MySQL**. A database system that can store pages, images, user data and revisions for the Wikipedia. It supports the widely used Structured Query Language to provide efficient sorting and searching functions[32].

- **PHP**. Scripting language that is used by Internet developers as "programming glue" to have all the pieces – web server, database and operating system – work together in concert and ultimately return content to users as web pages[33].

In January 2002, a new system written by volunteer developer Magnus Manske was launched using the PHP scripting language and the MySQL open source database system. At this point, support for international Unicode characters was implemented, which allowed for the further development of Wikipedias in other languages. A Phase III version of the software was launched in July 2002, and development of the software continues with developers Erik Möller, Tim Starling and Brion Vibber, though other volunteer software developers contribute to the effort as well.

The software is currently referred to as MediaWiki Phase III and is managed using the open source community site SourceForge.net, allowing anyone to inspect and suggest changes to the software. While the MediaWiki software is open source and freely available, it is a fairly complex system to set up compared to most wiki implementations. Its features are also quite specialized to the needs of Wikipedia, therefore other sites that have employed the MediaWiki software tend to use it for "encyclopedic," document oriented projects such as Wikitravel[34] or Disinfopedia[35].

Situated Software

The development of the MediaWiki software itself mirrors the dynamic that Wikipedia attempts to foster – community-oriented collaboration which can provide for rapid development of features customized for the project.

Open source software is crucial to this culture, not only for the wide availability of tools free of cost, but also because it allows changes to be implemented quickly. Clay Shirky has labeled this phenomenon *situated software*[36], versus traditional software which is "built for large numbers of users or designed to last

indefinitely." Instead, Shirky writes, situated software "is designed for use by a specific social group, rather than for a generic set of 'users' ". The MediaWiki system embodies this – features are developed specifically for the Wikipedia community's needs, without primary regard for making them generically useful to other projects. In fact, the development process for the software is rather wiki-like, as changes are constantly being made in small increments by a physically disparate set of developers in a matter of days and weeks, rather than the weeks and months it takes with many other software projects. Developers are also actively involved in conversations with users of the site, using a variety of methods.

Communications

The Wikipedia community is made up of users from all over the world, with different languages, time zones and expertise. As a result, the community has adopted multiple channels of communication to keep in touch with the constant evolution. It has adopted different types of communications for coordination, each for different purposes:

- **Wikipedia Talk pages**. Every page in Wikipedia has an associated "talk" or discussion page, which allow messages pertaining to an article to be left in context (ie. associated with the page in question). This is the simplest way to exchange and debate ideas on articles, and combined with the Watchlist function, allows users to customize which conversations to monitor. However, is not ideal for simultaneous or complicated conversations because it is simply a wiki page, and not suited to following conversation threads.

- **Wikipedia Village Pump**. This central page in Wikipedia serves as a main general discussion board. It averages a dozen or so posts a day

and is useful for larger community issues, but it is also unsuited for complex ongoing discussions. Topics which require deeper discussion are often moved to other "talk" pages of relevance.

- **Electronic mail list.** There are email subscription lists for general topics, technical systems, legal issues and different languages. Activity on the list is brisk, and often reaches dozens of posts each day. Most major policy and planning decisions about Wikipedia occur on the list, where message tracking can be better done by subscribers and their mail clients. The mailing list is archived to a web site and individual posts can be referenced by a URL.

- **IRC channels.** An Internet Relay Chat server at freenode.net allows contributors to interact in real-time to discuss general topics, or language-specific issues. The main #wikipedia channel has between 50 to 100 users online at any given time. A special channel, #enrc.wikipedia, is dedicated to a live feed of the Recent Changes log from the Wikipedia server which allows real-time monitoring of edits, showing the article title, time and author of the change. With Wikipedia recording roughly 5-15 edits per minute, this has become an important tool for the community to keep watch over vandalism and malicious users.

Conclusions

Future

Wikis are still in the early stages of generating credible collaborative content, so perhaps the toughest part of Wikipedia's future is how to manage its own success.

While Wikipedia has recorded impressive accomplishments in three years, its articles have a mixed degree of quality because they are, by design, always in flux, and always editable. That reason alone makes people wary of its content. First time visitors are typically impressed with what the community has developed, considering the decentralized nature of the effort and as they discover the usefulness of its content. However, there are still a large number of disputes among community members making ever more persistent stands on controversial issues. Entire sets of articles relating to Israel-Palestine, Polish and German names for Gdansk/Danzig, North Korea's government, medical science, AIDS and religion are constantly under dispute and have resulted in heated debates and individuals leaving the community in resentment. However, the vast majority of Wikipedia articles have settled into a state of equilibrium, as a recent analysis showed that just 0.10% of the pages are actively disputed with a "neutral point of view" warning[37]. But when they do flare up, high-profile and vitriolic disputes tend to dominate the conversation on Wikipedia, and can quickly negate many positive experiences within the project.

Much like the early development of the Internet in the 1990s, Wikipedia may be temporarily benefiting from an educated, technically proficient brain trust that can, in the short term, thrive and effectively manage the fledgling project. However, as the Wikipedia community grows larger as a more diverse virtual collaborative space, and as the project increases in reputation, it will need to contend with "the tragedy of the commons" – the phenomenon a community experiences when it grows so large that it faces scalability problems, un-sustainable governance and eventual abandonment. The inclusiveness of the wiki concept practically invites conflict and combativeness towards this drastic conclusion. There are already shades of the community facing scalability challenges, as it has had to employ new procedures for conflict resolution

beyond the *benevolent dictator* model used so far. For most of the project's history, Jimmy Wales has had final say over matters of judgment concerning banning users, but this is currently being phased out. The community has employed technological means for policing the community, such as the blocking of anonymous proxy servers being used for vandalism, as well as community-arrived decisions and policies. Mediation and arbitration committees have been set up to handle disputes between users, and the voting process has been used increasingly more, as the community strives for fairness as much as possible.

The future prospect of Wikipedia is startling in its closeness to the "tragedy of the commons" as described by Garrett Hardin in his renowned paper in 1968, originally written to describe population control, environmental protection and sustainable development. His ideas have been extended to the analyses technologies such as wireless spectrum[38] and virtual communities[39]. In what could accurately describe the perils of any online community, especially wikis, Hardin wrote:

> Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all… The commons, if justifiable at all, is justifiable only under conditions of low-population density. As the human population has increased, the commons has had to be abandoned in one aspect after another.

Even with a half dozen volunteer software developers to adapt the system to its growth, the challenges are daunting for Wikipedia. Hardin even posits that the prospect for a "technical solution" to problems of this type is futile and may involve, "an abandonment of the game, as we intuitively understand it." Shirky prescribes some measures to avoid the tragedy of the commons in online communities:

> Instead of unlimited growth, membership, and freedom, many of the communities that have done well have bounded size or strong limits to growth, non-trivial barriers to joining or becoming a member in good standing, and enforceable community norms that constrain individual freedoms. Forums that lack any mechanism for ejecting or controlling hostile users, especially those

convened around contentious topics, have often broken down under the weight of user hostile to the conversation.[40]

Hardin's abandonment of the game does not mean abandoning the goal of having a user-contributed encyclopedia. Over the history of the project, there have been recurring proposals among Wikipedia's veterans and developers to modify the wiki implementation in Wikipedia to have markedly "un-wiki" features – disallowing anonymous contributions, verifying the true identity of contributors, or having a reputation tracking system[41] for users, such as those used in other online communities like eBay's auctions[42] or Slashdot's technology news site[43]. Most of these ideas have not been instituted, as many users have insisted on preserving the historic openness and "wikiness" of the system. But as Wikipedia has grown larger, so have the voices for some type of reform in managing the problems seen in the community.

Abandoning the "game" might also happen through one of the long term goals of Wikipedia – to have a single snapshot, and approved version of the encyclopedia. Wales envisions someday a "1.0" version of Wikipedia[44] — a tangible product in printed form or CD-ROM being a codified edition, serving as a reference work, targeted at those not connected to the Internet. Understandably, there has been contentious debate within the community for doing something that is unnatural for a wiki – freeze its content or certify a particular version of an article. For many users, this amounts to a betrayal of the wiki concept, while others view it as a natural and necessary progression of the project as more and more articles reach a "finished" state.

Summary

Wikipedia is a unique implementation of social software – it attempts to maintain a balance between the goals of human usability and technological solutions for managing a disparate set of contributors. It is perhaps the best example of situated

software, being supported by developers who work in concert with users on a daily basis to evaluate and improve the software, in a very wiki-like manner.

Wikipedia serves as a rich area of study for participatory journalism because it realizes many of the hopes of the early Internet when cyberspace was predicted to connect the citizenry for a free exchange of ideas. Wikis are often mentioned in conjunction with web logs as examples of modern participatory journalism. Whereas web logs are highly personal and opinionated, wikis aim to form a commons for users to join together in consensus building.

Participatory journalism has recast online journalism not as simply reporting or publishing, but as a lifecycle, where software is crafted, users are empowered, journalistic content is created and the process repeats improves upon itself. The interaction of these elements advances the state of technology, community and knowledge, allowing participatory journalism efforts to evolve and generate innovative forms of content. Open source has been an essential part of this foundation, since closed source commercial software would not allow such flexibility and quick evolution of ideas and implementations.

Because of the ever changing nature of the Wikipedia ecosystem, it will remain an important proving ground for studying online communities, multilingual and multicultural collaboration, workgroup interaction and journalistic issues in the future.

About the Author

Andrew Lih is currently assistant professor at the Journalism and Media Studies Centre at the University of Hong Kong. He also serves as the center's director of technology. His research interests include online communities, mobile computing, collaborative and participatory journalism. Email: alih@hku.hk

Acknowledgements

References

[1] Shayne Bowman and Chris Willis, *We Media, How audiences are shaping the future of news and information*, July 2003, http://www.hypergene.net/wemedia/

[2] "The Material People Contribute to the Online World," Pew Internet and American Life Project, February 29, 2004, http://www.pewinternet.org/reports/toc.asp?Report=113

[3] J.D. Lasica, "Participatory Journalism Puts the Reader in the Driver's Seat," *Online Journalism Review*, August 7, 2003

[4] Danny Bradbury, "A turn up for the books," *The Independent (UK)*, March 24, 2004, p. 11.

[5] Yeon-Jung Yu, "OhmyNews Makes Every Citizen a Reporter," *Japan Media Review*, September 17, 2003, http://www.japanmediareview.com/japan/internet/1063672919.php

[6] Dan Gillmor, "A new brand of journalism is taking root in South Korea," *San Jose Mercury News*, May 18, 2003.

[7] Chris Gulker, "Global IT firm predicts Linux will have 20% desktop market share by 2008," NewsForge.com, August 14, 2003, http://www.newsforge.com/business/03/08/13/1424212.shtml

[8] "History and Philosophy of Project Gutenberg," Michael S. Hart, August 1992, http://www.gutenberg.net/about.shtml

[9] "What is Wiki," http://wiki.org/wiki.cgi?WhatIsWiki.

[10] Nupedia archive, http://web.archive.org/web/*/www.nupedia.com/main.shtml

[11] "Nupedia," *Wikipedia: The Free Encyclopedia*, http://en.wikipedia.org/wiki/Nupedia

[12] Slashdot.org, http://www.slashdot.org

[13] Stephen Adler, "The Slashdot Effect: An Analysis of Three Internet Publications," http://ssadler.phy.bnl.gov/adler/SDE/SlashDotEffect.html

[14] "Wikipedia:Modelling Wikipedia's growth," *Wikipedia: The Free Encyclopedia*, http://en.wikipedia.org/wiki/Wikipedia:Modelling_Wikipedia's_growth

[15] Andrea Ciffolilli, "Phantom authority, self–selective recruitment and retention of members in virtual communities: The case of Wikipedia", *First Monday,* volume 8, number 12 (December 2003), http://firstmonday.org/issues/issue8_12/ciffolilli/index.html

[16] "Wikipedia:Words_to_avoid," *Wikipedia: The Free Encyclopedia,* http://en.wikipedia.org/wiki/Wikipedia:Words_to_avoid

[17] "Reuters: Editorial Policy," http://about.reuters.com/aboutus/editorial/

[18] Tom Glocer and Geert Linnebank, Letter to the editors of U.S. newspapers, October 2, 2001, http://about.reuters.com/statement3.asp (link no longer active)

19 "Talk:Kobe_Bryant's_accuser," *Wikipedia: The Free Encyclopedia,* http://en.wikipedia.org/wiki/Talk:Kobe_Bryant%27s_accuser

20 David Zeman, "THE KOBE BRYANT CASE: Spotlight shatters accuser's privacy," *Detroit Free Press*, July 26, 2003.

21 "Metadata," *Wikipedia: The Free Encyclopedia,* http://en.wikipedia.org/wiki/Metadata

22 Klaus-Dieter Schewe, "Controlled Automation of Consistency Enforcement," *The Fifteenth IEEE International Conference on Automated Software Engineering (ASE'00)*, September 11 - 15, 2000, p 265.

23 Jennifer Preece, *Online Communities: Designing Usability, Supporting Sociability*, John Wiley & Sons, September 15, 2000

24 Clay Shirky, "Wikis, Grafitti, and Process," *MANY-TO-MANY: social software* web log, August 26, 2003

25 Richard Stallman, "new UNIX implementation," posted to newsgroup net.unix-wizards, September 27, 1983, http://groups.google.com/groups?hl=en&selm=771%40mit-eddie.UUCP

26 "The Free Software Definition," http://www.gnu.org/philosophy/free-sw.html

27 "GNU General Public License," http://www.gnu.org/copyleft/gpl.html

28 "GNU Free Documentation License," http://www.gnu.org/copyleft/fdl.html

29 Lawrence Lessig , "Reclaiming a Commons," Building a Digital Commons, May 20, 1999, http://cyber.law.harvard.edu/events/lessigkeynote.pdf.

30 Creative Commons, Legal Concepts, http://creativecommons.org/learn/legal/

31 The Apache Software Foundation, http://www.apache.org

32 MySQL, http://www.mysql.com/

33 PHP: Hypertext Preprocessor, http://www.php.net/

34 Wikitravel, http://www.wikitravel.org

35 Disinfopedia, http://www.disinfopedia.org

36 Clay Shirky, "Situated Software," Networks, Economics, and Culture mailing list, March 30, 2004, http://www.shirky.com/writings/situated_software.html

37 "NPOV Dispute Metrics," study from September 2003, Andrew Lih, http://en.wikipedia.org/wiki/User:Fuzheado/NPOV_disputes

38 R. Liao, R. Wouhaybi, and A. Campbell. *Incentive engineering in wireless LAN based access networks*. Proceedings of ICNP 2002.

39 *First Person: Donald A. Norman: Defending Human Attributes in the Age of the Machine.* Produced and edited by Melanie Goldstein. Irvington, N.Y. Voyager, 1994.

40 Clay Shirky, *Social Software and the Politics of Groups*, March 9, 2003 "Networks, Economics, and Culture" mailing list

41 Jimmy Wales, "Trust Metrics," Wikipedia-L mailing list, Sat Feb 14 15:10:52 UTC 2004, http://mail.wikipedia.org/pipermail/wikipedia-l/2004-February/014280.html

42 "Ebay Feedback Forum," http://pages.ebay.com/services/forum/feedback.html

43 Slashdot, http://slashdot.org/faq/com-mod.shtml

44 "Pushing To 1.0," http://en.wikipedia.org/wiki/User:Jimbo_Wales/Pushing_To_1.0