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The Growing Importance of e-Communities on the Web

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Abstract. Until recently, one of the main aims of the World Wide Web has been to offer users a wide range of information. This information was authored, by and large, by professional information providers. Recent advancements on the Internet, however, have changed this paradigm and the clear distinction between information producers and consumers is becoming blurred. New technologies such as weblogs, wikis, file sharing services, podcasting and social networks allow users to become an active part on the Web and let them participate in developing content.

In this chapter, an overview of several successful community-based concepts and services is given. The fact that many of these concepts have existed before is pointed out together with true novelties of their current implementations. Moreover, a critical view of recent communities, their importance and impact is presented. Especially the potential loss of individuality and the movement towards an “integrated society” with a common shared memory is discussed. We also venture to look at the future development of e-Communities in the light of ubiquitous access to information with technologies such as “always-on” wearable cameras and E-Ink.

Keywords: Communities, Collaborative Work, Web-Based Applications, Information Systems, Wikis, Blogs, File Sharing, Podcasting, Social Networks.

1 Introduction

During the last decade, the World Wide Web has evolved into a truly worldwide computer network. Traditionally, most information on the Web was published by professional information providers such as news services, companies advertising their products and offering support, or research institutions. Moreover, personal homepages could be established by users.

Although millions of individuals make use of the Web every day, in the past only a small percentage was capable of actually authoring content and participating in the Web. Primarily technological obstacles including the lack of technical background and complicated tools prevented users from producing web-pages and from participating in other services on the Web (e.g., (Lindahl and Blount 2003)). The only successful exceptions to this rule are discussion forums and communities for diseases and disabilities, eLearning systems, and dating services.

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2 Community-Based Services on the Web

In recent years, a host of new, mainly community-based concepts and services was introduced on the Internet. By some, these new technologies were coined the “Web 2.0”, emphasising both the evolutionary process the Web is undergoing and the innovation of the novel products (see O’Reilly 2006; Kolbitsch and Maurer 2006)). The following sub-sections describe a selection of relevant community-based services on the Web.

2.1 Blogs

Blogs, short for weblogs, are a form of web pages that contain articles similar to newsgroup postings in a reverse chronological order. Blog entries are usually produced by a single author or by a small group of authors and cannot be edited by the public. Postings on blogs are regular, typically once a day (see Blood 2002)).
Their content is similar to a combination of diaries, editorials in magazines, "hotlists", and the "breaking news" section on news channels. Contributions frequently refer to a current event such as a news story, a discussion in parliament, the release of a new record, etc.

In May 2006, Technorati, a service tracking blogs and the links between blogs\(^1\), indexes almost 40 million blogs (source: (Technorati 2006)). About eleven percent of American Internet users have read blogs, and two percent have actually maintained blogs in 2004 (see (Lenhart et al. 2004)).

2.1.1 Blog Styles

Currently, two notable types of blogs are available: diaries or personal journals (accounting for about seventy percent of all blogs) and filters (about ten to fifteen percent, see (Herring et al. 2004)). In diaries and personal journals, authors make details of their personal lives and their views on various topics public. The first diary-style blog believed to have been published was started in January 1994 by Justin Hall, then a college student (e.g., (Pollock 2001)). Nowadays, personal journals are particularly well-liked among young people who want to tell friends (and absolute strangers) about their experiences. An example for a young woman’s blog discussing taboo and provocative topics is “Miss Izzy”, a rather popular web-site in Singapore (see Figure 3; (MissIzzy 2006)).

Filter-style blogs aggregate links to noteworthy resources on the Internet. Links are usually complemented with short summaries of the respective resources' content and comments added by the author. The scope of such blogs is often limited to a particular topic such as globalisation, music, or computers and technology. One of the best known filter-style blogs is Slashdot, a web-site with a very large user base focusing on technology (see Figure 2; (Slashdot 2006)).

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\(^1\) The links between blogs are used for determining the relevance and popularity of single blogs. This is approach is not unlike Google’s ranking mechanism.
Due to their nature, blogs are intrinsically opinionated. They allow users to express themselves and present their views to a broad audience. However, weblogs are not only employed in personal environments but also in organisations and enterprises. They are utilised for keeping employees informed of the status of projects, of new policies or similar news (e.g., (Treese 2004)). Moreover, they can be used to encourage the communication and co-operation between various departments in large organisations.

2.1.2 Technical Aspects
A major part of the success of blogs is their ease-of-use—even for novices. Using blogs is about as difficult as writing e-mails and organising them in mailboxes. Moreover, free services like Blogger make it possible to start a new weblog within a few minutes (see Figure 1; (Blogger 2006)). Hence, they are often used as a replacement for traditional homepages.

Another aspect that makes blogs a popular means for communication is a set of technologies that greatly enhance community-building among users: permalinks, trackback and RSS (see (Efimova and de Moor 2004)). Permalinks are persistent URLs to single postings on a blog. When an author refers to another blogger’s article, the permalink to this entry can be used. If the two blogs are trackback-enabled a link from the newer blog entry to the existing one is established automatically. Thus with trackback, blog entries can be linked practically bidirectionally, and blog authors are notified about being cited by someone else (cf., (Maurer and Tochermann 2002)).

RSS (“RDF Site Syndication” or “Really Simple Syndication”) is a technology that lets users retrieve a list of changes made to a blog, or a web-site in general. Users subscribing to an RSS feed are provided with the titles of new articles, short summaries, and the URLs to the full blog entries. When users read an interesting article on a blog they have subscribed to (using RSS) they can write a blog entry in their own blog and refer to the original posting using a permalink. The author of the initial posting is informed through trackback.
This combination of technologies builds a network of more or less loosely connected blogs—the blogosphere. RSS feeds in particular foster community-building among bloggers. This relatively simple mechanism helps users stay up-to-date on blogs and people they are interested in, and transforms occasional visitors into frequent readers.

2.2 Wikis

The term “wiki” is derived from wiki wiki, which is Hawaiian for “quick”. This word is an appropriate description for Ward Cunningham’s notion of a concept for the rapid development and organisation of web pages (see (Leuf and Cunningham 2001)). Wikis are collaborative, web-based authoring environments, where anyone on the internet can edit existing content and add new pages any time they wish. In other words, every reader can instantly become a writer.

This concept is in stark contrast to authoring systems previously widely available on the web. Content management systems, the de-facto standard for large web-sites, for instance, make use of hierarchical rights management, and a publishing process similar to the one employed in newspaper publishing. Such a system usually incorporates administrators, editors, authors, and mere readers. A wiki, on the other hand, does not distinguish between readers, authors and editors; they have the same capabilities in the system.

This aspect is of particular interest because initial authors of articles allow other users to modify “their” content. Although this approach may seem utterly chaotic, there are several very large wiki sites offering quality content provided by the community (see below). One characteristic that makes wikis work is the aim to reach an agreement among all authors of an article. Hence, the content of single wiki articles is usually agreed upon, unbiased, and neutral.
2.2.1 Advantages and Drawbacks of Wikis

Their "open" nature makes wikis more flexible than conventional, editor-based websites. When new information becomes available it can be added to the wiki immediately, without an editor's approval. Similarly, when an error is found by a reader it can be corrected by the reader, without the need to contact the site's administrator or the author of the document. Moreover, wiki documents can be written using a relatively uncomplicated syntax, and features such as version control make wikis well-suited for collaborative environments.

At the same time, the openness of wikis poses a number of problems. Since quality control through editors is not in place errors might be inserted accidentally, or even deliberately. Readers, on the other hand, might mistake the information provided on a wiki site for reliable. Another problem is vandalism, where incorrect information, defamatory content, and advertisements are inserted, existing content is deleted or
overwritten, etc. In many cases, however, such acts of vandalism are repaired within minutes by reverting a page to its previous version (cf., (Viégas et al. 2004)).

2.2.2 Wikipedia
The largest wiki to date is Wikipedia, a free online encyclopaedia available in more than 200 languages (see Figure 4; (Wikipedia 2006)). Since it is based on the wiki concept, every reader is also an author and can add or modify information instantly—even anonymously. This is one of the reasons for the project’s rapid and steady growth: from Wikipedia’s founding in 2001, more than 1.1 million articles have been written in the English edition, and about 400,000 pages in the German edition. Wikipedia offers more material than many other, commercial encyclopaedias, and can deliver more supplementary content such as hyperlinks to information on the Web than many other works of reference. This makes people trust in Wikipedia more than in other resources.

However, as in any other wiki, any information provided might be erroneous because quality assurance mechanisms are not available. Research shows, though, that Wikipedia articles contain, on average, only about 25 percent more errors than renowned, for-profit encyclopaedias (see (Giles 2005)).

One of the most striking examples of incorrect data in Wikipedia is the case of journalist John Seigenthaler. A false biography published on Wikipedia associated him with the assassination of John F. Kennedy and alleged that he collaborated with the Soviet Union in the 1970s (see (Seigenthaler 2005)). As a consequence, the rights of anonymous authors have been restricted. In addition to this, a peer review mechanism for articles in Wikipedia has been discussed. (Although this feature was due for January 2006 (see (Wales 2005)), it has not been realised yet).

In some cases, incomplete content can be just as bad as wrong information. An article that lists a politician’s successes while deliberately omitting the promises that were not implemented is obviously not balanced and leaves a wrong impression.

Fig. 7. YouTube does not only offer home-made videos on their web-site but also broadcasts a selection on a traditional TV channel
Similarly, due to systematic bias it is difficult to provide unified views in Wikipedia. Although one of aims of the encyclopaedia is to be unbiased, social and cultural differences as well as different national and lingual backgrounds might have an influence on the content. On May 14th, 2006, the English article on the Hungarian scientist John von Neumann, for instance, was about five times as long as the corresponding article in the German edition and included detailed accounts of his research and a comprehensive list of external references. Thus, even if both articles are written in an unbiased and objective way, an imbalance due to the background of the authors and the target group can be observed. In professional, editor-based encyclopaedias this kind of systematic bias is countered by authoring guidelines that set standards for the length of articles, etc.

2.3 File Sharing Services

File sharing is probably best known in conjunction with applications that allow users to share any kind of files over the Internet such as Napster or Kazaa. These services are primarily used for downloading music and movies illegally. Recently, however, also several legal file sharing services have been introduced. These systems are usually web-based, provide users with a private space for storing documents, help users organise content, and let them make documents publicly available.

A popular file sharing tool is Flickr, a service for sharing and organising photos (see Figure 5; (Flickr 2006)). With Flickr, users upload their photos to a server, can add comments and leave notes inside images. Additionally, users can attach tags to every photo uploaded. Tags resemble keywords that loosely describe the content of the corresponding image. A photo of a family can, for instance, be tagged "wedding", "May 2006", and "Vienna". Consequently, a query for "Vienna" would also list this photo as a result. Besides searching, users can also browse the vast archive using tags. Every photo shown in Flickr is supplemented with the tags assigned by the author. By selecting a tag, all images with the same tag are displayed.

![Fig. 8. The podcast directory integrated in Apple's iTunes Music player](image-url)
A service extending this concept to the domain of motion pictures is YouTube (see Figure 6; (YouTube 2006)). With YouTube, users can share video clips they produced and employ a tagging mechanism similar to the one in Flickr. CurrentTV takes video sharing a step further. Not only can viewers produce their own video clips and publish them on CurrentTV’s web-site, but a selection of video clips is also broadcast on conventional television channels (see Figure 7; (YouTube 2006)). Thus, viewers may even become TV producers.

2.3.1 Podcasting
A slightly different approach to sharing content on the Internet is podcasting. Basically, podcasting means blogging audio content. Content producers regularly upload audio files in MP3 audio format to a server and insert references to these new files into an RSS feed. Listeners subscribing to a podcast (actually to the RSS feed) have access to the full list of audio files made available by the producer and are notified about newly published content. On the users’ request, audio files are downloaded. Therefore, podcasting can be seen as a type of “audio on demand” service (see (Biever 2005)).

A directory integrated in Apple’s iTunes music player software catalogues thousands of podcasts (see Figure 8). Podcasts are available on a wide range of topics ranging from self-made music to amateur talk and radio shows, from religious programmes and masses to professionally produced shows such as the Nature Podcast (see (Nature 2006)). Lately, podcasting has also been identified as a technology for enhancing existing e-Learning applications and distance learning initiatives. Lectures and discussions are recorded and provided free-of-charge as podcasts (e.g., (DukeCast 2006)). In a similar fashion, conference presentations are disseminated as podcasts on the Internet (e.g., (JISC-CETIS 2006)).

Fig. 9. MySpace, a social network with more than 78 mn registered users—the sixth most popular web-site worldwide
2.4 Social Networks

Social networks are structures that describe the social relations among individuals. Every node in the network is a person, and edges between nodes are the connections among individuals, where the weight of edges can be used to denote the degree of “amity”. In recent developments, the concept of social networks, previously mainly used for describing existing social structures, was successfully applied to the online world.

On the Web, social networks are chiefly utilised for maintaining relations with friends and acquaintances and for making new friends. Such services offer basic functionality for chatting with members of the network, for sharing information, etc. Users joining a social network have to fill out a profile containing information such as the person’s name, date of birth, and a photo. These data are made available to members of the network in order that they can find their friends. Moreover, most social networks do not only let users view their friends but also their friends’ friends (second degree friends). This feature clearly facilitates creating new connections in the network.

Fig. 10. With about 25 mn members, Friendster is one of the most successful social networks

Well-known examples for general-purpose social networks are MySpace, the sixth most popular web-site worldwide (source: (Alexa 2006)) with more than 78 million registered users, and Friendster with about 27 million users (see Figures 9 and 10; (MySpace 2006; Friendster 2006)). In addition to this, specialised services for people with similar interests have been established. OpenBC, for instance, is a social network of professionals with the aim of creating a web of trusted business partners and experts (see Figure 11; (OpenBC 2006)).

2.5 Other Community-Based Applications

A new class of applications combines features of social networks and file sharing systems. del.icio.us, for example, is a social bookmarking service (see Figure 12;
Users can retain bookmarks of favourite pages in the del.icio.us database instead of storing them on their local computers. Like in Flickr, users can attach tags to bookmarks and use these tags for finding similar bookmarks in the system. Since users can see who else bookmarked the same web page, it is possible to find people with similar interests. Hence, del.icio.us is not only a platform for sharing information but also includes mechanisms from social networks.

Furl is a service similar to del.icio.us (see Figure 13; Furl 2006)). In Furl, not only bookmarks but the actual resources from the Internet are stored in an internal database. This means that users can create a space only containing the web pages they want to store—their own “Private Web”.

Further services driven entirely by the community are, for instance, Eventful and OhmyNews. Eventful is a website listing events for almost any region in the world (see Figure 14; Eventful 2006)). The events offered by this service together with a short description, the exact location and additional information are submitted by members of the community. The second application, Ohmy News, is a blog-like news service in which articles are authored by “citizen reporters”—amateur journalists from the global community (OhmyNews 2006). Ohmy News is often faster than traditional news providers and can offer in-depth information written by locals and first-hand witnesses.

![OpenBC](image)

**Fig. 11.** OpenBC is a social network of professionals

3 What Is Really New? What Is Different?

On close inspection, it can be seen that the “novel” concepts and technologies introduced above are essentially nothing new (cf., (O’Reilly 2005)). Similar services have been in use earlier, for example, in hypermedia systems such as Xanadu, Microcosm or Hyperwave ((Nelson 1981; Fountain et al. 1990; Maurer 1996)).

However, there are certain aspects that distinguish these new applications from previous implementations. The novelty is not what these services do but how they achieve it. Moreover, all of the concepts and services introduced in this chapter have one aspect in common: they get better the more people use them (see (O’Reilly 2005)). The more people get involved in environments such as Wikipedia or Ohmy News, the more respectable the results get.
3.1 Blogs

Newsgroups, letters to the editor, editorials, and “what’s new” pages as parts of larger systems have existed before weblogs were conceived. Blogs, however, let users only write short articles and comments, while they are not offering functionality beyond these simple operations. Blogging software is usually a lightweight application that is not overloaded with functions users rarely make use of. Moreover, most blogging tools are free, easy to use, and hardly any special skills or technical background knowledge are required.

Most importantly, weblogs give users on the Web a chance to participate. Editorials, for example, are “passive” for most users. There is a small group of authors and a large mass of readers. Readers, however, do usually not have a way to comment on editorials on the same level; they could write a letter to the editor, but this letter might be shortened or not published at all. With blogs, however, every reader can start a new blog and discuss, or comment on, someone else’s article. Additionally, a small set of technologies including trackback and RSS helps forming a blogging community.

3.2 Wikis

Although wikis put forward a new concept that was previously unknown on the Web, the basic idea is far from original. In one of the early designs of the World Wide Web, Tim Berners-Lee describes the system as the “read/write Web”, where users are not only able to read documents but can also author documents (cf., (BBC 2005; Gillmor 2004)). Even earlier, Ted Nelson’s concept for Xanadu, the genuine hypertext system, involved versioning and allowed any user of the system to produce new content and share it with other users. Software such as Hyperwave implemented these features.
Further, Wikipedia is not the first attempt to establish a free encyclopaedia on the Internet. This notion dates back to October 1993 when the Interpedia Project was proposed on the Usenet (e.g., (Foust 1994)). While letting users participate in developing the content of the encyclopaedia, Interpedia offered an approach to quality assurance by providing seals of approval (SOAP). With this mechanism, various independent organisations could rate articles in the encyclopaedia and confirm the accuracy and quality of content. Displaying an article would also present the various seals of approval granted by organisations, making it easier for users to trust the information provided by the community.

3.3 File Sharing

Although the file sharing concept on a large scale is relatively new, the basic technologies for enabling file sharing have existed since the early days of the Internet. Anyone can set up an FTP or HTTP server on their computers, for example, and offer any kind of content to other users on the Internet. Software such as Napster employ proprietary protocols for the same purpose and add indexing and search functionality to the service. This makes the application purpose-built and easier to use. The same is true of podcasts: even years ago it was possible to make audio files publicly available on a web server. However, only with technologies such as RSS this became attractive and relatively consumer-friendly.

An innovative feature in recent web-based file sharing services is tagging. This functionality distinguishes Flickr from other approaches to organising large amounts of data (cf., (Mathes 2004)). In previous environments, strict taxonomies were employed, which usually limited the use of such systems to (domain) experts. Although annotations could have been employed for organising content in the same way as tags are used nowadays, a classification of data based on such loose metadata did not seem reasonable.
3.4 Social Networks

Social networks in the physical world have existed for a long time. Clubs, associations of people with shared interests, workgroups and similar societies were successful even before the Internet was developed. In the 1980s, characteristics of social networks were introduced in computer-mediated systems. Among other functionality, these “computer supported cooperative work” environments allow for collaboratively authoring content, sharing and organising information, maintaining relations among members of the systems, and direct communication (e.g., (Schmidt and Bannon 1992)).

Today’s social networks include significantly less functionality. Most systems currently available only focus on their main purpose—communication—and do not incorporate diverse functionality such as collaborative authoring. This lowers the barrier to entry and makes social networks easier to handle even for novice users.

4 Impact of Recent Community-Based Developments

The driving factor behind the transformations the Web is undergoing is probably not a set of new technologies but a fundamental mind shift in users and organisations alike. Users wish to participate instead of using the Web only passively as readers. Furthermore, there is a willingness to share content, and even companies grant access to their content databases. One of the best examples is Google Earth, where satellite images and geographic information are made publicly available (Google 2006). For private users, this new tendency “materialises” in a combination of blogs, file sharing services and social networks. Regular postings on weblogs provide a continuous stream of thoughts, experiences and emotions, while services such as Flickr or YouTube deliver complementing photos and videos. A social network offers the infrastructure for maintaining the ties with friends and acquaintances (cf., (Kolbitsch 2006)).
An immediate effect of these developments is that the world is getting yet "smaller". Teenagers in Europe, for example, can have friends in New Zealand and Singapore and can be a part of their lives as if they were next-door neighbours. Although, from a technical perspective, this was possible years ago it has become reality only recently with the services detailed above (and other technologies such as free Internet telephony). Especially the blend of social networks and blogging is intriguing: in social networks, it is possible to find new friends or rediscover "old" friends one has not been in touch with for a long time. Friends' blogs, on the other hand, are the means to stay informed on their daily activities—from minor events such as buying a new CD or doing a mountain bike tour to a three-month trip to South America.

From a less enthusiastic perspective, it can be argued that our society is heading in a direction where individual experiences become increasingly rare. Imagine holidays in Papua New Guinea. On the Internet, there are travel-related blogs written by people with first-hand experience, there is a wide range of photos and videos from the country, etc. Thus, even before actually going on holidays to a country we have not been before, we will have a very good impression of what to expect, what we will see and what it will be like.

5 Future Advancements

Looking back at the development of communication among human beings, we can see that written language started about 6,000 years ago. About 600 years ago, the invention of book printing increased the importance of written language, and some 200 years ago the introduction of compulsory education further spread reading and writing. About 150 years ago, photography and telephony were invented, and some 100 years ago moving pictures were introduced. About 80 years ago, radio broadcasting was started. 70 years ago, anyone interested and able to afford it, could buy a camera; forty years ago, the same was true of video cameras. Also about forty years ago, television was widely accepted. About twenty-five years ago, the Walkman was introduced. Twenty years ago, amateur video cameras became affordable and widely available. Fifteen years ago, computer networks were implemented in numerous organisations. Ten years ago, the Web (and the Internet in general) took off. About five to ten years ago, concepts such as wikis, weblogs, and social networks were introduced.

Considering that reading and writing became available to the public only about 200 years ago, that widespread technologies such as television have been accepted for only forty years or so, and that blogging came into being only ten years ago, it can be assumed that recent technologies permitting user participation will have a deep impact on almost anyone on the Internet in only a few years.

We believe that, in the future, most information will be accessed through a networked computer. Moreover, most people on the Web will be members of at least one social network or specialised community. Thus, it can be assumed that the technologies we see today and their usage are just the beginning of a movement towards an "integrated society". Already today we reveal more personal and intimate details on the Internet (even to absolute strangers) than most people would have
expected a few years ago. (MissIzzy 2006), mentioned above, is a good example (see section 2.1.1). On the one hand, the young female author posts very personal experiences and intimacies on her weblog. On the other hand, readers can relate to the experiences and feelings, sometimes even to a degree where they have the perception that they had the experiences, although they only read about it.

To an increasing degree, individuals merge their own experiences with the experiences of other users on the Internet. This is an important side-effect of modern communication systems. Consequently, in the future people might find it hard to have any truly individual experiences.

5.1 Upcoming Technologies

We believe that the key to the further success of the recent community-based services, and the formation of an integrated society, is ubiquity. In order to be able to have a “live experience” of someone else’s life, this other person has to provide a stream of data (text, images, video, sound, etc.) from virtually anywhere. At the same time, viewers need to have ubiquitous access to this information.

Both aspects will be possible in the future, as current technologies readily demonstrate. Hewlett-Packard, for instance, conducts research on an “always-on” wearable camera that captures what the user sees (see (HP 2004)). The data is recorded continuously and is to be stored in data centres. With such a camera, individuals could provide a continuous stream of their life, from their perspective, on the Internet.

Fig. 15. Demonstration of e-Ink technology. e-Ink paper is thin, flexible, and content can be changed as if it were a regular display. Source: (eInk 2005).
E-Ink paper is another technology that has the potential to revolutionise the way we have access to information. E-Ink paper is a material that requires electricity to "load" an image into a matrix-based display but does not consume any energy while displaying the image. The content of a page can be changed as if it were a regular computer display. However, electronic paper is thin, flexible, can display both monochrome and colour images, and is low in power consumption (see Figure 15; [elnk 2006]).

With high resolution wearable cameras, foldable displays, and fast, wireless network connections, users can publish information anytime from anyplace and can have ubiquitous access to information on the Internet. Imagine, for example, your partner sitting at home, watching your first presentation at a conference—from your perspective. Or imagine being on holidays in Papua New Guinea. With the upcoming technologies, your friends can “tune in” to your holidays anytime they want to (when you make the video stream publicly available). After a few weeks or months, absolute strangers can watch part of the video stream on your video blog. For these users, your video blog can be a replacement for a conventional travel guidebook. Or, even more radically, your video stream can be a complete substitute for the actual trip!

6 Conclusion

In recent years, the Web has grown into a network for community-based systems and global collaboration. Concepts for creating and managing information such as weblogs and wikis, file sharing services and social networks attract millions of users on the Web. With these novel developments, users are both willing to participate and willing to share content, experiences, thoughts and emotions. Although these advances are able to offer users unprecedented opportunities and are generally viewed positively, we should be well aware of the risks that may be involved.

The new forms of communication are part of a transformation that goes almost unnoticed. In fact, we are about to develop an integrated society with a “shared memory” stored on the Internet. As a consequence, a reduction of unique individual experiences seems unavoidable. What is more, our society relies increasingly on network-based services, even to a degree where we become dependent on the Internet. This can be particularly problematic in such sensitive areas as interpersonal communication. Hence, it will be exciting, on the one hand, to see future developments in electronic communities on the Web. On the other hand, it remains to be seen which effects the growing influence of information technology will have on our society and everyday lives.

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