

## **Web 2.0 Technology: Cybersociety, Cyberculture and Cybercrime**

**Debasish Pradhan** is a Librarian in University Section, St. Joseph's College, North Point, Darjeeling. He obtained B. Lib. Sc. and M. Lib. Sc. degrees from Calcutta University. He received Ph.D. degree in Library and Information Science from Burdwan University. He has written 1 book and 13 articles in reputed journals and conference proceedings.

### **Abstract**

Communication through the Internet has expanded the social circle. Now, people are actively using the Internet as an important form of social interaction. Internet has empowered this virtual society in diverse ways and it is the most interactive society among all community forms. Web 2.0 technology is a newer mode of web based services, enabling interactive websites and creating this virtual society. It is commonly known as cybersociety. Simultaneously, cyberculture and cybercrimes are the important fallout features. Now, cybercrimes take many faces and are committed in different fashions. Technological advancements have created new possibilities for such unfortunate criminal activities, in particular, the criminal misuse of information technologies in the cybersociety.

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**Keywords:** Cybersociety, Social Networks, Virtual World, Web 1.0, Web 2.0.

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### **Introduction**

Cyber communication offers opportunities for valued learning, responsibility and independence. People can learn to manage time and resources effectively, master the art of accessing and processing skills gained in a meaningful context, and communicate this information clearly to the intended audience. It has produced a totally changed and remarkable information environment, especially with the advent of Web 2.0 technology and its interactive nature developing synchronous messaging, streaming media, blogs, wikis, social networks, tagging, mashups, etc. and eventually a virtual society is created, with the help of Internet as a powerful medium in the process. The Internet has become a gateway for gigantic public library as well as world-wide message board, communication network,<sup>1</sup> and publishing medium. It is open round the clock and 365 days a year and we can find anything which we require and may describe anything which we want to communicate. If we appreciate the richness of the Web and importance of the Internet, and thus enjoy the benefits ourselves, then we will be better able to provide services on them. This type of virtual community<sup>2</sup> allows people to not only hold conversations with others in real time, but also to engage and interact with others. Communities in virtual world are the most similar to real life communities, because the human characters playing their roles are physically in the same place. It is close to reality, except that their expressions are digital. Development of such cybersociety has become possible after transformation of Web 1.0 features into

1 URL: <http://www.netinternals.com/network-solutions/index.asp?trade=theimportance-of-the-internet> (accessed on 20/Aug/2012).

2 URL: [http://en.wikipedia.org/wiki/Virtual\\_community](http://en.wikipedia.org/wiki/Virtual_community) (accessed on 2/Sept/2012).

Web 2.0 technology and its accessories attributed in websites accessed through the Internet nowadays.

### Web 1.0

Web 1.0 is a retronym which refers to an advanced state of World Wide Web (WWW) which was developed by Timothy Berners-Lee in 1989. Web 1.0<sup>3</sup> was an early stage of conceptual evolution of the WWW, centered around a top-down approach to the use of the web and its user interface. It commonly means any website design style used before the advent of Web 2.0 phenomenon. In Web 1.0,<sup>4</sup> hyperlinks mainly link to static pages and objects. Users could only view webpages and were unable to contribute to the content of the web pages.

### Web 2.0

Web 2.0 is a newer mode of web based interactive service than the Web 1.0. Since the services of Web 1.0 were distinctly established, the transformation of the same into Web 2.0 is not fully comprehensible to many of us. There's still a huge amount of disagreement about just what Web 2.0 means, with some people decrying it as a meaningless marketing buzzword, and others accepting it as the new conventional wisdom. Tim O'Reilly<sup>5</sup> has presented a comparative table on different aspects of transformations from Web 1.0 to Web 2.0 as follows:

Web 1.0		Web 2.0
Doubleclick	▶	Google AdSense
Ofoto	▶	Flickr
Akamal	▶	BitTorrent
MP3.com	▶	Napster
Britannica Online	▶	Wikipedia
Personal Websites	▶	Blogging
Evite	▶	Upcoming.org and EVDB
Domain Name speculation	▶	Search engine optimization
Page views	▶	Cost per click
Screen scraping	▶	Web services
Publishing	▶	Participation
Content management systems	▶	Wikis
Directories (taxonomy)	▶	Tagging ("folksonomy")
Stickiness	▶	Syndication

3 Evans, Mike. *The Evolution of the Web - From Web 1.0 to Web 4.0*. URL: <http://www.cscan.org/presentations/08-11-06-MikeEvans-Web.pdf> (accessed on 2/Sep/2012).

4 URL: [http://en.wikipedia.org/wiki/Web\\_1.0](http://en.wikipedia.org/wiki/Web_1.0) (accessed on 3/Aug/2012).

5 Tim O'Reilly, *What Is Web 2.0 Design Patterns and Business Models for the Next Generation of Software?* URL: <http://oreilly.com/web2/archive/what-is-web-20.html> (accessed on 2/Aug/2013).

Web 2.0 was first conceptualized and made popular by Tim O'Reilly and Dale Dougherty of O'Reilly Media in 2004. The term is now widely used and interpreted in different ways, but Web 2.0, essentially, is not a web of textual publication, but a web of multi-sensory communication. It is a matrix of dialogues, not an accumulation of monologues. Such characteristics of Web 2.0 have eventually created today's cybersociety and thereafter cyberculture which is highly flourishing day by day.

### **Cybersociety**

In 1970, Control Data Corporation (CDC), a supercomputer firm in Minneapolis, United States, had integrated number CDC-6000-series supercomputers in a notable early network to be used for aerospace development for their country. However there is no separate article found on CDC's Cybernet although it certainly existed. This "Cybernet" was one of the formative influences on the protocols that developed into the Internet which we know today in developing a cybersociety. Cybersociety<sup>6</sup> is the mesh of electronically based communications created by the world-wide network of computer users. Computer-mediated social interaction has become increasingly prominent in the organization of everyday life since the late twentieth century. Electronic mail and creation of different services in the Internet have made possible such things as on-line shopping; web-based 'chat-rooms'; personalized videos in the home; and so on. The implications of these services in communications for work, leisure and politics are now the matter of controversies among sociologists. The cybersociety is the online community that takes the shape of a computer-based simulated environment through which users can interact with one another as well as use and create objects.

### **Cyberculture**

Cyberculture is the culture that has emerged, or is emerging, from the use of computer networks for communication, entertainment and business. It is also the study of various social phenomena associated with Internet and other new forms of network communication, such as online communities, social media and texting. Since the boundaries of cyberculture are difficult to define, the term is used flexibly, and its application to specific circumstances can be controversial. It generally refers, at least, to the cultures of virtual communities, but extends to a wide range of cultural issues relating to "cyber-topics". This cyberculture<sup>7</sup> may purely be an online culture or may comprise both virtual and physical worlds. It is to say that cyberculture is a culture endemic to online communities and tends to be epidemic. It is not just the culture that results from Internet use, but the culture that is directly inspired and mediated by such networked environment.

6 Steven G. Jones, *Cybersociety: Computer-Mediated Communication and Community*. Thousand Oaks, CA, Sage Publications, 1994.

7 B. C. Kailay, "Art and Culture" in Utpal K. Banerjee, ed. *Information technology for common man*, New Delhi, Concept Pub., 2002, pp. 398-421.

## **Manifestations of Cyberculture**

Advent of Web 2.0 technology and thereafter interactive websites giving manifestations of cyberculture<sup>8</sup> include various human interactions in computer networks. They can be activities, pursuits, games, places and metaphors, and include a diverse base of applications.<sup>9</sup> Some are supported by specialized software and others work on commonly accepted web protocols. Examples of manifestations of cyberculture include:

- **Streaming Media**

The streaming of video and audio media is an application that many might consider as Web 1.0 feature, as it predates Web 2.0 thinking and was widely employed before many of the following technologies had even been invented. But for reasons similar to synchronous messaging, it is here considered as Web 2.0.

- **Synchronous Messaging**

This technology has already been embraced quite rapidly by the information user community. More widely known as Instant Messaging (IM), it allows real-time text communication between individuals. Information services have begun employing it to provide 'chat reference' services, where patrons can synchronously communicate with information centres much as they would be in a face-to-face reference context.

- **Blogs**

A blog is a discussion or information site published on WWW consisting of discrete entries typically displayed in reverse chronological order so the most recent post appears first. Bloggers do not only produce content to post on their blogs but also build social relations with their readers and other bloggers.

- **Wikis**

Wikis are fundamentally 2.0, and their global proliferation has enormous implications for information seekers. They enable the rapid production and consumption of web-based publications. Wikis are essentially open web-pages, where anyone registered with the wiki can publish to it, amend it, and change it. Much as blogs, they are not of the same reliability as the traditional resources.

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8 Debasish Pradhan and Pijushkanti Panigrahi, "Library 2.0 Emerging as the New Generation Interactive Library Service" in Jagdish Arora, [et al.] ed. *Re-engineering of Library and Information Services in Digital Era*, Ahmedabad, INFLIBNET Centre, 2010, pp. 450-463.

9 URL: <http://en.wikipedia.org/wiki/Cyberculture> (12-05-2011)

- **Tagging**

Tagging essentially enables users to create subject headings for the object at hand. Tagging is essentially Web 2.0 technology, because it allows users to add and change not only content (data), but content describing content (i.e. metadata). For example, in Flickr, users tag pictures.

- **RSS Feeds**

RSS feeds and other related technologies provide users a way to syndicate and republish content on the web. Users republish content from other sites or blogs on their own sites or blogs, aggregate content on other sites in a single place, and ostensibly distill the web for their personal use. Such syndication of content is another Web 2.0 application.

- **Social networks**

A social networking service is an online service, platform, or site that focuses on facilitating the building of social networks or social relations among people who share interests, activities, backgrounds, or real-life connections.

- **Games**

An online game is a video game played over some form of computer network or on a video game console. The expansion of online gaming has reflected the overall expansion of computer networks among people.

- **Chat**

Online chat may refer to any kind of communication over the Internet, that offers a real-time direct transmission of text-based messages from sender to receiver. Online chat may address point-to-point communications as well as multicast communications from one sender to many receivers and voice and video chat. Online chat may be a feature of a Web conferencing service.

- **Usenet**

Usenet is a worldwide distributed Internet discussion system. Users read and post messages (called articles or posts, and collectively termed as news) to one or more categories, known as newsgroups. Usenet is the precursor to the various Internet forums that are widely used today.

- **Bulletin Board Systems**

A Bulletin Board System (BBS) is a computer system running software that allows users to connect and log in to the system using a terminal program. Once logged

in, a user can perform functions such as uploading and downloading software and data, reading news and bulletins, and exchanging messages with other users.

- **E-Commerce**

Electronic commerce, commonly known as e-commerce, is the buying and selling of products or services over the electronic networks. E-commerce involves electronic funds transfer, supply chain management, Internet marketing, online transaction, and so on.

- **Virtual worlds**

A virtual world is an online community that takes the form of a computer-based simulated environment through which users can interact with one another as well as use and create objects. The computer accesses a computer-simulated world and presents perceptual stimuli to the user, who in turn can manipulate elements of the modeled world and thus experience a degree of telepresence.

- **Cybersex**

Cybersex is also called computer sex, Internet sex, netsex, mudsex, and TinySex. It is a virtual sex messages encounter in which two or more persons are connected remotely via computer network.

- **Internet memes**

An Internet meme is an idea that is propagated through the World Wide Web. The idea may take the form of a hyperlink, video, picture, website, or just a word or phrase. The meme may spread from person to person via social networks, blogs, direct email, news sources, or other web-based services.

- **Mashups**

Mashups are perhaps the single conceptual underpinning to all the technologies discussed above. They are ostensibly hybrid applications, where two or more technologies or services are conflated into a completely novel service. For example, WikiBios is a site where users create online biographies of one another, essentially blending blogs with social networks.

## **Cybercrime**

With the evolution of the Internet, along came another revolution of crime where the perpetrators or criminals commit acts of wrongdoing on the World Wide Web. Cybercrimes<sup>10</sup> take many faces and are committed in diverse fashions. These are the offences that are committed against individuals or groups of individuals or nation

10 URL: [http://cybercrime.planetindia.net/ch1\\_2008.htm](http://cybercrime.planetindia.net/ch1_2008.htm) (2-07-2012)

with a criminal motive to intentionally harm the reputation of the victim or cause physical, mental and financial harm to the victim directly or indirectly, using modern telecommunication networks. Cybercrimes can be categorized two ways :

*Computer as a Target* : Use of computer to attack other computers. e.g. hacking, virus attacks, email bombing, data diddling, DOS (denial-of-service), etc.

*Computer as a weapon* : Use of computer to commit real world crimes. e.g. cyber terrorism, IPR violations, credit card frauds, EFT (Electronic Fund Transfer) frauds, pornography etc.

### **Technical Aspects in Cybercrime**

Technological advancements have created new possibilities for criminal activities, in particular the criminal misuse of information communication technologies, such as:

- **Unauthorized access & Hacking**

Unauthorized access and hacking would mean any kind of access without the permission of either the rightful owner or the person in charge of a computer, computer system or computer network.

- **Virus attack**

A program that has capability to infect other programs and makes copies of itself and spreads into other programs is called virus. Programs that multiply like viruses but spread from computer to computer are called worms.

- **E-mail related crimes**

Email Spamming: Email 'spamming' refers to sending email to thousands of users, similar to a chain letter.

Sending malicious codes through email : E-mails are used to send viruses, Trojans etc. through emails as an attachment or by sending a link of website which on visiting downloads malicious code.

Email bombing : E-mail "bombing" is characterized by abusers repeatedly sending an identical email message to a particular address.

Other email related crimes : Sending threatening emails; defamatory emails; and email frauds.

- **Denial of Service (DOS)**

Flooding a computer resource with more and more requests than it can handle. This causes the resource to crash thereby denying access of service to authorized users.

- **Forgery**

Counterfeit currency notes, postage and revenue stamps, mark sheets etc. can be forged by using sophisticated computers, printers and scanners.

- **IPR Violations**

These include software piracy, copyright infringement, trademarks violations, theft of computer source code, patent violations, etc.

- **Cyber Terrorism**

Targeted attacks on military installations, power plants, air traffic control, banks, tele-communication networks are the most common targets. Cyber terrorism is cheaper than traditional terrorist methods. It has potential to affect a larger number of people.

- **Banking and Credit Card Related crimes**

In the corporate world, Internet hackers are continually looking for opportunities to compromise a company's security in order to gain access to confidential banking, Electronic Fund Transfer and financial information.

- **E-commerce/ Investment Frauds**

An offering that uses false or fraudulent claims to solicit investments or loans, or that provides for the purchase, use, or trade of forged or counterfeit securities. Investors are enticed to invest in this fraudulent scheme by the promises of high profits.

- **Defamation**

Defamation can be understood as the intentional infringement of another person's right to his/her good name. Cyber Defamation occurs when defamation takes place with the help of Internet. Someone publishes defamatory matter about someone on a website or sends e-mails containing defamatory information to all of that person's friends.

- **Data diddling**

Data diddling involves changing of data prior or during input into a computer. In other words, information is changed from the way it should be entered by a person typing in the data.



- **Breach of Privacy and Confidentiality**

Privacy refers to the right of an individual to determine when, how and to what extent his or her personal data will be shared with others. Breach of privacy means unauthorized use or distribution or disclosure of personal information like medical records, financial status etc.

- **Obscene or offensive content**

The content of websites and other electronic communications may be distasteful, obscene or offensive for a variety of reasons. In some instances these communications may be illegal.

### **Importance of Cyber Law**

Law is a system of rules and guidelines which are enforced through social institutions to govern behavior. Laws are made by governments, specifically by their legislatures. The law shapes politics, economics and society in countless ways and serves as a social mediator of relations between people. Now, there is a need to regulate the Cybersociety and its culture. Cyberculture has now given a new way to express criminal tendencies. Due to anonymous nature of the Internet, it is possible to be engaged in a variety of criminal activities. It is therefore right time to constitute cyberlaws and apply them properly. Cyberlaw is a term that encapsulates the legal issues related to use of the Internet. Cybercrimes involve criminal activities<sup>11</sup> that are traditional in nature, such as theft, fraud, forgery, defamation and mischief. All of which are subject to the Indian Penal Code. The abuse of computers has also given birth to a gamut of new age crimes that were addressed by the Information Technology Act, 2000,<sup>12</sup> amended by Information Technology Amendment Bill 2006 passed in Lok Sabha on 22nd December and in Rajya Sabha on 23rd December 2008.

### **Conclusion**

The Web 2.0 technology associated developments and use of Internet have become gradually popular due to almost endless capabilities it can offer including electronic mail systems, information distribution, file sharing, multimedia streaming service and online social networking. Now, in an advanced world, everyone belongs to cybersociety and Internet has been significantly serving billions of people living the net. The advantages of the Internet and consequent cyberculture definitely outweigh its disadvantages. Some of the great benefits of Internet over other communication networks are its global presence, easy accessibility and wide-scale communication. The boundless communication it provides makes the Internet an important medium of communication. Whether we like it or not, the internet borne cybersociety will always be here to stay. However, cybercrimes are to be avoided with the establishment of efficient laws. The Internet requires a supportive legal infrastructure, in tune with the times, so that free flow of information for beneficial use in society may not be restricted or minimized.

11 URL: <http://www.cyberlawsindia.net/internet-crime.html> (accessed on 2/Jul/2012).

12 URL: <http://catuts.com/major-amendments-to-information-technology-act-2000-by-ita-2008/> (accessed on 2/Jul/2012).