Openness in communication
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Abstract

This paper introduces three existing models that give different perspectives on *openness* in communication systems. The first focuses strictly on how content is presented in digital media. The second model distinguishes between a content layer, a logical layer, and a physical layer where all may be open or restricted in various degrees. Finally a model with nine ideal communication patterns is presented in more detail and used to discuss the different power relations between *producers* and *consumers* and *users* of media content. The model provides an analytical framework to describe some characteristics unique to digital networked media.

Contents

Introduction

This paper discusses openness in *mediated communication*, which is communication that will only exist by the use of one or by several technical solutions within a *communication system*. In the following openness is defined according to whether individuals are able to use a communication system to *organise* themselves in any way they find adequate. My understanding of openness also implies the facilitation of both *production* and *distribution* of information, as in true dialogues where all participating

parties are given equal possibilities.

From this definition follows that a system facilitating complete openness does not exist. On the other hand, it does not make sense to speak about a completely closed communication system. A dichotomy of open and closed does not exist in communication, as long as communication cannot be completely closed. A communication system always invokes some restrictions on the user's ability to communicate. We need classifications that make us able to characterise different degrees of openness, using a common vocabulary and a shared understanding of criteria. After introducing some different perspectives on the use of the term "openness" I present three models, representing different approaches to the discussion of openness and closeness.

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Some ways of using "openness"

Standards, "open specifications", and "open interfaces" are explicitly recognised as a precondition for the implementation of e–government services [1]. "Openness" is the first among the principles considered important to this development, followed by "participation, accountability, effectiveness and coherence" [2]. The transition to e–government must improve all these dimensions, acknowledging that economic and social empowerment rests on the public's ability to access, gather, analyse and utilize information and knowledge (Commission of the European Communities, 2002).

There is a general assumption that digital empowerment could become a cornerstone for the future development of society through *e–participation*. Initiatives should increase information to citizens by offering information through government Web sites, enhance consultation for participatory processes by making it possible to discuss public policy topics online, and support decision–making by recognizing the value of citizen input to decision–making [3]. This participation implies that all communicating parties are able to see some results of their contributions, something that requires openness at different levels. However it is not necessarily the other way around: many countries encourage participation, but provide limited mechanisms to allow user feedback [4]. They may seem to facilitate "openness" by providing access to information, but without giving the public opportunities where they become able to become more than mere consumers. Even when civil authorities do want active participation from interest groups the questions of openness become complicated. Any interest group represent the interests of their members and thereby tend to exclude, or minimize perspectives and interests that may be of great importance to those not capable of taking advantage of the openness (Global Policy Forum, 1999).

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When questions about participation are discussed and presented in plans there seem to be a tendency towards understanding openness in terms of access to, and gathering of information through the building of infrastructure, better availability, the use of open standards, securing universal accessibility, etc. This becomes evident when the European governments are elaborating on the implementation of *e–government* (Commission of the European Communities, 2002) within the European community, as well as when American authorities discuss similar issues (U.S. Executive Office of the President, 2003). Aspects of openness regarding how the public should become more able to "analyse and utilize" this information do not seem to be considered as important as those concerning access and availability.

Commercial information providers have another relationship to the quality and sustainability of information. They always have to consider whether the presentation of information is going to sell their product, and if it is going to improve the customer's experience of the product in which they have decided to invest their time and/or money. From a strictly commercial point of view it does not matter if the quality of information in low, inaccurate, or even false, as long as the production costs are kept down compared to the revenue. Commercial actors are therefore encouraged to design systems facilitating openness by the fact that a large number of people are willing to produce information for free through participation, being both producers and consumers of information. These systems may be organised as large communities with tens, perhaps even hundreds of thousands of users, or the users may be organised in a large number of small groups where the members have closer ties. Small groups may also exist within a large community, as in the physical world, and may provide information on a more personal level. Information with personal qualities interests users, but these qualities may be difficult to achieve [5]. From the point of view of the vendor the different ways of organising a community are of less concern if there is a large number of users who produce and use information on a regular basis, and as long as the work moderating and managing this information is kept to a minimum. When talking about openness, commercial vendors tend to use the term as part of their strategic thinking to introduce "pervasive media environments" (Berman, 2004), not necessarily in terms of empowering individuals or technology's democratic potential (Rushkoff, 2003).

An interesting observation is that education is somewhere in the middle, being obliged to handle all aspects of openness, from a strictly authoritative approach, where the learners are given access to one understanding of specific information, to an approach where the learners are expected to explore, re–contextualise and produce information on their own.

When media change information providers are affected most significantly by whether they are able to build new relationships to their previous customers/consumers [6] who now become potential contributors in a *participation culture*. Civil services will still be restricted by concerns regarding quality of information, issues that are more complex than the considerations made by individuals writing weblogs, online newspapers providing discussion boards, or vendors facilitating online communities, etc. There may be numerous reasons why the different actors do what they do; I would like to emphasize the increasing differences between how information is created and distributed in various parts of society. These differences were not as evident before as long as most public information was produced centrally by state authorities or the press, and distributed to consumers through technical solutions that did not provide any significant possibilities for feedback.

To summarise some of these approaches to openness: From an official and public service point of view information providers want openness biased towards information

access. One tends to encourage participation, but this is understood as mechanisms facilitating *feedback*, not as tools making the public *producers of content*. From a commercial point of view information providers also want to facilitate easy access, but these actors also have strong interests in encouraging openness with users acting as producers of content. These actors are more likely to develop an understanding of the "quality of information" with a bias towards information's ability to appeal and engage an audience.

Some approaches to openness in communication

The complexity of *openness* in communication systems range from technical issues, like how information is mediated and distributed, via economical concerns, to a number of social issues that may influence the availability, use and the potential impact of information in society. Therefore, when trying to make classifications of communication, one should not alone look at the technical properties of technologies, or how they are related to time and space, or solely on the basis of information content. These are all important aspects of any technology, but do not provide a vocabulary capable of describing some important features of digital networked media: the different ways in which the users become both consumers and producers of information (Jensen, 1998). Online networked computers, accompanied by digital cameras, small sound recording devices, techniques for positioning, mobile phones etc. all have the potential of enabling groups of various sizes and individuals to participate actively in the *production* of information in numerous ways. When looking for a classification that includes different aspects of openness these features of "new media" have to be considered.

Open vs. closed content

Mayer (1997) — building upon earlier work — presents a classification of common computer media applications which focuses on the computer's characteristic semiotic nature and its "capacities for symbol manipulation", and the "responsive context of reception". In the table below, content scope, temporal, and spatial attributes are compared, and demonstrate how these characteristics can be used to differentiate between various computer media.

Asynchronous				Synchronous			
Closed Content		Open Content		Closed Content		Open Content	
Aspatial	Spatial	Aspatial	Spatial	Aspatial	Spatial	Aspatial	Spatial
Interface text	Interface graphics	E-Mail, WWW	VRML, 3D Models	Encarta, Cinemania	Myst, Doom	IRC, Web Chat	MUD's, MOO's

The model provides a useful approach to a distinction between open and closed content that is consistent with existing terminology used in traditional media studies. However, this classification fails to grasp the processes related to how this content came into being, or how it is used.

Communication layers

Another perspective on openness is provided by Benkler [7] who defines three different layers of communication, a *physical layer* (wires, cable, radio frequency spectrum), a *logical layer* (software, protocols), and a *content layer* (text, images, sound etc). Lessig (2001) uses Benkler's layers when discussing how different communication systems influence on our abilities to act as users instead of mere consumers of information. The table below is an extension of the model presented by Lessig [8]. Lessig discuss 1, 2, 3 & 8, and uses "free" vs. "closed" where I am using "open" vs. "closed":

	Speakers' corner	Madison Square Garden	Telephone System	Writing / Recording	Internet	PVR	Surveil- lance	Cable TV / ADSL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Content	Open	Open	Open	Open	Closed	Closed	Closed	Closed
Logical	Open	Open	Closed	Closed	Open	Open	Closed	Closed
Physical	Open	Closed	Closed	Open	Closed	Open	Open	Closed

Speakers' Corner and Madison Square Garden are two of the examples used by Lessig. At *Speakers' Corner* (1) anyone who wants to public performance get access to the park (the physical layer), he may do a presentation of his own choice (the logical level), and he is free to chose what to present (the content level). One may, however, argue that this openness become a theoretical possibility to most people, not being able to visit Speakers Corner when they have something they want to say, or not being among the relatively few constituting a "public sphere" where private people come together "as a public and articulating the needs of society with the state" [9]. However, communication will always be limited by both physical and social/psychological constraints, and for practical purpose we will only be able to talk about this complete openness within limited communities, though never in the world at large.

In an arena like *Madison Square Garden* (2) an individual will have the same possibilities as at Speakers' Corner, save that the building has to be rented. That is because the access to the physical level is restricted by the owner of the infrastructure needed to give a performance.

In the *telephone system* (3) a user will have to pay for access to the system and he has no influence on how the content is mediated at the logical level. But the system is open on the content level making the users able to say whatever they want, as long as the system does not discriminate between different users on the basis of the information they are communicating.

Writing by hand (4) is an example of a technology that do not imply any restrictions to the content, and where the physical level is fully accessible, at lest for most practical purposes. The only restrictions to what the users are able to express is found on the logical level as limitations implicit in written language. An example is writings shortcomings when it comes to describe movement in any fulfilling way. One may also

argue that the use of *recordable media* like CD–R, DVD–R, and hard disk recorders, MP3 players etc. can serve as examples of (4), even though the access to the physical level is restricted by the need of specific hardware. However, given that in large parts of the world such recording devices are relatively cheap and easy to purchase, this limitation do not imply any practical restriction that prevents these people from using recording devices. The most severe limitations to the use of digital recording technologies are found on the logical level where DRM systems applied in software and the implications of copyright laws are some examples.

Lessig argues that the *Internet* (5) is an example where the physical layer is completely controlled by governments and commercial vendors. Most of the content is protected by copyright laws, Benkler [10] uses *Los Angeles Times v. Free Republic* (Carney, 2001) as an example. However, on the logical level the Internet has been open, as long as protocols and software traditionally have been openly documented, as well as shared and used without severe restrictions, and developed by collective efforts. Because of this openness Internet technology has been transferable to numerous infrastructures, making the communication facilitated by these technologies difficult to control by introducing restrictions at the physical level. However, this may change from a number of reasons. *Trusted computing*, referring to the embedding of end–to–end validation of the origin and integrity of data into computer hardware and system software (Kay, 2006), is one of several technical solutions that alone, or in combination with other technical and legal solutions, will limit users' abilities to produce, back up, copy, and distribute content in ways they find opportune (Walker, 2003). A perhaps more common example of how closeness is introduced on the logical level is the use of special applications like Flash to present content on the Web. Instead of making autonomous Web pages that can be linked to, and accessed one by one Flash applications usually close references to different content on a server.

Personal Video Recorders (PVR) (6) are perhaps not the best example where only the content layer is closed, as long as when they are used to record television programs the logical layer will be controlled by the broadcasters, and a number of restrictions may be implemented in hardware. However, I am using PVRs as an example to be able to introduce the possibility of technical restrictions taking full control over the presentation of media content, in extreme cases even over perception. A concrete example is Philips solution for "preventing a viewer from switching from a channel when an advertisement is being displayed on the channel", and if the program is recorded on a PVR the technology "prevents a viewer of a recorded program from fast forwarding the recorded program in order to skip past advertisements" [11].

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A When the physical level is open and there are restrictions to both the content and the logical level we are experiencing an instance of *surveillance* (7). Writing this sitting in Volkspark Friedrichshain I am thinking of what Speakers' Corner would be like in

former East Germany: Most people would have physical access, but would be unable to speak freely or make performances of their own choice. Aspects of surveillance introduce several questions about power relations, not only between the producers and consumers of information, which will be discussed later, but also to an increasing degree those who the communication is about. An example is services like gawker.com/stalker (at http://gawker.com/stalker/ that re–mediates parts of gossip–journalism, now in the hands of the public. But the potential in "surveillance" goes much further, and is one of the main reasons why Google fund the building of free WiFi systems, making them capable of providing *plateatic advertising* (advertisements targeted by geographic location). The surveillance potential in different technologies may cause an erosion of of privacy with the result that individuals will become accustomed to the idea of little or no privacy whenever they visit public places, both physical and virtual. Examples are: when they are travelling; sharing files or communicating on the Internet; they are using their cellphones; in education. In addition to intended use technologies almost always have a "function creep" that occurs when technical features, designed for a specific purpose, ends up serving many other purposes (Hoepman and Jacobs, 2006). Being accustomed to a general idea that privacy is not available, people may become less able to recognize new, potential threats against privacy. Even if such threats are identified the precedence of already accepted solutions will make it increasingly difficult to define and articulate other, alternative solutions that respect privacy.

Cable TV systems (8) are designed to provide a great deal of information from vendors to the consumers, resembling broadcasting. All three levels are restricted: the consumers do not own the wires into their homes, programming is controlled, and the use of the content is limited by copyright, or by technical restrictions (see Personal Video Recorder). Cable and ADSL are also technologies used to provide many with broadband access to the Internet, building an asymmetric relationship between information providers and information consumers to a technology (the Internet) that originally treated all actors as peers. Users with unrestricted Internet connections are already a privileged class being able to set up their own servers, create new services, establish true peer–to–peer connections with other sites, etc. By introducing technical solutions to make online computers more easy and secure, like NATs and firewalls, new technologies reproduce the traditional relationship between "publishers" or "broadcasters" and their "consumers" or "audience" (Walker, 2003).

Being able to describe how the different layers of a communication technology influence the production, distribution and use of information is important to an understanding of *openness*. However, even though Benkler discusses how regulatory choices influence the "consumer–producer relationship", the model does not provide a vocabulary that considers how users are affected as *producers* or as *consumers* of information on different levels. A comprehensive understanding of openness in communication should be able to classify different media according to how they influence relations between producers and consumers, an approach taken by Bordewijk and van Kaam (1986) when explaining the future development of "tele–information services". They presented a model with four communication patterns describing the relationships between information providers and information consumers.

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Communication patterns

Rather than emphasizing different media's technical characteristics, genres or content

Bordewijk and van Kaam answer two initial questions about the "provider" and the "consumer" of information:

1. I   s the transmitted information owned by an information service providing centre or an individual information service consumer?

2. I   s the transmission and use of the information controlled by an information service providing centre or an individual information service consumer?

Answering who delivers the information, and who controls access to and use of information is represented as a matrix with four "ideal information–patterns". It is important to note that these patterns are "ideal" in a sense where they are supposed to be used as analytical tools. In reality no media can be understood as being part of only one of these patterns:

		Control of production	
		Information centre	*Information consumer*
Control of distribution & consumption	*Information centre*	Allocation	Registration
	Information consumer	Consultation	Conversation

Bordewijk and van Kaam use the terms "information service centre" and "information service consumer" instead of "sender" and "receiver". Like Benkler's model, one distinctive mark of the typology of communication patterns is that it is defined independently of the technical design of the media, the form of presentation, and the content of information. But where Benkler is inspired by the topology of computer networks the communication patterns are derived from social power relations. Focus is on the flow of information between different actors ignoring the different quantitative and qualitative aspects of the information content (Jensen, 1996). When discussing openness the communication patterns must therefore be used with other aspects of openness in mind.

Extending the model

Bordewijk and van Kaam came up with their model years before the invention of the Web; their four communication patterns only take into account "centre" and "consumer". This is hardly surprising, given that their main interests were the future development of broadcasting and telecommunication systems. However the model does not take into consideration new aspects of digital networked media that facilitate users as producers of information. These perspectives call for an extension of both axes of the model: I am therefore adding *information produced by users as a collective* and

distribution controlled by users as a collective.

In the following model my understanding of "distribution" goes beyond the ability to control the infrastructure (corresponding to Benkler's physical level) used for distribution. One also has to consider the users' ability to decide when and how the content is re–edited, re–used, or just consumed. The use of "collective" also needs some initial explanation. Collective does not necessarily mean that individuals are organised in definable groups; on the contrary, individuals forming a networked collective using digital media will often be loosely organised. One can even describe this organisation, or lack of such, as autonomous individuals "out of control", not connected by a hierarchical chain of command. Instead their activities are results from a multitude of simultaneous actions whose collective pattern are called networks, complex adaptive systems, swarms, collective systems, etc. [12]. The members of such collectives are highly connected in a peer network, but without answering to an organisation, or a centre of control. Each member acts individually according to some basic rules and given situations in their local environment [13].

When taking the collective into consideration the model forms nine different communication patterns:

| | | Control of production & re-use | | |
		Information centre	*Individual user*	*Collective*
Control of distribution & consumption	*Information centre*	Transmission	Registration	Commenting
	Individual user	Consultation	Dialogue	Collaboration
	Collective	Syndication	Sharing	Emergence

Transmission

Transmission occurs when information is produced by a centralized information service which also controls when information is distributed to the users. The flow of information runs in one direction only, from the centre to a number of autonomous users. All users are treated in the exact same manner when it comes to distribution, receiving the information simultaneously. The information can either be previously stored by the information service, or it may be offered "on the fly" at the moment of distribution.

Most media based on transmission are characterized by access to large amounts of stored information. Only a tiny fragment of this information is distributed to users at a given time, and always in ways that ensure that users are receiving the same information simultaneously. Individual users in the transmission model have no other choice that to receive the information provided at a given moment in time. Communication based on transmission may therefore be referred to as "one–way" or "one–to–many", emphasizing that the communication channels have no possibilities for feedback. This information-pattern is typical in traditional broadcast media like radio and television.

Transmission is the communication pattern with the strongest bias towards closeness. Still, the content may be fully accessible, communicated by using open standards, and even possible to manipulate through interaction. Nevertheless, the pattern is heavily restricted, as long as the information centre exclusively chooses when to grant access to users. However, the use of video recorders is an example of how new technology changes an existing communication pattern by giving users more choices to control the distribution of information. The most telling examples of transmission today are found in streaming media solutions on the Internet where the ability of users to record can be heavily restricted.

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Registration

Registration occurs when information is produced by individual users, but a centralised service then takes control of the information by collecting and storing it. Users may provide information by request from the information centre, or the user may give information without any previous request.

As long as the information is produced by users the division of power seems to be reversed from "transmission" and "consultation" patterns. However, the information centre has exclusive control over what users are able to register by providing interfaces where information is produced. An example is the use of polls where the owners of Web sites give their users opportunities to answer questions by selecting between predefined choices. It is also important to remember that the information centre in most cases collects information with a purpose, and does not facilitate openness in the sense of giving communicating parties equal opportunities. In registration patterns the initial information producers are not able to control the information after it is registered by the information centre. The centre has exclusive control of storage and may use this control to re–arrange and re–mediate the information and use it in other communication patterns, or to facilitate such patterns.

Bordewijk and van Kaam use (tele–)opinion polling, shopping systems, etc. as examples of registration by request. Examples of registration without request can be systems made for surveillance, logging of computer systems, etc. Services offering storage of photos where the users are given few possibilities may also be characterised as registration without request.

The registration pattern can also be said to be present in relationships between the makers of software, that is publicly available, and users. Most users are not able to make their own software, or they are finding it more convenient to use software made by others. These users are limited to the possibilities build into software and illustrate that production of digital media objects are often assembled by selecting from ready–made

functions, or from media material provided centrally. All authoring and editing software comes with a large number of these predefined functions, and additional functionality may be added by using "plug–ins" which makes third–party vendors able to incorporate new functions into a program's interface [14]. This selection among predefined functions is only registration when the new information is stored by a central service, but to an increasing degree this is happening with online services that provide the same functions as standalone programs. Google is the most obvious example of a successful commercial approach based on the principle that information is accessible, and, to an increasing degree, produced online (Google, 2005). Questions about selection are important when discussing openness and control, and makes evident one of the limitations in the model: there is no pattern that covers situations where information that is controlled by a centre (the program manufacturer or the service provider) and used by individuals to make products that they are able to store and control. Selecting performed by individuals when producing and re–mediating information that is stored locally has to be understood as a combination of several patterns.

Commenting

Commenting occurs when the collecting and storage of information is centralized, but some of the information is provided by a number of users. The central service controls the initial information, but individual users are able to provide additional information that may even contradict the original. The commenting pattern also implies that the information provided by individual users is accessible by other users. Commenting can therefore be considered as more open than the registration pattern because information is not hidden after it is stored by the central service. Where registration normally will be limited to selecting between pre–defined alternatives most instances of commenting make the individual producers able to formulate their opinions with their own words, perhaps even provide some additional media material by uploading or using hyperlinking. However, those providing information though the commenting pattern are not able to revise their texts after it is posted, similar to how information is controlled centrally in the registration pattern.

Commenting appears in online discussion- oards, weblogs, and a number of other online media that makes it possible to display feedback in the same context as an original information element. Normally this pattern does not include response where additional information are controlled, or changed by an editor, unless the content is a violation of law or considered as spam. Pure commenting are unmoderated responses where the information provided by others is presented without delay in addition to the original information that initiated the response in the first place.

Consultation

Consultation occurs when information is produced and owned by a central information service, but where individuals are able to control which information they receive and when this information is delivered. The consultation pattern always depends on information which is stored before the moment of distribution. In other words, this

communication pattern is always asynchronous.

Consultation offers some flexibility in favour of users, but it requires some specific activities on their behalf. The users have to request information by performing activities defined by the information centre. The label "interactivity" [15] is often used to characterise this process, ranging from clicking on specific hyperlinks to the users' movement and achievements in computer games. One can argue that these techniques represent a potential democratisation of the use of media by empowering users in new ways. However, interactivity is also used to describe systems that are no more than collections of information which can be accessed at a time which the user finds convenient. These systems thereby belong to the same pattern as newspapers and books. Discussing openness one can even argue that many so–called interactive systems are much less open than printed books: for example, cybertexts (Aarseth, 1997) are controlled by a computer, where users can do no more than select between pre–defined options since the overall structure is hidden. Even if the functionality of a given program is available, most users will not be able to make qualified judgements about how information is presented.

Communication based on consultation is often "one–to–one" or "many–to–one", found in what Jensen calls "electronic memories" (Jensen, 1996). Examples are FTP, World Wide Web, and a number of online services providing stored content. The consultation pattern also include various forms of printed media, CD–ROM, DVDs and videotapes.

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Dialogue

Dialogue occurs when individual users are able to participate actively in both the production and distribution of information. The information and the time of information exchange are totally controlled by the users, and the means of production and distribution are shared equally between them. Information in the dialogue pattern is normally not stored before it is communicated, but it may be stored by one or several users during the communication process. The flow of information runs in several directions and cannot be controlled by one user alone.

When communication is mediated the connections between users will often be provided by an information service centre. In these cases the centre represents a technical facility which typically serves several consumers, and the centre does not intervene in the production or in the time of distribution of information.

Dialogue may be referred to as "one–to–one" or "many–to–many". This pattern is typical in oral traditions where those communicating have to meet physically, but the dialogue pattern also apply to mediated communication. The telephone system is a typical example: users decide who they want to call, when to make the call, and what the conversation is going to be about, while the system operates like a "black box" routing the telephone calls between users without interfering with the information that users communicate.

Dialogues do not have to be synchronous and instantaneous. The dialogue pattern can include ordinary mail, fax, e–mail, etc. Similar patterns also occur on a number of different services on the Internet, from Usenet discussions, via a wide range of commenting functions to open chatrooms.

Collaboration

Collaboration occurs when information is produced by a number of individuals organised as a collective, and distribution is controlled at an individual level. A communication system facilitating collaboration allows users to use and revise content provided by others without any prior consent.

The information in the collaboration pattern has to be stored before it will be accessible to other users, and this storage is normally done by a central service. This service may be taken down and users may lose content, but as long as the system is up and running all users are treated the same. Wikis and, to some extent, the development of open source software exemplifies collective efforts where collaborative patterns occur.

Note that a great deal of software that is sold under the umbrella "collaborative tools" does not necessarily facilitate a collaborative pattern. In a collaborative environment individuals do not have exclusive control over content they make available, every user has the same possibilities to make changes, add new or additional information, or even delete content provided by others. This does not cause any substantial problems in wikis where malicious behaviour or mistakes may be corrected easily, and only affect autonomous nodes without severe consequences in related nodes. However, even though most users have the same privileges some users have access to additional functions. In a wiki this will be system operators and administrators at different levels who are able to make changes to software, carry out sanctions against misbehaving, etc.

When collaborating on large software projects there are also differences in the status of users, because minor changes in one part of a program may cause unexpected failures in other parts. There has to be some centralised revision control with the implementation of new code [16]. Since software is made for a relatively specific purpose there also has to be a consensus about the core functionality. Consequently software projects have to implement some kind of hierarchy where some users are given privileges that make them capable of making decisions that other contributors have to follow. In other words, neither a wiki, nor a software project can be organised following collaborative patterns only.

Because users in a collaborative environment are able to revise and re–use each other's work they have to make an agreement stating that copyright law shall not be applied to shared information. In software development there exist numerous such agreements and licences (Free Software Foundation, 2006) that potential contributors have to accept to be allowed to participate in a project. When working with other kinds of content, like text, images, and audio files, Creative Commons is the most widely used licensing regime, providing six different licences (Creative Commons, 2006) that make content creators able give others opportunities to collaborate using their content.

The two communication patterns — collaboration and dialogue — are often closely connected: dialogue is necessary to foster many of the social processes which make collaboration possible. Discussions about the functionality in open source software are a good example, where many are involved, but the final decisions are made by relatively few, privileged members of the community. Collaboration differs from commenting because new content can be produced by users revising each other's work as well as adding new material.

Syndication

Syndication occurs when information is produced by an information centre, but individual users are able to take control over the information and re–use it for different purposes.

Syndication is well known from traditional media. Both television and newspapers pay for the right to use information provided by news agencies and they often use this information quite extensively without substantial editorial changes, adding it to information they produce themselves. However, the latter is more like the communication pattern sharing, while a precise understanding of syndication does not involve any changes in the information content by others than the the central service creating the content in the first place.

On the Internet syndication normally refers to the distribution of banner advertisements, and "feeds" from a site indicating new content (like the latest posts from a weblog). The degree of user control varies from full text feeds in XML, that other services may re–mediate in multiple ways, to solutions where content may be included, but not changed. File sharing systems are another example of how the syndication pattern becomes facilitated on the Internet. File sharing systems distribute data, or parts of larger collections of data, to a number of users who then provide this data to others.

Sharing

Sharing occurs when content produced by individual users is distributed and re–used by a number of others. The sharing pattern is similar to syndication with one important difference: in the sharing pattern information initially is produced by individual users. Note that sharing is not necessarily a communication pattern that all the actors approve, as long as information may be distributed through a sharing pattern without the original creator's consent.

The re–use and re–editing of information may be an aspect of sharing, but the sharing pattern differs from collaboration because there are only individual users who take part in the production and editing of information. Creators of weblogs often use the sharing pattern this way when they create new posts by using citations and links found at other sites. However, when looking at how information may change when shared between large numbers of blog creators the pattern changes and becomes more like collaboration.

Some actors are always considered to be more authoritative, or more trustworthy that others, and when information are edited by these users others are likely to treat this information in ways which may have some of the characteristics of syndication. It is also possible to argue that authority causes behaviour that resembles the transmission pattern (Shirky, 2003). There are numerous examples of how information is shared among online newspapers and blogs, where the exact same citations, phrases, and references are used on hundreds of sites. When the creator of a new post only makes a citation, without making any changes to the initial information, the communication

pattern that occurs is only distinguished from syndication by the fact that the original producer no longer has the ability to make changes to the cited content.

Transclusion (Nelson, 2000) of media material, typically used to "hot–link" images and multimedia files or by displaying an external site within a frameset, are also examples of the communication pattern. These examples are made possible by the Web, and the Internet's "openness" on Benkler's logical layer, which makes content creators able to identify autonomous elements and address them directly.

Emergence

Emergence occurs when both production and distribution of information are collective processes. No centralised unit or individual user are able to fully control the creation or re–editing and distribution of information. Actually emergence is characterised by an explicit absence of control and systems facilitating emergence are those which come closest to full "openness".

It is relatively easy to design communication systems where emergence is not likely to occur; if information can only be accessed, not re–used, emergence will never happen within a system. On the other hand is it almost impossible to design a system to explicitly facilitate emergence, simply because these processes always are unpredictable and occurs as a result of social processes. These processes include contributors with different objectives and they seldom have a shared understanding about the results of their collective achievements. As individuals, each contributor may have well–defined reasons for what he is doing, but there are absolutely no guarantees that these ideas are shared by others.

Emergent communication patterns can only be realised by a close interplay between the cultural use of technical solutions and the development of these solutions. The actors using and developing an emergent system will quite often be unaware of each other, but they will still rely upon each other's work and they may share a set of socially constituted "rules" influencing their behaviour. From this follows that a communication system that gives an emergent information pattern in one setting may not cause the same effects when some of the conditions change.

An attempt to give a practical example of the emergent communication pattern can be seen in the figure above, an attempt to create the title of this paper in colourful letters. The letters are provided by individuals posting pictures to Flickr.com, a service hosting

pictures and giving their users the option of tagging their images. Tagging is one approach to the ordering of information by unorganised efforts, often called folksonomy (Quintarelli, 2005). Some of those who upload pictures of an "O" choose to tag it with the tags "oneletter" and "o". When this paper was written 3,408 pictures were tagged this with "oneletter". Flickr also provides an application interface (API) available for non–commercial use by outside developers (Flickr, 2006), something that made it possible to write a script (Kastner, 2005) which I could use to make the title. The final result is possible because of the contribution from a number of people, not connected to each other and with no obvious intentions on collaborating.

"Qui bono?"

The communication patterns are limited by the two initial questions: "Who controls production?", and "Who controls distribution?" These questions do not address the different actors' underlying motivation, in other words: *which and whose interests benefit from different patterns?* Some initial answers to this question may be formulated by using what Michel de Certeau calls strategies and tactics, used in his analysing the nature and politics of cultural production within "the practice of everyday life" [17]. Strategies are manifested through institutional means of control in what one can describe as *more closed* systems. Among the communication patterns presented "transmission", "registration", and "consultation" may be characterized as strategic/more closed communication patterns where the control is centralized.

On the other hand, any economic, political, or technological system has to give their users some "space" for movement, qualities that connotes *more openness*. Only a completely totalitarian regime will be able to reserve these spaces for exclusive purposes and these limitations to the application of strategies allow individuals to develop *tactics*. Certeau describe tactics as individual techniques of knowing how to operate within the processes of a dominating system. Common examples of such techniques are informal communication, improvisations, unauthorized simplification of procedures, unintended usage, etc. "Sharing", "collaboration", and "emergence" — where users are in control — are more tactical and open patterns.

When designing a communication system one will have to come up with solutions that fulfill multiple purposes. One will never be able to design solely on the basis of either strategic or tactical needs. Experience from designing and testing a virtual learning environment in primary schools (Hoem, 2006) indicates that most users were satisfied when the designers focused on facilitating communication patterns found in the middle of the model: "syndication", "dialogue", and "commenting". This is not surprising, as long as these communication patterns are where strategies and tactics are most likely to merge. In the case of a communication system used in education this becomes a negotiated solution between the different needs of the administration, educators, and learners.

Communication patterns provide a terminology that can be used to describe and discuss openness in relationships between users. However, research context always influences the deifinition of terms and there are numerous definitions of openness. For example: degrees of openness can be discussed by looking at technical factors that cause interruptions between an information source and those who are going to receive information. Communication patterns may still provide a useful framework, but

emergence would probably not be characterised as the most open pattern is this scenario.

The question of *"place"* is one essential aspect of openness that has not been discussed in this article. I mentioned some problems of physical access in the introduction, and when introducing Benkler's model, but our relationships to space are perhaps where the most significant changes will come in the next few years. Production and consumption of information was freed from some of the restrictions of space by writing, and brought to a state of "no sense of place" (Meyrowitz, 1985) by electronic media. Today the importance of *place* is reinforced by the ability to position mobile devices, making it possible to control access to information and objects on the basis of where the users are in physical space. Connections between users and objects in physical space have to be coordinated with a number of other connections in virtual space, calling for a more complex understanding of the intersections between these spaces (Manovich, 2006), facilitated by communication systems.

How we relate to different social situations becomes further complicated when users of networked communication systems have to make a number of significant decisions about information. Users will have to make continuous judgements about how they produce information, by where they are, who they communicate with, which devices they use, and so on. Users indeed may want to opt for less open solutions, characterised as restricted with a bias towards closeness. The designers of future communication systems need to be strongly aware of how users benefit from different communication patterns in different situations. ▪M

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Notes

1. Commission of the European Communities (CEC), 2006, p. 3.

2. Commission of the European Communities (CEC), 2001, p. 10.

3. UNPAN, 2004, pp. 18–19.

4. UNPAN, 2004, p. 70.

5. Powazek, 2002, pp. 22–.

6. Berman, 2004, p. 6.

7. Benkler, 2000, p. 562.

8. Lessig, 2001, p. 25.

9. Habermas, 1989, p. 176.

10. Benkler, 2000, p. 568.

11. U.S. patent 20060070095; see http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PG01&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.html&r=1&f=G&l=50&s1=%2220060070095%22.PGNR.&OS=DN/20060070095&RS=DN/20060070095, accessed 14 July 2006.

12. Kelly, 1994, chap. 23.

13. *Ibid.*

14. Manovich, 2001, p. 124.

15. Svanæs, 1999, p. 5.

16. Wikipedia, 2006. "Revision_control," at http://en.wikipedia.org/wiki/Revision_control, 26 April 2006.

17. Certeau, 1984, p. xix.

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