Critical vocabulary in the analysis of an eLogg case

Introduction

In the following I will give a brief introduction to eLogg, which was a personal publishing environment used in schools. I will present a model of what I call "communication patterns" and show how these influence on how users of a communication system produce and use texts. I will use this model in an analysis of an eLogg case, and show how the model is part of a critical tradition.

eLogg

eLogg was a personal learning environment made as a working prototype in 2004. The development of eLogg was initiated as a response to the growing demand for digital learning environments in Norwegian schools. After an initial phase of participatory design and development eLogg was used in a number of primary and lower-secondary schools during 2005 and 2006.

eLogg was developed with a normative approach: One believed that giving the users a personal publishing environment, inspired by the increased popularity and use of weblogs, one would encourage more extensive text production, and contribute to enhance the learners' digital literacy.

eLogg no longer exist, the server was taken down a couple of years ago. A close reading of an "eLogg case" is therefore no longer possible. An analysis has to be based on limited material that has been stored when working with previous articles.

eLogg was a personal learning environment (PLE). When logging on the users were met by their own page, where the posts they had produced were easy to access. Any user could always access other users' pages.

eLogg had two different interfaces, one for learners younger than ten years, another for the older learners:

A closer look at the interface of the version made for the oldest group: In the centre of their own front page the users found a list of their latest posts showing a text-summary of the posts. eLogg had standard weblog functionality that made it possible to comment on posts, and the weblog owner was able to sort posts in categories.

At the top of the page were navigation functions that the users were not able to change. The users could choose between different graphical designs, but this did not affect eLoggs functionality. The users could access assignments, projects that they were member of, a list of users in their group, an individual portfolio and a media archive where both personal and shared files could be stored.

At the left there was an editable welcoming message and a profile picture with a link to a more extensive personal profile. Below there was a field with messages from the teacher, and links to archives (not shown in the screenshot above).

In the right column there was a bloggroll, which showed the names of the users who had made the most recent posts. The bloggroll did not show the whole group, it did only show the most recent activity. Below the user could store links to other webpages, and there was an area for links posted by the school. The latter was shown on all the weblogs.

Note the "pen"-icon. In eLogg one tried to keep a short distance between reading and writing. All objects with a "pen" could be edited by the user just by clicking on it.

I will return to more examples from eLogg in the analysis, but first I will look at a critical vocabulary.

A critical vocabulary

Critical vocabulary can be understood in at least three different ways (Seiter et al, 1989):

1. A vocabulary used in criticism
   used by professionals when describing and criticising a work within a specific tradition. This vocabulary should be able to emphasise differences between various works.

2. Related to post-structuralism
   These are critical theories of literature and aesthetics, which emerged in France during the 1960s. The "critical" component originates from a rejection of traditional analytic standards.

3. Related to the "Frankfurt school"
   These are theories of society where the "critical" components were derived from attempts to overcome the limits of positivism.

The different traditions have substantial differences, but they are united as far as understanding critical theory as the examination and critique of society and culture. From one perspective critical theory can be seen as a cross-disciplinary field where social sciences, technological studies and humanities are able to meet.
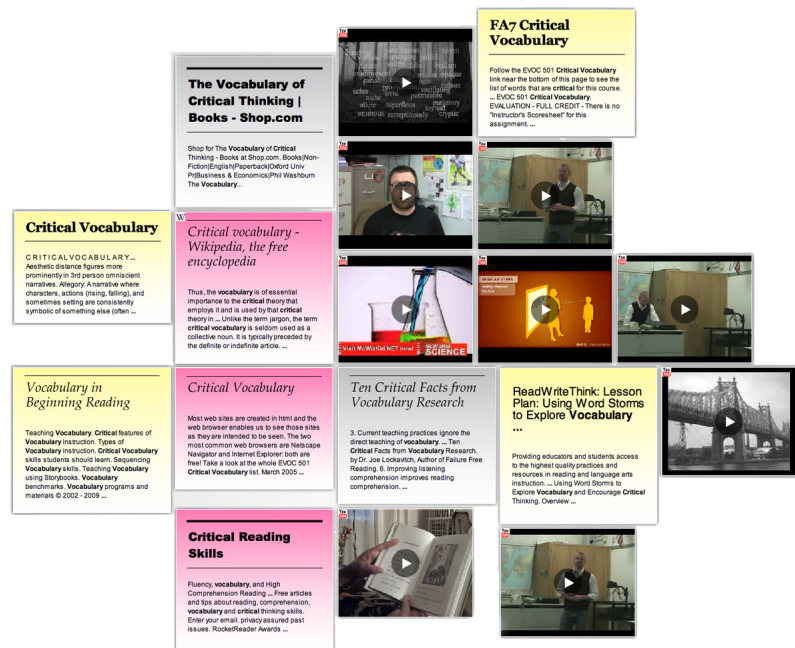
Post-structuralism is relevant to the understanding and criticism of electronic and digital texts in general, and hypertexts in particular, being texts without an identifiable centre. Being a system with a hypertexual structure and allowing the users to interact upon the content in various ways, eLogg and the produced texts can definitely be analysed from a post-structuralist perspective.

However, when one look at the development of media the last decades, one can argue that the most significant changes are not related to how we read and understand texts. Digital texts, like hypertext narratives, interactive presentations and computer games, are obviously new expressions that have become extremely sophisticated, but their underlying structures - the "stories told" - have not changed significantly over the last decades. On the other hand, what has changed profoundly is how these texts are produced and distributed - how the users interact with the mediated content and one another. To better understand this development we can look into the critical tradition following the Frankfurt-school.

Critical theory - Frankfurt school

"Critical theory" began with the Marxist tradition known as the Frankfurt school. Within this tradition we find theories that were in opposition to "traditional" theory by advocating a specific, often political purpose. Theories that aim to identify, explain and transform all the circumstances that dominate and lay restrictions upon human beings in a modern society.

According to Max Horkheimer a truly critical theory "has as its object human beings as producers of their own historical form of life" (Horkheimer, 1993:21). This emphasises critical theory's normative approach: Stating that an environment can only be transformed by becoming more "democratic".

Beginning in the 1960s Jürgen Habermas redefined critical theory. Habermas sees critical knowledge as constructed through public use of reason. What is crucial, according to Habermas, is not whether the actors are always able to agree, but how they are able to reason together within a common public sphere (Bohman, 2009).

In the following I will look at how different communication patterns provide a vocabulary that can be used to characterise the different users' ability to communicate, and how this influences on their ability to "reason together".

Communication patterns

When trying to explain the future development of information services Jan Bordewijk and Ben van Kaam (1986) presented a model with four communication patterns. Bordewijk and van Kaam came up with their model answering two initial questions about the "producers" and the "consumers" of information:

Answering who produces the information, and who controls the access to and the use of

information was represented as a matrix with four "ideal information-patterns".

		Control of production	
		Information centre	*Information consumer*
Control of distribution	*Information centre*	Allocution	Registration
	Information consumer	Consultation	Conversation

Bordewijk and van Kaam's original model (Bordewijk & van Kaam, 1986)

The communication patterns are derived from social power relations. Focus is on the flow of information between different actors, not taking into account the different quantitative and qualitative aspects of the information content (Jensen, 1996).

Extending the model

Bordewijk and van Kaam came up with their model before the World Wide Web, and the following massive use of the Internet. The model does not consider how digital networked media can facilitate new ways of collective production and distribution. These new perspectives call for a revision of the original model:

We can add "information produced by users as a collective" and "information distributed by users as a collective".

Collective does not necessarily mean that individual users are organised in identifiable groups. The individuals who constitute a networked collective are not organised in a traditional sense, but individuals who are "out of control" (Kelly, 1994). They are not connected by any chain of command. The members of such collectives can, however, be highly connected in peer networks, but without answering to an organisation, or a centre of control.

When taking the collective into the model the result forms nine communication patterns:

		Control of production		
		Information centre	*Individual user*	*Collective*
Control of distribution	*Information centre*	Transmission	Registration	Commenting
	Individual user	Consultation	Dialogue	Collaboration
	Collective	Syndication	Sharing	Emergence

My extension of Bordewijk and van Kaam's model.

What follows is an explanation of each communication pattern, with examples from eLogg.

Transmission

Transmission occurs when information is produced by a centralised information-service, which also controls how this information is distributed. The flow of information runs in one direction only, from the centre to a number of users who are receiving the information simultaneously.

The individual users in the transmission-model have no other choice than to receive the information provided at a given

Franklin D. Roosevelt's "fireside chats" in the 1930s.

moment in time. Communication based on transmission may also be referred to as "one-way" or "one-to-many", emphasising that the communication channels have no possibilities for feedback.

This information-pattern is typical in traditional broadcast media, and live-streaming solutions on the Internet. In eLogg there are no examples of the communication pattern transmission.

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. The users may provide the information upon request from the information centre, or they may give information without any previous request.

Registration can be found in many forms, but polls, tests and questionnaires are typical examples.

www.aftenposten.no

The centre holds exclusive control of storage and may use this control to re-arrange and re-mediate the information.

Registration in eLogg

There were several examples of registration in eLogg: The system automatically counted and displayed the number of posts in the monthly archives. It also counted and displayed the number of comments for each post.

Another function that can be characterised as registration was the bloggroll: When making a new post the user's name was also shown at the top of the blogroll. All this information was collected automatically without any request.

When it comes to registration upon request the categories are one example. When making a post the users could tag their posts with categories, which was used by the system to sort the

posts.

The users could always choose to give their blogs another visual appearance. This selection between predefined choices was also a part of the communication pattern registration.

Note that this interface looks quite different than the first example. This example shows a part of the interface that was used by the younger learners. The basic principles were the same as in the more complex version of eLogg, but some functionality was removed form the interface.

Commenting

Commenting occurs when the collecting and storage of information is centralised, but 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 to other users. However, those providing information though the commenting pattern are not able to revise the information after it is posted.

NRKbeta
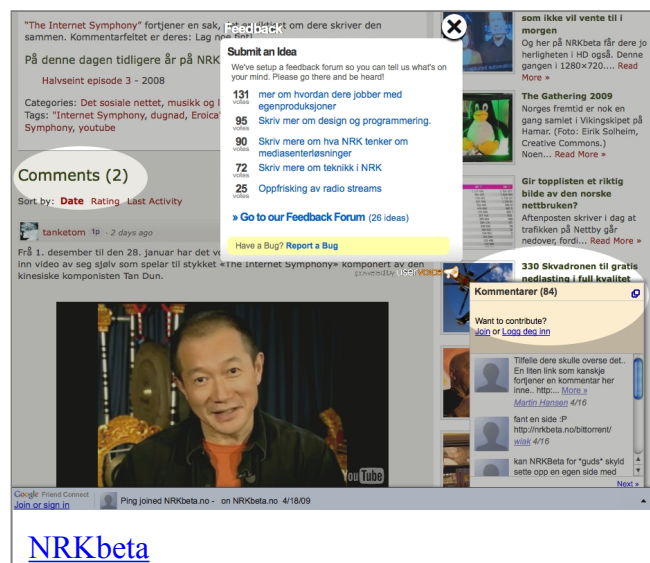
Commenting appears in online discussion-boards, in weblogs and in a number of other online media that display the user's feedback in the same context as the original information.

Commenting in eLogg

When working with eLogg the users were encouraged to post information that was not directly school related. Among the younger learners a significant part of their education is to enhance their writing skills, and "personal" topics can be easier to write about. In some classes this lead to practices where some users asked questions in their posts that other users answered by commenting.

The commenting pattern gives the one providing the initial information the upper hand, but the understanding of the initial information can change if the content is recontextualised by comments from other users.

Most of the examples of comments in eLogg can be characterised as a kind of virtual back-patting where the learners showed that they agree or they expressed a general encouragement. Almost no negative comments can be explained by the teachers' presence, and the fact that eLogg did not allow anonymous comments. The learners were always aware that there was a fair chance that their comments would be read by their teacher.

Consultation

 occurs when information is produced and controlled by a central information service, but where individual users are able to decide which information they receive and when this information is delivered.

Examples are most websites on the World Wide Web, and a number of online services that provide access to stored

myspace.com/datarock

content.

Consultation offers some flexibility that favours individual users, but it does also require some specific activities on their behalf. The users have to request the information by performing activities defined by the information centre.

Consultation in eLogg

Consultation is the basis of all communication on the World Wide Web, and other systems where the users navigate following links. This communication pattern does normally not leave any visible traces of the users' interaction with the system.

However, before other communication patterns, e.g. registration, commenting and dialouge, can occur a specific webpage has to be consulted.

In eLogg there are some visible traces of consultation when learners have consulted the assignments given by their teacher, before answering in their own blogs.

This example also shows how different communication patterns often interfere. The traces of consulting are only visible because the users have clicked on "answer in your own log", which is an example of registration upon request.

Dialogue

Dialogue occurs when individual users are able to participate actively in both 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. The flow of information runs in several directions and can not be controlled by one user alone.

twitter.com/jonhoem

Dialogue does not have to be synchronous and instantaneous. The dialogue pattern can include asynchronous distribution found in a number of different services on the Internet, from discussion-boards to open chat-rooms.

Dialouge in eLogg

eLogg was used in a blended learning environment where the learners and their teachers met every day. Large parts of the communication did therefore happen outside the system.

Inside eLogg there were two forms of dialouge: What can be characterised as single-blog conversations and multi-blog conversations (Baggetun & Mjelstad, 2006).
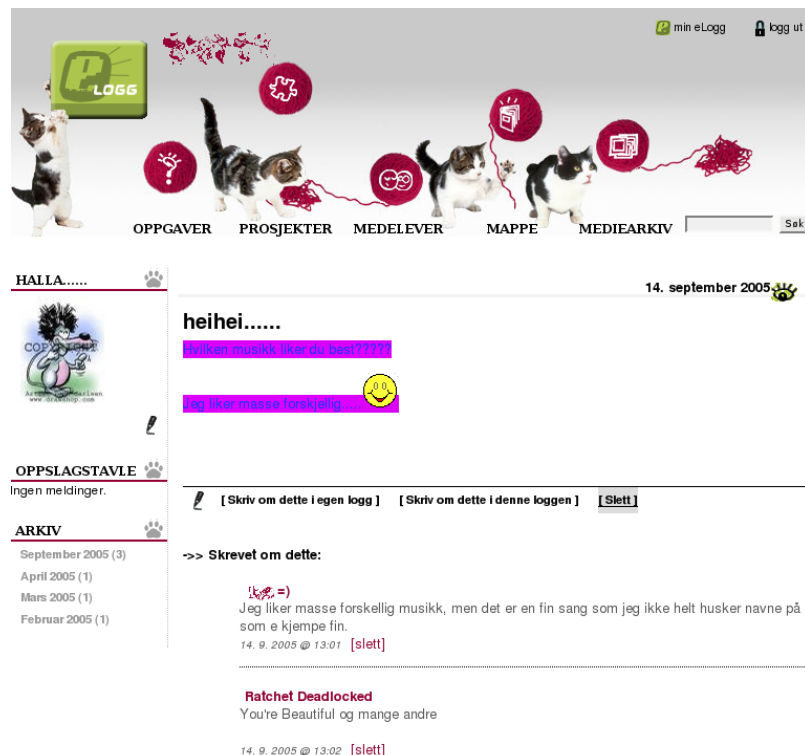
The first type of dialogue describe conversations in the threads adjoined to the original entry (i.e., learners and educators replying with comments to a specific post). The second type of dialouge seemed to occur as a result of eLogg's openness. It was easy to consult what the

other learners posted, and then respond by writing posts on the same topic. Questions like "What kind of music do you like" was seen in several blogs within a relatively short timeframe.

The two types of dialouge emphasise differences in the learners' tactical behaviour. When the conversation is a thread of comments in one user's log, other learners – those who post comments – give up their control of their texts. Comments given this way could not be revised, but the blog-owner was able to delete comments that he did not approve.

When learners added commenting texts in their own logs, they were able to revise the entries later (post-editing). I do not know if these different ways of commenting was a result of tactics that the learners chose, but it seems clear that knowledge about when and how to keep "ownership" to different kinds of information is a central component in what is often referred to as digital literacy. eLogg did provide a "safe" environment where these practices could be tested.

Collaboration

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

Wikis are typical examples of collaboration where any user can make changes and additions to content produced by others.

In a collaborative environment individual users do not get exclusive control over the content they make available. Every user is

no.wikipedia.org/wiki/Digital_dannelse

given the same possibilities to make changes, add new or additional information or even delete content provided by others.

Collaboration in eLogg

The project-tool was functionality given to the older users. Projects were collections of posts where the users could invite each other to collaborate when producing texts.

The members of a project were also able to import posts from their own weblogs into the project or they could write new project-specific posts within a given project. Posts written within the project could be edited by all the users collaborating on the project.

Projects were shared writing-spaces, but the learners were not able to edit posts imported from the other members' logs. However, all members of a project were able to decide where the posts should appear in the project-text by using the small arrows shown in the example, to the right.

The final presentation could be presented as a continuous webpage, or as a "Powerpoint-like" presentations (using S5) where every post was presented on separate pages. Back in 2005 this was a quite unique functionality. Today a number of free tools are more advanced (the slides for this presentation, made with Google Presenter, is an example), and make similar kinds of collaboration easy accessible.

Syndication

SyndicationSyndication 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.

Syndication does not involve any changes in the information content by others than the central service that produced the content in the first place.

Syndication in eLogg

Messages from the teacher and the assignments were collected by the system and then syndicated to all the users. The bloggroll was another example where registration and syndication was combined. Recent activity was displayed on the frontpage of all the users' logs.

nyheter.no/teknologi/teknologi-20-1-1.html

Including posts from their own logs in projects is the best example of syndication in eLogg.

This functionality is still, as far as I know, only found in eLogg: As long as the users imported posts from their own logs the authorship was always accounted for, and the initial producer kept control of the content.

If the user wanted to make others able to edit the post, this was possible by writing the post directly in the

project. Most users chose this possibility, and thereby gave away the exclusive control of the post.
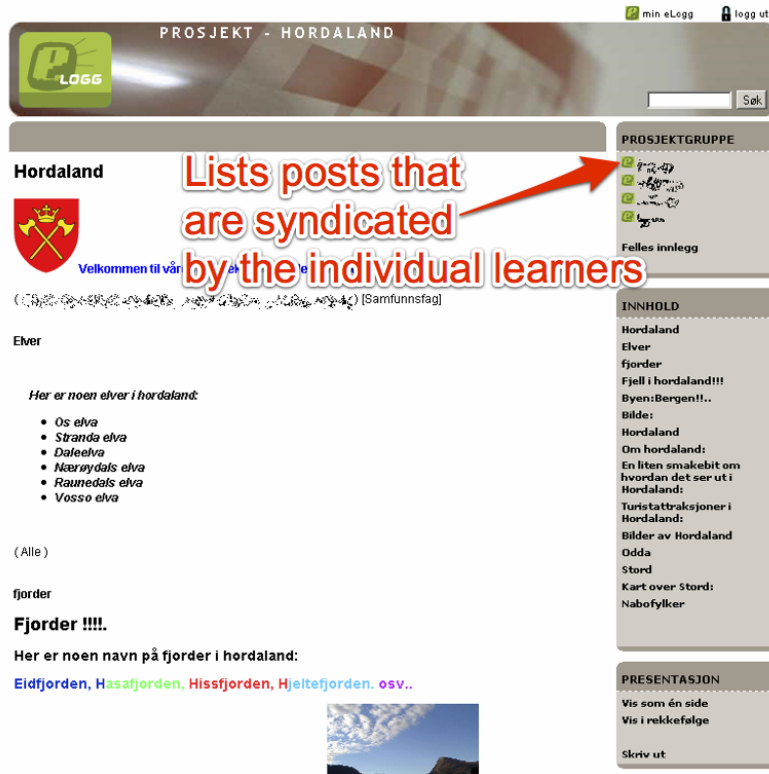
Sharing

Sharing occurs when content is produced by individual users and distributed and re-used by a number of other users.

Creators of weblogs do often use the sharing pattern when they create new posts by using text citations, media material and links found on other webpages.

cc.aljazeera.net
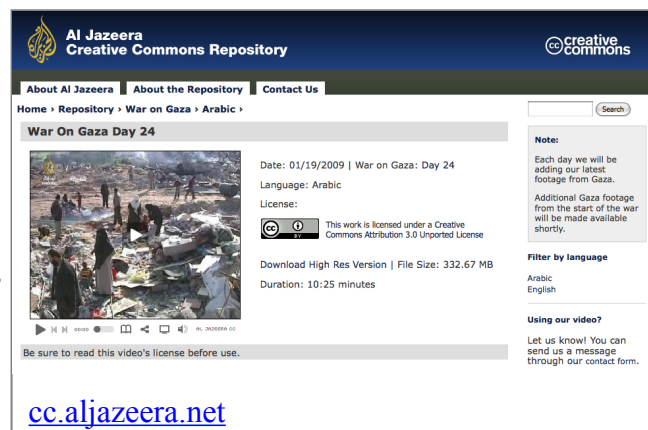
Sharing is not necessarily a communication pattern that all the actors approve of. Information can be distributed through a sharing pattern without the original content-creators' consent.

Sharing in eLogg

In eLogg a typical example of sharing was the posting of pictures in the shared archive. Especially one of the teachers used this kind of sharing actively, encouraging the learners to write texts on topics given by the pictures.

All posts in eLogg were ordinary webpages presented in HTML, which made it very easy to include pictures by copying them directly from external webpages or from other users' blogs. This is an example of syndication, but it can also be considered as part of the communication pattern sharing, even though the material was not stored in the shared archive.

The users of eLogg did not copy a lot of text from each other or from external resources, but some copied a lot of pictures. It is an interesting observation, also seen in other projects (e.g. Memoz), that the copying of texts are normally considered inappropriate by most teachers, but many seem to accept the copying of images.
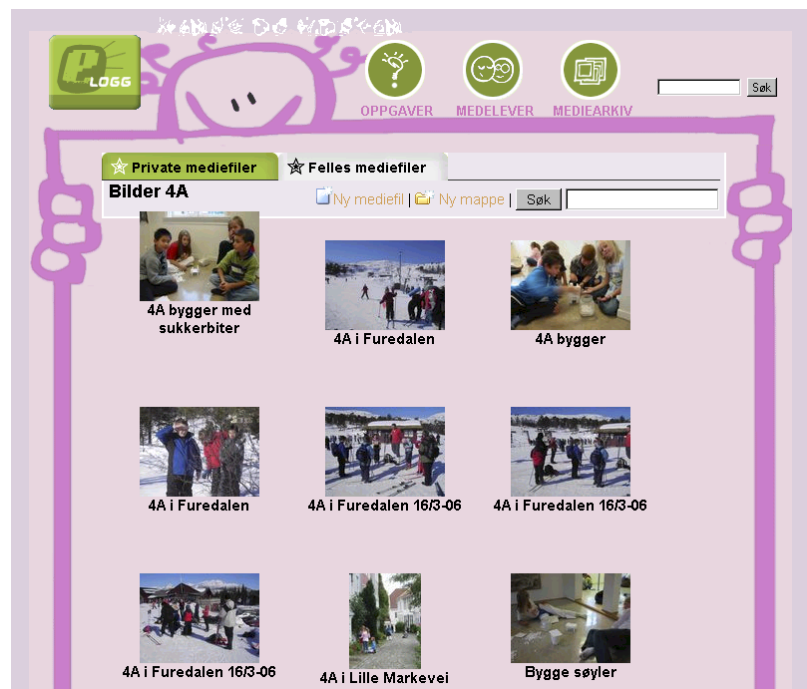
Emergence

Emergence Emergence occurs when both production and distribution of information are collective processes. No centralised unit or individual users are able to fully control neither the creation, nor the re-editing and distribution of information. Emergence is characterised by an explicit absence of control.

Emergent systems are complex systems facilitating processes that include contributors with different objectives, most often without 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 guarantee that these ideas are shared by other contributors.

infodesign.no/../twitter-tabbe-en-leksjon-i.htm

The example illustrates how a personal message can be spread, and how a situation can escalate beyond the individual actors' influence.

Emergence is not likely to occur in systems where the number of users are relatively low, and where the members are known to each other. There are no examples of emergence found in the use of eLogg.

Who benefits from different communication patterns?

The two initial questions: "Who controls production?" and "Who controls distribution?" do not address which and whose interests that may benefit from different patterns. If one is going to use the communication patterns as a vocabulary within a critical tradition one need to identify some qualitative differences between the various patterns.

One method can be to look into the different actors' strategies and tactics when operating a communication system.

Strategies and Tactics

I have argued [elsewhere](#) that one need a more diverse understanding of strategies and tactics in education. A point of departure can be found in the post-structuralist tradition, using Michel de Certeau's understanding of strategies and tactics (de Certeau, 1984: xix):

Strategies are made possible by institutional means of control through the constitution of social and technological systems. On the other hand, the operation of any economic, political or technological system needs to give the users some space for movement. The application of strategies always has to allow the development of individual tactics. Tactics are understood as individual techniques of knowing how to operate within the dominating system. Tactics represent a constant search for situations that are possible to manipulate, and thereby transformed into individual opportunities (ibid.).

Categorising the communication patterns

Strategies are made possible by institutional means of control, in what one can characterise as closed systems. The communication patterns "transmission", "registration", and "consultation" can be characterised as strategic - communication patterns where control is centralised.

However, a communication environment can not be reserved for exclusive purposes only. Individual users are always able to develop individual techniques of knowing how to operate within the system. The communication patterns "sharing", "collaboration", and "emergence", where the users are in control, stand out as patterns of a more tactical nature - patterns where centralised control is impossible.

A system characterised by strategic communication patterns, will serve purposes where control is considered one of the most important features. A system characterised by tactical communication patterns, will be a better if one tries to encourage creative processes, including contributions from participants and ideas that were not thought of when the system's initial design was made.

Most communication systems will have to take into consideration a multitude of different user-expectations, and they become negotiated solutions. These systems are often characterised by the communication patterns found in the middle of the model: "syndication", "dialogue", and "commenting", what can be characterised as adaptive communication patterns.

Closed systems	**Transparent systems**	**Open systems**
Strategic patterns	**Adaptive patterns**	**Tactical patterns**
No feedback	Some feedback	Constant feedback
Secure	Uncertain	Emergent
Consumption	Production	Remixing
Controllable	Predictable	Unpredictable

I have introduced nine communication patterns. These patterns form the basis of a critical vocabulary that can be used to analyse the communicative possibilities given to the users, or the restrictions put upon them. The model can be used analysing any mediated communication, given that that the content is available in public or access is shared among a group of people.

	Information centre	*Individual user*	*Collective*
Information centre	Transmission	Registration	Commenting
Individual user	Consultation	Dialogue	Collaboration
Collective	Syndication	Sharing	Emergence

Strategic patterns   **Adaptive patterns**   **Tactical patterns**

The model is clearly consistent with a critical tradition making it possible to describe the conditions influencing how a work is produced and how it is used within a communication system. That is: the model can be used to investigate the users' ability to reason together.

Personal Publishing Environments - Summary

What can be characterised as personal publishing has been one of my interests for a long time, and the possible connections to learning have followed form my work at Mediesenteret, Bergen University College, where I have made a variety of learning resources since 1995.

My aim with this thesis has been to extend our understanding of personal publishing in the context of learning and education, and, in a broader perspective, contribute to a more precise vocabulary that can be used to describe personal publishing activities.

Personal publishing

Personal publishing is part of a long tradition. Already in the eighteenth century individuals used small printing presses to become publicist of printed pamphlets and newsletters. These individuals held multiple positions being content creators, redactors, editors, and publishers. Later copying machines, tape-recorders etc have made it possible to make copies that could be distributed by various means. The distribution of these works have, however, always been small-scale. Personal publishing to a larger public has not been achievable until the mass-introduction of cheap computers and Internet-access. Today the term personal publishing refers to the processes where individuals produce and publish digital content, publicly available on the Internet.

The "personal" aspect emphasises that one is talking about individual publicists who take some responsibility for the content.

The "publishing" aspect tells that the mediated content is stored on webservers and accessible to anyone with access to the World Wide Web. "Publishing" also implies storage and asynchronous access.

Personal publishing can be seen as a result of a development during the last decade where more users of media have become active participants in the production of media content, and able to publish what they produce on their own (illustration from Business Week).
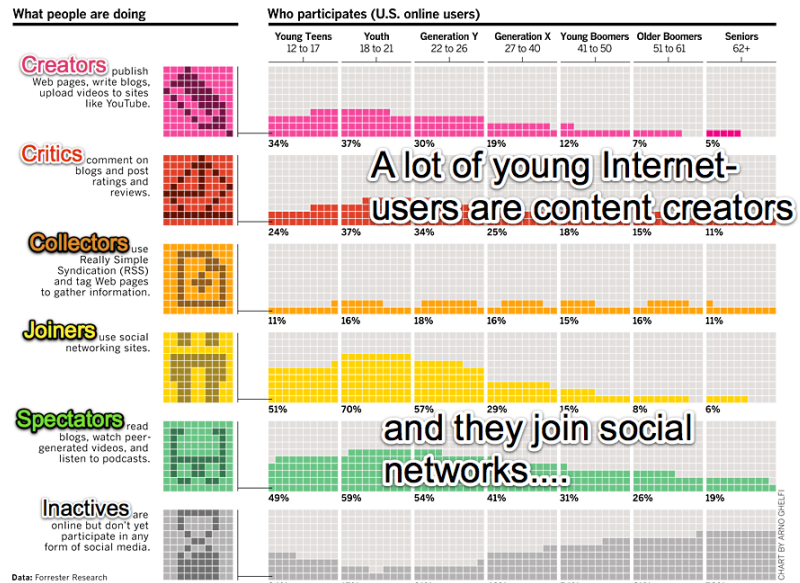
Personal publishing includes a number of genres from individual and collective weblogs to wikis that make individuals able to collaborate. What all these genres have in common is the absence of a formal editorial unit, and the individuals involved will often be changing between being "producers" and "consumers" of information

From "editing" to "conferring"

The development of personal publishing has followed a major trend, also influencing media at large: A shift from editorial media towards a situation where conferring media become more important.

Editorial media are characterised by a formal unit that takes legal responsibility on behalf of those producing and redacting the content. All changes to the content are performed before publishing.

Conferring media are characterised by the absence of a formal editor, and the users' active participation after the content is published.

Weblogs and wikis are examples of conferring media where control happens after the content

is published, that is when the content creators choose to confer with a public audience. The members of the audience are then able to contribute in different ways, often by comments, but also by explicit revision of the content.

Personal - between private and public

The current development of media redraws the borders between what can be considered private and public, when an increasing number of users become both content producers and publishers. At the forefront of this development are individuals who become publicists. One may argue that they play a significant part of a development where the production, distribution, and use of media become less controlled by traditional actors.

Comparing Job Numbers in America

Lawyers	555,770
Bloggers	**452,000**
Computer Programmers	394,710
CEOs	299,160
Firefighters	289,710

Source: Bureau of Labor Statistics

Traditional media are "traditional" in the sense that they are based on publishing-practices that go all the way back to the invention of the printing press. These traditions have changed, but they still share one significant feature: an idea about a distinction between those producing the information and making it available and those consuming this information. This can be seen in media and in education. These traditions will not disappear with the introduction of new media, but they are challenged by the spreading of cheap, digital and networked computers in the hands of everyone.

The widespread use of Internet media represents challenges and opportunities to all who work with information, especially where the users' new behaviour changes the economic rules due to the fact that the production and distribution of information become less controllable.

Restrictive technologies

There is arguably a development towards more open systems and new technical artefacts that hold the potential of making production and distribution of information easier. This threatens existing business-models, and powerful actors attempt to maintain control introducing technical, economic, political and legal restrictions. In the thesis I discuss the most significant restrictive technologies in more detail.

Publicists often rely on information published by others, they reuse existing information that is incorporated into new works. Personal publications often include a lot of references to

other mediated expressions, and the placements of restrictions on publicists' ability to cite may have devastating effects on the future of personal publishing.

Learners as producers

Most information on the Web is organised with a lot of available choices, in menus, thematic pages, sitemaps, links etc. This various choices are often an efficient structure when the objective is to give the users easy access to information, for example when users are looking for answers to a specific problem. On the other hand, one can argue that fixed structures are less able to support individual learning processes.

Learners, even when learning though collaboration and using shared learning resources, need to develop their knowledge through processes that organise information in contexts that make sense on an individual level. Thus information organised by others (e.g. by educators and professional producers of learning resources) is more likely to be useful for finding and presenting information, but often less capable of fulfilling individual learning-needs. To be really useful the information should be possible to recontexualise, making learners able to incorporate the information in their own works.

Personal publishing and learning

Throughout the project I have tried to keep focused on the fact that most of what youngsters learn with computers happen in situations outside of education. Therefore, when looking at the potential in personal publishing I have had a broad perspective, beginning with communication systems that people are likely to use in their private sphere.

From this perspective learning can be understood as the product of three related aspects (inspired by Säljö, 2001:23):

1. The development of a vocabulary that makes it possible to describe and discuss the conditions for learning in a networked environment.
2. The development and use of artefacts that can facilitate learning.
3. Communication and the different ways that humans co-operate in collaborative environments facilitated by networked computers.

To describe and discuss how individuals use and contribute to online media, one needs a vocabulary that include the different ways that users become both consumers and producers of information. I have worked with a model of communication patterns to include the most significant changes in media: collective participation. The model with nine communication patterns provides a vocabulary that makes it easier to be precise when discussing the different

relationships between users in general, publicists and big media. It can also be used to describe some relationships between learners and educators.

In the context of learning, I continue to discuss how the communication patterns can be related to strategies and tactics, and relate this to the openness of communication systems. The theoretical approach is made operational following the design, development and use of a personal learning environment - eLogg. Findings from the use of eLogg indicate that there often is a correlation between learners collecting existing material (copying) and their production of new material. Available resources seem to encourage production.

The thesis does, however, not provide a thorough discussion of findings from the use of eLogg in schools. In a Norwegian context, the use of eLogg has been discussed in a number of articles (some found at infodesign.no, others at idun.no) and several book-chapters (Å være på nett & Enter - Momenter til en IKT-didaktikk). Quite a few published after this thesis was written.

My major contributions are related to the period when eLogg was designed, which is reflected in my thesis. What has been one of my primary interest are the conditions that give users opportunities or put restrictions upon them in a computer mediated environment: How different designs affect our ability to communicate.

Summing up

During the more than five years I have worked with this thesis, the general awareness of the different relationships between personal publishing and learning has increased significantly. Personal learning environments are likely to become more widely used, a development that is reflected by the integration of weblog-like tools, and functionality borrowed from personal publication-systems, in traditional learning management systems.

The thesis sees personal publishing in the context of learning, but I am not pretending that I am able to tell much about whether the learning outcome is better or worse when learners are using a personal publishing environment. It is difficult to say anything precise about learning, and it is outside my field of expertise. Therefore my contribution is limited to a closer look at the communicative conditions formed by publishing environments and a vocabulary that can be used to describe personal publishing activities. I believe this vocabulary can be used to better describe solutions that can facilitate different learning outcomes, and communicate this to designers and programmers.

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