

Mediated values in Swedish municipality Website design

By Emma Eliason and Karin Hedström

Dept. of Informatics (ESI), Örebro University, SE-701 82 Örebro, Sweden

Abstract.

Not only in Sweden are governments designing and maintaining web sites, this to be able to improve interaction with their citizens. It is therefore important to choose the best suiting website design, communicating the intended values. In this paper two Swedish municipality front pages are compared with respect to mediated user roles, user groups, action space (action possibilities and restrictions), and communicated producer intent. This highlights how values can be mediated in website design.

Introduction

The Internet, as communication medium, is being increasingly used by citizens and governments in most advanced democracies [Gibson et.al, 2003]. ICT has changed the way government and citizen can communicate and offers a new action space for politicians and citizens to act within [Åström, 2004] and is thus used as a medium for communication [Kuuti, 1996]. This arena is dependent on the possibilities and restrictions the citizens are offered to communicate upon. But it is also dependent on how these possibilities are presented, e.g. how the arena is designed and what values it mediates.

One increasingly important arena for citizen-government interaction in Sweden is Swedish municipality websites. These websites are often designed based on experiences from existing designs, other types of media, and face-to-face communication. Designs are created in a social context where expectations and experiences are important influences. Values are therefore present in the design as well as during the evaluation of the effects of using websites (for a discussion on values in IT see e.g. [Mumford, 1981; Hedström, 2004]). These values are studied by a genre analysis, and named mediated values as they are created when actors interact with a media such as websites.

The purpose with this paper is to exemplify how values are mediated through a design, and highlight the importance of value awareness in the design of government websites. Focus is on how a website as a communication medium can be used to mediate values, for example what roles that are established between for example a municipality and the citizen, through the used design elements. Thereby how different designs promote e.g. certain user roles and suppress others.

First of all a theoretical framework will be presented where mediated values and the term genre is presented. The research method will thereafter be described, how the comparison between two municipality website designs has been conducted. The comparison will then be presented and finally we will present some conclusions.

Theoretical framework

2.1 Mediated values

The question of what makes an ICT successful and for whom has been discussed in different research areas (see e.g. ‘technological frames’ [Orlikowski & Gash, 1994] and ‘task-technology fit’ [Goodhue & Thompson, 1995]). One research area that highlights the social impact on success is social informatics [e.g. Kling, 1999], where a technological design alone is not considered sufficient to ensure a successful ICT. The interplay of social assumptions, values and practices are reflected in technological design features, and by studying both the technical and social can we better understand ICTs success [Kling, 1999]. Kling argues that differences in values rest upon not only differences in technical architectures (for example more informational value through crosslinks) but also social values (for example how the reviewing processes of an electronic journal is conducted).

Values guide our actions, as the values we hold influence selection from available means and prioritization [Kluckhohn, 1951; Rescher, 1969]. In a design process choices are made between competing design ideals, where designers’ preferences point to an underlying set of values [Klein & Hirschheim, 2001]. Values are also used to express feelings and attitudes [e.g. Bergström, 1992] and in design of ICTs these can for example concern what constitutes a good/successful design. The design of an ICT, its content elements (form and position), and mediated action space (what I can and can not do) communicates underlying values. These values are experienced in use, and exist in a genre and in a specific social context.

2.2 Genre

Genre is a term that has been used in diverse areas with roots in the study of text and rhetoric. Genre can be referred to as the common sense notion, shared by producer and audience, used to find or produce more generic products, thus creating expectations what elements to expect in the design [Lundberg, 2001]. Lacey [2000] describes genre products as having a common repertoire of elements. In movies, the elements are setting, characters, iconography and style. Using the repertoire of elements of a genre will guarantee that the experienced audience gets what they expect. This causes predictability, which helps understanding the media product [Lundberg, 2001].

There are different ways and views of what characterises a genre. For example you can characterise genres using a semantic, syntactic, or pragmatic definition [Jensen, 2002]. The semantic definition focuses on the content, the signified and what the text is about. Semantics can be used to describe the relation between user and producer, the producer works with signs that the user perceives, and the producer communicates through the product’s signs [Krippendorff, 1995]. A syntactic definition of a genre focuses on the structure of the text, the composition. The focus in a pragmatic definition is the intention governing the production of the texts. What is their purpose? One important issue is the way in which the text addresses its audience, its mode of address. A reason for focusing on genres is that the mode of address, in addition to their form and content, anticipates particular uses of media in social contexts. Information on a website can be designed to support different user roles where the user is seen as a receiver of information, knowledge seeker or as a participator where the user becomes a knowledge creator. In the study we will compare semantic (form, communicated producer intent), syntactic (content elements position) and pragmatic aspects (user roles and action space) of two Swedish municipalities’ front pages.

Research Method

In the paper we present parts from a genre analysis that we have conducted on Sweden's municipality websites (290). The genres identified were; brochure, promotion, commercial, newspaper, notice-board, portal and filter. This paper exemplifies how values are mediated through two different municipality front page designs belonging to the newspaper and filter genres.

The focus of the web page analysis was on the front pages since it is the most complex page and the first impression communicated to the users. The front page can be seen as similar to the cover of a magazine or company report and tends to set the tone and theme of the web site design [Zhang et. al., 2000]. According to Nielsen and Tahir [2002] this page is the most important and has the purpose of communicating what the company is, the values the site offers, products and services offered etc. You only get one chance to give a first impression and you have to deliver on the promises. Mediated values were identified by comparing user roles communicated by the design (participator, listener etc), action possibilities present in the design, content elements in the website and their form and position, and communicated producer intent.

The Swedish municipality web site design is an interesting study of object because of its importance to the citizens. There is a population of approximately 9 million people who are communicative targets of these municipalities. Further, not only in Sweden but in many countries governments are designing and maintaining web sites in order to improve citizen communication [Ryan et al., 2003]. It can thereby be seen as important to choose the best suiting website design, communicating the intended values. Thus an ICT is used to communicate, it is a mediating instrument for communication [Kutti,1996].

De Souza et al. [2001] distinguish between three types of communication that an ICT can support, user-system interaction, user-user interaction and designer to user communication. In the first analysis of the two front pages we study the communicated producer intent (see section 4.2); in what form, how, and directed to whom (user group, e.g. inhabitant). The designer to user communication is studied. The second analysis focuses on the user in the interaction with the front page. What user roles that are supported and what action space that is mediated, thus user-system interaction and user-user interaction (communicated through the system) (see section 4.3 - functionality analysis).

Mediated values in municipality website design

In this section we exemplify how values are mediated in web designs, through user roles (the participator, listener etc), mediated action space and communicated producer intent.

4.1 The Newspaper and Filter Genres

Örebro municipality have been categorised as belonging to the newspaper genre (Table 1) and Hällefors municipality as belonging to the filter genre (Table 2). In this section these genres will be described. In a previous study 30 municipality web sites were categorised as belonging to the Newspaper genre and 18 to the Filter genre.

The Newspaper genre

We define newspaper websites as those with a content that is dominated by information about latest/actual/central news in the community. The purpose is to inform the community about events/news in the municipality. The main target user is seen as a user who is a listener to stories, who wants to gain knowledge about the community through navigating through latest news. The newspaper use advertisement graphics and have influences from the on-line newspaper in the presentation of the news and/or information and often support an interactive communication, with web questions, possibilities to give your opinion etc. The newspaper also gives a feeling of continues updates with e.g. weather reports and daily updated articles.

Table 1: The Newspaper genre

Dominating content	Form and position	Action possibilities	Purpose	User role
High density of dated information about the latest/actual/central news in the community and advertisements.	Layout: Soft composite: short information with links to information and services (positioned centred on the page). Hard composite: Latest news often to the right. Graphics in form of advertisements (bottom or right). Colour: white background.	Interactivity in form of web questions and possibilities to give your opinion.	A main purpose that is communicated is to inform about news in the community.	The user as listener to stories and performer (e.g. giving opinions).

The Filter genre

We define filter websites as sites with the purpose to guide the user through the offered information via the municipality's main categories of services (have been categorised in advance). The website is dominated by the options that are offered. The user role that is communicated is a knowledge seeking user who wants to orient according to a specific area of interest. The available choices can be categorised based on user groups such as tourist, inhabitant, and business. The main action potential that a filter site provides is to choose a main category. Appelgate [2000] differentiates between three types of portals: horizontal portals, vertical portals and affinity portals. Affinity portals focus on one well defined target group for example women, with specific information. The filter can be seen as a variant of affinity portals where different defined categories are offered to different target groups.

Table 2: The Filter genre

Dominating content	Form and position	Action possibilities	Purpose	User role
Presentation of different views for different user groups in some cases with service/product descriptions.	Layout: Short, compressed page, with a flat structure. The dominated element is a handful of categorised navigation (positioned centred on the page). Low if any density of information. Often use visual elements as pictures. Colour: Often white background.	One-way communication is focused, filter the offered information.	A main purpose that is communicated is to guide the user to the municipality's main categories of services.	Knowledge seeking customer-/service oriented.

4.2 Communicated producer intent

The point of departure is to study why the sender wants to communicate (through the offered action possibility), if it is to inform, suggest, attract, promote, offer etc. In what form and how and directed to whom (e.g. tourist, inhabitant)? Thereby focus on the design decisions that have been made. The analysis is based on Yoshioka et.al.'s [2001] taxonomy of genres that represents six dimensions of genres; purpose (Why), content (What), participants (Who), timing (When), location (Where), and form (How).

The question of why has been studied with respect to the producers' mediated intentions with the content element. In the analysis of Content (What), the content elements on the front page were identified. The question of Who concerns the participants, that is associated with different senders and receivers (Tourist, Inhabitant, New inhabitant and Business). In this analysis the sender perspective is focused through mediated purpose of different content elements and toward who they communicate. This in contrast to the functionality analysis (see section 4.3) where the user perspective is focused, in the role as performer of actions. The timing dimension (When) is not focused in this analysis. Location (Where) has been focused on the position of the content element in the analysis, thus not on geographical considerations (Sweden or Italy). In order to relate the positioning of content elements to the front page we used Ihlström and Åkesson [2004] section and column grid (see figure 1). Section A (Header of front page) and B (Bt: top half of B-section and Bb: Bottom half of B-section) are visible on the screen in resolution 1280x1024 pixels, whereas one has to scroll to be able to see section C and D (footer of the front page). The form (How) concerns the design of the communication, that is observable features that the identified content element has.

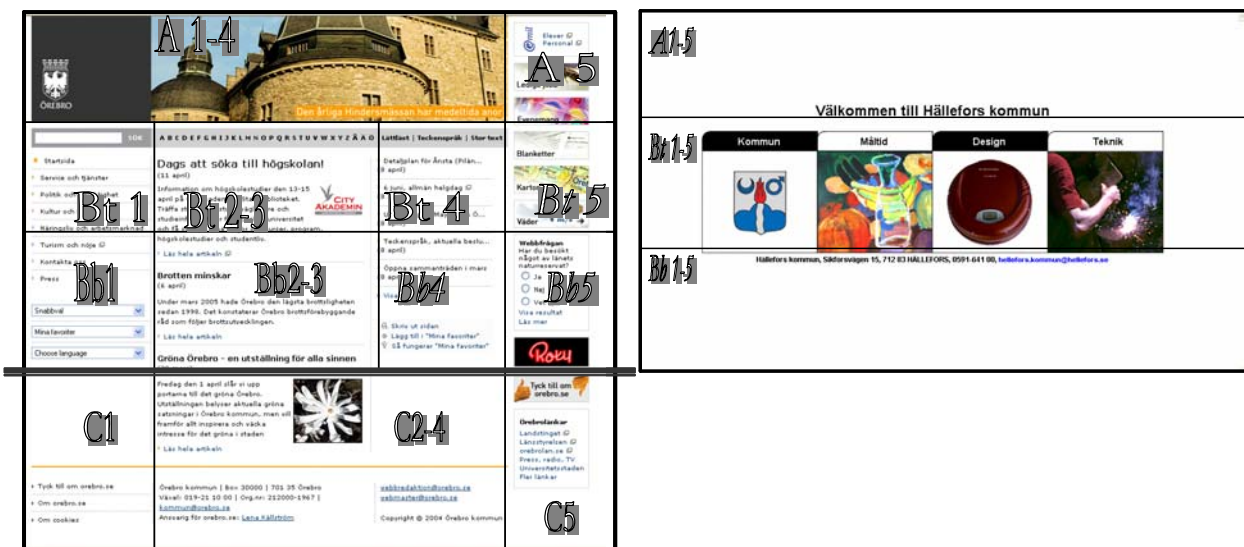


Figure 1 : The Column and section grid (The left picture shows Örebro municipality and the right shows Hällefors municipality).

Contrasting examples from the conducted analysis of the communicated intent in the two municipalities will be presented.

Örebro Municipality

The main purpose can be seen as to inform the community about events/news in the municipality (see table 3). This assumption is made based on the design of the website, where the prioritised action possibilities, centred on the page, concerns news in the municipality and

the use of the broad sheet metaphor. The website is divided in three main sections. On the left side (Bt1 and Bb1) the main navigation is positioned, in the middle (Bt2-3, Bb2-3, C2-4) there are summarised texts about main news in the municipality with links to the whole article and the latest news is presented as dated headings (Bt4 and Bb4). On the right side advertisement (Bb5), banners (A1-4) and graphical links (A5, Bt5) are presented. An on-line newspaper is often dependent of the income from advertisements. This is not the case for municipality websites, but the same form language is used in the design, communicating the intent of wanting to inform and persuade, the two basic functions of advertisements [Singh and Dalal, 1999].

The website uses advertisement graphics and has influences from the on-line newspaper in the presentation of the news and information. The design of the front page gives a feeling of continues updates with weather reports (Bt5) and updated articles (Bt4, Bb4). Another purpose is to gather users' opinions through a web question (Bb5), give your opinion (C5 and C1) and contact the municipality (C2-4). The positioning of the possibility to give your opinion have however not been given a centred place in the design, you have to scroll down the page. The municipality also intend (Bt4 and Bb1) to include as many users as possible.

Table 3: Communicated producer intent – Örebro

Why (Sender)	What (content element)	How (form)	Who	Where (Position)
To provide news	A. News	A. Headlines	Inhabitant	Bt 4& Bb4
		B. Headlines and summary		Bt2-3 & Bb2-3
		C. Headline and summary and picture		C2-4
To provide contact information	A1. Contact information	Text (hyperlink)	All	C2-3
		Menu choice	All	Bb1
To persuade/advertise	Commercials	Banners/Animations	All	Bb 5 A3-4 (changing information in the header)
		Graphics	All	A5, Bt5
To gather opinions	Opinion	Graphic with title Hyperlink	All All	C5 C1
	Web question	Text and radiobutton	All	Bb5
To include different User groups	Adjustments	Combobox	All (Foreign language)	Bt4 & Bb1
		Hyperlink	All	Bt4

Hällefors municipality

The main purpose can be seen as to guide the user through the offered information categorised and filtered in advance (see table 4). The main services are centred on the front page (Bt1-5), municipality, meal, design and technology. The compressed front page presents the four options and guides the user to the wanted information. Another communicated purpose is to invite the visitor with the phrase "Welcome to Hällefors municipality" (A2-4). Visual elements are also used to give an aesthetic impression through pictures of the main categories.

Table 4: Communicated producer intent – Hällefors

Why (Sender)	What (content element)	How (form)	Who	Position (Where)
To offer filtered information	Main categories	C. Graphics and Titel	All	Bt 1-5
To inform (Informative)	A1. Contact information	E. Text (hyperlink)	All	Bb 1-4
To invite & attract	Welcome	Text	New inhabitants Tourist Business	A2-4
	Pictures	Pictures illustrating the main categories	All	Bt 1-5

Comparison; communicated producers intent

The layout of Örebro municipality's front page supports a newspaper metaphor with e.g. news, advertisements and web question. The front page of Örebro municipality prioritises news in the municipality (centred and use much space), where the communicated intent is to inform (especially the inhabitant) of the news in the municipality. In the front page of Hällefors municipality the four main categories are focused (centred), the purpose is to offer different entries depending on the desired information. Hällefors municipality is focusing on inviting the visitors by the "door" and present the main categories the visitor can choose between.

4.3 Functionality Analysis: Mediated user roles and action space

The focus in this analysis is on how different design solutions support certain actions and inactions, and thereby different user roles (e.g. participator) and groups (e.g. inhabitants).

The functionality analysis focuses on the user's use of the website, thus the supported actions with corresponding functionality. According to Löwgren & Stolterman [1998], functions tend to be expressed with two words: a verb followed by a noun, representing an action and an object acted upon, for example, 'register customer'. A function thus corresponds to an action that the ICT supports. Identified functions will be described together with the user group (user or more specific group such as tourist, inhabitant, new inhabitant or business) performing and interpreting the actions. The functionality analysis will highlight what communication that is supported. Actions were the results of the action is directed to the user (e.g. navigation actions), or user to municipality interaction (through e.g. e-mail) are identified. The third type of identified actions is actions directed to the municipality and other users, e.g. register an opinion that is directed to the municipality and other users through the displayed result on the website.

Functionality analysis of Örebro municipality

The front page supports mainly user-computer interaction, e.g. Browse news and Search. The main target user is seen as a user who is a listener to stories, who wants to gain knowledge about the community through navigating through latest news, not as a participator.

There exists however possibilities for the user to communicate with the municipality through a contact information and register opinion (see table 5). A web question also supports the communication user to municipality and other users. The web question in this sample concerns whether you have visited any of the nature reserves in the municipality. This action possibility is not used to gather information about the publics' opinion about for example a central question that the municipality shortly will decide upon. Not used to make it possible for the users to have an impact on the process.

Other kinds of action possibilities offered are adjustments, e.g. to choose language.

Table 5: Examples from the functionality analysis of Örebro Municipality front page

Action	Performer	Directed Towards	System Function
Register opinion	User	Municipality	Present e-mail form
Contact the municipality	User	Municipality	Present e-mail form
Answer a webquestion	User	Municipality Other users	Register opinions, display the result of the opinion. E.g. 30 persons have now voted and this is the result.
Choose language	User	User	Display the information in the chosen language
Choose big text	User	User	Display the information in big text
Browse/Read news	User	User	Display chosen news

Functionality analysis of Hällefors municipality

The main action possibilities offered is user-system interaction, specifically navigation actions where the user is restricted to choose an area of interest e.g. technology and then to navigate to the selected area of interest. The user is a knowledge seeking customer that is service oriented. The categories Meal, Design, Technology can be seen as mainly directed to the user groups tourist, business and new inhabitant. Because the named navigation possibilities are characterised by main attractions in the municipality e.g. the municipality is an old industry community (technology). The navigation action to go to the municipality is however directed mainly to inhabitants, business and new inhabitant.

Apart from the navigation actions there is one user to municipality action supported, where the user can contact the municipality by e-mail (see Table 6).

Table 6: Examples from the functionality analysis of Hällefors Municipality website

Action	Performer	Directed Towards	System Function
Contact the municipality	User	Municipality	Activate and display users' e-mail program
Navigate to meal	Tourist Business	Tourist Business	Display meal webpage

	New inhabitant	New inhabitant	
Navigate to design information	Tourist Business New inhabitant	Tourist Business New inhabitant	Display design webpage
Navigate to municipality information	Inhabitant New inhabitant Buisness	Inhabitant New inhabitant Buisness	Display municipality webpage
Navigate technology information	Business Tourist New inhabitant	Tourist Business New inhabitant	Display technology webpage

Comparison; mediated user roles and action space

The newspaper's action space offers a variety of navigation possibilities, while the filter layout offers a concentrated navigation, with few options. The few navigation possibilities force the user to take an early stand, what type of information am I interested of? The narrow action space guides the user to specific information that has been grouped and filtered in advance. In the newspaper, the information filtering is not in focus, the user explores the website, in that process the user gets informed about the latest news in the municipality. It gives the user a more flexible action space and not as predefined as in the filter design. The user role that is mediated is the user (primary inhabitants) as listener to stories and performer (e.g. giving opinions), while the filter design prioritizes a user role where the users is a knowledge seeking customer that is service oriented.

The communication role that is prioritised on the front pages is user-system interaction, thus to navigate through the offered information. The municipality primarily use the front page to inform the users, not to make it possible for the users to participate. The two municipalities offer the possibility to contact the municipality on the front page, making it possible for the users to take a communication initiative, user to municipality. This communication is however isolated to the specific people in the communication situation, like a phone call where others can not participate. In contrast to e.g. the possibility to vote on a subject, were everyone can see the result of the votes, which gives the possibility to in a more direct way effect a process.

On Hällefors municipality front page it is possible to navigate to different areas of interest but in contrast to Örebro municipality front page do not offer different adjustment possibilities. One example is the possibility to select language (e.g. English), which risks to exclude inhabitants and tourists with a foreign language. This exclusion of action support indicates a prioritising where attracting and informing users with a foreign language is not important enough to earn a place on the front page.

4 Conclusions

The front page of a municipality website is the first impression communicated to its users. It spans an action space for the users to act within, communicating and prioritising user roles.

In the two examples presented in this paper the focus on the front pages has been to support the municipality to inform their users, by supporting mainly user-system interaction. The newspaper layout, consists of different kind of news, mediating a main usage situation to read municipality news, but is it news that is the most important to promote or something else? The filter layout used by Hällefors municipality guides the users at the door entrance to their main area of interest. The selection of action possibilities is narrow as the municipality has categorised the information in advance. In the two designs a passive user role is communicated: to read news or select a main area of interest. A user to municipality communication was however offered through web questions and opinion registration on Örebro municipality webpage. The question is nevertheless how the communication possibility is designed and how the gathered information is used. The design concerns e.g. the content elements position, form and what the web question is about, a general question that equally could be used on an on-line newspaper that has nothing to do with central issues concerning the municipality or used as a information source in a decision process. Using web questions as a way to inform the government about citizen's views could be one way to facilitate citizen influence, encourage active citizens, and improve the democratic process. Thus making it possible for users to participate and influence the decision process, or if the collected opinions are treated as questions that the municipality should answer, thus to inform the user.

A website design mediates values by promoting certain user roles and suppressing others, supporting certain action possibilities where others are not offered, using certain content elements for example advertisements, and building on earlier genres (e.g. on-line newspaper genre) and thereby expectations. Thus risking promoting selected user values without having knowledge of this, and including certain user groups on the expense of others. It is therefore important to be value aware in website design, mediating the intended values.

5 References

- Agre, P. (1998) Designing Genres for New Media: Social, Economic and Political Contexts. In Jones, S.G. (eds). 'CyberSociety 2.0 : revisiting computer-mediated communication and community', 69-99. Thousand Oaks, Calif.: Sage Publications.
- Appelgate, L M (2000) E- Business Models: Making Sense of The Internet Business Landscape. In Information technology and the future enterprise: new models for managers, Dickson G W & DeSanctis G (red.), Prentice Hall, Upper Saddle River, N.J pp. 49-101.
- Bergström, L (1992). Grundbok i värdeteori (2 ed.): Bokförlaget Thales, Stockholm.
- Crowston, K. and Williams, M. (1999). The Effects of Linking on Genres of Web Documents. Paper presented at the 32nd Hawaii International Conference on System Sciences, Maui, Hawaii.
- De Souza, C.S., Barbosa, S.D.J. and Prates, R.O. (2001), A semiotic engineering approach to user interface design, Knowledge-Based Systems, Vol 14 p 461-465
- Gibson, R. K. Margolis, M. Resnick, D and Ward, S. J.(2003), Election campaigning on the WWW in the USA and UK- A Comparative Analysis. Party Politics vol 9. No1 pp 47-75, SAGE publications.

- Goodhue, D. L. and Thompson, R. L. (1995), Task-Technology Fit and Individual Performance, *MIS Quarterly*, Vol 19, No.2, pp 213–236.
- Hedström, K. (2004), Spår av datoriseringens värden – effekter av IT i äldreomsorg. PhD-thesis, Linköping University, Sweden.
- Ihlström C and Åkesson M (2004), Genre Characteristics- a Front Page Analysis of 85 Swedish Online Newspapers. Proceedings of the 37th Hawaii International Conference on System Science.
- Jensen, J. (2002), A handbook of media and communication research: qualitative and quantitative methodologies ; London: Routledge.
- Klein H. K and Hirschheim R. (2001), Choosing Between Competing Design Ideals in Information Systems Development. *Information Systems Frontiers* 3:1, 2001, Kluwer Academic Publishers, Manufactured In The Netherlands. p.75-90
- Kling, R (1999), What is Social Informatics and Why Does it Matter?. *D-Lib Magazine*, January 1999, volume 5 number 1 (ISSN 1082-9873).
- Kluckhohn, C. (1951), Values and value-orientations in the theory of action: an exploration in definition and classification. In Parsons, T. & Shils, E.A. (Eds.). *Toward a general theory of action. Theoretical foundations for the social sciences.* Harper & Row, New York.
- Krippendorff, K. (1995), Redesigning Design; An Invitation to a Responsible Future, In *Design - Pleasure or Responsibility?*, Tahkokallio, P. Vihma, S. (Eds.)Helsinki: University of Art and Design, p138-162.
- Kuutti, K. (1996), Activity Theory as a Potential Framework for Human-Computer Interaction Research, In *Context and Consciousness: Activity Theory and Human-Computer Interaction*, Nardi, B A (Ed) MIT Press, Cambridge, MA, pp 17–44.
- Lacey, N. (2000), *Narrative and Genre: Key concepts in media studies.* New York: St.Martin's Press.
- Lundberg, J. (2001), On-Line Newspapers and Genre Development on the World-Wide-Web. Paper presented at the 24th Information Systems Research Seminar in Scandinavia.
- Lundberg, J. (2005), Shaping electronic news A case study of genre perspectives on interaction design, phd thesis, Linköping University, Sweden.
- Löwgren, J. and Stolterman, E. (1998), Design Av Informationsteknik: Materialet Utan egenskaper, In Swedish, Studentlitteratur, Lund.
- Mumford, E. (1981), *Values, Technology and Work*, Martinus Nijhoff Publishers, The Hague.
- Nielsen, J and Tahir M. (2002), *Home page Usability: 50 Websites Deconstructed.* New Riders, Indianapolis.
- Orlikowski, W. J. and Gash, D. C. (1994), Technological Frames: Making Sense of Information Technology in Organizations, *ACM Transactions on Information Systems*, Vol 12, No.2, pp 174–207.
- Rescher, N. (1969), *Introduction to value theory.* Prentice-Hall, Englewood Cliff.

Ryan, Terry. Field, Richard. Olfman Lorne. The evolution of US state government home pages from 1997 to 2002. *Int. J. Human-Computer Studies* 59 (2003) p 403-430.

Singh, Surendra N & Dalal, Nikunj P.(1999), Web Home Pages as Advertisements. *Communications of the ACM*. August 1999/vol.42. No8.

Åström, J. (2004) Mot en digital demokrati?: teknik, politik och institutionell förändring, phd thesis, Örebro University, Sweden.

Zhang Xiaoni. Keeling Kellie B and Pavur Robert J.(2000), Information quality of commercial web site home pages: an explorative analysis. *Proceedings of the twenty international conference on information systems*. p. 164-175.