Shaping electronic news
A case study of genre perspectives on interaction design

by

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The following publications are related to this thesis:


Abstract

This thesis describes and analyzes implications of going from hypertext news to hypermedia news through a process of design, involving users and producers. As in any product development, it is difficult to conceive design of a novel news format that does not relate to earlier genres, and thus to antecedent designs. The hypothesis is that this problem can be addressed by explicitly taking a genre perspective to guide interaction design. This thesis draws on genre theory, which has previously been used in rhetoric, literature, and information systems. It is also informed by theories from human-computer interaction. The methodological approach is a case study of the ELIN project, in which new tools for online hypermedia newspaper production were developed and integrated. The study follows the project from concept design to interaction design and implementation of user interfaces, over three years. The thesis makes three contributions. Firstly, a genre perspective on interaction design is described, revealing broadly in what respects genre affects design. Secondly, the online newspaper genre is described. Based on a content analysis of online newspaper front-pages, and interviews with users and producers, genre specific design recommendations regarding hypertext news front-page design are given. A content analysis of Swedish online newspapers provides a basis for a design rationale of the context stream element, which is an important part of the news context on article pages. Regarding hypervideo news, design rationale is given for the presentation of hypervideo links, in the context of a hypermedia news site. The impact on news production in terms of dynamics of con-
vergence is also discussed. Thirdly, the design processes in cooperative sce-
nario building workshops are evaluated, regarding how the users and pro-
ducers were able to contribute. It provides implications and lessons learned
for the workshop phase model. A discourse analysis also reveals important
facilitator skills and how participants relied on genre in the design process.
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I. Introduction

This thesis describes and analyzes implications of going from hypertext news to hypermedia news, through a process of design, involving users and producers. As in any product development, it is difficult to conceive design of a novel news format that does not relate to previous genres, and thus to antecedent designs. Related to previous genres are experiences of surprise, familiarity, and appropriateness. Relying on previous genres, values of previous designs can potentially be maintained, whereas incorporation of new technology can overcome limitations of previous designs.

Previous research presents examples of genre change and of reliance on genre in design. A common relation between old and new media is the reuse of form and contents. This process is called remediation. Often, it is done to overcome limitations of the previous medium, by exploiting technologies. For instance, the Fishwrap personalized news system, gave students personalized access to news from their home towns, through the then new medium of the World Wide Web (Chesnais, Mucklo, & Sheena, 1995), and the NewsPad system made multimedia news interactive and portable (Molina, 1999). The prevailing medial form that contents of the old medium have is often transferred to the new medium (Bolter & Grusin, 1999 p. 55). However, in the Electronic News Delivery Project, it was found that, on the WWW, which was then a new medium, some news sites instead used a Web style presentation. That research showed that using conventions from the print news genre provided a more attractive way of news presentation (Watters, Shepherd, Chiasson, & Manchester, 2000). Boczkowski (2002)
describes that electronic news, starting with teletext and videotext systems, preceded by faxmile editions, mainly has been relying on reusing news content, rather than producing new contents for the new media. This has also initially been the case for web editions of online newspapers. Current online newspapers have remediated printed news, overcoming the limitations of print regarding the fixed deadlines for publications, but still being readily identified as having origins in print (Ihlström & Lundberg, 2003). Online news, in 2004, exhibited both remediation of print news and of video news. For instance, one resulting style is to mainly remediate news text and images, such as in the Swedish online newspaper DN.se. Another style is to remediate the latest newscast, for instance as at TV4.se. Alternatively, still having print as the dominating form, video can be present as an add-on to selected news items, such as at CNN.com. Thus, clearly, previous genres are important to consider in design of news services.

Previous research has also revealed the importance of perspectives and genres in design. For instance, in the UTOPIA project, tools were created for workers with specialized production skills for the news genre, through prototypes (Bødker, Ehn, Kammersgaard, Kyng, & Sundblad, 1987; Ehn, 1988). Moreover, Kammersgaard (1988) presents several perspectives on design, for instance the tool and the media perspectives. Previous research has shed light on how perspectives can affect design. However, that research did not address genre perspectives in depth (Hult, Irestig, & Lundberg, 2005). Genre theory has previously been used in rhetoric, literature, and information systems (Miller, 1984; Swales, 1990; Yates & Orlikowski, 1992). However, those theories lack analysis categories from Human-Computer Interaction (HCI). In HCI for instance, Carroll (2002) suggests genre as a way of reusing design rationale. That also relates to Schön, who advocates that designers should develop a repertoire of design examples (Schön, 1983; 1987).

My thesis is that an explicit genre perspective can fruitfully be used to guide an interaction design process.

The research approach is a qualitative case study of a development project on new tools for online hypermedia newspaper production. The study follows this project from concept design, to interaction design and implementation of user interfaces, over three years.

The Electronic Newspaper Initiative (ELIN) EC project, was initiated in 2001, and aimed at creating a publishing toolkit, and presentation formats,
to make content available to a variety of devices for the audience, in a variety of media forms. At the outset, it was unclear to the participating media organizations what their requirements on such a system would be, since it was unclear what use they would have for the new technologies, and what new problems they might have to face. The impact of the new system was hard to predict. Since the information system, in a simplified view, consists of production – mediation – audience use, changes in one place affect the other two. In parallel with the information system, there is a system of conventions in society, giving meaning to the mediated messages. Changes in the information system may depend on changes in the system of conventions. These conventions are embedded in situations of production and use, in which situations recur in the sense that the purposes of actions are similar, and the ways of acting to satisfy the purposes are also similar. The environments of the situations may be similar both in the sense that the same place, time, and surrounding activities may recur, but also that physical characteristics of the situation may recur, such as a table large enough to open and read a newspaper. These kinds of situations are often described as genres of communication, sharing form, content, and purposes.

1.1. Contributions

The work presented in this thesis can be summarized as three contributions to the area of Human-Computer Interaction.

1. Characteristics of a genre perspective on interaction design.

2. Genre specific design recommendations and design rationale. Firstly, design recommendations on hypertext news front-page design was achieved. Secondly, a design rationale of the context stream element was also achieved. Regarding hypervideo news, a design rationale was achieved for the presentation of hypervideo links, in the context of a hypermedia news site. The impacts on news production in terms of dynamics of convergence are also discussed.

3. The design process was examined, to evaluate how the users and producers were able to contribute to the design process. Observations during cooperative scenario building design work, and an analysis of the resulting designs, provided implications and lessons learned for the workshop phase model. An analysis of design moves revealed important facilitator competences for cooperative scenario building. The analysis
also showed how participants relied on genre in the design process, discovering and evaluating implications of design moves.

1.2. Thesis outline

In chapter 2, an overview of online newspaper research is presented, regarding publishing formats, publishing systems, and design of publishing systems. Also, design theory is presented, with an emphasis on user participation in design, and on the role of perspectives in design. Moreover, genre theory is presented, including aspects from rhetoric, literature, information systems, and human-computer interaction design. It is, finally, summarized as a genre perspective on interaction design.

In chapter 3, the research methodology used in this thesis, and its relation to the Electronic Newspaper Initiative research and development project is presented. Moreover, collaboration with other researchers in the thesis work is described.

In chapter 4, a genre analysis of online front-page design is described. It is based on a content analysis of newspaper front-pages, together with the user and producer views on the pages. The chapter is concluded with eight design recommendation for online newspaper front-page design, based on genre rules. This chapter has previously been published (Ihlström & Lundberg, 2004), but has been edited as a thesis chapter.

In chapter 5, a content analysis of the interactive form of three online newspaper front-pages, is presented, together with a design rationale of the context stream element, based on a content analysis of 77 Swedish online newspapers. This chapter introduces the difference between interactive and medial form, and presents genre analysis as a complement to prototyping, to achieve a design rationale. The first part of this chapter has previously been published (Lundberg, 2001).

In chapter 6, the design of an interactive integrated multimedia front-page for online news is presented. It shows how a front-page composition can integrate the findings regarding news page design of the earlier chapters with hypervideo. A design rationale for online hypervideo news link presentation is presented, which was evaluated in three workshops, to identify good options for online news multimedia.

In chapter 7, the cooperative scenario building method is evaluated. The analysis is based on eight workshops. Lessons learned from the design
work, paying particular attention to the issue of consensus and conflict between stakeholder groups, are presented as an improved workshop method. This chapter is based on a publication, but has been substantially revised (Arvidsson, Ihlström, & Lundberg, 2002).

In chapter 8, issues regarding parallel publishing, potentially affecting systems development and organizational design, are presented. These issues are based on the results from two workshops with media professionals. It is argued that a dynamic process of divergence and convergence of roles will be advantageous within a media organization, exploiting different kinds of convergence potential, depending on the kind of event covered.

In chapter 9, a study is presented regarding reliance on genre by participants during scenario building. It is based on an analysis of design moves in three workshops. Implications for the workshop structure are presented, together with an analysis of important facilitator competence for drawing on the participants’ genre knowledge during design.

In chapter 10, through an analysis of design moves, the design style of journalists in two workshops is compared with the design style of professional usability designers in one workshop. Important facilitator competences, for situations when design is mainly conducted through talk, are discussed.

In chapter 11, the fruitfulness of the genre perspective on interaction design is discussed. The different results of the genre analyses, and the design work on the interactive integrated multimedia front-page, are summarized and discussed, together with implications and lessons learned for the cooperative scenario building workshop method.
2. Genre based design of online newspapers

This chapter aims to present the role of genre in design. Firstly, research on the electronic newspaper genre is presented. That mainly regards remediation of previous news genres, through new functionality. The new technologies have been aimed at overcoming limitations of previous media technologies. The research also shows how practice of working with news production has been remediated through design, incorporating users. Secondly, some specific aspects of what it means to be a designer are highlighted, to show some conditions for participation in design without design skills. Thirdly, theories on perspectives in design are presented, in which genre is treated as a particular perspective. That broadly indicates the role of genres in design action. Then, finally, a genre perspective on design, grounded in literature, is presented.

2.1. Online news research

In 1997, Molina reported that online newspapers were embarking on the journey towards multimedia. The vision for the end of the journey was “a personalized interactive electronic news system making fully-integrated use of text, audio, still-image, animation and video”. (p. 219) He described that during that journey, several initiatives had already failed, for instance, three portable electronic news systems, featuring expensive audience devices for media consumption. Several problems were described, of uncertainties fac-
media companies experimenting with steps towards the multimedia vision, for instance, profitability, copyright, and organization of production of the new media, versus the old newsroom (Molina, 1997). Just before the impact of online newspapers, in 1994, Brown and Dugid used newspapers as an example of the danger of ignoring the often taken for granted properties of technologies, in making a genre suitable to the needs of people. They claimed several advantages of a printed newspaper over its electronic news database counterparts, claiming that these were the reasons for the failure of personalized newspaper system prototypes. The three advantages for print were in their view 1) its uniformity of information; that everybody got the “front-page news”, compared to everybody getting their own different front-page, 2) the juxtaposition of news through layout in the paper, giving information about news value and relatedness, and 3) the constrained physical space of a printed paper, demanding a selection of news (Brown & Dugid, 1994). In retrospect, it seems that their assumptions of the centrality of all these three advantages were correct, since the online newspaper genre that emerged shortly after their publication draws upon these three aspects. However, current papers do not rely on the database metaphor, which they criticised.

Bockowski (2002) described that electronic news, starting with teletext and videotext systems, preceded by faxmile editions, mainly has been relying on reusing news content, rather than producing new content for the new media. This has also initially been the case for web editions of online newspapers. A review of online German papers in mid 1997, at a point in time when papers were established online, but still were quite new, revealed that they were very far from the vision of Molina (1997). The online papers at that time mostly used articles from print, often not edited for online publication. There was almost no use of video or audio. Most papers had daily updates, but no more than one in twelve papers had updates more often. Also, most audience members read the paper online because it was free. Furthermore, most publishers had their paper online to have a presence in a promising sector (Neuberger, Tonnemacher, Biebl, & Duck, 1998). In contrast, a longitudinal study of online newspapers has revealed that the use of multimedia and interactivity has increased from 1997 to 2003, turning online news into stand alone products. That study also showed that the web has not been an equalizing factor for small newspapers, which have lagged behind in the development (Greer & Mensing, 2004). Moreover, the users of online services who were in early studies characterized as information seeking early adopters were in more recent studies characterized as entertainment seekers (Boczkowski, 2002). In a study of Swedish online newspa-
pers, it was shown that online audiences could be clearly divided into subscribers and non-subscribers to the printed editions, regarding their online news habits. Whereas a primary reason for online news reading for both groups was to get news updates, for the non-subscribing readers, local news was an even more important reason to read online, and it was much more important to them than to the subscribing readers. (Ihlström & Lundberg, 2002a).

**Novel publishing systems and news formats**

Research has also been reported regarding publishing systems and user interfaces for news. For instance, through the EDUCOM system, multimedia news could be authored using news videos, texts, audio, and images, and presented through Hypercard. The daily edition was updated each morning, and downloaded to a server on a high-speed network (Hoffert & Gretsch, 1991).

Firshwrap was an early personalized Internet based news service, for students at MIT. It featured personalization based on home town and career interests. The system collected information from different sources, updating the news database as news arrived. The news was presented as hypertext, showing headlines, articles, and audio clips. The system had no editorial staff for news of general interest, instead each user could propose news for page one, and the amount of readers having clicked the link decided the position on the page of the story. The system also integrated a news flash service, through a pop-up window (Chesnais et al., 1995).

Another personalized system, ANATAGONOMY, featured four layouts inspired by existing layouts in other media, that is, newspaper, magazine, TV, and banzke, selectable by the user. The system gave more room, in each layout, to articles on the same topics as articles users had previously interacted with, in other words, scrolled to read, or opened a window to read the full text. A test with users revealed that the personalization algorithm needed user modification through feedback bars to work, since users sometimes read articles which they then found uninteresting, and sometimes found an article interesting, but were satisfied with the amount of information they could read on the screen (Kamba, Sakagami, & Koseki, 1997). In 1997, another author described that the hypermedia potential of the web would allow raw material to be published in conjunction with online news stories, however noting that this was not done at online papers the author had visited (Engebretsen, 1997).
In the electronic news delivery project, a system was created for utilizing the “information superhighway” for online news delivered to personal computers. The system would feature core content presented to all users, and personalized content based on group profiles and personal profiles. Regarding specific screen elements, it would provide a news flash ticker for sports, stock market, and breaking news. It would also provide interactive contents such as classified ads and crossword puzzles, personalized advertisement contents, and supplemental contents to news articles. The system also aimed at being interoperable (Burkowski, Watters, & Shepherd, 1994). In the project, both an editors workbench, and user interfaces were constructed. The system integrated text, images, and video on a page. The videos were integrated as video-buttons. Pushing a button launched the video in a separate window, with VCR controls. Video buttons were given different colours to indicate what they were related to, that is, to the same story, the same section, or to an advertisement. Advertisements were presented as smaller icons, and could be expanded by moving the mouse pointer over them, to avoid covering more than 10% of the screen. Images and texts were presented in small and short versions respectively, to be expanded covering the screen. This forced a back-and-forth strategy of reading full news articles (Watters, Shepherd, & Burkowski, 1998).

Two theories of news reading were compared, the uses and gratifications theory, assuming that people are goal oriented, and the ludenic theory of news reading, assuming that the reading in itself was the goal. These were compared by creating two interfaces for news reading. One based on uses and gratifications, created in the web style of the time, presenting one full text on one page, and an overview page of headlines, forcing a back-and-forth strategy of reading all news. The ludenic interface used the broadsheet metaphor, presenting larger parts of several articles on each page, featuring a next-page button for going through the paper in a sequential fashion, and section buttons for jumping through the paper. To read the full text, a back-and-forth strategy was still needed. The interface only featured text and images, thus remediating the printed paper. The results of the evaluation showed a preference for the ludenic interface and the broadsheet metaphor. Readers using the ludeinc interface were often satisfied with reading the part of the text shown on screen, and only occasionally read the full texts. They

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1 This small-advertisement strategy has recently been questioned. Trials with half-page advertisements have been as effective as pop-up advertisements, and these advertisements can be integrated as smoothly online as in print. (Sullivan, 2003).
conclude that it might be advantageous for online newspapers to have news overviews on several pages, rather than just on the front-page, and then to present more than just the headlines (Watters et al., 2000). Their system featured a client-server architecture, enabling news updates during the day, and other interactive features, which were not available on the EDUCOM system.

The NewsPad was an early prototype multimedia system, presenting news through a pad. News was presented through an interface dividing the screen into a top navigation area, and a larger news presentation space. The navigation area consisted of a bar of frames displaying contents, which could be clicked by pointing at them on the touch screen display. These items moved, creating what they called a “news carousel”. The system could feature a back channel for interactivity. Evaluations with early Internet users, in 1997, however, indicated that they would not pay for news contents, which were available for free on the Internet. They also found the interface odd, compared to what they were used to on the Internet. The system was seen as a success, except that the market was not ready for the development of a commercial version at the time (Molina, 1999). On a more detailed level, tentative results regarding finding information in online newspapers suggest that on deeper levels, having to scroll makes contents harder to find, and harder to remember. This means that someone who skims, to read in depth later, would have problems finding specific content again (van Oostendorp & van Nimwegen, 1998).

A more unconventional interface for news presentation was proposed by Rennison (1994). The Galaxy of News had the purpose of allowing users to see the relations between articles, and to facilitate the discovery of unknown relations. The interface was not based on any popular everyday metaphor. Instead, the galaxy had a six-step hierarchical structure, starting with categories at the top, and presenting full text at the lowest level, six clicks away from the top level. At each level, the galaxy was semi-transparent, showing the contents underneath, and nearby categories at the same level. From the screen shots, it appears that three levels were visible at the same time, however the full texts were only readable at the lowest level. Apparently, headlines were readable at the fourth level. The system featured automatic creation of the space, given a set of contents (Rennison, 1994).

Furthermore, there have been proposals and evaluations of news video overview systems. For instance, to present video collages as temporal structures, or in geographical maps (Christel, Hauptmann, Waetlar, & Ng, 2002).
Chapter 2. Genre based design of online newspapers

Others focus on specific technical aspects, such as segmenting videos into hypervideos. For instance, the closed captions often sent in digital channels on line 21 of the vertical blanking interval, often includes a topic change symbol, which can be used to automatically segment broadcast news, which subsequently can be presented as hypervideo (Boissière, 1998). Also personalization has been given considerable attention, and for instance, the N24 web site system utilizes personalization for news. That system uses collaborative filtering, grouping users with similar interests together, presenting the same news items to the group members (Fink, Koenemann, Noller, & Schwab, 2002). Another example is the Hypernews system, which was a personalized agent system, which managed subscriptions from several sources, allowing the user to receive then through a single interface, which could be personalized by the user. The system also dealt with payment for contents. The interface consisted of a navigation bar on the top and right, and a hypertext contents window on the right (Morin, 1998).

Another system was based on automatically creating news summaries, and used these to present news through two interfaces. An algorithm was used to identify different kinds of informative units in news texts, going through five levels from brief “topic stamps” to longer “paragraphs with a topically coherent discourse theme”. Each level elaborates the previous. It then had two presentations, utilizing the levels. One was a large screen news ticker, which cycled through all news items, first presenting the two top levels, and a third level on demand. The second interface was a three-column news browser. It featured a large display area to the right, and a narrow navigation area to the left. The navigation area was divided into two columns, where the left column showed the full text, in miniature, and the right showed topic stamps (the top level) for sections with such stamps. The right navigation column thus had a lot of white space between the topic stamps. Selecting a topic stamp would highlight the relevant section of the full text in the left navigation column, and show it in the display area to the right. Pointing, but not clicking a topic stamp would instead show the second level of information in the display area, much like in the ticker. The purpose of the system was to reduce information overload, by making news easy to skim and browse, providing peripheral awareness of constantly changing news. The system accordingly provided news updates through the public ticker, and in depth reading through the news skimming interface (Bellamy, Boguraev, & Kennedy, 1999).

These interfaces thus used the basic contents and forms (news texts and videos) from the news genre, whereas the editing techniques were not
adopted from news publishing. The sets of purposes of the two first interfaces, the galaxy of news, and the video overview, mostly regard browsing of an existing news database, rather than keeping track of news updates. The Ticker interface in the third study did only addresses news updates, namely to get a news overview, and to reduce information overload. The news reader interface, was also made to satisfy a narrow set of purposes, namely to reduce information overload, and facilitate skimming of news texts. In particular the ticker had a somewhat strange design solution, in that short texts appeared on top of each other, instead of beside each other, despite featuring a lot of white space around the text. Previous research thus has revealed different ways of exploiting technology potential, for online news publishing, to overcome limitations of previous technologies. It has also shown that form is an important design consideration for electronic news, online or not.

**Design of publishing systems**

Research has been conducted on online news work, and on design of new computer systems for publishing. Bellotti and Rogers (1997) present a study of online news work, and concludes that paper or whiteboard were used in many situations where computational devices would give advantages, providing that they retain some important characteristics of paper (ibid). In the UTOPIA project, a prototype system for graphics workers at newspapers was to be constructed, computerizing manual work processes. It was recognized early that traditional methods such as interviews did not give the information needed about how tasks were actually accomplished. The approach taken was to remEDIATE practice into a computer system by providing tools for the workers, rather than formalizing what the workers knew. Firstly, traditional tools were remediated, such as a crop tool for images. Secondly, tools were invented to compensate for weaknesses in the digital environment, such as a magnifying glass, compensating for low resolution screens. Thirdly, new tools were invented, that exploited the advantages of the technology, providing added value. Regarding pictures, not only were tools designed, but the digital material was designed as well, modelling some good aspects of traditional materials. The method used in the UTOPIA project was based on providing prototypes, to model use of the system-to-be (Bødker et al., 1987; Ehn, 1988). Thus, genres of interactive artifacts were created by considering the form and content of the current product, but also by considering the current tools/materials and practices of production. Digitalization proceeded by remediation. It provided added value through exploiting
technology potential, but it also preserved current value through maintaining the value of worker skills.

2.2. Design methods

This section describes some aspects of what it means to be a professional designer, compared to being an untrained designer. This is of importance when considering how to involve “users” in a design process, since they in many cases can be assumed not to be experienced professional designers of interactive systems. That is important, since user involvement in design may be a good way of discovering how to remediate current practice through new technologies. User involvement was, for instance, done through prototyping in the UTOPIA project. The value of user involvement was part of the rationale for using the cooperative scenario building method (chapter 7, 9, 10) in the ELIN project. Pointing out what users can be expected to be able to do, compared to a designer, can be useful to evaluate in what respects an untrained designer can take part in design work. This brief section does not cover all relevant aspects, but it highlights some of the aspects, which make design a complex activity.

Product development is often related to some larger scheme, although phase models in practice might be more useful as idealized models, than as normative models. Design work, is thus often related to different idealized phase models, but is often also described as related to design methods. On the one hand, successful design work can be described as one or several methods. On the other hand, work can also be described as the use of some method, or as drawing on different methods as inspiration. Design methods may, for instance, prescribe materials, participants, and a plan for carrying out design work, by specifying how to use the materials, and how to work together (Muller, Hallewell Haslwanter, & Dayton, 1997; Muller, Tudor, Wildman, White, Root, Dayton, Carr, Diekmann, & Dykstra-Erickson, 1995). An individual designer may master many alternative methods and skills, for similar ends. Since methods may also be on different levels of scale, methods may fit inside each other. Whereas one method may outline what activities are needed for a one-day design workshop, another method might outline how brainstorming, one of the specified methods in the workshop, can be carried out. A practitioner can decide to substitute one activity within a method for another, depending on things like the resources needed or the skills mastered by the participants. The mastery of several methods enables a practitioner to change plans in the midst of an activity. For instance, participants might lack skills, which they were assumed to
2.2. Design methods

master, or time constraints could suddenly change. Also, the systems development method might state that specific representations should be the outcome of design activities, and the method could be adjusted accordingly. Moreover, group design work is often seen as affected by dynamics between participants.

A co-citation analysis of design literature between 1990 and 2000 by Atwood, McCain, and Williams revealed that design of interactive systems is not a unified area of research (2002). Its theories were separate from software engineering design, which had an unrelated set of research. Within interactive systems design, seven areas emerged. The groups were divided in that firstly, three of the clusters focus strongly on users. Going from bottom to top, these were cognitive systems engineering, user-centred design and participatory design. The remaining four clusters, going from bottom to top, were design theorists, design complexity, design taxonomies, and design rationale. Going upwards represented more applied research. In their review, no author was in the centre of all clusters. They thus concluded that there is no unified view on the design of interactive systems (Atwood et al., 2002). The research in this thesis belongs, approximately, to the middle cluster, of user-centred design, focusing on users and their tasks. It is close to the participatory design cluster, but the methods being studied here do not share all aspects of that approach. I would position this thesis in the large and diverse design rationale cluster, in particular the analyses in chapters 5 and 6.

At the bottom of the design theorists’ cluster, drawing on Simon (1996), Kroes (2002) describes design as going from a functional description to a structural description, through a process of design. From this point of view, an artifact has (at least) two contexts: design and use. For instance, a sundial is often used in a context of ordering events, having the function of time keeping, through a structure consisting of a stick and its shadow. In Kroes view, function takes the place of purpose or goal, compared to the view of Simon, since function can be attributed to artifacts, whereas goals and purposes imply some human activity. From this, Kroes finds the notion of quality to be problematic. He notes that quality can be seen from the context of design and from the context of use. Firstly, he doubts that following a prescribed phase model will always result in an excellent design. Secondly, he states that even though a design may satisfy requirements, it still may not satisfy the users needs – for instance if the communication between users and designers has been poor. Thirdly, he notes that designers
may value constructional aspects of less importance to users, and that many other stakeholders may have their own views on quality (Kroes, 2002).

Presenting some answers to the questions posed by Kroes, Löwgren & Stolterman (1999) argue that methods are no better than their practitioners. Furthermore, methods are seen as a means for practitioners to be prepared for design situations at hand. Sidestepping the question of quality by Kroes (2002), they assert that methods are thus not primarily useful for ensuring repeatability, or quality assurance. Drawing on Jones (1992), they view a designer as a self-organizing system, rather than as a mysterious creative “black box” or as a rational and transparent “glass box” (Löwgren & Stolterman, 1999). Löwgren (2001) furthermore defines interaction design as “the shaping of interactive systems with particular emphasis on their use qualities” (p 29). To him, HCI, in contrast to interaction design, is seen as more task-oriented. This thesis incorporates that view of Interaction design. Moreover, whereas Kroes' view on design is that it starts with a given function to implement, Löwgren's view is that the design problem is coupled with problem setting. Also, he emphasises the importance of the designer’s repertoire of examples. This aspect is also emphasised by Baljon (2002), regarding architecture. Baljon asserts that history, rather than theory, should be the designer’s frame of reference. Here, history and design repertoire is partly conceptualized as genre. Moreover, here, design is seen as being conducted through design moves in a reflective conversation with materials, in a design situation, as described by Schön (1983; 1987). As Fallman (2003) notes, sketching is not only done through pen and paper, in HCI, but also through prototypes. Prototypes can be seen as modelling three aspects of a design, namely role, look-and-feel, and implementation. A role prototype illustrates the intended use of the product, whereas an interface prototype illustrates the look and feel of the product. A given prototype can illustrate both role, and look and feel, but it is not necessarily so. These prototypes can be complemented with implementation prototypes, which are used to prototype technical solutions. These three kinds of prototypes can be integrated into one prototype, illustrating technical, role, and look and feel solutions (Houde & Hill, 1997). In this thesis, role is the primary focus, when using the cooperative scenario building method (chapter 7 and 8), whereas also look-and-feel are important for the genre analyses (chapters 4-6).

**Systems development schemes**

A design method may specify how to carry out a specific design task, using specified materials, in specified ways, by specified actors. On a larger scale, a
2.2. Design methods

systems development method could specify the sequence of design tasks and methods. Systems development methods can also address how to deal with transitions between design activities, for instance by specifying how the outcomes of a design activity should be organized. Thus, related to design methods, systems development methods may also specify ways of diagramming and other means of representation and highlighting, to be used throughout a project. Also, systems development management involves numerous issues, such as management of resources.

In the ELIN project, the case study in this thesis, a waterfall development model was used. In their overview of the history of systems development models, Larman and Basili (2003), argue against a waterfall model. They conclude that projects following a waterfall scheme fail dramatically more often than projects following an iterative incremental approach. The iterative incremental approach prescribes that not all functionality should be delivered at one point. Instead, functionality should be developed and delivered in two or more iterations of the development cycle. As they describe, not even the most famous publication regarding the waterfall model recommend a single iteration. Instead, Royce (1987)\(^2\) recommends that version two of the program should be the version actually delivered to the customer, going through the cycle “at least twice”. In the model, there are also arrows pointing upstream. Thus, the original idea of the waterfall model was to adopt an iterative approach, even though it was not an incremental approach. However, Larman and Basili describe that this recommendation was immediately lost, and the waterfall model devolved into a single-cycle approach. Royce gives five recommendations, based on his experience of development projects, that should be followed for successful development according to the waterfall model, presenting a complex development model, with the waterfall activity sequence as the skeleton (Royce, 1987).

Requirements

Requirements are often seen as important in design, as well as often being part of an early step in idealized phase models, which arguably then follow the view of design of for instance Kroes (2002). A naïve theory of requirements would state that requirements are the facts of the situation, of which some are known by different stakeholders, and can be elicited by methods such as traditional interviews or surveys. Such a theory would focus atten-

\(^2\) Originally published at WESCON, 1970, p 1-9
tion on how to engineer a system that conforms to the requirements. In fact, the problem is much harder. Designs have to fit into complex environments, which can change during a development project. Moreover, the requirements process is a political activity occurring amongst stakeholders. As they discover the implications of a design, which they were not aware of initially, some of these will be anomalies. A key stakeholder can promote an anomaly to a design problem, which is to be solved. Doing so can result in an explosion of consequences, some of which will be promoted to design problems. This changed understanding of a system, can cause a change in the commitment to a system. If a system is far into the development process, when such discovery occurs, development may be stopped if the problem is seen as severe. Often, a system has not only a proponent group, but also an opponent group, presenting other anomalies as problems. The differences of the groups can be solved through negotiation, again changing the requirements, and changing the commitment to a design project. Alternatively, the opponent group may win, in which case development ceases (Bergman, King, & Lytytinen, 2002).

**Group dynamics**

Design method descriptions are often centred on facilitating design action, or on how to carry out design activities. But facilitating design action alone, or having a good method description and skilled participants, may not be sufficient for successful group design work. When carried out within groups, activities are either supported by positive group dynamics, or disrupted by negative dynamics. In learning groups, which arguably are similar to design groups, Heron (1989) describes three aspects of group dynamics; cultural, educational, or psychological. The *cultural dynamic* is either liberation, which means that avant-garde ideas from the surrounding culture enter the group, or oppression, which means that oppressive norms, values or beliefs influence the group. Negative forms are, for instance, that some high contributors dominate, that gender bias silence some participants, or that participants compete with each other. The *educational dynamic* is either confluence, having different kinds of learning in the group, or alienation, which means that learning, is dominated by the intellect, emotions, or spiritual experiences. Learning can also be alienated from the body. The *psychological dynamic* can be openness, which means that the group is open to the challenges it faces. Psychological defensiveness includes negative aspects, like participants being afraid that they will not perform well, or that they will not be accepted as group members. There are three forms of expression of negative dynamic, namely submission, flight, and attack. *Submission* is a col-
lection of passive behaviours. Flight, is to actively avoid group work, by doing something else, such as gossip, or insisting on a clear programme. Attack, may mean that group leadership is challenged, or that some member becomes the scapegoat of problems.

Group dynamics can be facilitated in three modes, hierarchical, cooperative, or autonomous mode. In the hierarchical mode, the facilitator decides and acts, in the autonomous mode the group decides and acts, and in the cooperative mode the group and facilitator decides and acts together. For instance, planning can be done in these three modes, and on different aspects, such as on objectives, and programme. There is also another dimension of planning, namely to plan in advance, or to improvise as events unfold. To improvise does not necessarily mean that no plan exists; there may be several alternative plans, which are selected depending on how the situation unfolds. Thus, being experienced may mean that a person has a repertoire of plans, enabling informed improvisation (Heron, 1989).

**Skill**

Improvised action is sometimes described as depending on situated cognition (Suchman, 1987). That is, relying on the surroundings to gather information needed to make decisions on the spot. For instance, by interacting with a physical representation of an object, or the object in itself, people can use the back-talk of the material, to improvise actions. Such interaction demand skills. To have important skills is obviously central to be accepted as a professional practitioner. Thus, a part of being a non-practitioner or non-designer is to lack such skills. The skills may, for instance, regard the use of specialist tools. A very detailed method description could describe how to use the tools, to make the method available to non-designers. But rather than just following instructions of a design method and go ahead with the activity, practice is needed to achieve the necessary skills. The reason can be illustrated by an example. An action, such as pulling a lever when driving a car, may be a conscious act, demanding attention, and be carried out with difficulty. With practice, it may turn into an effortless operation, which can be carried out without paying much attention to it. That frees up cognitive resources for the activity, which may be one of driving a car. That activity, when supported by many operations, has then become a skill of the actor. As the example illustrates, when struggling with mastery of basic actions, it may be hard to concentrate on the activity at hand.
Cognition can also be seen as distributed, by chains of transformations of information, conducted by different people, and handed over from one person in the chain to the next. This is certainly the case in large design projects, where the work of people within one profession is later used by people in other professions. This process is complicated by the specialized languages used to communicate within different professions. That might, for instance, include specialized diagrams. Diagrams are a means of professional communication that may demand specialist training to use. Specialists may also use highlighting techniques, placing markings on representations or on the objects themselves, which are done according to specialist coding schemes. Within a profession, different practitioners may carry out coding of the same objects in the same ways, making it possible to substitute one professional with another. Coding might be formalized in physical coding schemes, such as colours indicating how sections of earth in an excavation should be coded, regarding the age of the layers. Such physical coding schemes may be part of a method description. Thus, mastering a professional vision, with its coding schemes and practices, is also part of what it is to be a professional. Accordingly, an aspect of being a non-professional is to lack the mastery of a professional vision (Goodwin, 1994).

2.3. Design perspectives

Human action and perception are often performed based on one or more perspectives, of which professional vision can be a part, through which the individual sees the world. The importance of perspectives for human interpretation of the world is stressed in the literature. (Bansler, 1990; Hirschheim & Klein, 1989; Molander, 1996; Nurminen, 1987; Nygaard & Søgaard, 1987). Winograd argues that the design perspective “…determines the kind of questions that will be raised and the kinds of solutions that will be sought”, and that when consciously applying a perspective as a guide to design, “It will not provide answers to all of the specific design questions, but serves to generate the questions that will demand answers” (Winograd, 1986, p.203).

A definition of the term perspective is proposed by (Nurminen, 1987, p. 155): “The perspective determines to a great extent many essential characteristics of our actions, i.e. our praxis. It tells us the rules according to which

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3 This section is based on the first part of a publication (Hult et al., 2005).
to act, to conceive of things, to think about them etc.” That definition is coherent with the definition of perspective presented by Nygaard and Sørgaard (1987). “A person’s perspective is a part of the cognitive universe that may structure his or her cognitive processes when relating to phenomena within some domain.” (emphasis in original) (Nygaard & Sørgaard, 1987, p. 381).

Nygaard & Sørgaard (1987) furthermore discuss three perspectives on programming, and two perspectives of harmony and conflict in systems development. Kammersgaard (1988) discusses four design perspectives on human-computer interaction: The system perspective, the dialogue partner perspective, the tool perspective, and the media perspective. He argues that in design, one should take a multi-perspective. In this, he agrees with Nurminen (1987) who discusses three perspectives on information systems: the systems theoretical perspective, the socio-technical perspective, and the humanistic perspective. He argues that perspectives are similar to paradigms in that they often operate unconsciously, and that they like paradigms have emerged to answer questions which previous perspectives have been unable to answer. However, perspectives regard practical, rather than scientific problems. In Soft Systems Methodology (Checkland, 1988), perspectives also have a prominent role, where a problem situation or system is examined by explicitly applying different perspectives to view the situation and gain a multi-faceted understanding.

The concept of perspectives in design highly resembles Buchanan’s concept of placements in that it describes a designer’s subjective, experience based on a holistic view of the design situation. “Placements are the tools by which a designer intuitively or deliberately shapes a design situation…” (Buchanan, 1998, p.16). When applying a placement to a specific design situation they give a context to and orient thinking, and can be the source of new ideas and possibilities. The ability to systematically shift placement is of utmost importance for the designer’s capacity to handle complex design situations (Buchanan ibid.)

As a designer acts and interprets events in creating an IT-artifact, several factors influence the active design perspective that in turn influences the way the designer explores and interprets the design space. The individual’s preunderstanding forms an overall frame of reference for interpreting the world (Hirschheim & Klein, 1989), which is constituted by earlier experience, knowledge, feelings, et cetera. This is a personal and partly unique perspective of the world for every individual in a society. Maaß and Ober-
quelle (1992) argue that design perspectives can be observed in design work, in the way systems are described to users, and by the design techniques that are used. Nygaard and Sørgaard (1987) also describe perspectives as being embodied in design techniques. They can guide the attention to what aspects of the design situation that are seen as important.

Design methods frame design problems by setting dimensions. For instance, the persona technique frames design in terms of future users. The persona technique frames the design problem through a perspective, by setting dimensions for describing users, for instance by describing their life goals, experience goals, and their end goals (Cooper & Reimann, 2003). Products may also be framed primarily from the perspective of the activities in which they are or could be relevant. That can be done through scenarios, describing a product in terms of how it is or should be used. A scenario characteristically includes a set of dimensions, for instance actors, a setting, and a goal to be attained in the activity. There is also a temporal dimension, the plot, describing aspects of use, such as events and actions. Regarding design methods, the description embodying the dimensions can for instance be achieved through textual scenario descriptions, or prototypes (Carroll, 2002).

Having framed a problem, the design space can be explored, to discover different design alternatives. When a problem is framed then loosely a design space is set, with dimensions and constraints. Boden (1994) describes that creativity stems from exploring and transforming design spaces. For instance, explorative creativity can be exemplified by the composition of music, painting, or speech, when following the rules of composition governing these activities. These rules may or may not be known explicitly by the producer. Drawing upon this kind of creativity, whatever is produced at a specific point in time could have been produced before, exploring the space of that system of rules. Boden also discuss another kind of creativity, which stems from changing the design constraints, for instance by negating or removing some rule in the generative system. Regarding design of computer technologies, this would imply that a technical development, opening new possibilities for design, opens the possibility of transforming the design space, regarding technical constraints.

Design methods may thus be motivated from a perspective, but does not have to involve every aspect of the perspective. An example of taking an artifact-centered perspective on design is the use of heuristics for interface evaluation. They can focus only on the interface, such as the heuristics of
Nielsen and Molich (1990) and Nielsen (1992). In this case, the perspective taken by the designer may well affect how the heuristics are interpreted. For instance, they may affect the interpretation of who the user is, in “speaking the user’s language”. Heuristics may also be described from an explicit perspective. For instance, taking a genre perspective, genre specific design guidelines for artifacts can be described, being more specific than the general guidelines of Nielsen and Molich (Nielsen, 1992; Nielsen & Molich, 1990), but also being more restricted in their applicability (see chapter 4). This is also true for genre specific use-qualities (Hult, 2003).

Explicit design perspectives have been used to guide design work. Bødker, Nielsen, and Petersen (2000) used the same perspectives as Kammersgaard in a design workshop. They described the perspectives as character-perspective pairs, using two-page posters. For example, the systems perspective was paired with the character Spock. During design, they repeatedly experienced that participants referred to how the character would have acted in the particular situation, rather than how the perspective would apply. Bødker et al. (2000), found that the character descriptions they additionally used were used in place of the perspective descriptions. Perspectives have also been used in design critique systems to organize design knowledge, support individualized critique and provide support for designing from alternative views in given design situations (Fischer, Nakakoji, Ostwald, Stahl, & Sumner, 1993).

Design perspectives can also be utilized when interpreting situations of use. The role of perspectives in interpretation can be illuminated by Neisser’s (1976) model of the perceptual cycle. In its simplest form, it consists of three entities, an object, a schema and perceptual exploration. The object is in this case the use situation under observation, and the design perspectives are part of the schema. The schema directs perceptual exploration of the use situation, causing the schema to change. Idealized design perspectives can be used to guide design, to make divergent designs (Hult et al., 2005). In the terms of Goodwin (1994) they can be used as coding schemes. In a study of co-located situations of computer usage, perspectives were used to identify whether the usage corresponded to tool, medium, system component, or the arena perspective. Shifts between action characters was observed during use (Arvola, 2003).

The view on perspectives in design presented here is summarized in Figure 2-1, where key elements of the design situation are depicted. Note that a
view of the designer as an individual is implicit in the following section, even though in practice often design is often conducted in teams.

As illustrated in Figure 2-1, when a designer meets a design situation and the genre that the object of design relates to or belongs to, the designers pre-understanding acts as an active design perspective. This perspective has a major influence on the actions taken in the design situation (Lawson, 1997). Genre can be a powerful way of framing a design, since the producer by relying on genre can be assured that the user in some sense already has experienced the product. Implicitly, designers will have with them a set of genre instances that they have experienced as designers, users, or both, constituting part of their design repertoire. Design activities are thus often related to the designer’s repertoire of examples as an integrative part of design action (Schön, 1983; 1987). As Carroll (2002) discuss, having achieved design rationale and scenarios for an artifact, it may be possible to generalize the findings to the artifact genre, rather than narrowly to the specific artifact. In this way, scenarios with design rationale can be carried over to new design situations. Thus, genre acts as an important perspective in many design situations. The difference between the more general perspectives described above and genre is that genre regard the specific object of design, whereas a designer may carry a set of general perspectives influenced by professional training to all design situations. For instance, a designer may be trained to view artifacts as systems, tools, media, and dialogue partners, in all design situations, shifting between the points of view. However, if the artifact is, for instance, a newspaper, then genre specific aspects relating to the designers previous experience with the genre will also act as a perspective on the product. These can be more specific than a general perspective on a system, as for instance a tool, for instance by suggesting a generic
composition of form and content elements. The knowledge of genre conventions may also be brought into play when designing other artifacts. If so, then the genre will act as a metaphor. Metaphors rely on analogy. Through speaking of something as it was something else, an analogy is pointed out, that there is a similarity between two different concepts. Indeed, Lakoff and Johnsson argue that the human conceptual system is built on a system of metaphors. It is based around a core of bodily experiences that have been expanded by the use of metaphor (Lakoff & Johnson, 1980). Through the use of metaphor, genre will thus affect design to a larger extent, since it can be used when designing products belonging to other genres, or to non-genre products. That also allows genre mixes. But, as Maaß and Oberquelle (1992) emphasize, talking about a product as if it belongs to a certain genre, or as if a specific perspective has been adopted, does not mean that the perspective is in fact taken. They suggest that metaphor can be used to “…play down system aspects that might produce user resistance: Who would be afraid of a tool?” (p 245) (Maaß & Oberquelle, 1992). Their example thus illustrates the difference between perspective and metaphor.

A generic perspective framework

The generic perspective framework can be viewed as a meta-perspective on a design perspective. In terms of conceptual spaces, the generic perspective framework sets up the dimensions of the design perspective. This framework is necessary for a number of reasons. Firstly to, in a structured way, highlight aspects of a perspective that can have important consequences in interaction design. Secondly, a design oriented meta-perspective structures interpretation of perspectives originating outside of the field of IT and systems design. Thirdly, a generic framework makes it easier to compare and contrast different perspectives, since the same design oriented dimensions can be described for each perspective in the language of the framework rather than the sometimes heavily connoted terms of different perspectives.

Regarding the design of IT-artifacts, it is reasonable to include the user, the artifact, the context and the activities involving use of the artifact, in the framework. These components (users, artifacts, context and activities) are related to each other in a use situation. Between these components there exist some relations. The most central relations are therefore included as a dimension in the framework. Since communication between these components is also of paramount importance in interface design and collaboration between users, it is arguably an important dimension to include in a framework. Also, designs may be framed in terms of different sets of values, such as their
efficiency, their ethical consequences, the discomfort users are subject to during use, or their safety. These qualities emerge in use, or can be seen as residing inside a product, as does the durability of a product. In this design-oriented framework, these are described as specific use-qualities (Ehn, Mege, Steen, & Svedemar, 1997); that is, use-qualities that would be good regardless of a specific artifact and user. In a perspective, there often is an accepted terminology to describe components and relations. This terminology also has value connotations that are lost when a perspective is described with a more generic terminology. For clarity, the accepted terminology of a perspective is therefore presented under the label described by. However, it is not a design dimension. Since a number of different perspectives should be describable in the same framework, the dimensions and their names have to be general enough for characteristics of any design-oriented perspective. It is, however, impossible to completely separate between the dimensions, which partly overlap in the descriptions. The seven dimensions and the described-by category are presented below.

The users: This dimension includes the actors who are seen as users of the artifacts within the perspective. The users can for example be regarded as individuals or groups of users. They can, for instance, be characterized in terms of their knowledge, habits and goals. It is also relevant to address whether the perspective attend non-users. The notion of non-users is, for instance, of importance in ethical discussions, where the effects of system use greatly can affect other groups (the non-users) not directly involved in the actions.

The artifacts: The object of use within the perspective is some kind of artifact. This dimension focuses what these artifacts are and also the characteristics of the artifacts. Depending on the perspective, material, virtual or abstract artifacts, for instance code or formulas can be regarded as artifacts.

Context: The design and use of artifacts exists within some given situation. Context refers to what is considered the use situation in which the users and artifacts interact. The context description may, for instance, contain spatial, cognitive, emotional and temporal aspects. It can, for example, include in what physical cultural and organizational environment the users and artifacts are embedded. It also includes a relation to historical and future development of this environment.

Activities: This dimension focuses on how activities are characterized within the perspective, for example cognitive or physical, structured, and predictive.
or unpredictable actions and activities. Activities also include intentionality, if any, in relation to the use of the artifact, for example the goals or purposes, wishes or expectations relating to the artifact use and related activities.

Central relations: This dimension describes what can be seen as most prominent in the perspective regarding these relations. This includes what relations are focused and salient in the perspective. Relations can exist, for instance, between different groups of users, user and artifact, artifact and history, or surroundings. Depending on the perspective, for instance, the relations between the manufacturer, car, user, traffic regulations environment and the road system can be focused.

Communication: Both design and use of artifacts creates a rich space for different kinds of communication. This dimension focuses on what is communicated and how. The term communication is here used in a broad sense, intended to include communication and interaction between active agents as well as the communicative effect artifacts can have on these agents. Buildings can, for example, (intended or non-intended) signal something about the designer, owner or intended use. Signs can also convey a message and a document or screen layout can inform the user of priorities or the desired work order.

Perspective-implied use-qualities: Within the use situation, from the interpretation (user) and communication between user, artifact and context, use qualities emerge. An important aspect of design work is to identify and articulate central use-qualities that are desirable given the perspective. This can for example include describing, according to the perspective, the desired effects resulting from the intended use of the artifact. The use of a car can for example be described in terms of being effective, pleasant, educative, cheap, environmental friendly or safe.

Described by: A perspective can carry its own vocabulary, with perspective-specific words or meanings. This category describes the accepted terminology of the perspective and what the underlying values are. For example the term playability, is highly relevant in game design, but has little relevance in control room design.

Hult et al. (2005) describe four design perspectives, using the framework. To characterize genres of interactive artifacts in general, and the online newspaper genre in particular, a genre perspective framework is presented, based on genre theory, in the following section.
Chapter 2. Genre based design of online newspapers

2.4. Genres of interactive artifacts

To characterize genre theory in terms of interaction design, a literature review was conducted. The review of the literature on genre reveals that genre analyses have been conducted with different units of analysis, and with different labels and definitions of the units of analysis. Previous work on genre has largely focused on descriptive frameworks that include aspects of user, producer, form, content, and purposes. These have been used to describe genres, as a unit of analysis, and as a layer of meaning, connecting purposes with compositions of elements in genre products. To take the dynamic and interactive nature of the digital material in mind, in this thesis, the framework is extended by breaking out interactive form from medial form. Also, use-quality is added as an aspect in the framework, since the goal of interaction design is often to achieve specific qualities in a context of use.

Genre as a layer of meaning

The research in this thesis draws heavily on the genre definition of Miller (1984) who defines rhetorical genres at the level of motive. That excludes purely personal motives, and sets the level of genre analysis to units that can be attributed to having a social motive. Within that unit of analysis, genres must also consist of more than one instance. They must be enacted in recurring situations, sharing the social motive. Where one society just has one genre for a purpose, another society may have refined genres for variants of that genre, embodying variations in the purpose. When a genre is enacted, elements of form are being drawn upon, to satisfy a social motive associated with the genre. The form elements can have emerged through having been drawn upon often, in situations with similar social purposes, until conventions govern the genre by informal rules. Through the form elements, genres can also be recognized, and contribute to communication by a layer of meaning, emerging from expectations on a familiar genre (ibid). In mass communication, genre can be seen as a relation between user and producer, allowing the user to find more of the same, and the producer to create more of the same (Agre, 1998). It is also illustrated by Brown and Drugid (1994), who define the relation as genres being invoked by producers, to establish what conventions they are “putting into play”. Visitors try to test genre assumptions, until one “fits”, to give an appropriate response. But not only do genres provide a conventional means for reaching social goals, they also represent a set of social goals that people in a society can have (Miller, 1984).
The genre layer of meaning draws upon other layers of meaning, where the content, at one level in the hierarchy is the content + form of a lower level. The point is that the genre layer of social motives and social conventions of form, shaping recurrent situations, adds meaning (ibid). A nice example of genre as a layer of meaning was presented in a study of personal home pages on the world-wide-web. Within that genre, it was argued that a list of links says something about the author of the page, being part of telling a story, whereas a search engine result page that looks and behaves similarly does not support the same interpretation. Recognizing the genre, thus gave the list of links a new meaning (Roberts, 1998). Devitt (1993) further emphasise this, by exemplifying that changing genre in the middle of a text is confusing, not just because of the violation of expectations, but because changing genre can change the situation, since a different genre may imply a different motive. Moreover, a genre also implies characteristics of the communicators; of who the readers and producers are. Swales (1990) also defines genres as being a class of communicative events, with sets of purposes. These sets of purposes are more specific than Miller’s social motives. Swale’s purposes are attributed to different actors, potentially with conflicting purposes, and he also recognizes that actors can have more than one purpose. In contrast, Miller’s social motives are on a higher level, they are motivation for the genre to exist at all, embodied in the recurring situation that all actors respond to with their personal purposes in mind (Miller, 1984).

Genre and media

At this point, it should also be noted that the medium itself cannot be seen as equivalent with genre, which is also emphasised in genre literature. That genre is not the same as medium, is easily seen in the relatively new medium of the World Wide Web. On the web, there are documents from many genres, from many cultures, mixed with non-genre documents. It has been argued that search engines can be improved by allowing users to state what genres they are looking for. The argument rests upon the finding that purposes of searches often match a limited set of genres. The limitation of that approach would be that an algorithm for genre classification would have to be invented (Roussinov, Crowston, Nilan, Kwasnik, Cai, & Liu, 2001). That might be more difficult than we could assume at first, since different cultures express genres through different styles, and since different “generations” of web designs express different styles, shown in a tentative analysis of online newspapers (Schmid-Isler, 2000). Another example is that coloured backgrounds, which were popular around 1998, had been replaced by
pages with white backgrounds around 2001. The authors place this as a dimension, like form, function, and purpose, but in the light of other studies, this is clearly the style element of form (Ryan, Field, & Olfman, 2002). Fashionable styles in a society, along with current themes and topics, are part of what makes the current zeitgeist, which can make genres go in and out of fashion as it changes (Lacey, 2000).

Although media is not the same as genre, genres are mediated through media. Media are firstly, the technologies involved in mediating communication, characterized by sensory modality, physical transmission modality, economic modality, and mode of transmission (network, one-to-one, or one-to-many mass communication). Also, media are characterized by its institutions, the roles and practices of production, and by their audiences, and the effects of media on those audiences. Media theory has been seen as belonging to one of two kinds. The first characterizes communication through media as the sending of a message through a medium, like a conduit, to be received, and causing effects at a recipient. The second characterizes media communication as social construction of meaning, which emphasize that interpretation is based on shared understandings and cultural forms (Grossberg, Wartella, & Whitney, 1998). The Internet as a medium is characterized as providing freedom, for the would-be producer, since it is easy to publish on the Internet, but at the same time it becomes harder to be seen, to get an audience. Furthermore, interactivity can be a liability rather than a benefit, since it demands an active audience (McQuail, 2000). The concept of interactivity is itself ambiguous, and can for instance refer to the opportunities and constraints for interaction between people, or to the interaction between people and messages, or between people and the system mediating content and communication (McMillan, 2002). On the Internet, thus media are implemented, constraining communication, through the characteristics of the digital material of the medium, and through tools of creation and consumption. For instance, e-mail is a medium implemented on the Internet, through which genres of communication are enacted. On the Internet, since media are digital, they sometimes converge, such enabling the digital material used for world wide web pages to be authored and sent through email.

**Genre rules**

Substance (including motive, topics, and themes) and form of communication can be regulated by genre rules. These can regard the suitable topics for a communicative exchange (substance), and also the form (for instance, the
subject line of a memo). When genres are used, these elements of form and substance are enacted. Then, when the rules are followed, the genre is maintained. When the rules are violated, and if the violation becomes adopted as a genre rule, this induces a variation, or it can modify the genre, given that the change is dramatic. In their study of the memo genre, Yates and Orlikowski (1992) note that genre change was introduced and enforced by management. Also, elements like the “from”, “to”, and “subject” lines from the memo genre were used for electronic mail. This shows how new media can become influenced by existing genres. But also, the electronic memo genre was affected by new practices surrounding email, and of properties of email, such as not going through a secretary, and not having the same layout possibilities as with typewriters. The existence of a new medium in a recurring situation can thus affect an existing genre, through remediation. Also, the form of a genre, in this case the memo genre, can affect all other genres mediated through in this case electronic mail, by designing in aspects of the memo genre in the medium – in this case for instance the subject and sender lines (ibid). A similar argument has been made for other electronic documents, such as online newspapers, showing how new functionality enabled by the medium transforms the purposes for which genres can be used. In the first stage, genres are replicated, satisfying the same purposes as before, they then add new functionality enabled by the new medium, but their origin is readily identifiable. In the third stage, the origins of the genres are no longer readily recognizable, placing them next to genres having emerged in the new medium without precedent genres. Surprisingly, Shepherd and Watters recommend that genres stay at the second level, being recognizable, since then users can draw upon previous experience in using the genres (Shepherd & Watters, 1998). Apparently, this surprising advice emerges from Shepherd and Watters’ definition of progress, which bundles form and new functionalities into one line of progress of change. In their article, functionalities are made relevant in their presentation through the new things which can be done, i.e. what purposes can be satisfied. This again demonstrates that form and purpose cannot be treated as one unit, and also that functionality of a medium can be drawn upon in genre change. That genre conventions are often used in remediated forms was shown in a comparison between print front-pages and online front-pages. The study revealed that print conventions like a left hand navigation bar, use of a dominant photo, and change of headline size were also common on the online front-pages (Utt & Pasternack, 2003).

A model for genre change has been proposed, that genres, shared by discourse communities, are a stabilizing communicative force, whereas social
practices and technology affordances may be either stabilizing or destabilizing forces. Discourse communities are defined as groups communicating to achieve joint goals. Yates and Summer (1997) describe genre as embodying generic fragments, in particular configurations. In their model, motives are not part of genres, but a part of social context. They show that an electronic document genre in a company evolved from a textual representation to an elaborated presentation model, through the use of technology affordances. These were used, not just because they were available, but because using those resolved breakdowns of the older genre forms (ibid). Bazerman describes a similar case, of patent claims, where law regulating the genre was changed, due to a breakdown caused by effects of the genre rules. However, his case did not involve using technology potential as part of the resolution of the breakdown. (Bazerman, 1994). This is consistent with the advice of Agre (1998), who argues that designers working with re-design of artifacts belonging to genres, should examine what genres could do for users, by exploiting technology potential.

**Genre elements**

Genres can form during a short period. The personal home page, possibly the first unique genre on the WWW, very soon had a set of core page elements. The presence or absence of these elements correlated with user preferences of the pages (Dillon & Gushrowski, 2000). Similarly, Swales (1990) asserts that genres constrain content, positioning, and form. Regarding form, he turns to cognitive prototypes, to explain how instances are recognized as belonging to genres. Cognitive prototypes have also been used by other authors discussing genre, e.g. Paltridge (1995). That genres are cognitive prototypes means that an artifact may be a more or less good example of the genre, depending on how near it is to the cognitive prototype, in the conceptual space. Cognitive prototypes have central characteristics rather than necessary and sufficient conditions (Rosch, 1973; 1978).

Positioning, which Swales treats as a separate aspect, is arguably a form element, of a composition. He illustrates the importance of positioning in academic texts (Swales, 1990). Thus, composition of elements is an important characteristic in genre research, which roughly follows the hierarchical model proposed by Miller, except that not all agree that genre should be just at one level.

It has been shown that form alone often facilitates recognition of familiar genres. In an experiment, the texts of digital and printed documents were in
one condition replaced with X and 9 (characters and numbers respectively), whereas layout was removed in the other condition, presenting all text in one paragraph. Both the composition and characteristic elements were relied on for recognition. (Toms & Campbell, 1999). The genre was familiar to the audience, emphasising the importance of previous experiences. Also, the results were explained in terms of characteristic elements and their composition, providing an example of using a description in terms of genre elements. Their research is also an example of using content (or meaning) as a defining characteristic. They moreover used interface as a describing term, for interactive form elements. Meaning as the defining characteristic was also used in a study on the effects of linking on the frequently asked questions genre, when remediated to the web. It was argued that only links that enabled the documents to be used for new purposes changed the genre, whereas other uses of links no more altered the genre than presenting a long text on several printed pages (Crowston & Williams, 1999).

Using genre as a unit of analysis, for instance, a task analysis method for e-commerce has been proposed. It did well in analyzing the task of placing an order, but analyzing the browsing activities prior to placing an order were described as more problematic (Dyk & Renaud, 2004). Also, other researchers has argued that design, where user goals are ill-defined, is problematic to deal with using traditional task analysis methods (Bolchini & Mylopoulos, 2003).

**Interactive and medial form**

The discipline of human-computer interaction (HCI), with its history of analysis and design of office systems, provides a historical progression of interface elements for computer programs. Nielsen (1993) presents a progression going from batch file, through command language, menus, and forms, to windows, menus, icons, pointer (WIMP). Combined with hypermedia vocabulary (Halasz & Schwartz, 1994; Pawan & Helander, 1997), it is suitable for describing interactive form elements on web sites. Each interface paradigm remediates aspects of the previous, for instance menus and forms are common in WIMP and hypermedia interfaces. Also, for instance, command lines have been proposed as a means for jumping between nodes in hypermedia (Younggren, 1988). Each paradigm also introduces advantages over previous media forms. For instance, through hypermedia, the linear nature of the printed material of a book can be overcome, allowing the author to specify different paths through the structure. The reader can be the author of the paths, linking nodes with each other, as different asso-
associated documents are found and read together (Bush, 1996). The organization of hypermedia is also covered in the information architecture literature. A site can be organized in a hierarchy, which has depth, and breadth. The navigation system is what allows people to go between different places in this structure. The navigation system consists of navigation elements, which are different kinds of menus. Good labeling is what makes people understand what the different menu items are meant to represent. Context is another important concept, which in information architecture is what allows a person to orient themselves in the hierarchy. Hypertexts are seen as a way to bypass the hierarchy (Rosenfeld & Morville, 2002).

In media theory, it has been shown that contents are often remediated in different media, where media is seen as having medial form, characteristic for a particular medium at a particular time. Remediation is often driven by a wish to make mediated contents more similar to what they represent. (Bolter & Grusin, 1999). The importance of interactive form as distinct to media form has been highlighted in a study of an online discussion forum. There, it was seen that interactive form elements made different conversational moves more or less convenient, thereby affecting (semantic) content (Erickson, 1997).

**Use-quality**

In HCI, use-qualities are often used as design objectives or as descriptions of characteristics of an artifact in use. Taking the example of office tools, the ISO DIS 9241-11 usability definition lists three relevant use-qualities; effectiveness, efficiency, and satisfaction. A more nuanced view on use-quality was given by Ehn and Löwgren (1997). Related to the design clusters described by Atwood et al. (2002), their view seems to be primarily based on the design theorists, user-centred design and participatory design clusters. They view interactive systems as having form, function, and structure, similar to the view adopted by Simon (1996), and having purpose as a descriptive category instead of function, like Kroes (2002). However, they instead define form as experience, as a subjective relation between user and system. In this thesis, form is instead a more objective category, whereas use-quality is seen as an analysis category. Ehn and Löwgren also propose three analysis perspectives for quality, namely constructional quality, ethical quality, and aesthetical quality. Alben (1996) present eight quality criteria

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4 Originally published in The Atlantic Monthly, July 1945
used to answer their design awards question: “How does effective interaction design provide people with a successful and satisfying experience?” (p.14). Löwgren (2001), furthermore emphasise that use qualities are related to different genres. He exemplifies that transparency would on the one hand be important in for instance a productivity related genre such as spreadsheets, whereas on opacity, on the other hand, would be essential for some computer games.

As an example, again consider the Erickson (1997) online discussion forum study. One secondary use-quality was highlighted, that of providing overview. That use-quality was explained in terms of other supporting use-qualities, elements of form, and actions. For instance, one supporting quality to “overview” was the “ability to skim”, which was supported by the form elements of headers. Also, rhythm, an experiential quality, was seen as facilitated by the element time stamps (Erickson, 1997). Moreover, research has addressed how the quality of flow relates to other qualities, in web site use. In that study, flow was characterized by time distortion, enjoyment, and telepresence. The attractiveness and interactivity of a site were the most important factors contributing to flow. In turn, flow was closely associated with learning, which as seen as important for attitude and behaviour change (Skadberg & Kimmel, 2004).

### 2.5. Summary: A genre perspective on interaction design

The genre perspective, as seen in this chapter, originates from media theory, in particular the theories of genre and remediation. In this thesis, it is informed by theory from human-computer interaction design. The dimensions for describing interactive systems achieved in the previous section are summarized in Table 2-1.

As illustrated in Figure 2-1, the genre perspective has a special standing amongst design perspectives, since it regards specifics of a genre, for instance generic compositions of form and content, rather than abstract properties proposed by other perspectives. The genre perspective on interaction design is summarized below. That also relates the dimensions for describing and modeling interactive systems genres (Table 2-1) to the generic interaction design perspective framework proposed by Hult et al. (2005).
Chapter 2. Genre based design of online newspapers

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Interactive &amp; medial form, style, spatial and temporal positioning</td>
</tr>
<tr>
<td>Content</td>
<td>The meaning of the element</td>
</tr>
<tr>
<td>Purpose</td>
<td>Purposes of use and production</td>
</tr>
<tr>
<td>User</td>
<td>Private &amp; professional roles, other characteristics</td>
</tr>
<tr>
<td>Producer</td>
<td>Private &amp; professional roles, other characteristics</td>
</tr>
<tr>
<td>Use-quality</td>
<td>Intended and actual use qualities and experiences</td>
</tr>
</tbody>
</table>

Table 2-1. Dimensions for describing interactive systems genres

A genre perspective framework

The users: The users are seen as belonging to audiences, or to producing organizations. They also are seen as belonging to audiences of media, and of discourse communities, sharing genres of communication. They are seen as having sets of purposes, in different situations, which can be met or negotiated, through genres.

The artifacts: Central artifacts are production artifacts, artifacts for media consumption, and communication infrastructure. Artifacts are seen as having form, content and purpose. Form is seen as a composition of content elements, where an element at one level can be decomposed into form and content at a lower level of analysis. Form is described in terms of interactive form, medial form, and style. Medial form is seen as being composed of digital materials, with properties depending on its design. Although purposes belong to users, artifacts are often described in terms of what purposes they fulfill.

Context: A historical context of existing and pre-existing genres and media are considered. At the level of genre, meaning and genre rules are shared in discourse communities and societies. Rules and regulations, as well as the current zeitgeist in society, are also seen as important. Also, artifacts are considered as dependent both on their contexts of production and consumption.

Activities: Activities are seen as being related to genres, as belonging to, or being variants of, or not belonging to, a genre. Activities related to genre are seen as having recurring motives in a society. The genres are embodied by genre rules. Important activities are production and consumption of genre artifacts, but also the maintenance, modification, or creating of variant genres, through the change or enactment of genre rules.
Central relations: Important relations are those between artifacts, user, producer, advertiser, technology, and production management. These relations are regulated through the use of genre rules. Modifications of these factors can change the balance needed for the maintenance of a genre, and may cause changes to a genre, or the end of a genre. Genres are thus related to a history of previous and current genres. Changes to genre rules may occur through design, in which case the relation between stakeholders and designer becomes important.

Communication: Audience members and producers are seen as communicating, through genres, in networks, in one-to-many mass communication, or between two parties. Communication can be in one or two directions, and the communication can be on unequal terms, where one party has more power over the communication. Communication is often conceptualized as interactivity, between communicating parties, between users and contents, and between users and the physical mediating artifacts.

Perspective-implied use-qualities: Use-qualities are seen as being associated with different genres. Genre itself brings qualities of surprise, familiarity and appropriateness in a situation.

Described by: Accepted terminology is, for instance, channel, medium, genre, audience, producer, content. Economy is an underlying value, as is value for society.

Genre perspectives

As implied above, the design perspective may suggest how to conduct design. Design drawing on an explicit genre perspective would suggest finding out about the aspects of the framework discussed above. The genre perspective framework could thus be used to describe different genre perspectives; much like the generic perspective framework can be used to describe design perspectives, such as the genre perspective. In chapter 11, the online newspaper genre is described using the genre framework.

Just like contents can be remediated in new media, also tools of production, the materials contents are made of, and artifacts of consumption can be remediated. In a sense, procedures of production and consumption can be remediated as well, even though the people doing the production and consumption are not always digitalized. A genre perspective suggests that design activities regarding the different kinds of remediation could be useful. That is, the artifact, the situations of use and production, and the tools, ma-
terials, and media used. In particular, it suggests that an artifact analysis could be a useful means of going about design, by analysing precedent designs. In doing that, it also suggests that the view of the user and producer would be important, regarding the final artifact. Moreover, it implies that the practice of the user and producer are important to take into account, when designing tools for the remediation of a genre.
3. Method

This chapter broadly describes the research methods used, and what data the different studies are based on. It also describes their relation to the Electronic Newspaper Initiative research and development project.

3.1. The interplay between research and design

Research on artifacts, and the interplay between people and their artifacts can be conducted in numerous different ways, for instance through survey methods, individual interviews, group interviews, observation, diaries, experiments, and artifact analysis. My research was conducted as a qualitative case study within the context of a design project.

When studying a design process, and the artifacts being designed, an additional layer is added, that of creation and change. At the outset, the artifact might not exist. Through the process of design, numerous designs may be created, exploring the design space. Not only the artifact can be of interest, but also what the situation of use would be, if a design alternative would in fact be put to use. When testing a design, there are always implicit or explicit assumptions about contextual factors, such as current trends, fashions, economy, and the development of other technologies. A changing context can make a design solution obsolete, or inappropriate, in ways that are hard to predict, during the time that goes by between the research situation and the situation of use of the finished product. Naturally, the published out-
come of the research may in itself affect the development of other designs that compete with the design being tested, or it can cause changes to the context, such as altered legislation, that hinders the artifact from being put to the intended use. These changes can also take place during design, in which case an explicit design rationale can be used to reconsider design decisions. Design and research sometimes use the same methods, although in research, other criteria for rigour are used, and the studies are thus carried out somewhat differently than if they would primarily have been used to inform design. In other cases, the research process relies on data collected during design, but which is of secondary importance to the design process.

The kind of studies carried out here is often labelled as action research in the literature (Zuber-Skerritt, 1991). The design activities had two motives, one was to gather research data, and the other was to achieve good design work for the design project. For all studies, to some extent, data was collected first, and hypotheses and contextualization in previous research, was conducted after the studies. In the studies on design action, the researcher was an active agent in the design process, rather than a detached observer. In the ideal case, in action research, the research results should be used to improve practice, so that subsequent design work would incorporate the changes. In this case, the design activities which were analyzed in detail were conducted during a rather short time span, compared to the time demanded by scientific analysis. It was also the case that some observations which led to scientific analysis was seen as contrasts between design meetings, or seen in the light of subsequent events and contextualization in previous research. This naturally also led to a delay in the analysis process. In effect, much, but not all, analysis work of the design process was finalized approximately two years after the design meetings took place. The exception to this was a workshop held with usability professionals, which is here used as a contrast case. In that case, some methods improvements were introduced. The research on online newspaper design was used to inform design in the project.

3.2. The electronic newspaper initiative

The goal of the design project in which the research was conducted, the Electronic Newspaper Initiative (ELIN) project was to create a news publishing system prototype, demonstrating the ELIN technologies. The prototype was to be created by a development consortium, funded by the fifth framework EC programme. It had partners in Sweden, France, Germany, and Spain. Even if the project would be successful, further development would be needed for the toolkit to become a commercial product.
The project idea was to integrate existing tools into a toolkit, rather than creating everything from scratch. These tools would be compliant to several standards, most importantly MPEG 4, 7, and 21. It would utilize a subset of these extensive standards for the technical needs of the project, to make it easier to integrate the toolkit with other systems. The toolkit would provide added value to existing publishing systems at news organizations, rather than be a full-fledged replacement. The added value was to be interactive video, personalization, location-based services, and parallel publishing with automatic content adaption to smartphones, personal digital assistants and to PCs. In the toolkit, a 3D chat environment for news and advertisements would also be integrated (Table 3-1).

### Technologies and their purpose

<table>
<thead>
<tr>
<th>Publishing interactive multimedia contents, mainly through MPEG-4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalized contents through smart agent technology.</td>
</tr>
<tr>
<td>Content delivery based on the location of the user.</td>
</tr>
<tr>
<td>Parallel publishing, with content adoption to terminal and network capabilities, to PCs and mobile phones.</td>
</tr>
<tr>
<td>Interaction between audience members, through a 3D world for news and advertisements.</td>
</tr>
<tr>
<td>Providing system interoperability through the MPEG-4, 7 and 21 standards.</td>
</tr>
</tbody>
</table>

The basic development scheme of the ELIN project was a single-pass waterfall model, a sequence of phases going from requirements to implementation, through a development phase (Table 3-2). The project had four phases, each overlapping with previous and subsequent phases. Each phase was divided into parallel activities. For instance, in phase one, the user needs analysis was conducted in parallel with the technical analysis.

Project work in the ELIN project was divided between partners. Technical partners were responsible for one technology each. Two media companies were involved, and their responsibility was to test the ELIN system prototype, to provide an understanding of the market, and of news production. Linköping University was responsible for interaction design. One partner was responsible for project coordination.
Chapter 3. Method

<table>
<thead>
<tr>
<th>No</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. User needs and technical analysis</td>
</tr>
<tr>
<td>2</td>
<td>2. System specification</td>
</tr>
<tr>
<td>3</td>
<td>3. Development</td>
</tr>
<tr>
<td>4</td>
<td>4. Installation and operation</td>
</tr>
</tbody>
</table>

Table 3-2. System development phases

Following this scheme, no partner was expert in the work of any other partner. Much development work was conducted at each site. Coordination was conducted through project meetings, and through the project documentation. Also, weekly or bi-weekly telephone conferences were used for coordination. In addition, project work as evaluated at audit meetings, by external reviewers. At these evaluation points, it could be decided to end the project, if major obstacles had been encountered. Since each milestone demanded extensive resources allocated to writing the work package deliverable reports, the process was highly document-driven. Also, it could be decided that specific deliverables had to go through another development cycle, to make improvements. Thus, at the evaluation points, it could be decided to deviate from the single-pass waterfall model. At the time of writing, just before the installation and operation phase, two work packages had been reiterated through decisions at evaluation points. The project duration was planned for two years from start to finish; however, the iterations caused a delay of more than one year.

At the outset, it was not clear what the added value of these technologies would be in terms of news and advertisement services to newspaper audiences, and to publishing companies. Also, interfaces for news consumption would have to be designed. It was at the outset unclear to what extent interfaces for news authoring would have to be designed, since existing authoring tools would be used to a great extent. From a practical viewpoint, time that could be spent with users was limited. Key personnel from the media organizations were only available for short periods, such as two or three hours, during few occasions. Since the entire project was only going through a single iteration, creating a prototype, rather than a full commercial product, activities relying on functional prototypes had to wait for the testing phase. Another consideration was that the media organizations wanted to increase their knowledge of the new technologies. A third important consideration was that the project development team was distributed
over different organizations throughout Europe. This made gatherings of developers and end-users twice as complicated as just gathering one of the groups, and project team meetings were also associated with considerable costs. Therefore, it was economically advantageous to avoid methods involving too many different team members.

Interaction design relied on a scenario based design approach, together with user characteristics, use-quality, and design rationale. As suggested by the genre perspective outlined in the previous chapter, it would be useful to conduct studies regarding the form and content of current online newspapers, as precedent design solutions, and to model the new work and use procedures, as a remediation of current procedures, tools, media, and materials of production and use. Regarding the study of design precedents, the method proposed in literature is content analysis (Hansen, Cottle, Negrine, & Newbold, 1998), which here would have to be informed by interaction design theory. Before the ELIN project started, the author had already begun research on the state-of-the-art in the interaction design of front-pages in the online newspaper genre. This research was continued during the project, and results were used to inform design in the project.

Previous research on remediation of practice did not favour pure interviews or surveys (Ehn, 1988), therefore these were not used as the main method of user involvement. The development methods used in the first project phase (Table 3-2), were mainly focus groups conducted as scenario building future workshops, and prototyping. Also, ethnographic interviews, semi-structured interviews, site visits, situated interviews, and online questionnaires were used. The user needs analysis described the gap between current and future use, in terms of difficulties and opportunities of new technologies. These opportunities were described as 36 services integrated in 24 scenarios of future use. The audience was described in terms of demographics, from the online questionnaires. Also, typical audience user descriptions were created, focusing on desirable use-qualities, for different users, based on interviews. A set of prototypes were also created.

In the second project phase, prototyping of audience and user interfaces was conducted, based on the scenarios derived in the development method used in the first phase, and on the project related genre analyses created outside the ELIN project. That activity was continued until implementation of user interfaces. For instance, cooperative design was used to refine the designs. Also, interfaces for production were designed, for the news publishing tool developed in the project.
Chapter 3. Method

At the time of writing the final project evaluation, which would take place in the installation and operation phase, had not yet begun. In this phase, the initial scenarios and use-quality criteria were to be used as a point of departure.

3.3. Research data

In this thesis, all research activities have also influenced or been part of the ELIN project. The genre analyses were not formally part of the ELIN project, but were nevertheless used to inform the designs. From the ELIN project, research data from the future workshops and from the front-page design process was used.

Genre analysis

The first analysis, of interactive form of online newspapers, was conducted on three online newspaper front-pages (Table 3-3). It also included data from article pages reachable form the front-pages, at level two in the site hierarchy. Each front-page was sampled on 14 different days. The data was collected by researcher R1, the author. The second analysis, of the user and producer view of online newspapers, included a content analysis of the front-pages of 9 online newspapers (Table 4-1).

<table>
<thead>
<tr>
<th>Site analysis</th>
<th>Focus</th>
<th>Content</th>
<th>No</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Genre elements</td>
<td>Front-pages</td>
<td>3x14</td>
<td>R1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Also level 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Genre elements</td>
<td>Front-pages</td>
<td>9x2</td>
<td>R1, R2</td>
</tr>
<tr>
<td>3</td>
<td>Context stream element</td>
<td>Front-pages (Also level 2)</td>
<td>77</td>
<td>R1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3-3. Site analysis

Each front-page was sampled twice, in 2001 and 2003. The data was collected by researcher R1 and R2 (Carina Ihlström). The research data in both cases consisted of printed web pages. The third analysis focused mainly on an interactive form, the context stream element. That element presents additional news items as a context to full article texts. In this analysis, 77
front-pages were collected and analyzed by researcher R1, covering most Swedish online newspapers.

The analysis of the user and producer view also included interviews with 153 audience members, of the 9 online news sites, and of representatives of online newspaper management of the papers (Table 3-4 and Table 4-1). This data was collected by researcher R2. Research data consisted of interview transcriptions and audio recordings.

<table>
<thead>
<tr>
<th>Interviews</th>
<th>Focus</th>
<th>Participants</th>
<th>No</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use</td>
<td>Audience</td>
<td>153</td>
<td>R2</td>
</tr>
<tr>
<td>2</td>
<td>Production</td>
<td>Producers</td>
<td>13</td>
<td>R2</td>
</tr>
</tbody>
</table>

Table 3-4. Interviews

**Future workshops**

The study of design work and visions of future news, was based on eight design sessions (Table 3-5). One pilot study, with a sports community, was conducted before the main series of workshops. Also, one contrasting study was conducted at a consultant company, with designers. That study was conducted to compare the design style between users as designers, and professional designers. Design sessions 7 and 8 were conducted in Spain, partly in Spanish and partly in English, whereas all other sessions were conducted in Swedish. Research data consisted of audio and transcriptions of workshops 1, 3, 4 and 5. Workshops 7 and 8 were partly conducted in Spanish and verbal interaction was therefore not analyzed. One of the scenario building phases of workshop 9 was transcribed. It was based on audio and video recordings of design work. From all workshops, design materials were also collected and used as research data. The transcriptions were at a level of including all verbal and identifiable non-verbal interactions (e.g. someone making a tapping sound on the table as he or she was pointing). The transcription also included hesitations, pauses, aborted and interrupted utterances. This level of transcription corresponds to level 2 in Linell’s method of transcription (Linell, 1994). This data was collected by researcher R1. Regarding the criticism in the literature (Hackos & Redish, 1998), of task analyses conducted during focus groups to be inaccurate and incomplete, it should be noted that no conclusions are made regarding the detailed task structures achieved in the workshops. However, overarching conclusions regarding the scenarios are made. Also, just like observed tasks, these out-
comes can be questioned with regard to whether they meet desirable goals, and whether the tasks are the best ways to accomplish the overarching goals.

<table>
<thead>
<tr>
<th>WS No</th>
<th>Focus</th>
<th>Participants</th>
<th>No</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Community / end users</td>
<td>Sports Community</td>
<td>5</td>
<td>R1</td>
</tr>
<tr>
<td>1</td>
<td>Tools</td>
<td>Journalists, editors etc.</td>
<td>6</td>
<td>R1</td>
</tr>
<tr>
<td>2</td>
<td>Business models</td>
<td>Marketing &amp; management</td>
<td>7</td>
<td>R1</td>
</tr>
<tr>
<td>3</td>
<td>Tools</td>
<td>Journalists, editors etc.</td>
<td>6</td>
<td>R1</td>
</tr>
<tr>
<td>4</td>
<td>Community / end users</td>
<td>Political community</td>
<td>3</td>
<td>R1</td>
</tr>
<tr>
<td>5</td>
<td>Community / end users</td>
<td>The elderly</td>
<td>5</td>
<td>R1</td>
</tr>
<tr>
<td>6</td>
<td>End users</td>
<td>Early adopters</td>
<td>10</td>
<td>R1</td>
</tr>
<tr>
<td>7</td>
<td>Business models</td>
<td>Marketing &amp; management</td>
<td>10</td>
<td>R1</td>
</tr>
<tr>
<td>8</td>
<td>Business models</td>
<td>Marketing &amp; management</td>
<td>10</td>
<td>R1</td>
</tr>
<tr>
<td>9</td>
<td>Design methods</td>
<td>Designers</td>
<td>4</td>
<td>R1</td>
</tr>
</tbody>
</table>

Table 3-5. Workshops

<table>
<thead>
<tr>
<th>WS No</th>
<th>Focus</th>
<th>Participants</th>
<th>No</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front-page design</td>
<td>Management, journalists</td>
<td>4</td>
<td>R1</td>
</tr>
<tr>
<td>2</td>
<td>Front-page design</td>
<td>Marketing, graphics, usability, technicians</td>
<td>10</td>
<td>R3</td>
</tr>
<tr>
<td>3</td>
<td>Front-page design</td>
<td>Audiovisual and journalist students, technicians, journalists, academics</td>
<td>12</td>
<td>R3</td>
</tr>
</tbody>
</table>

Table 3-6. Cooperative composition workshops

**Front-page design**

For front-page design, initial design work was conducted by different designers, all using the genre analysis and scenarios of use as a point of depar-
3.4. Studies

The first study, presented in chapter four, regards genre specific guidelines for online newspaper front-page design. This study utilized data from site analysis 2 (Table 3-3), and interviews (Table 3-4).

The second study, presented in chapter five, regards the interactive form of online newspaper front-pages, and the design rationale of the context stream element. It relies on site analysis 1 and 3 (Table 3-3).

The third study, presented in chapter six, presents a hypervideo front-page design. It relied on the cooperative composition workshops (Table 3-6) and the future workshops (Table 3-5).

The fourth study, presented in chapter seven, regard cooperative scenario building, and the lessons learned from applying that method. It relied mainly on the written records from the workshops (Table 3-5).

The fifth study, presented in chapter eight, regard implications for media organisations, from the ELIN system. It relied mainly on the written records from the workshops (Table 3-5).

The seventh study, presented in chapter nine, is an in-depth study of how participants’ genre perspectives on the online newspaper genre, affected the work in workshops 1, 3 and 4. It relied mainly on transcriptions of workshop audio data (Table 3-5).

The eighth study, presented in chapter ten, is an in-depth study of how participant design skills interact with facilitator skills, in cooperative scenario building, in workshops 1, 3 and 9. It relied mainly on transcriptions of workshop audio data (Table 3-5).
4. A genre perspective on online newspaper front-page design

In the process of designing online newspapers, publishers seek to identify good ways to use web technology for establishing their online editions. Today, there is a demand from both academics and practitioners for more knowledge about how to design the online newspapers to become as recognizable and familiar as the printed ones (Boczkowski, 2002; Gunnarsson, 2002).

To address the perceived need of knowledge about design, this chapter uses genre theory (Shepherd & Watters, 1998; Yates & Orlikowski, 1992) for developing empirically based design recommendations for online newspapers. Newspapers and TV news broadcasts can be perceived as sub genres of the news genre (Bell, 1991) and the integration of the web medium and the traditional newspaper genre defines a genre for online newspapers. To gain good quality in design different approaches could be taken, for instance, the use of guidelines. Guidelines could be used as checklists against a design (Nielsen, Bush, Dayton, Mond, Muller, & Root, 1992; Nielsen & Molich, 1990; Shneiderman, 1997; Smith & Mosier, 1984). Genre theory, however, helps to look at the design problems from a different perspective than prevailing usability engineering strategies (Breure, 2001).

5 This chapter is based on a publication (Ihlström & Lundberg, 2004), but has been edited as a thesis chapter.
Genres are produced, reproduced and changed over time (Yates & Orlikowski, 1992). A genre can be characterized by its content, form, functionality (Shepherd & Watterson, 1998) and positioning (Ihlström & Åkesson, 2004), and a specific genre consists of a set of genre rules that are recognized and enacted by human actors in their use of the genre (Yates & Orlikowski, 1992). The genre rules of online newspapers, for instance, are enacted by both publishers and audience in the daily production and consumption of news.

Genre awareness is a notion of how users and designers reduce the complexity of the web (Eriksen & Ihlström, 2000). When establishing a new site with a purpose similar to existing sites, genre characteristics may be copied and refined to reflect resemblance to an existing genre, that is, designers may want to draw on already accepted genres that correspond to their design purpose. Genre specific content elements for the online newspaper genre have been identified by Eriksen and Ihlström (2000), for instance, the news stream, the archives and the headlines. The news stream presents recent stories ordered by publishing time. The main criterion for arranging articles is the time stamp of the article. Neither broadcast nor print media applies this form of organization. The archive has also become a part of the online newspapers. This construct allows users to search or browse historical content. Headlines are the presentation of stories that are valued as most interesting, these are presented at the front-page of the online newspapers. It is also essential to be aware of the users’ expectations of the genre (Crowston & Williams, 1997).

The methods used in this study are described in section 4.1 followed by a presentation of the empirical results in section 4.2. In section 4.3, the findings are discussed and the design recommendations are presented. Section 4.4 concludes the chapter.

### 4.1. Research approach

In order to obtain a comprehensive understanding of online newspaper design, a qualitative study was conducted. The study consisted of interviews with management, designers and editors-in chief at nine Swedish newspapers with online editions, and interviews and usability tested 153 of their users (Table 3-4), in order to derive genre rules based on publishers design purpose and audience recognition and use. Also, the front-pages of the nine online newspapers were analyzed in 2001 and again in 2003 to identify genre characteristics and to study design changes of the genre (genre analy-
4.1. Research approach

sis 2, Table 3-3). The analysis of 2001 was also used to interpret the statements of the respondents, whereas the 2003 analysis showed what features had gained dominance two years later.

There are three reasons for why it is relevant to study the publishers, the online newspapers and their audience in Sweden, to gain more knowledge of the design and use of online newspapers. Firstly, Sweden had the fourth largest newspaper consumption per capita in the world in 2002, only Norway, Japan and Finland had larger consumption (WAN, 2002). Secondly, most Swedish daily newspapers have online editions today (Gunnarsson, 2002). Thirdly, reading newspapers online was the fourth activity (after e-mail, surfing and banking) in time spent on the net in Sweden during 2002 (World Internet Institute, 2002).

<table>
<thead>
<tr>
<th>Nr</th>
<th>Online newspaper</th>
<th>Average circ.</th>
<th>Unique visitors</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><a href="http://www.ekuriren.se">www.ekuriren.se</a></td>
<td>33.000</td>
<td>3500</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td><a href="http://www.hallandsposten.se">www.hallandsposten.se</a></td>
<td>32.500</td>
<td>2400</td>
<td>4-5</td>
</tr>
<tr>
<td>3</td>
<td><a href="http://www.nerikes.se">www.nerikes.se</a></td>
<td>69.000</td>
<td>8000</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td><a href="http://www.nt.se">www.nt.se</a></td>
<td>49.900</td>
<td>4000</td>
<td>3-4</td>
</tr>
<tr>
<td>5</td>
<td><a href="http://www.stonline.se">www.stonline.se</a></td>
<td>38.600</td>
<td>1100</td>
<td>2-3</td>
</tr>
<tr>
<td>6</td>
<td><a href="http://www.unt.se">www.unt.se</a></td>
<td>62.100</td>
<td>9000</td>
<td>6-7</td>
</tr>
<tr>
<td>7</td>
<td><a href="http://www.vlt.se">www.vlt.se</a></td>
<td>47.600</td>
<td>7000</td>
<td>4-5</td>
</tr>
<tr>
<td>8</td>
<td><a href="http://www.vk.se">www.vk.se</a></td>
<td>45.000</td>
<td>10000</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td><a href="http://www.corren.se">www.corren.se</a></td>
<td>67.300</td>
<td>5000</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 4-1. The online newspapers in the study

In this chapter, online newspapers are defined as the online editions of daily newspapers, not including branch specific or other newspapers. To get a good representation of Swedish newspapers Citygate was contacted, which is an association of newspapers located from Halmstad in the south of Sweden to Umeå in the north. Nine of their ten newspaper members agreed to participate, providing access to their audience as well, resulting in a sample that is representative for Sweden. The URL:s, the daily average circulation of the printed newspaper, unique visitors online per day and the number of staff at their Internet divisions from 2001 are presented in Table 4-1.
In the remainder of this chapter the newspapers are referred to by their numbers in Table 4-1.

**Webpage analysis**

A web page analysis was conducted in 2001, and again in 2003, in order to identify genre characteristics and to study design changes of the online newspaper genre. To study design change, we (researcher R1 and R2) have used a repertoire of page elements consisting of elements from general web design, that is, navigation and search elements and genre specific elements, that is, the news stream, the headlines and the archives. Advertisements, finally, were included in this analysis, since they cover a lot of space in the printed edition, and to a great extent is what currently brings revenue to the online edition (Borrell & Associates Inc, 2003; Ihlström, Lundberg, Rehnström, & Vimarlund, 2002).

![Figure 4-1. The column and section grid (Ihlström & Åkesson, 2004)](image)

All page elements in the repertoire can be seen as content elements, which are presented in one of several forms, sometimes require functionality, and are positioned on the web page. All page elements were analysed according to this view. The focus of our web page analysis was on the front-pages since it is the most complex page, containing all page elements. A column and section grid was used to describe the positions of the elements on the front-page (see Figure 4-1 and Figure 4-2).
4.1. Research approach

The results from the first web page analysis and the audience response was reported back to the newspapers at the end of 2001. The forms and position of the page elements of the front-pages from 2001 and 2003 are presented in appendix A.

![Diagram of a newspaper page layout](image)

**Figure 4-2. The column and section grid applied on paper 3**

**Interviews with the publishers**

To obtain knowledge about the publishers’ design purpose, researcher R2, Table 3-4, conducted semi-structured interviews with management, designers and editors-in-chief at the nine newspapers. The interviews were all based on an interview guide approach (Patton, 1990). The interview guide was used to ensure that the information needed was obtained in the interviews, but it did not determine the sequence or structure of the interview. The purpose was to allow new topics of interest to emerge as the interviews went on. Questions regarding design and page elements were asked together with a wide range of themes covering prerequisites, current status and the future expectations and so on. These respondents of the newspapers were chosen because they were the most suitable to answer these kinds of questions. These interviews lasted between 60-90 minutes. The interviews were recorded and then transcribed. In order to analyse the collected data, patterns were identified in the transcribed material (Easterby-Smith, Lowe, &
Thorpe, 1991). The patterns include issues raised repeatedly during the interviews or opinions that kept re-appearing and can be described as commonly found views. We both analysed the material of our own before making a joint effort in order to make the analysis more trustworthy. We discussed our different analyses and made joint decisions where we differed.

**Audience interviews and usability tests**

The plan was to interview 21 users at each newspaper in order to obtain knowledge about the audience recognition and use of the online newspapers. To get a good sample of respondents, a questionnaire was presented (as a pop-up window) when an individual visited the news sites. Also, two advertisements were presented in the printed edition of the papers. The pop-up window was shown from 3-7 days and there were 60-240 answers from users at each newspaper. The selection was made out of four different criteria; 1) gender, 2) age, 3) education and 4) Internet usage. There was a decline of 3-4 respondents that did not show up for the interview at each newspaper, giving a total of 153 respondents.

The final sample consisted of 78 women and 75 men. There were 12 respondents who were born in the 1920’s, 20 in the 1930’s, 25 in the 1940’s, 27 in the 1950’s, 28 in the 1960’s, 31 in the 1970’s and 10 in the 1980’s. 21 had compulsory school as their most advanced education, 53 had comprehensive school and 79 had a university education. 4 respondents had never used the Internet, 11 used it on a monthly basis, 25 some times a week and 113 on a daily basis.

Each interview session, performed by researcher R2 (Table 3-4) together with two colleagues, started with a standard usability test using the think-aloud technique (Shneiderman, 1998) for about 10-15 minutes in order to analyse their interaction (use) with the online newspaper. The interviews were carried out using a structured interview guide (Patton, 1990), in order to get answers to the same questions from all respondents. Parts of the interview guide were constructed to match the repertoire of page elements. The interviews took place in front of the computer, in order for the user to show the researchers how they performed tasks in the news site and for the users to relate to when answering our questions. 53 interview questions were asked, grouped into 5 different themes; (1) Navigation and structure, (2) Reading preferences, (3) Format, (4) Trademark and trustworthiness and (5) Others. Here, we mainly report from the first three themes. Each interview lasted about 45-50 minutes. The interviews were recorded and tran-
scribed. The analysis was done in a similar way as with the interviews with the publishers described above.

### 4.2. Empirical results

In the following section, first the analysis of each content element from the repertoire (navigation, news stream, headlines, search/archive and advertisements) are presented, followed by the publishers and audience view on each element. Thereafter, some general reflections from both the publishers and the audience are presented. The parentheses after the quotations indicate the numbers of the online newspapers presented in Table 4-1. Where position is mentioned, it refers to the column and section grid (see Figure 4-1) and the results in Appendix A.

#### Content elements

For each content element, we present a) its form and position (see Appendix A) and functionality, b) the design change since 2001, c) the publishers design purpose and d) the audience recognition and use.

The content elements of two front-pages from 2001 are illustrated below, where paper 2 (Figure 4-3) has tried to retain the newspaper form (that is, the broadsheet metaphor) for the headlines and newspaper part labels from the printed edition, whereas the web layout of paper 6 (Figure 4-4) most markedly differs from the printed newspaper genre.

![Figure 4-3. Front-page of paper 2, February 22nd 2001](image-url)
Navigation

We have identified five main different navigation element forms on the nine web sites; menus, bars, tabs, banners, and dropdown menus. Menus are composed of a column of headings, a variant was the small menu that merely consists of a few headings. Bars are composed of a row of headings, sometimes shown as tabs. One variant was the small bar, merely consisting of a few items. The vertical tabs, used at paper 4 in 2001, where the text was written vertically, was a technically advanced and unusual solution. The content of the tabs was shown when moving the pointer over them. When showing the content under the tabs, the news stream was hidden. Another unusual solution was a bar attached to a frame, that is, it stayed in position when the user scrolled the screen. In this case, it was placed at the bottom of the page at paper 6. Another navigational aid was the banner, which used a form resembling that of an advertisement. Finally, there were dropdown lists, which when clicked dropped down a list of items over the contents of the page. Common elements in 2001 were the menu presented as a table of contents (TOC), preferably in the B1 position, and the tabs or bar, presented in the top A position. The TOC also provided overview of site contents, by its content headings. Banners in different positions were also frequently used (see Table 4-1, Appendix A).

Design change. In 2001, there were two unusual navigational solutions; the on-mouse-over expanding vertical tabs at paper 4, and the bottom navigation
frame at paper 6. These unusual solutions from 2001 were not present on the sites in 2003. The use of banners as navigation elements had increased. The most common solution was still the left navigation menu at B1 and the navigation bar or tabs at A1-4.

*Publisher design purpose.* The publishers had discussions regarding the organization of the navigation elements. These discussions partly resulted from the online edition having contents that were not present in their printed editions as illustrated: "... but here we have additional contents such as services, which are neither bird nor fish. There are several different perspectives that should share too few dimensions." (7). Another issue of discussion was to separate the editorial from the commercial material, since many papers in addition to news and web services had commercial material of the same kind as in their printed editions. This was achieved in different ways, for instance by using color markup, and additional menus. Some publishers wanted to avoid an overloaded navigation, and they achieved this by dividing their navigation into categories.

Most of the newspapers were following the categories from the printed newspaper to some extent when designing their navigation. The depth of the sites was also discussed. To find things quickly, a maximum of three levels was used by for instance, paper 5 and one respondent stated that: "There is never more than two clicks to anything else." A respondent at paper 8 stated that news had to be categorized according to actuality. No-one provided a site map but some of the newspapers offered alternative navigation via drop-down menus or a table of content organized in alphabetic order showing all contents of the site. This was a time consuming effort, as illustrated by the respondent at paper 3: "We were trying to make it easier for our readers to get an overview of all contents. Sometimes one wonders whether it is useful at all."

*Audience recognition and use.* Most users returned to the first page to start from "the beginning" to browse the newspaper contents or to search for something else. "Either I click my way back, or I go to the start page and restart from there" a respondent from paper 9 stated.

More than half of the respondents thought that they got an overview of the contents of the online paper. In general, respondents found that they got overview from navigation elements and news elements such as headlines and captions. Some comments from the respondents were: "Yes, it is this list of different groups of contents, and that you can get further from these different stories."
However, the form of the pages and the position of the elements at some news sites made them less effective. On paper 6, which had the navigation bar placed at the bottom of the page, only one third of the respondents felt that they got an overview. As a respondent stated: “I never discovered this navigation at the bottom of the page. Never. I arrived in Uppsala in September-98 and each time I have had to think about how I did the last time” On paper 4, many of the respondents stated that they did not get a proper overview. The navigation element at paper 4 was vertical tabs, which did not show content before moving the pointer over them. Some respondents on paper 4 did not recognize the vertical navigation tabs at all and were surprised when they encountered them by accident. At papers 2, 7 and 8 most people felt that the paper gave a satisfying overview.

A respondent of paper 2 and several others stated that it might take some experience with the paper to get the overview: “I think that if one uses the website often, one surely gets a good overview. If one learn what is under the tabs” (2). It was not always the case that having read the printed edition helped when trying to get an overview of the online edition as another respondent from paper two stated: “It is like when it comes to reading the newspaper, one has read the printed edition during most of one’s life, and this is a new way of reading” and “... I recognize the paper, but I am not so used to the web” (9) whereas another respondent of paper 9 thought that the resemblance between the printed and online edition was helpful: “... I think so because you recognize it from the printed edition”.

Many respondents found it more difficult to find items when navigating in the online edition, than in the printed edition, as one respondent from paper 9 expressed “It is more difficult. Since I recognise the newspaper but I am not so used to the web”. As a respondent from paper 2 said, it could be due to different ways of thinking “… because here one must consider under what tab something could be. In a printed paper one searches pages. It is easier to find on the web because here I can go directly to the specific question.” Many respondents also found it rather easy to find things on the online edition, and some found it even easier.

During navigation of the site, only one third of the respondents could tell their position on the website, but as many as about one fourth of the respondents found it important to know their position. Most respondents that knew their position in the web sites were from papers 2, 3, 6, 7 and 8 and most that did not know were from paper 4. The most common ele-
4.2. Empirical results

ments used for this purpose were the URL in the address field of the browser or headings. One of the respondents stated, “I look at the captions to see where I am” (3). Also, dedicated landmarks in the navigation, for instance, a red dot in the B1 menu at paper 9, or marks in the tabs in the A1-4 position of paper 2 were used, for instance, “I look at the tabs, one can see on the marking what thing one has done last” (2).

Over 50% of the respondents considered it easy to find previously visited pages and very few found it difficult as illustrated by a respondent from paper 3: "It is easy to go back, I just use the back button”. Almost all of the respondents used the back button of the browser for this purpose. Very few of the respondents could see which way they have taken through the structure of the web site when moving from one page to another. Most of them looked in the URL trying to get this information. Also captions and different colours etc were used. Many respondents on paper 2 recognized the path taken by using a breadcrumb navigation element present at each page. The use of colour was also mentioned. Some comments from the respondents of paper 2 were "The colour marks show me what path I have taken" and "I look at the breadcrumb navigation aid”. Moreover, some respondents were looking in the browser history menu.

**News stream**

All of the newspapers had a special news stream element for the most recent news. It had the form of a list of article headings, each marked with a timestamp. All papers updated their news stream during the day. Some variations to the form of the news stream were found. Firstly, the position on the front-page varied, but not much. Most papers placed their news stream in one column in the Bt position in 2001 (see Table 4-2 in Appendix A), but the papers differed regarding what column it was placed in. The exception was paper 9, with a news stream in the C2 position. They also differed in length, from containing a few news items to stretching down into the C area. Secondly, some for instance, papers 5, 6 and 9 had divided their news stream according to different categories, for instance, domestic, international, sports, economics etc. Thirdly, there were also streams containing headlines, but without time stamps, these also existed with headlines dedicating them to particular categories, such as sports. We denote these just as streams, since they were not as time sensitive as the news streams regarding the absolute latest news.
The functionality of the news stream is based on continuous updates during the day, where some of the news is automatically presented by the Swedish Telegram Bureau (TT). Moreover, when the news stream was categorised into a table of contents, it sometimes got additional functionality. If there was a corresponding newspaper part containing all the articles of the category, then the news stream also was a navigational element. That was the case when the user could use any element in the news stream, or the contents heading, to navigate to different parts of the site.

**Design change.** The three papers with a division into categories in 2001 had changed to a non-categorized news stream in 2003. Only paper 7 instead changed to a divided news stream. In all papers, the news stream, with timestamps, was in a top position in 2003. There were also non-time stamped streams in the 2003 sample. In paper 7, there was a stream divided into several categories. A particular category found in 2003, but not in 2001, was "the most-read stream", which did not categorize items according to content, but according to how many times they had been read. Moreover, in 2003, there were several cases where a news stream or stream was presented together with a headlines element presenting articles in the same category.

**Publisher design purpose.** All newspapers updated their news stream continuously during working hours using news from TT. In 2001, some of the newspapers had started to update their news stream 24/7 and most of them had started to feed the news stream with in-house produced local news, which was provided by all newspapers in 2003. In paper 5 there had been a discussion whether or not to provide time stamps, and a respondent said: "We are going towards not time stamping, since it's really unimportant information. 03.00 really tell you nothing. It's mostly for our own use. We have removed it from the in-pages." A few of the papers had chosen to divide the news stream into different categories and this had also been discussed by others, for instance, at paper 8: "We are discussing whether we should divide it into local, domestic, foreign, but for now we keep it like this. We think it is advantageous to have it all together. We do news valuation and insert it in order."

**Audience recognition and use.** Most respondents (approximately 80 %) recognized the news stream. They used the label 'latest news', used by some papers, and the timestamp for this, as illustrated by a respondent at paper 2: "It is the latest that has been published, there are no timestamps on the ordinary articles" (2) They also recognized new articles due to form, when they were positioned in a top position; at the top of the page, at the top of a news stream or at the top of the headlines, for instance, "It has something to do with the latest
being on the top of the page. The most important things are on the top” (9) and "The latest news is very brief, the most important and very compressed” (6).

When timestamps were used, some readers used those to differentiate new articles from older articles. Paper 3 presented an “L” below the timestamp in their news stream to indicate that it was local news from the newspaper. The readers of paper 8, which had a sizeable time stamped news stream in the B3 position, all found it easy to recognise the latest news, for instance, “I know what items are the latest news. There are timestamps on the headlines.” and “I can see it in the field on the right. It catches the eye.” However, not all respondents could see what items were the latest, as one respondent of paper 4, with a small time stamped news stream at position Bb2-3, stated "It's not that easy to see. Of course, one knows that the main news always is placed on the front-page”.

**Headlines**

The main form of the headlines element was one or more puff element, which consisted of a headline and a lead paragraph and sometimes had an image. It could also have other contents such as a linked discussion. Sometimes the headlines were categorized, containing headlines from a particular section. On paper 9, there were also time stamped headlines making them a hybrid element taking the characteristic of the news stream of showing the time of publishing. In 2001, all of the newspapers published headlines in the top B position and several papers also in the C position (see Table 4-3 in Appendix A).

Some papers positioned news articles due to importance (for instance, paper 2, 4 and 8), whereas other papers used the size of headlines, amount of text or pictures to indicate importance (for instance, paper 3 and 6). Paper 9 added content during the day to the headlines section in temporal order, rather than ordering by importance. Sometimes, the category headings also functioned as navigation items.

The functionality connected to the headlines was also related to the browser functions, such as going to a new page with the full article text. When the article was categorised, if there was a corresponding newspaper part containing all the articles of the category, the headline also functioned as a link to that part.

*Design change.* Most papers in 2003 had a time stamped headlines section, although some papers as before had more than one headlines section. Only paper 9 went against the trend, removing the time stamps altogether from
the section. Moreover, in 2003, paper 4 presented headlines together with a stream presenting articles in the same category.

Publisher design purpose. All newspapers were in 2001 to some degree positioning the news that was considered as the highest valued at the moment in a top position. Many of them were using pictures as well, and sometimes the news article for the top position was even selected due to there being a good picture to go with it, as illustrated in the comment from the respondent from paper 1: "Firstly, one tries to find a good image that fits the page. And we'd rather have a broad image, since that looks best. Therefore sometimes the top headline won't be the same as in the printed edition. To make the page look nicer."

In the morning, the top story from the printed edition was usually placed in the top position but most of the papers were changing their top story during the day. "... preferably about three times a day. When something happens, you change. An accident or something else." was a comment from a respondent to paper 3. Sometimes time was considered to be more important than news value for the top position news as illustrated by a respondent to paper 8: "Sometimes an important news item is placed in the bottom position, since freshness is also considered when we prioritize. A smaller news item that is less important but more fresh can end up in the top anyway." Paper 9 had technical problems which made it hard to administrate the site. They were waiting for a new publishing system that they had been working with for four years. They found it problematic that all articles on the front-page had the same heading size regardless of the news value. "We can not prioritize at the moment, the latest one is placed at the top".

Audience recognition and use. Many respondents mentioned the size of headlines and the amount of text as the main tool for the newspapers to indicate the importance of the article together with the position on the page. The general opinion was that the layout was different online than in the printed edition, as illustrated by this comment from one respondent at paper 2: "On the net, I feel that there are few big news items, and many small".

The absence of pictures contributed to the general feeling that all articles had the same value. When a picture was present, the article was considered to be more important. Some respondents considered that the article placed on top of the page was the most important one, even if it had a timestamp. Thus, the news valuation was not seen as evident, as illustrated by the following citations: "All news here has the same size, regardless if there is a kitten in a
4.2. Empirical results

tree or a severe accident has occurred” (7) and “One has to decide for oneself, what’s is important” (1).

However, there were different opinions regarding whether this was good or bad, for instance, “One doesn’t have to get irritated when unimportant stuff cover half the first page as they sometimes do in the printed edition” (2), and “They select at the paper what they think one is interested in and publish it prominently. It can happen that the little article says more than the big one” (5), but most users missed the news valuation from the printed newspaper.

Search/Archives

The search/archives were presented on the first page by a link to a search page (1, 2, 4, 9), as a search function consisting of at least a text entry field (8), or both (3, 5, 6). Only paper 7 lacked a search/archive function completely. The links were presented as items in a menu, bar or tab, in the A or B positions. The search function had different positions in the papers (see Table 4-4, Appendix A). The amount of time that the news articles were available for search by the users varied from one to three months. The functionality of the search fields made it possible to conduct a search leading to a new page showing the results, mostly 20 at the time. The difference in functionality between the search function and the archive was that the search function only searched the current site, whereas the archive searched previous editions, sometimes including the current site, sometimes not.

Design change. All papers had at least a link to the search/archives in 2003. Some papers (2, 4, 7, 9) had added search fields to their front-page, whereas papers 5 and 8 removed their search fields, which result in a total of six papers with search fields on the front-pages in 2003. The search/archive functions in 2003 were always in the top position, either A or B, whereas in 2001 there were search functions also in the C position.

Publisher design purpose. In 2001, seven of the newspapers had archives with different limits for searching, for instance, available data from one week (1), four weeks (6), and three months (9), while one (paper 3) has an archive with material from several years. They were concerned that their users did not find and did not use their archive. Some of the papers allowed searching directly after publishing, for instance, paper 5: “Here it is possible to search immediately. If it is in the database, then it is searchable. If it is published, then it is searchable. They can even search for more than they are allowed to view. [...] Then they get an error message.” while others did not allow it until the day after. In some papers, there were different search functions for the news archive, and for
the current online pages. All but two papers (6, 8) had in-house made search engines. There was a discussion going on at the newspapers whether or not to let users have access to the newspaper archives of text and pictures. They all thought that these archives could generate revenues if they were accessible online. They are waiting until it will be possible to charge the users as illustrated by the respondent at paper 8: "We do have a text and picture archive at the editorial office. We do not put it online. It is a goldmine for us newspapers. Perhaps on the day when it becomes possible to charge for small transactions."

**Audience recognition and use.** More than half of the respondents stated that it was easy to find what they searched for on the web sites. Some users expressed that they liked to use the search function, for instance, one respondent from paper 2 said that "I use the search function as much as possible". One respondent from paper 4 said that "It is much more difficult to find things on the web. I think that they have complicated things with advanced technology." Most respondents who found it difficult were from papers 3 and 6 and most that found it easy were from papers 2, 7 and 8. Almost one fifth found it easier to search the web where twice as many found it easier in the printed edition, since many users navigated when searching. "If one has read the paper for years, then one finds, it’s not like that on the net" (6).

**Advertisements**

There were two variations of advertisements; banners, and links in menus. A banner normally was an illustration, which could have both text and images. They could also be animated and have sound, although in our sample, there were no sound banners. We differentiated one particular kind of advertisements in the menus, which had the form of text links leading to the classifieds. The functionality of an advertisement was to sometimes provide a link to a site, often outside the online newspaper as decided by the owner of the advertisement.

**Design change.** In 2001, there was often at least one top banner in the A position, and usually to the right, in column 4, 5, 6 or a combination (see Appendix A, Table 4-5). The classifieds were only presented as links in a menu. At most papers, there was still a top banner and banners to the right in 2003. In addition, at two papers (3, 4), mid-page banners were added. With the exception of paper 9, there were generally more banners at the sites in 2003 than in 2001. Moreover, advertisement supplements appeared at paper 1 in 2003 as links.
Publisher design purpose. Since all nine newspapers belonged to the same association, Citygate, they had developed a concept for advertisements together. They had special personnel who were selling banners on a national basis, while it was the newspapers own responsibility to sell local banners. The banners were positioned in the same top and right position at all online newspapers. Most papers stated that they made some revenue from advertisements but they agreed that was hard work, for instance, as a respondent on paper 3 said: "It is difficult to sell banners. We haven’t succeeded so well with that.” The national banners were made by Citygate, while most of the local banners were made in-house at the newspapers.

They were restrictive regarding sound, but animations were common. However, as a respondent at paper 5 said: "I believe we are quite happy for the advertisements we get.” At paper 7 they had had an incident with a banner including sound: "You should have heard the racket when our advertisement editor sold a sound banner. First and foremost it was a very long sound clip for on-load. As soon as we loaded the page, the computer started screaming ‘Here is cheap Nisse’s!!’ And it was impossible to shut the sound off too. There was a damn racket.”

Audience recognition and use. Most respondents thought that they could clearly differentiate between advertisement and editorial material, for instance, "It is very clear what are advertisements, but at the same time one is a bit cowardly about clicking on these things” (8). Some respondents noticed that there were fewer advertisements in the online paper.

However, many respondents expressed a clear lack of interest in the advertisements as illustrated in the following quotations; "One doesn’t notice the advertisements, they are there but one doesn’t look at them” (9) and "One has almost learned not to notice the advertisements” (2). One respondent in paper 9 had discovered that some ad-like banners were not advertisements: “I have been clicking on these here at the edge, and they have turned out to be something else than ads”. Another respondent expressed the view that the form was a distinguishing factor to recognise advertisements: “On the ads, there are clickable images, and it is not like that in the editorial part. There it is text.”

General reflections from the publishers

All but one of the papers had made the design in-house, and two of them had tested their sites with users. Some of the papers were also providing web design services for companies in the region. This was sometimes considered problematic, since they had to prioritize the customers before the in-house development of their online newspaper. A respondent from paper
Chapter 4. A genre perspective on online newspaper front-page design

4 said: "We have been working under heavy time pressure. When we work as a web bureau and editorial office we have double responsibilities. It is an internal question that shouldn’t affect our readers, but which regretfully affect them anyway.” The publishers also look at other sources when designing their web sites. For example, some of the newspapers mentioned that they scanned other news sites both in Sweden and abroad for inspiration for design.

Most of the newspapers considered themselves as media organizations rather than as newspaper organizations. Seven of them had radio stations and two had video production companies in their organization as well. They all envisaged a future of multimedia, using print, audio and video over different media terminals in a broadband context. Some comments were: “It is a total media” (4) and “It will be about presenting editorial and commercial information in different ways for the readers own choice” (7). The rapid media was also discussed at paper 3: "It is a new culture that provides the rapidity. Now we can be faster than the local radio, and shortly we have moving images as well.”

The functionality provided by new technology presented several issues. Firstly, designing for new versions of browsers was discussed, with most respondents wanting to keep the sites accessible to audience members with older browsers. However, they also wanted to have sound and moving images, which demanded newer technology. Secondly, the respondents of paper 9 discussed the problems with the front-page not being rapid enough. They were experimenting with different browsers with different modems and broadband connections. “The problem is that at the same time one wants the broadband to be quick as lightning one also wants very good design. It is not possible to have the both things at the same time.” Thirdly, several of the newspapers had encountered technical problems and were about to change publishing systems which allowed more flexibility and functionality.

**General reflections from the audience**

Half of the respondents perceived the sites as newspapers, while the other half did not. The result was evenly spread among the newspapers. To a large extent, the differences were experienced as emerging from the physical characteristics of the printed newspaper, for instance, “I would not like to take the computer into bed with me” (2), “It does not smell newspaper” (2) and "The paper is too big, it is even difficult to read at the breakfast table. If I had had the computer at the table, I am sure I would have read it there” (8).

The structure of the newspaper was perceived as mirroring the printed newspaper’s structure by almost half of the respondents. One third did not
think so, whereas the rest did not answer the question or expressed no opinion. Most respondents of paper 2 and 5 agreed that the structure was similar, although most of the respondents of paper 3 and 4 were of the opposite opinion.

The respondents had one or more reasons for reading the online edition. One third of the respondents stated that the reason for reading the online newspaper was to be updated, one fifth used it as a replacement for the printed edition, whereas one sixth saw it as a complement. Other reasons for reading the online edition were searching (10%) and leisure (10%), as illustrated in the following quotations: "I am not interested in a subscription of the printed edition. It's of convenience I read the online edition. It's less expensive and there are news updates" (4) and "When I read the online edition, it because it is convenient. It's too cumbersome to go several hundred meters to fetch the paper" (5).

4.3. Discussion

Addressing the perceived need for knowledge about the design of online newspapers, we propose eight design recommendations for online newspapers. Using common web guidelines for this purpose would not have been enough. For example, guidelines would have little to say about genre specific elements, for instance, news stream and timestamps, or the problems with news valuation. We have therefore instead taken a genre perspective on design by using genre theory to: a) identify genre characteristics and study design change through web page analysis, using the genre elements content, form, functionality and positioning, and b) derive genre rules by analyzing publishers design purpose, and audience recognition and use, through qualitative interviews and usability tests.

The eight design recommendations are thus based on identified features that mediate a specific purpose and use between publisher and audience, which we describe as genre rules in terms of purpose, form, and positioning. They are also based on the genre change regarding design, that is, which solutions that have gained importance or which solutions that have been rejected and the heritage from print regarding form and shared content elements.

(1) Use the length of the front-page to give an overview of the whole site. Several things in the study indicate the importance of the front-page of the news sites, for instance, most respondents returned to the front-page to ‘start over’, when looking for something else, instead of using the navigation elements of the
site. The publishers have also made the front-pages longer containing much more content than before, for instance, navigation banners, most-read stream, more headlines. Furthermore, the time stamped news streams and headlines on the front-pages provide an overview of the latest news, which corresponds to the most important reason for reading the online newspaper, which was to stay updated.

The use and importance of the front-pages suggests that an overview of the entire site should be provided, since scrolling the front-page could be compared to browsing the printed newspaper. To provide an overview, a prerequisite is to understand the page structure. Many respondents were relying on their understanding of printed papers for this purpose and the publishers also considered the use of categories from print. This also corresponds to using the "broadsheet metaphor" for layout. Since the pages need to be long to give an overview of the entire site, the most important functionality is to scroll the page. We did not discover any difficulties regarding the use of that function.

(2) Use the broadsheet metaphor for layout. From the audience view, the online newspapers to some extent resembled the printed papers by the categorization and divisions from the printed paper, which helped them in recognizing the genre. This is in line with the results of Watters, et al. (1998), which showed that the broadsheet metaphor was preferred by the users. One third of the respondents in our study did not perceive the sites as mirroring the printed papers structure. The general opinion was that the layout was different online than in the printed edition.

The producers expressed uncertainty about how to present new services and separating them from editorial material, which is not supported by the metaphor. Most of the audience, however, seemed to have no problems differentiating editorial material from other kinds of materials on the sites. We suggest basing the layout on the broadsheet metaphor in order to give a familiar frame of reference.

(3) Provide navigation support in different ways. Both the audience and publishers experienced difficulties with the navigation. The increased focus on the front-pages has made it necessary to provide navigation support in many different ways besides the ordinary navigation support through menus and bars. It was evident that dedicated navigation items were used in combination with other elements, such as the news stream, headlines, captions and headings to navigate the site.
Content elements can be designed to support navigation, for instance by dividing the news stream into a table of contents. Presenting news from all categories of the site on the front-page can also serve as navigation support to different sections. Providing navigation in the suggested ways also corresponds to using the length of the front-page for overview and using the broad sheet metaphor for layout.

\(4\) Consider the use of navigation banners in combination with banner ads. The publishers have made an effort to differentiate the editorial and advertisement material and there seems to be no problem for the respondents to differentiate between them. From the audience’s point of view, the advertisements were relatively uninteresting, and as some respondents mentioned, they even avoid them. The banner form has also been adopted for within-site navigation to advertise important site contents. The positioning of regular advertisements has traditionally been around the page, with a focus on the top and right edges. In 2003, the use of within-site banner-like navigation puffs has increased. These navigation items are often placed together with the ads, but also at other page positions.

We believe that the use of navigational elements such as banners, mixed with the advertisements, might be questionable, if the users avoid clicking on, or even looking at the advertisements. If users do not look at the banners, this is clearly a poor solution from a navigational point of view. However, given that it causes users to look for navigational items amongst the banners, it is a good solution from a business point of view. The increased use of navigation puffs partly solves the problems of too long menus but there is a need to study if the users have began to use these puffs or is still looking at them as advertisements and therefore avoids them.

\(5\) Place the news stream at a top position and \((6)\) Use timestamps to indicate latest news. As noted in the first point, to stay updated was the major reason for visiting the online newspapers. Latest news was recognizable by the audience from timestamps, labels and top position. In 2003, the latest news has clearly been given even more focus, with news streams at top positions at all papers.

Emphasizing both the publisher and audience view, that news updates are both important reasons for providing an online edition, and for reading it, there should be a news stream on the site. The news stream should be placed in top, as it is at all papers in 2003. To emphasize that updates are made, timestamps should be used for the news stream since many audience
members relied on the existence of timestamps to identify recent news. In 2001, there was a discussion at the newspapers about timestamps also for other news items, and in 2003, some of the papers in this study have started to timestamp headlines as well, which is also discussed in the following point.

(7) Provide news valuation through positioning and markers. The valuation of news on the front-pages was not as clear as of the printed front-pages in 2001 according to the audience. All newspapers to some degree position the highest valued news in a top position, but sometimes immediacy was considered before news value for the top position, that is, the use of timestamped headlines in temporal order. The use of layout to mark the importance of news differed between the papers in the study, ranging from almost no markers, to the use of headline size, images, and amount of text. However, sometimes publishers used images to decorate the page, rather than to indicate news value. There were different opinions regarding news valuation among the audience, for instance, when disagreeing with the news valuation of the printed paper, they liked the lack of markers online, but most users missed the news valuation from the printed newspaper.

The broadsheet metaphor includes the use of newspaper-like columns, headlines, etc. but also indicates news value by the use of position and markers, which are essential for the audience recognizing the genre. During 2003, it has become more common to timestamp the headlines, indicating the immediacy rather than making a news valuation for the readers. We recommend providing news valuation through position and markers since it are demanded from the audience and since it supports the broadsheet metaphor.

(8) Provide one joint search facility for both the archive and today’s news. Many users navigated the online edition without using the search function when looking for something special, but many users also tried to use the search engines with varying results. Even though more than half of the users found it easy to find what they searching for, some found it problematic. From the interviews, with the publishers we found possible explanations why the use of search engines could be found problematic,

a) the search facilities were mainly designed for searching the news archives and at some news sites the articles did not end up in the archives until the day after they have been published
<table>
<thead>
<tr>
<th>Design recommendations</th>
<th>Content elements</th>
<th>Genre rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use the length of the front-page to give an overview of the whole site.</td>
<td>Navigation, news stream, headlines, advertisements, search/archives</td>
<td>Purpose/use: give/get overview of the entire site (since scrolling the front-page could be compared to browsing the printed newspaper) Form: broadsheet metaphor (see point 2) Positioning: most important content elements in top position</td>
</tr>
<tr>
<td>2. Use the broadsheet metaphor for layout.</td>
<td>Navigation, news stream, headlines, advertisements, search/archives</td>
<td>Purpose/use: give/get a frame of reference, making understanding easier through recognition Form: newspaper like headlines and puffs (broadsheet metaphor) Positioning: division into columns, headlines in top position</td>
</tr>
<tr>
<td>3. Provide navigation support in different ways.</td>
<td>Navigation, news stream, headlines</td>
<td>Purpose/use: ease of navigation Form: headlines, headings and captions Positioning: depending on the content element</td>
</tr>
<tr>
<td>4. Consider the use of navigation banners in combination with banner ads.</td>
<td>Navigation, advertisements</td>
<td>Purpose/use: make/perceive particular newspaper sections or services evident Form: banner Positioning: in combination with banner ads, mainly to the right</td>
</tr>
<tr>
<td>5. Place the news stream at a top position.</td>
<td>News stream</td>
<td>Purpose/use: provide and get news updates Form: timestamps, headings, optionally divided in a table of contents Positioning: top of the page</td>
</tr>
<tr>
<td>6. Use timestamps to indicate latest news.</td>
<td>News stream</td>
<td></td>
</tr>
<tr>
<td>7. Provide news valuation through positioning and markers.</td>
<td>Headlines</td>
<td>Purpose/use: indicate/recognize the value of news Form: headline size, images, and amount of text Positioning: top position for highest valued news</td>
</tr>
<tr>
<td>8. Provide one joint search facility for both the archive and today's news.</td>
<td>Search/archive</td>
<td>Purpose: enable search in archives and today's news Form: search field Positioning: top position or in menu</td>
</tr>
</tbody>
</table>

Table 4-2. Design recommendations


b) there sometimes exist different search functions for the news archive and for the current online pages.

Searching the sites through the dedicated search facility was something requested and used by the respondents. Emphasizing the importance of that function, it should be placed in a top position or in a menu. We recommend to combine the archive and current edition in one search facility since much confusion arose from the newspapers that were not placing their current edition in their archive.

In Table 4-2, the design recommendations are summarized and the content elements concerned and the underlying genre rules are presented.

4.4. Summary

By taking a genre perspective on design a set of design recommendations for online newspapers has been derived. This genre perspective on design revealed the users’ expectations of the genre as found essential by (Agre, 1998; Crowston & Williams, 1997) and also facilitates for designers to copying and refining genre characteristics. The results can also be regarded as a step in the process of designing the online newspapers to become as recognizable and familiar as the printed counterparts as requested by (Boczkowski, 2002; Gunnarsson, 2002).

The interviews and usability tests revealed which features of the sites that were used and intended for certain purposes, such as the headlines and navigation elements to get or give overview. From the publishers, it was also revealed why some features were problematic, such as the search function sometimes not having access to the news of the current day. The genre rules thus are derived from utterances and actions revealing how publishers and audience rely on the same features of the pages to fulfil a shared purpose, for instance, to give and get a familiar frame of reference. The website analysis revealed how the features were used in the different newspaper designs in 2001. This was also used to interpret the statements of the respondents, which was perhaps most beneficial when the sites differed regarding some features. For instance, the audience respondents could easily differentiate news value at the sites using newspaper-like headings and puffs, whereas at other sites they found that the pages seemed to contain many items of similar value. The 2003 analysis showed what features had then gained dominance two years later, for instance, positioning has become even more important due to news valuation, news streams, headlines, adver-
4.4. Summary

A researcher and his co-workers investigated the design of front-pages in newspapers and found that the longer the front-pages become, the more important the position gets.

Genre awareness, that is, to be aware of the genre characteristics, the producer's design purpose and the audience recognition and response, are useful in the design process of digital documents. There are three reasons for why this is useful:

a) existing design guidelines are too general to be applicable when designing for a specific genre

b) identifying and classifying genre specific elements and characteristics facilitates for designers to create a familiar frame of reference of the genre in use

c) it is important for designers to have an understanding of the audience to meet their expectations of the digital genre in the design

Since genres are produced, reproduced and changed over time it is essential to identify genre characteristics to study genre change and to derive genre rules in order to increase genre awareness among designers. Further research could elaborate the proposed design recommendations further by creating genre specific design patterns in collaboration with designers and audience at the newspapers. A follow up study with publishers and audience would also further elucidate the evolution of the genre. Moreover, with the genre perspective as the base, other design methods could be developed. The next chapter illustrates how design rationale can be used to structure results of a genre analysis of local online newspapers. Also, in chapter 6, these guidelines inform the design of a hypervideo news front-page, combining these hypertext guidelines with new interactive form elements.
5. Structures of hypertext streams: a genre analysis of Swedish online newspapers

Genres, such as online newspapers, are characterized by sharing form, content and sets of purposes. In this chapter, I will discuss their form, in particular the interactive form that lies at the heart of the browsing experience, of going between the texts of the online newspapers, of skimming content, and reading in depth contents. Although online newspapers support many other activities, such as viewing advertisements and voicing opinions in discussions, presenting news is a central purpose of an online newspaper. As seen in the previous chapter, it is obvious that there are many similarities between the design of different online newspapers, and also that there are some differences. In this chapter I first describe the notion of interactive form, and I then describe the design options used by a selection of papers, and what sets of browsing purposes these support. I also discuss how different design options interact with each other, through different design criteria, in particular use-quality criteria.

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6 The first part of this chapter is based on a conference publication; (Lundberg, 2001). The chapter is currently being revised as an article, by Lundberg, Holmlid, and Arvola.
Chapter 5. Structures of hypertext streams

5.1. Interactive form

The interactive forms of digital products are what allow interaction with the products, as compared to physical and visual form, which supports perceiving the product. Thus content with interactive form are part of the layout of a page, together with the non-interactive content. The discipline of human-computer interaction (HCI), with its history of analysis and design of office systems, provides a historical progression of interface elements for computer programs (Nielsen, 1993). Combined with hypermedia vocabulary, it is suitable for describing interactive form elements on web sites.

The batch file, beginning with the oldest interaction method, lets the user specify a number of commands, and then execute them all at once. On the web, the batch concept gets slightly obscure. On the production side there are batch files doing all kinds of things, but on the audience side, there appears to be very few batch files. Some pages, however, contain information from other web sites, for example one page can display the main news of several newspapers, refreshing the contents with a push of the reload button, doing a batch job of collecting information from several sites.

Command languages are uncommon on the web. However, they could provide a convenient way of interacting with news, using spoken commands. The most similar device on the web is the search facilities present on many web pages. These can be considered being web interfaces for specific commands, and can have modifiers in the same way as seen in command language commands.

Forms are instead present everywhere on the web, encapsulating commands like subscribing to web sites, using search engines, and sending web based email. Forms could for example be used to request on-line newspaper parts, instead of using a menu, as is the current standard.

Menus are also used everywhere on the web and in the browser, to move between positions in the structure. In the browser, a special menu is the bookmarks menu, where each user can create a personalized set of web pages.

Windows, Menus, Icons, Pointer (WIMP) interfaces. WIMP interfaces are commonly used in office applications of today. These remediate menus from earlier interactive forms, and often these interfaces provide access to command language interfaces. These interfaces embody the direct manipulation paradigm. In its pure form, data are made visible as objects, which the user ma-
5.2. Information architecture

Manipulates. In office systems, objects are manipulated using a pointer connected to a mouse. In virtual reality systems sometimes gloves are used for direct manipulation, and in computer games often joysticks are used. Thus, the character of interaction, through interactive form elements, is tightly coupled to the available input devices, which is most evident when considering direct manipulation interfaces. Also, WIMP is often combined with the what-you-see-is-what-you-get (WYSIWYG) style of content presentation. The idea is straightforward, and simply means that what you see on the screen is what you will get as the final product. This remediated the lack of direct feedback of actions, of earlier interfaces, which necessitated the use of a specific preview mode to see effects of manipulations. In these older interfaces, manipulation was instead often achieved by inserting tags into the text, such as `<b>` which would result in bold text if shown in a web browser.

Hypermedia became popular with the invention of the WWW, and is used extensively on the web today. In hypermedia, objects are conceived as nodes related to each other by association (Bush, 1996; Halasz & Schwartz, 1994; Pawan & Helander, 1997; Younggren, 1988). The links are often presented as a word or phrase, or a part of an image, which when selected brings forth the related information.

5.2. Information architecture

While analyzing an information rich web site, such as an online newspaper, it would be reasonable to turn to the design area of information architecture. Rather than focusing on interactive or media form, the design focus is on the information structure of the site.

Information architectures are built on categorizing information around what answers people are likely to seek, and the ways they are likely to go about seeking them. According to information architecture, people may be searching in a focused manner, knowing what they search for, or they may have a more fuzzy idea, and instead browse the sites. Central design problems then become to decide how to categorize information, how to label it, how to navigate information by browsing or moving, and how to find it through a search system. Important concepts of information architecture are organization systems, navigation systems, search systems, thesauri, controlled vocabularies and metadata (Rosenfeld & Morville, 2002). A site can be organized in a hierarchy, which has depth, and breadth. A design problem high-
lighted by this problem framing is to find a balance between the two extremes of broad and shallow versus narrow and deep.

The navigation system is what allows people to go between different places in this structure. The navigation system consists of navigation elements, which are basically different kinds of menus. Good labeling is what makes people understand what the different menu items are meant to represent. Context is another important concept, which in information architecture is what allows a person to orient themselves in the hierarchy. Hypertexts are seen as a way to bypass the hierarchy (Rosenfeld & Morville, 2002).

Naturally, information architecture has intermediate design artifacts, used to model sites using the above concepts. Examples are blueprints of information structure, and wire frame page models. Moreover, a set of design methods, such as interviews and user testing, can be used to design the intermediate design artifacts.

5.3. Interactivity

The aspect of interactivity explored in the current study regards moving in a structure, through interactive elements. Other aspects of interactivity, not explored here, are for instance the creation of a structure, or the editing of contents. A structure could for instance be personalized by manual setting of preferences, by manually placing news in the structure, through personalization by agents, or by other means. A structure could also be created through a search query, entered by the site visitor. Although all pages of a site may be created on-the-fly, through a pre-defined query, the layout of pages and decisions of what news will be presented may still be controlled by the media house, and possible to alter through design. Moreover, users could contribute with their own contents, through discussion forums, or polls. This aspect is not studied here.

5.4. Study of interactive form

A first empirical study was conducted to investigate the interactive form of three online newspapers front-pages over time. This study would investigate what page elements were dynamic, to reveal how different page elements contribute to the site structure, and how the elements contribute to the purpose of presenting news on the sites.
5.4. Study of interactive form

**Method**

From three papers, two weeks of front-pages were analyzed. Östgöta Correspondenten (Corren.se) was selected to represent a local online newspaper, and this particular paper was selected since the author was conducting other research activities together with that media house. Dagens Nyheter (DN.se) was selected since it one of the largest daily national papers, and Expressen (Expressen.se) since it is one of the largest national evening papers. In addition, each article reachable from the front-page news hypertexts was analyzed. Initially, by following all article hyperlinks, except for the advertisements, and then by following all new hyperlinks, in subsequent samples.

For the analysis, recommendations given by Hansen, Cottle, Negrine and Newbold (1998) were followed. First, seven days from one week was analyzed, then another seven days from seven different weeks, distributed over all days in the week. To select several days, instead of just one, was necessary to differentiate static structures from dynamic structures. Furthermore, quantity was necessary to be able to analyze how the dynamic news represented each paper as a whole. In total, 14 days of front-pages from each of the three online newspapers were sampled.

**Front-page analysis**

Figure 5-1 depicts the front-page of DN.se. Each page was divided into columns and page sections using the same layout grid. Here, the original grid has been replaced with the one used by Ihlström and Åkesson (2004), but that does not affect the analysis or the results presented here. Section A contains the page header, section B the remainder of the visible screen area on a computer monitor, which thus varies slightly with monitor resolution, and section C contains the remainder of the page, except for section D, which contain the page footer. Here, only news contents and menus are analyzed, although there were also other elements which were important for the page composition as a whole, such as for instance the top advertisement banner at DN.se (Figure 5-1 position A 1-4).

Three interactive forms emerged as central from the analysis of the two-week newspaper sample, namely; hypertext, structure and stream. The papers had front-pages presenting short content summaries from different sections, and article pages presenting the full text of the articles. There were also section overview pages, presenting short article summaries of content from the section.
The content analysis showed that the three online newspapers could be characterized as hypertexts, mostly relying on text and images. The hyper-
texts used genre conventions from print news for their form. Images were scarce at Östgöta Correspondenten, with images used only for 4% of the news items, common at DN (22%), and widely used at Expressen (63%). The hypertexts covered most of the page space, as can be seen in Figure 5-1 hypertexts covered areas B 1-3 and C 2-3 of DN.se.

There were few links to related contents associated to specific articles, presented at article pages, at Corren.se, whereas at DN.se links to other articles were common (at 31% of the articles), but links to external materials were less common (3%). At Expressen.se, both kinds of links were common (70%/45%). Thus, there were two kinds of hypertext links, those that kept an article together by linking headlines and content pages (Figure 5-2), and those that presented related materials. There were also links to other articles at two of the papers, presented together with the articles, in a context hypertext stream. At DN.se and Corren.se, articles from the same section were presented beside and below the articles, respectively. At the three papers, there was also some other indication of what section the articles belonged to. These surrounding page elements constitute part of the context of the article.

As shown in Figure 5-2, the papers had a traditional hypertext structure, where most contents could be reached through a hypertext headline. Only DN.se presented the entire top news article up front, when reaching a section through a menu. This structure forced the reader to go back and forth between front-page and article pages at all three papers, when reading front-page news. At DN.se and Corren.se, when reading section news, other sec-
tion news items could be reached through the context hypertext stream. That allowed a reader to go directly from one news item to the next, without having to go back to a previous page to make a new selection.

Structure

All three papers organized contents in sections. Corren.se and Expressen.se had section news overview pages, similar to the front-pages. At DN.se, there was no proper section overview page, since the section links always lead to the top news item in each main section, which as mentioned had a section news overview in the B1-C1 page position.

At Expressen and Östgöta Correspondenten, if a reader arrived to an article page through a hypertext link from the front-page or from a link in a “related articles” element at another news item, the section overview page could be reached only by using the menu.

![Figure 5-3. Structure](image)

Sections were presented at all papers as menu items on the front-page (Figure 5-3). However, the analysis of the sites over time showed that the menus were not completely static; they sometimes changed to reflect changing contents of the sites. For instance, at DN, the four item menu bar at the bottom of C2-3 was static during the analysis, whereas the C3 menu changed slightly, with some items being added and others removed. New navigation items were not highlighted in any particular way. At Expressen,

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7 The position of page elements in Figure 5-3 does not reflect the position on the sites.
the B1 menu was fairly static, with some added and removed items in the sample. New items were highlighted in two ways, sometimes by color, sometimes by the label “new”. At DN, a menu at the top of the page could be used to navigate between the four main news sections. It was not present on the front-page. In one of the sections, the menu wasn’t present. This was clearly a design mistake, treating the menu either merely as a page layout element or as a hypertext associated with a section.

*Stream*

The combination of hypertexts and structure thus formed a complex web of links between articles and overviews, as show in Figure 5-4. However, the hypertext news overviews were not static. They were constantly changing, shaping a stream of contents through the newspaper and its sections.

![Figure 5-4. Stream](image)

The stream elements allowed visitors to skim the front-page now and then, rather than having to navigate through the newspaper pages and parts, to get an overview of the most important or most recent news items. There were many different kinds of stream elements, with purposes of presenting
the most important news, or the most recent news, with mixed contents from all categories, or divided into categories.

While having a dynamic set of contents, the hypertext stream elements had fairly static positions on the pages. Thus, they were part of the structure of the pages, and users could potentially learn the position of different elements. Also, the composition of pages with elements mainly satisfying different purposes, constitute a part of what it meant for the papers to satisfy sets of purposes. At DN.se, shown in Figure 5-1, there were four different streams on the front-page. At B1, there was a news stream showing the latest news, divided into a table of contents. At B2-3, there was a headlines stream, showing the news with the highest news value (not necessarily the latest news items). Additional news items were presented as headings at the top of C2-3, and below there was a stream containing feature news.

As shown in the analysis, in addition to longer news texts, the papers were almost entirely made up out of streams, not even the menus were entirely static. They could change to have for instance a link to a temporary “Olympic games” section, for particular sports news. Using the stream elements to reach an article also implied movement in the site structure. For instance, on the DN.se front-page, 35% of the headlines in the headlines section and 30% of the headlines in the second stream led to the national news section, whereas in the third stream (Figure 3, B3), 38% of the introductions lead to the culture section. At Corren.se, the headlines section (B2-3), more than one fifth of the headline puffs had “Linköping” (the main local city) as the destination part. At Expressen.se, 48% of the top headlines lead to articles in the national news position.

Where, as at DN.se, the B1 stream was divided into a table of contents, any news item could be used as a link to the particular section, in addition to using a menu item, but only when there was a section news context stream presented at the article pages. Reaching different sections from one stream may contribute to a feeling of disorientation.

5.5. Study of the context stream

The study of interactive form showed that the three papers were mainly composed of hypertext streams. The study showed that streams were part of the site structure in two ways. Firstly, they kept fairly static positions on the pages, and secondly, they tended to either link to a specific section, or to over-represent one section, through their hypertext contents. Whereas the
papers were similar in the sense that they all used conventions from print for article and page layout, and divided into sections, like traditional printed editions, the interaction design of streams differed markedly between the three papers.

The context stream(s) presented next to articles at articles pages seemed to be of particular importance for the browsing experience. These presence of these streams decided whether other categories of news, in these cases, section news, could be browsed directly from an article page. The context news stream was present at two of the papers in the previous study, presenting section news as a context to articles, on article pages. There were two designs of the context stream in the previous sample. At Corren.se, it was a list of section headings below each article in a section, whereas at DN.se, the list of headings was in the B1-C1 position. An empirical study was carried out to describe a larger sample of sites. The aim of the study was to find out how different design variations of the context stream element could potentially affect the browsing experience.

**Method**

The same list of 85 new sites used by Ihlström and Åkesson (2004) was used. From this sample, 8 papers were removed, which did not have news texts on their front-pages. Some of these were under reconstruction. A focused sample was collected, consisting of the front-page, an article page, and an optional section page from each online newspaper. Not all papers utilized section pages. The pages were collected as screen shots, to allow subsequent re-analysis of their appearance (although not their interactivity). Some papers apparently utilized identical or almost identical site structures, although not identical contents. There were thus 77 site structures in the sample, and 65 of these apparently had a site specific layout. The analysis was conducted through browsing the pages, analyzing both apparent design differences, and differences in the analyst's experience of browsing the pages. The screen shots were used to link experience and design, by comparing page layouts, as illustrated below.

**Context stream analysis**

The analysis of the 77 online newspaper sites revealed that on the article pages, the context stream element found in the analysis of the initial three papers, was often present. The contents of the stream were news items from the front-page, or from a news section. The analysis identified design
Chapter 5. Structures of hypertext streams

solutions found on the pages, which can be related to use-quality criteria. A design rationale (MacLean, Young, & Moran, 1989) was used, to describe the design space, summarized as question, options, criteria diagrams (QOC), in Figure 5-5 and in Figure 5-6. A full line indicates a positive relation between a design option and a criterion (purpose), and a dashed line indicates a negative relation. As shown in the figure, design options and criteria interact with each other. Design options were grouped by overarching questions of content, form (Figure 5-5), and position (Figure 5-6) of the context stream. Regarding these aspects, three questions were formulated.

Q1: What content should the context stream have? (Figure 5-5)
Q2: What form should the context stream have? (Figure 5-5)
Q3: Where should the context stream be positioned? (Figure 5-6)

Several use-quality criteria were identified. Orientation is the general experience to understand where in a stream one’s current position is and how to continue from that position. Overview is the general experience that together with information, especially in-depth information, provides design considerations and trade-offs in many of the design situations of interaction design. The experience of news valuation builds on the notion that editors usually indicate news valuation by positioning, and by making a news item more
prominent by using a larger typeface for its headline, presenting a few lines of article text, and by presenting an image.

![Figure 5-6. Question, options, criteria diagram for context stream](image)

Q3: Where should the context stream be positioned?

Three alternative positions were used for the context stream (Figure 5-6); below the article, to the right of the article or to the left of the article. The design options in the QOC in Figure 5-6 also include the relation between content presentation at section overview pages, and content presentation at article pages. It includes the design option to have a section overview page with top headlines in the B2-3 position, and a context stream of additional news in the same position as the context stream on the article pages. Additional news, in Figure 5-6, thus refers to news items, which were not in the context stream on the section overview pages.

None of the papers used a context stream above the article. Some papers used more than one alternative. The advantage of left and right hand streams is that they can be in top positions, providing a news overview, and that browsing the stream is easy; just move the pointer up or down a little, and then click. The advantage of a bottom stream is that it frees up space on the sides of the article, while still providing a context for the reader. The bottom position often implies scrolling the page, which makes it harder to browse the stream. Although it was uncommon to use a bottom stream presenting news items similar to how they were presented on the front-page (or section page), this solution was used at several papers with large audiences (Aftonbladet, Expressen, SVD). Therefore, this solution might be more important than it would seem judging from how common it is.
Few papers forced the reader to go through a section page, to reach article contents. It was also uncommon to present many full article texts on the same page. At many papers, it was surprisingly inconvenient to go from an article page to its section overview page. In many cases, a section label was presented above the article, but that label was not always a link to the section page. Few papers had no section pages.

Content

Context streams mainly presented front-page news, or section news. Approximately half of the sites used the article section as context, and presented it as a stream element on the article page. About one fifth presented front-page news items as context. Few papers presented both section and front-page streams, and in some cases other streams were also used, such as latest news. Only about one sixth of the papers did not utilize a context stream.

An advantage of presenting front-page news in the stream is that the reader does not have to go back and forth between article pages and the front-page, to read all headline news items. An advantage of giving the section as a context is that the reader can then use articles as a means to reach sections, and that section news can be browsed without having to go back and forth between a section overview page, and article pages.

Context stream beside articles

At some section pages, the main news items were presented as puffs in the middle column, and more news items were presented as headlines in a stream to the left, right, or bottom. An example is shown in Figure 5-7, of the solution used at Bohuslänningen.

The apparent downside of this solution can be seen by comparing the additional news items stream at the section page and the context stream at the article page in Figure 5-7, in the B4 position. The context stream on the article page occupies the same position, and uses the same layout, as the additional news items stream on the section overview page, but has different contents. All headlines from the section page were presented in the context stream on article pages, except for the one corresponding to the article being viewed. The circle indicates that the headlines are queued in at the end of the context stream, although not in the same order as on the section page.
Comparing the solution used at Bohuslänningen with the QOC in Figure 5-6, there seems to be conflicting criteria for this design solution. On the one hand, preserving the top items in both streams makes it easier to orient in the stream. But on the other hand, if the reader thinks that the top items have the highest news value, with this solution, the valuation on the article page is reversed compared to the section page. That is since the articles that were presented as puffs with prominent positions in on the section page are given a bottom position in the stream on the article page.

Also, some readers will never see the section page, if they go back and forth between the front-page and article pages. The obvious alternative, to add the high news value items presented as puffs in the section headlines as top
items in the article page context streams, was for instance used at Dagbladet Sundsvall. At that site, news valuation was preserved in the context stream on article pages, but then the top of the stream differed between the section and article pages, probably making it more difficult to orient between article and section pages. Thus, both solutions seem problematic, since a genre convention (news value as top position) conflict with an interaction design value (support orientation between pages).

Another solution, used at Blekinge läns tidning (Figure 5-8), was to present one article from each local news area on the front-page as headlines in the B2-3 positions, and two more items from each section in a stream element in the B4 position. With this solution, the stream element was divided into the news area sections. At each article page the front-page headlines items were added to the stream in the B4 position, in the top position of each section. The advantage would be that each item is presented only once at the section page, but the disadvantage would be that the streams become different on the article and section pages. A similar solution was used at Göteborgs Posten, but here the stream included the headline elements, also at the section overview page. Thus, on that page, the headlines items were presented twice, first as headlines, then also as items in the stream element.
The advantage would then be that the streams are identical on the section and article pages, making orientation easier between section and article pages. The disadvantage then would be that there would be less space left to provide overview of other contents (Q2, Figure 5-5).

*Context stream below articles*

Folkbladet (Figure 5-9) exemplified a solution where the context stream was presented below the article. There, the main headlines from the section page were presented as headlines, in a stream below the article. The headlines...
were presented in the same order as on the overview page, which made orientation easier, and also preserved news value.

A similar solution was used at Expressen.se (Figure 5-10), where a context stream presenting front-page news was positioned at the bottom of C2. At C3, there was another context stream, presenting section news. Although, in this case, the section stream was not related to the article, it illustrates the possibility of presenting an article both in the context of a section, and in the context of a front-page. That design would be hard to replicate in print, unless the article would be printed more than once.

Figure 5-10. Expressen front-page (right) article page with context stream highlighted (left)

Varied layout

The most common design option was to present the context as headings. Whereas the advantage is that it preserves space, the disadvantage is that it
is less informative than using puffs (Q2, Figure 5-5). The use of puffs reduces the need for reading the article texts, since more information is available up front. In addition, presenting all news items as headlines does not offer much visual variation. It looks more or less the same all the time, and gives few visual cues that would allow the reader to recognize what articles they have already seen visually, without having to read the headings.

The advantage of presenting a context layout similar to the front-page, or to a section page, would be that the reader is given a better chance to orient themselves in the stream, to visually scan the list for already seen news items, and for new items. The disadvantage would be that this usually means that puffs are used, which requires more space, resulting in a longer page. Both Expressen.se and Aftonbladet.se had a context stream with a layout similar to the front-page, not only regarding the order in which items were displayed, but also regarding the form of the stream. Whereas Aftonbladet represented the section overview below each article, as Figure 5-10 shows, Expressen used a miniature variant, which still preserved more features of the overview page presentation than just the headlines. Presenting for instance an image makes it theoretically possible for a reader to use that as a landmark, to recall that another interesting article was right below that image.

5.6. Discussion

The news presentation in the papers in the study of interactive form was characterized as structures of hypertext streams. The reliance on text and images for content presentation corresponds to the findings in a previous study of German online papers (Neuberger et al., 1998). However, it does not reflect the wider use of multimedia found in another study (Greer & Mensing, 2004).

The second study examined the context hypertext stream element in depth, an element which was found to be both important, and had varied designs, in the first study.

A hypertext is a linked structure of related information. The design of hypermedia is covered in the literature, for instance Pawan and Helander (1997). Hypertexts cannot be implemented in a printed newspaper, except as references to page numbers, while online papers depend on them. For example, they are used to connect the parts of articles, such as when clicking on a headline may bring the entire article for viewing. In this way they
support the reading of articles in a non-sequential fashion. They can also be used to support, for example, the finding of related stories inside or outside the paper. In a hypermedia paper, related materials can be presented as links to articles within or outside of the news sites. With respect to this, the papers differed markedly.

A *structure* supports navigation of the site, which the user can learn or comprehend, and then use to navigate to desired parts. How to construct structures for static information is well covered in the information architecture literature (Rosenfeld & Morville, 2002). In the first study, it’s illustrated how dynamic stream elements structure online newspapers. Apart from presenting the site structure explicitly in the form of a menu, different streams may be part of the structure by exclusively presenting hypertexts from a specific section, and present news together with a section context stream. For instance, a news stream on a page might exclusively present news headlines for international news, and present an international news context together with each article. Thus hypertexts are part of the navigation structure of the site, if moving into a hypertext also always is accompanied with moving to a certain newspaper part. Here, the particular aspect of labeling sections was not examined in detail, although it will affect the extent to which a reader will have to learn the meaning of labels, versus being able to rely on their previous knowledge from the printed counterpart, or other examples of the genre.

*Streams* most closely resemble what we encounter when turning on a television set. They support the passive consumption of content, where the user must attend to a “channel”, but does not have to actively search for or demand each item, thus reducing the need for interacting with the system to manipulate the view on contents. Online newspapers are mainly structures of hypertext streams, as is evident from the analysis. Indeed, it would be possible to skim the online newspapers in this study by reading the front-page streams, and get an idea about current events, without moving to any other page. It was also possible to read much of the newspaper hypertexts without use of the menus. A stream may be composed of different content forms, for example, as stream of headlines, or as a stream of puffs. Regarding previously described genre elements from online news, which are also found here, the elements present in Eriksen and Ihlström (2000), are all different kinds of stream elements, which can be differentiated from each other by form, content, and purpose. In principle any editing and timing principle could be used for streams, from the personalized continuous stream of a favorite topic to the stream of news appearing in a newspaper.
section each day in the printed edition. Moreover, news stories can be moved in different ways within and between streams. It seems that streams are more important to online newspaper design, than would be expected from reading general literature on information architecture (e.g. Rosenfeld & Morville, 2002).

The context hypertext stream element. The second study was narrowly focused on one page element, which design differed markedly between the papers in the first study. The context hypertext stream element is what potentially allows a reader to effortlessly skim articles from, in this sample, a section, or the front-page, directly from the article page, without having to go to an overview page first. The analysis showed that there were several supporting use-quality criteria, namely orientation, informativeness, and news value. Overview of other contents was a restricting criteria. Re-orientation would be needed when arriving from a page without the particular section stream, or with a slightly different layout of the stream. It would also be needed when having read one article in the stream, when considering where to go next. The notion of Informativeness regards how much information about the page item presents up front. Previous research has shown that this particular aspect makes it difficult to use interface actions needed for in-depth reading, as a personalization criteria. Rather than finding the skimmed items uninteresting, a reader might have read, and be satisfied with, the amount of information they got (Kamba et al., 1997). News value regards the principle of newspapers to put the highest news value item at a top position. In this sample, overview of other contents was a restricting criterion. Smaller elements allows more elements to be in the B screen area, being visible directly when entering a page. Smaller elements also makes pages shorter, reducing the need for scrolling. Larger elements are potentially more informative, and varied. The context stream element could, as an interactive form, be seen as a hypertext widget, complementing research on other characteristics of hypertexts (Pawan & Helander, 1997)

Genre evolution: In the first analysis, the expected related news links were found, which separates online news from the printed counterparts, by the immediacy of access to related materials provided by hypermedia. Also, as shown in the second analysis, the option of having context streams from more than one section, on article pages, differentiates the online media from the printed counterparts. Online, one does not have to place an article in one section only.
In this sample, genre was used as a layer of meaning, through the use of newspaper style layout, in particular positioning, to assign news value, and to present news. That corresponds to what has been seen as the most promising style of news presentation in previous research (Watters et al., 2000). Regarding use of the genre in recurring situations, arguably having a reading habit matching the context stream contents would make browsing more convenient. Here, evolution can go to ways. Either, the audience adapts their habits to the contents of the streams, or the newspapers adapt their streams to the habits and desires of their audiences.

Use in recurrent situations: The context stream makes different kinds of browsing convenient, depending on its form. The analysis showed conflicts between genre conventions of news valuation, and ease of re-orientation, for one particular composition of the context stream, making that class of stream unsuitable for online newspapers.

Due to the reliance on genre (as form, content, and level of meaning of existing forms) the analysis here is a cultural-historical approach to the creation of a design rationale. Having no knowledge about genre conventions, such as news valuation, would result in a flawed design rationale. These conventions may be specific to our culture. Also, the papers indicate what is valued in the online culture where the papers are popular, namely being up to date, overview at a glance, and in-depth information on demand.

Another strength of the analytical approach used here is that it gives the advantages of hi-fi prototypes without having to do the design and implementation work. Discovering the options and criteria for design alternatives may first be guided by intuition, by analyzing an experience. For instance, “... how come I feel lost at this site, but not at this other one, despite the sites looking very similar?”. The analysis may then reveal subtle design differences, or differences, which are apparent, but not apparently important. Two examples here are illustrative. The varied visual layout of Aftonbladet.se is clearly different from the uniform layout of many other sites. That this also helps to convey a sense of orientation is arguably an important aspect, which may be less apparent without comparing the experience between of using the different designs.

Taking another example, the sense of disorientation that may result from having different top items in a right hand section stream element on an overview and article page, stands in contrast to the experience of orientation when using pages with identical layouts. However, without comparing page
designs giving rise to different experiences, the reason for the sense of disorientation may be rather obscure. Thus, the advantage of hi-fi prototyping, of experiencing the dynamics of use, can be achieved by using a sample of existing designs. Similar to how a hi-fi prototype may be limited to some specific design aspect, a genre design alternative analysis may be focused on a specific aspect. The analysis is however limited, since design alternatives enabled by new and untried technologies will not be available, and also since some good design alternatives may not be in use, due to less dramatic technology limitations. In particular, the papers in the current samples could all be regarded as being hypertext papers. Therefore, novel designs and design alternatives would have to be created for a design incorporating online news hypervideo, or hyperaudio. A particular limitation of this analysis is that it is strictly analytical, and not based on an empirical evaluation of the experiences of different users. Moreover, the hypertext papers here did not seem to incorporate the use of some WIMP features, such as drag-and-drop, or virtual reality features, such as 3D-modelling.

In short, genre analysis is a “discount” analytical method, compared to exploring the design space and prototyping all design alternatives for the analysis. It is thus promising as an analytical approach, which could fit with other analytical discount approaches such as the heuristic evaluation presented by Nielsen and Molich (1990). It might reveal issues like what “speak the users language”, or “be consistent” really means for an online paper. In such a study, genre is both the unit of analysis, and a level of meaning.

For interaction design, the context hypertext stream element found to be central to online newspapers, might be useful also in other designs. It adds to other hypertext elements such as related information (outside and inside a site). It might thus be seen as a hypertext widget.

**Summary**

The news presentation of the online newspapers was mainly achieved through structures of hypertext streams, with supporting menus. Having many similarities, the interactive form of the papers also showed considerable variation. One of the defining differences regarding the experience of browsing online news regards the content of the context stream, which either presented front-page articles, section articles, or was omitted. The composition of the sites relied heavily on streams, and on going between overview and article pages. It is evident that no solution was without draw-
backs, as shown in Figure 5-5. From the perspective of those criteria, it would seem that solutions that give the user more clues for orientation within streams and re-orientation between overview and article pages, at the same time preserving news valuation, would be preferable. The solutions for the context stream and overview pages seen here, fulfilling those criteria, use puffs, with similar layout as on an overview page, presented below the articles.

The methodological advantage of a genre analysis over prototyping is that a genre analysis can provide the same advantages of providing the experience of interaction, as a high fidelity (hi-fi) prototype does, but without the design and implementation work demanded by a hi-fi prototype, when creating a design rationale. The genre analysis approach is naturally limited to design solutions which already exist, but in design, a genre analysis could be conducted before designing a hi-fi prototype incorporating a combination of old and new design elements. The approach used here is thus a promising analytical “discount” analysis method. Its reliance on cultural norms, such as genre conventions, and its reliance on existing cultural forms, makes it a cultural-historical approach. The next chapter illustrates how current genre elements can be incorporated in a design, exploiting hypervideo functionality.
In 1997, Molina reported that online newspapers were embarking on the journey towards multimedia. The vision for the end of the journey was “a personalized interactive electronic news system making fully-integrated use of text, audio, still-image, animation and video” (p. 219). One part of that vision is the use of hypervideo. Different ways of organizing hypervideos and for presenting links have been reported. In their HyperCafe hypervideo, Sawhney, Balcom, and Smith (1996) discuss three options for indicating spatio-temporal links within videos; flashing frames within the video, an on-mouse over cursor change, and on-mouse over switch of audio to the linked video. They also propose combinations such as on-mouse-over switch of audio together with audio preview, or to initially indicate the direction of the link by mixing the audio from the linked movie in a stereo channel, and then use the on-mouse-over cursor change to indicate the exact location of the link. The spatio-temporal link option they primarily made use of, however, was to present the links beside the current video, as a temporal events. Furthermore, they refer to earlier work having made use of link icons beside the video.

In a study of detail-on-demand video, several ways of link presentation were designed and evaluated, using the video time line as the point of departure. The defining characteristic of detail-on-demand is that no more than one hyperlink is available at each specific time in the video. In the design, the organization was hierarchical, with a video summary at the top level, with links to more detail. In the first design, the time where links would be avail-
able was marked on the video timeline, and during playback of a segment with a link, a label over the timeline both functioned as an additional link indicator, and a link content description. After evaluations, a new design was presented where on-mouse-over texts on the timeline indicated the contents of the link, together with a video keyframe with a text label below the segment in the timeline. In that design, users could go directly to the linked videos, without having to navigate to the relevant video time point. A keyframe-based navigation history was also available (Girgensohn, Wilcox, Shipman, & Bly, 2004).

Given that research, it is still unclear what options are suitable for link presentation in hypervideo news, and how to organize the overall presentation of online multimedia news.

To address that question, a hypermedia news front-page was designed. The design of the front-page was conducted in three steps. First, design rationale for online newspaper design was achieved through an exploration of the design space, including an analysis of newscasts, and of design alternatives presented in previous research. Then, an interactive hi-fi prototype was created, illustrating hypervideo design alternatives within a front-page layout. That front-page layout was composed using the design elements found in chapters 4 and 5. An example is also presented of an interactive form integrating hypervideo and a design element from hypertext newspapers. This prototype was then evaluated in a cooperative composition workshop, and subsequently re-designed. The result of the workshop show what design alternatives for hypervideo were preferred by the journalist participants. The re-designed front-page, as a whole, is an example of a hypermedia front-page for online news, featuring seamless integration of different media forms. Several designers were involved in the process.

### 6.1. Hypervideo design alternatives

When creating the design alternatives for hypervideo links, the design question was how to present the links to the audience. The design process started out with a content analysis of three video newscasts, which were described as storyboards. That analysis resulted in a set of elements used in news videos, which could potentially be used as link anchors. Then, the design space was explored, starting with alternatives reported in research articles, adding new alternatives discovered in the exploration of alternatives. The resulting set, after the workshops, is shown in Table 6-1, as a QOC diagram.
### 6.1. Hypervideo design alternatives

#### Options

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Undisturbed news presentation</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>/</td>
<td>-</td>
<td>-</td>
<td>/</td>
<td>+</td>
</tr>
<tr>
<td>Informative about link to be followed</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>*</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>The link is easy to notice</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>/</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Contents are kept secret from the audience before temporal events in have occurred in the video.</td>
<td>*</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>*</td>
<td>+</td>
<td>/</td>
<td>-</td>
</tr>
<tr>
<td>Overview of contents related to the specific news item</td>
<td>*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>/</td>
<td>+</td>
</tr>
<tr>
<td>The link is easy to select</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>-</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>Visibility of other contents is maintained (text, in these design options)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

As illustrated with item 8, in Table 6-2, each design alternative embodies a set of design options. These in turn embodies design decisions. Thus, the list of design alternatives is not exhaustive. For instance, it would have been
possible to use abstract icons, for item 8, in which case the permanent icon outside the video area would not be very informative. For the workshop, design alternatives for regarded options and criteria for covering different screen areas for content presentation were also prepared.

**Table 6-2. Hypervideo design option 8**

<table>
<thead>
<tr>
<th>8 Permanent icon (Image below video)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Icon outside video area: Below</td>
</tr>
<tr>
<td>• Permanent link indicator: The icon itself</td>
</tr>
<tr>
<td>• Highlighting: when relevant to news presentation</td>
</tr>
<tr>
<td>• Icon depicts content to be shown</td>
</tr>
</tbody>
</table>

In preparation for the evaluation workshop with journalists, each alternative was described on one presentation page, as a list of positive and negative design aspects, and an image illustrating the design alternatives.

Figure 6-1. Initial front-page design

Also, to show the interaction dynamics of hyperlinks in moving images, an interactive prototype was designed, where the dynamic design alternatives were shown (Figure 6-1). Alternatives 7 and 8 were to be shown as still images during the workshop. For the prototype, four news video were shot by a journalist at a local newspaper participating in the ELIN project. The online newspaper front-page design prototype incorporated common ele-
ments of online newspaper front-pages (see Chapters 4 and 5). The design featured a top navigation bar, headlines to the left, personalized news to the right, advertisements in the bottom together with a news stream ticker presenting the latest news. News articles, including videos, were presented in the middle column (Figure 6-1).

6.2. Genre mix

The news overview element

The interactive prototype also illustrated a design alternative for integrating video news overview with the headlines stream element, common in hyper-text newspapers. That element also worked as a context stream element (see chapter 5), since news items were always presented in the middle column in the prototype, keeping the headlines element visible.

The importance of providing an overview of interactive video news contents can be illustrated by two workshop excerpts, from the requirements phase of the ELIN project. Excerpt 6.1 is taken from workshop 1 (Table 3-5), where journalists were building a scenario of how to handle the report of a stormy day.

Sven: I think one will have to work on summaries too, much like, the sports radio does, a summary of the five first. Because when you enter as a sporadic viewer, then you want to know what has happened, and get a summary, to get the big picture. [...] the summary should be clickable.

Excerpt 6.1. Summaries

This excerpt can be described in terms of the genre framework. The role of the speaker in this example is that of the producer. There are also expectations on the user, who want overview. That is at the same time a part of the users set of purposes. Moreover, the excerpt illustrates expectation on content; a summary of news with reference to sports radio summaries (which is a reference to a medial form). Also there is a proposal for an interactive form, a clickable summary.

Excerpt 6.2 is taken from workshop 5 (Table 3-5) where a group of senior citizens discussed their view on current ways of viewing news.

Erik: Come to think of it, this viewing of the morning news from beginning to end is rather tiresome. There is some guest, or
there is a debate, that one wants to hear, then one is forced to…

Ulrik: When one listens to the news, then one listens once or twice more, because there could be something new

**Excerpt 6.2. News viewing**

In terms of the genre framework the excerpt can be described in the following fashion. The role of the speaker is that of the user, and the content spoken about is news. In this example the experienced use-qualities are central, namely tiresome repetition when waiting for a desired news item. The medial forms mentioned are television news (Erik), and radio newscast (Ulrik). Their purpose is to get the desired content, without first having to go through repetitions of other contents. Erik and Ulrik do not experience a breakdown, since they do watch the news despite its shortcomings and probably would not have thought of these issues if not asked to reflect on their practice. However, following the notion of tensions presented by Holmlid (2002), there seems to be a tension that is expressed as a negative experience accompanying the recurring situation of news consumption.

In the online news genre, overview of current important news items is mainly provided through the headlines element, which is a spatial layout of articles, using the broadsheet metaphor, mixing text and images. In the television news genre, overview is instead given by a temporal layout of brief glimpses of upcoming news stories. There are several ways of combining these elements. When assessing design alternatives together with a small set of potential users, preferences tended to go towards the online newspaper style of spatial layout of video clips on a page. This motivated the design decision to use an online newspaper style headlines element on the frontpage. A spatial layout of headlines is for instance used at TV4.se (Figure 6-2), where their past newscasts are presented with individual news clips presented as headlines, allowing the viewer to skip to a desired clip at any time in the presentation. Another example is Reuters.com (Figure 6-2), where news channels and news items are presented in a similar fashion, with a breaking news channel in a top position. At both sites, the news cast continues to the next item, after playing the current item. This stands in contrast to news presentation on the CNN.com front-page, where not all items were presented as video items. Instead, news texts were presented with video as add-on for some items, although video links lead to a news video page.
However, the reference to summaries on sports radio in the workshops, gave the idea of keeping the news overview video often found in television broadcasts, summarizing the news, before the newscast starts. When the video page would be opened, in the primary media area, five seconds of each video in the headlines section would be played, following the spatial layout from top to bottom, highlighting the current news item. It should be possible to interrupt the overview video at any time, by clicking a hyperlink. Potential users, who have encountered the interactive prototype, have been surprised by the overview video (Figure 6-1), expecting a normal web page. They requested a replay button, which was not present in the initial prototype. This element was subsequently also implemented in a design template for handheld devices (Figure 6-3). In that solution, headline elements were presented using a horizontal layout, with a bottom scrollbar to go between items. The spatio-temporal overview was achieved by playing five seconds from each video, just as in the larger template, but since not all headlines elements would be visible on the screen at the same time, the page would automatically scroll to the next item, until the last item had been played.
Accordingly, overview was given by a spatio-temporal news element, which is a genre mixture, incorporating the following elements of previous genres: The *medial forms* were television style video and online newspaper style headlines. The *interactive forms* were hypervideo, for instance, clickable video objects, like normal clickable headline elements in traditional online newspapers. Finally, the *purpose* was to get an overview, and the *experienced use-qualities* were surprise and gaining overview.

### 6.3. Cooperative composition workshops

Three cooperative composition workshops (Table 3-6) were conducted, primarily to evaluate the design alternatives for video hyperlinks in the initial prototype (Figure 6-1). Another purpose was to evaluate the composition of elements, to be able to make an informed re-design. The workshops were set up as focus groups, but with materials for low fidelity (lo-fi) prototyping, and a design session where participants could create design alternatives.

#### Participants

Three groups participated in the workshops, one in Sweden, and two in Spain, with 4(2/2) (male/female), 10(8/2), and 12(8/4) participants, respectively. They represented different competences within the newspapers, including web, journalism, technology, and business. Some participants had had different roles, and thus had several competences. Also, in the Spanish workshops, audiovisual and journalist students, and people with usability competence participated.
6.3. Cooperative composition workshops

Procedure

First, the purpose of the workshop was explained. Then, background information forms were filled in. The front-page design (Figure 6-1) was presented, using a hi-fi prototype. That page was discussed by the participants, in an expert group review, for 20 minutes. Then design alternatives for hypervideo presentation, and for content presentation, were presented, as a still image, and a list of advantages and disadvantages. Participants were invited to add any unlisted advantages and disadvantages that they could see for the design alternatives. Each alternative was placed on the wall of the room, and in a document given to each participant, to use as a reference during design.

“A school bus has had an accident in a nearby village, around four in the afternoon.”

- Images from the site
- 3D-Animation of the event
- Video from the accident site
- Video from the site where accident victims have gathered
- Video from the hospital
- Background information about the Bus. Did it pass the last check-up?
- Texts for the above contents

Table 6-3. The bus accident scenario

A scenario was then presented to the participants, the “Bus accident” (Table 6-3). It had been created in a initial project workshop, by media professionals (workshop 1, Table 3-5). Using a page template showing the initial page layout as a wire frame, each participant made his or her own prototypes, individually (Figure 6-4).

The participants could both draw design alternatives, and refer to the design alternatives by number and title. Each participant showed his/her design solution to the group, going around the table, discussing and comparing design alternatives. The workshop facilitator took notes, paying particular attention to what alternatives were preferred, and why. Ending the workshop, the next steps of the development project were presented.
Results

Regarding video hyperlinks the media professionals in the workshops preferred icons as the primary way of illustrating video hyperlinks, and other related information (alternative 8). Also, there was a somewhat weaker view that links in the videos could sometimes be useful, if the alternative with a visual link indicator was used (alternative 4).

During the review and re-design of the front-page, the workshop participants requested modifications to the front-page. They designed a larger video area, a white background, and clear differences between the headlines element and the personalized news column. Moreover, the workshop participants tended to prefer two modes for news content presentation; one full screen contents mode, and one preserving the menus and media areas. Also, in the Swedish workshop, the news overview element was discussed. They then proposed to use the element to present entire news items in sequence, rather than to only use it for news overview.

Re-design

The new design is presented in Figure 6-5. It was achieved through sketching design alternatives, thereby exploring the design space, using the workshop outcomes as design constraints. Since design alternative 8 for hyper-video links to related materials demanded icons outside the video area (Table 6-1), a design for that had to be incorporated, but that design had to take the whole composition of the page into account. The design as a whole also had to take technical constraints of the ELIN project into account.
During re-design, the breaking news element was moved to a top position, to follow recommendations regarding online newspaper front-page design (chapter 4). The right hand context stream implemented the best solution found in the web site review (chapter 5), considering the page layout as a whole, except that it did not have a varied visual layout, complying with a technical constraint from the ELIN system. In the modified template, the top half of the stream presented the current top news articles, whereas the bottom headings area presented personalized contents.

There were three media areas in the interface, all with 4:3 proportions for video contents. The primary area was used to present contents, when selected from the headlines section. The template was optimized for display of video contents, but traditional articles with text and images could also be presented. When displaying video, a play head for start/stop/pause was to be shown in the media area. A scrollbar would instead be shown when text occupies an area.

The icons representing hypervideo links were presented in a sidebar. Two interaction design solutions were considered for the objects in the sidebar. Either, objects could be dragged to the media area, where the viewer wants to see them, or they could be clicked, and displayed in the primary, secondary, or tertiary media areas (or both). There would only be a minor difference in possibilities for viewing contents, if the click-to-view solution is used, since all areas would have a full-screen button that can be clicked. The advantage of the click solution is that it is more convenient than dragging, and the advantage of the drag solution is that it gives the viewer more control over where the contents are shown. Also, currently, the drag solution is not normally used for following hyperlinks. To use that solution only, currently, would violate conventions and expectations, and would most likely result in a breakdown, unless it was clearly communicated.

In the full-screen mode design, which had also been requested by the workshop participants, the hidden parts of the template, except the secondary and tertiary media areas, namely the headlines, the navigation menu, and the media objects, could be pulled out from the side, over the video, by moving the pointer to the edge of the screen, to select new contents to view, without leaving the full-screen mode. Also, in the full screen mode, important breaking news could be displayed in an overlay in the top right position, just like in the overview mode.
Regarding the method used for cooperative design, the use of the method by the Swedish participants was observed by the facilitator (the author of this thesis). None of the participants seemed to have any problems sketching design alternatives. Participants were both drawing and referring to design alternatives by their labels. Thus both design styles which the method was intended to support, were used. That they had modified the front-page template did not seem to cause any problems for placing page elements into the composition.

6.4. Discussion

The value of the design examples shown in this chapter is mainly the design alternatives for hypervideo, and the recommendations for online news hypermedia. Using this as a point of departure, during re-design it would be possible to take a step back, and re-consider alternatives, which were not chosen here. Also, revisiting the design rationale, page details, which were not explored and evaluated here, could be explored and given a design rationale. Moreover, the design case shows how the genre approach guided design, both analytically and to drive the design process.
6.4. Discussion

Integrated hypermedia news

For video hyperlinks, the design alternative with static icons outside the video area (alternative 8, Table 6-1) is the most promising one. That is a reasonable conclusion, since the three workshops with journalists came to the same conclusions regarding the interaction design of video hyperlinks, and since these judgements were both based on having seen a design rationale, and the hypervideo hi-fi prototype illustrating interaction dynamics.

The preferred alternative (alternative 8, Table 6-1) embodies several criteria. It does not disturb news presentation, it is informative about the link to be followed, the link is easy to notice, in the case of several related items an overview of them is provided, and the link is easy to select by using a mouse and pointer. It reduces space for other page items, which was not seen as problematic. It does not give the opportunity to hide contents from the user, until some point in the video. That possibility was however not seen as very useful for news videos.

These judgements only regard online news. For other applications, such as advertisements, other alternatives may be suitable. Also for news, the alternative with a link indicator in the video (alternative 4, Table 6-1) seemed promising, but it was not seen as important as the primary design choice. A limitation of the study was that the views of different audience groups were not examined.

Regarding the spatio-temporal overview element, the results are inconclusive, since it was not backed up with design rationale, and since the alternative preferred by the media professionals, to link the full videos in a sequence, was not explored further. This design solution was not followed up here in detail, due to prioritizations in the ELIN project. In particular, the solution would imply that all news items would at least be presented as audio, otherwise the news overview could not go through all news items (unless a news summary text would be shown for a short time). That might not be unreasonable for high news value items, but it was decided not to implement that design in the first ELIN prototype. Therefore the exploration of this design element remains as an issue for further research. Among the issues remaining, there is the question of switching between news overview, full news videos, and videos including in-depth details. Added to that, there is the production question of what information to create in multi-modal form. A remaining question is also whether it is preferable that the overview returns when a news item has been played, or that the next full video is then played, or that the video is stopped. Moreover, the views from differ-
ent audience groups are important regarding the design. The solution presented here is similar to a detail-on-demand solution proposed for instruction videos (Girgensohn et al., 2004). There are also differences. That solution had a timeline, with links presented at some times, as clickable areas in the timeline, with an image and a caption below the timeline. In the current solution, online newspaper style headlines are used, instead of the timeline with images and captions. Headlines were presented vertically, with a moving focus, indicating the current position in the overview video.

The composition of the front-page as a whole, resulting from the re-design rests on a somewhat less comprehensive design rationale, compared to the video hyperlink design. It rests on the design recommendations provided by the analysis in chapter 4, but these still leave a great extent of design freedom, regarding the layout of the news elements analysed. Numerous front-page design alternatives could be created based on the rationale discovered here, which motivates the current design. For instance, the two media areas below the primary media area could change places with the headlines section to the right. Also, the current design has no rationale for the details of the graphic design. Further research could provide a more comprehensive design rationale for different designs. In sum, then, the degree of certainty about the design decisions in the design varies.

**A genre approach to interaction design**

The genre approach informed the use of three interaction design methods, namely design rationale, prototyping, and cooperative design. Firstly, hyper-video link design alternatives were described with an explicit design rationale. In creating the alternatives, a genre analysis of news videos contributed to the identification of potential link anchors in the video. Secondly, the spatio-temporal news overview element remediated television news and online newspapers. It was thus a synthesis of news overview elements from two genres. Thirdly, the design alternatives were integrated in the front-page design, as a hi-fi prototype. Also, the method of cooperative composition that was used here seems promising. It supports two ways of designing, both by drawing, and by referring to design alternatives. With both design styles, the design alternatives which can be referred to, or used as inspiration when drawing, include elements from the online news genre. The method was successfully used in both the Swedish and Spanish settings, but nevertheless, further studies are needed before any general conclusions can be made regarding its scope of applicability, strengths, and weaknesses.
The design in Figure 6-5 is thus based on preceding genres, their form, content and sets of purposes, as a point of departure for the design process. The advantage of the genre approach is that it does not only help the designer identify purposes, or qualities, but also helps identifying existing design elements and compositions that has contributed to conveying the quality, in previous designs. In this way, the approach helps the designer to preserve good design solutions from the past, and merge these with new solutions which remediate problems with old designs. The design situation is shown in Figure 6-6, illustrating examples of aspects that designers of interactive systems work with, seen from a genre perspective.

Figure 6-6. An interaction designer engaged in composition of an interactive system

These aspects influence the composition of the interactive artifact, by setting constraints and design objectives. The design was conceptualized in terms of genre elements (for instance headlines and news stream), and of new elements to incorporate (mainly for hypervideo). The designer composed the elements into a whole, relating to, designing, and choosing between alternatives, in terms of form, content, and sets of purposes. For instance, there were two context streams, one presenting the most important news contents (top right), and the other presenting personalised news contents (bottom right). These reflect purposes of following personal interests, but also to follow and present the most important news, respectively.

As mentioned earlier in this chapter, the hypervideo design, was preceded by as series of future workshops, envisioning both news use, and news production. These envisioned futures achieved in these workshops are presented in the following chapter, and in chapter 8.
7. Cooperative scenario building

The vision for the end of the journey of online newspapers, presented by Molina (1997) was “a personalized interactive electronic news system making fully-integrated use of text, audio, still-image, animation and video” (p. 219). To envision the changes needed to fulfill that vision, we conducted a series of eight design workshops in the context of the user requirements phase of the ELIN project (workshop 1-8, Table 3-5). The workshops had the ELIN vision of wireless and broadband access, a diversity of media terminals, such as smartphones and media home platforms, and the possibilities of interactive video, 3D and personalization, as a starting point (Table 3-1). None of the technologies were new at the time of the workshops. However they were not widely used by local online newspapers.

From a genre perspective, electronic news systems do not only mediate contents, but also genre rules. Since technical systems can enforce genre rules, or make some genre rules inconvenient to maintain, they can affect genre change. These changes can relate to genre by positive experiences regarding surprise, familiarity and appropriateness, but the experiences may also be negative. The system might moreover be experienced differently by different stakeholders. Since genres mediate between groups, a genre can be impossible to maintain, if important stakeholders are not satisfied. There-

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8 This chapter is based on a publication, but has been substantially revised (Arvidsson et al., 2002).
fore, stakeholder visions were achieved through workshops where stakeholder groups acted as co-designers.

During the workshops, the participants first articulated problems and concerns about the technology vision, then the problems were turned into a vision of a desirable future, and finally, scenarios of future technology use were created. The participants represented either end-users, or management, or media professionals, all with different motives for their participation and expectations of future news services. The groups were mixed in the sense that, for instance, different media production competences were presented within the media professional’s workshops, and non-mixed in the sense that management and end users were not represented at the same time, to the same extent. In design, stakeholder knowledge related to genres would act as their genre perspective (Figure 2-1).

In this chapter, the design process is discussed in general, and lessons learned are presented. In particular, the aim was to find out whether the groups shared a common vision, and to identify issues of conflict, if any. Regarding the issue of harmony (consensus) and conflict, Bødker, Gronback, & Kyng (1993) and Iivari and Lyytinen (1998) disagree. On the one hand Bødker et al. (1993) states that “The design process, as any process, is a political one and leads to conflict.” They furthermore emphasize that “...organizations are characterized by conflicts, most significantly between management and labor, and because different groups have different power and resources in the organization.” On the other hand, Iivari and Lyytinen (1998) state that despite having sympathy for resource weak groups, cooperative design is characterized by “a harmonious dialogue” between the designer and the user. This issue has not been given much attention in empirical studies. It follows the argument of Buchanan (2003) who argues that giving multiple accounts is preferable to giving unitary accounts of complex processes of change. The reason would be that single accounts may be political in the sense that they present only the account of an event that fits some stakeholder, while hiding other, less favorable accounts. What is reported here is not a process of change, but views on possible changes.

### 7.1. Workshop method

When planning the interaction design process in the ELIN project, it was decided that focus groups would be economically advantageous, to create scenarios of use. According to different surveys, focus groups are not among the most popular usability methods (Mao, Vredenburg, Smith, &
Carey, 2001), but are not unheard of either. The main disadvantages listed in the literature were that focus groups conducted by marketing often involved buyers rather than users and that in describing work, people often omit steps, or describe prescribed procedures rather than actual procedures. Also, focus groups are subject to negative group dynamics. Moreover, marketing often focus the groups on attitudes rather than on work tasks (Hackos & Redish, 1998). From the design perspective guiding the interaction design process, it appeared that managers were indeed important stakeholders and that their view on what services the system should support were no less important than the view of primary users in media production, or audience users. A similar argument has been made regarding design of a museum web site, where management and sponsor goals were seen as important as visitor goals (Bolchini & Mylopoulos, 2003). It was therefore decided to involve these three groups in the design process. Since this was not a marketing activity, but a design activity, it was decided to conduct a high-level task analysis for the future system, to create scenarios, during the focus groups. In this way, some of the disadvantages of focus groups for design would be overcome.

The main reason for conducting a task analysis is to control the performance of work. “Task analysis is the collective noun used in the field of ergonomics, which includes HCI, for all the methods of collecting, classifying, and interpreting data on the performance of systems that include at least one person as a system component.” (Diaper, 2004 p. 14). Although it is often advantageous to base task analyses on observation of work, in some cases it is useful to base the data on other sources, such as interviews. Task analysis models can be built regarding existing or future work. These models include things, people, and relations between them. Relations between work and an application domain can be used to judge performance (Diaper, 2004). Task analysis methods have been developed for different ends, for instance hierarchical task analysis, for training workers, or groupware task analysis, for group work. Task models differ not only in their notation, but also in what aspects they model (Limbourg & Vanderdonckt, 2004). It is not uncommon to modify task analyses for new ends, by for instance adding model aspects, however some models are more difficult to modify (Balbo, Ozkan, & Paris, 2004). Due to the focus on work, classic task analysis do not take other aspects of interaction, such as may be important in areas, like use of interactive multimedia, sufficiently into account (Karat, Karat, & Vergo, 2004). Task models and methods may be usable for different systems development phases, for instance a low level of detail gives overview useful in a specification phase, whereas a high level of detail may
make it possible to generate part of the system from the specification (Balbo et al., 2004). In this case, it was important to involve stakeholders with other competences than interaction design, and for this, card methods are recommended in the literature (e.g. Lafrenière, 1996; Muller et al., 1995).

Also, since the design activities regarded future rather than current work, it was decided to situate the card based method in a future workshop. That method has previously been used to situate, for instance, metaphorical design (Kensing & Madsen, 1991), but has also been used as a part of other design activities (Tollmar, Sandor, & Schömer, 1996). If the purpose instead had mainly been to generate and assess viewpoints, rather than to create scenarios, other methods, such as GEM (Boy, 1997) could have been used. Still, it is likely that the disadvantage of incompleteness and inaccuracy, with regards to the task structure achieved, stated in the literature, will affect the outcomes of the card based task analysis (Hackos & Redish, 1998). Therefore, the scenarios should be seen as partly incomplete and partly inaccurate approximations of future work with a loosely defined system.

Figure 7-1. Workshop phases and activities. The image in the “tigger” phase was taken from the video “tomorrow’s news” (IFRA, 2000).

The workshops were set up as half-day future workshops, where a card-based method was used for scenario building. The workshop phase model is shown in Figure 7-1. The figure illustrates the four main phases of a future workshop; introduction, critique, fantasy and implementation. Each phase
has a different objective; to introduce the workshop; to articulate the problem, to envision a solution, and to come up with a plan to implement it, respectively (Jungk & Mullert, 1987). The future workshop method does not strictly prescribe the activities within each phase.

In the introduction phase, the role of the participants in the workshop was explained; why they were there and what was expected from them. The different phases were explained briefly and the need for their active participation during the workshop was stressed. The role of the workshop facilitators was also explained. Moreover, the workshops had a brief verbal technology description, and an introduction to the development project. In the workshops, the goal of the ELIN project was described, and who the involved partners were. As proposed in the literature, in each workshop some kind of warm-up activity was used.

Then, a critique phase followed, to articulate current problems. As recommended, all problems were written on large sheets of paper that everybody could see, and then the participants identified and ranked the most serious problems. This phase was not restricted to problems with practical use of technology, but had a more broad focus on the impact of current technologies on news work and news usage. Since the new technologies were not used in the newspaper organization, or by their audience, a technology demonstration phase was added, to trigger the imagination of the partici-
Chapter 7. Cooperative scenario building

pants. This demonstration was either before, in the middle, or after the critique/vision phases, depending on whether the purpose was to imagine problems in the current situation, or in the future situation. As mentioned, there was also a short technology introduction in the introduction phase of all workshops.

These problems were subsequently treated in the vision transition exercise, as recommended by Jugk and Mullert (1987). It is a transition from problem articulation to envisioning a solution. The purpose was to turn the problems into a positive image, a desirable future, in order to give the participants the space to come up with creative scenarios without being constrained to the problems. The facilitator started with the highest ranked problem, giving the participants the possibility to discuss how each problem should be turned into a positive image. Problems may have different opposites, and were in some cases discussed, when some participant opposed the first suggestion. For instance, “no resources for production” was transformed into “adequate resources”, rather than “with a maximum of resources”.

In the subsequent fantasy phase, the purpose was to further explore the impact of new technologies on journalistic work, by envisioning scenarios of work with the technologies. The purpose of this phase thus deviates from that of a standard future workshop where the purpose is to solve the most important problem. In these workshops, to evaluate to what extent technology would solve problems articulated in the previous phases, would instead involve a post-activity evaluation. In this phase, card based scenario building was used. The method is based on methods such as CARD, CUTA and PICTIVE (Lafrenière, 1996; Muller et al., 1995), as a point of departure. These are all methods that are easier to use by non-designers than normal diagramming methods. The main differences between the mentioned methods were card layout and the rules of the activity. Like in the studies presented by Muller (2001), the method was adapted to the design task. It was also adapted to the low level of experience with the method, by the facilitators. Muller does not propose one set of cards for all situations. On the contrary, new card sets are developed for each design situation. Like in Muller’s home computer study, generic cards were created and used. Muller proposed a layered analysis, using cards in three categories, namely observable / formal, skill & craft, and description. The card set used during the scenario building sessions had cards mainly in the observable and skill & craft categories.
At the first workshop, the facilitators were not skilled in the method. Therefore, the full layered analysis was not used, during scenario building. Instead, to reduce complexity, making the situation more manageable for the facilitators, description cards were used in the final phase of the future workshop, rather than during design. Also, the idea was to direct problems to the problem phase of the future workshop, rather than being voiced during design. This would also make design more creative, by restricting criticism of ideas. The method was similar to graphic facilitation (Crane, 1993),
except that participants wrote down keywords on categorized cards and did no illustrations.

The facilitators initiated scenario building by explaining the rules and the materials. The participants then came up with an event to explore. A scenario was then created to envision how that event could be treated, with the future vision and technologies as a frame of reference. The participants started out by filling in a card labelled ‘what?’ with a brief label of the event to cover. Then they constructed the scenario by filling in cards. Each card was labelled ‘what?’ ‘when?’ ‘how?’ ‘where?’, ‘tool?’, or ‘who?’. As shown in Figure 7-5, participants were seated around the card-based scenario that they created, except in workshops 7 and 8.

The role of the facilitator was to ask the participants to fill in cards and place them on the table if the process of filling cards faltered. Also, the facilitator kept track of the completeness of the scenario, trying to probe the participants to fill in apparently missing or incomplete parts.
An example of a scenario structure is presented in Figure 7-3. It has been translated and redrawn, and Figure 7-4 shows the upper corner of the sce-
nario. The entire structure covers the news scenario “Airbags are death traps for children”, which was one of the main headlines of the Östgöta Correspondenten newspaper, on the day of the workshop.

The implementation phase of a standard future workshop was not used completely, since the workshop was part of a development project that would subsequently create an implementation plan. However, in some workshops, different aspects of the scenarios, such as payment models, were assessed in this phase.

### 7.2. Workshops

The study of design work and visions of future news was based on eight design sessions (workshops 1-8, Table 3-5). One pilot study, with a sports community, was conducted before the main series of workshops. Workshop 9, the contrast case, is discussed in chapter 10. The workshops had different foci, and although following the basic structure of Figure 7-1 was followed, there were some modifications to the basic structure for each workshop to fit the particular circumstances. In workshops 1-8, one participant from newspaper management was present. He was an active participant in workshops 1-3 but also acted as co-facilitator in workshop 4-6, and as representative of the Swedish newspaper partner in the ELIN project in workshops 7 and 8. In the count of workshop participants, he is included in workshops 1-3. One facilitator was present in all workshops, running the workshops except for workshops 7 and 8 which were run by a facilitator fluent in Spanish. All workshops had one additional co-facilitator. The main facilitator in workshops 1-6 was coordinating the user needs analysis and interaction design in the ELIN development project (the author of this thesis, although formally, another person was responsible for the coordination).

Workshops 1 and 3 (Table 3-5) had a total of 12 participants. The media professionals were are all immersed in the news production of today. The participants were hand picked by the newspaper management. The participants were seated together around a table, and the wall in front was used for group brainstorming. The workshop structure in Figure 7-1 was followed, except that there was no implementation phase in these workshops. In these workshops, the IFRA movie was used as technology demonstration in the trigger phase. Also, in workshop three, the trigger phase was in the middle of the critique phase, to capture both current and future problems. Both workshops started with an idea generation phase, as a warm-up exercise,
7.2. Workshops

based on a verbal description of the technologies. The scenarios discussed were based on news events from the local newspaper.

Workshops 2, 7 and 8 had a focus on business models, with a total of 27 participants from Sweden and Spain. Participants in workshop 2 were recruited from a meeting with Citygate, a newspaper association. Participants in workshops 7 and 8 were invited by the Segre newspaper. Participants in workshop seven were in management positions, but also two usability academics from a nearby university participated. In workshop 8, participants were in management positions, with the exception of one journalist. In workshop two, participants were seated together around a table, and the wall in front was used for group brainstorming. In contrast, in workshop 7, participants were seated in rows, in an auditorium, and in workshop 8, in a conference room laid out in a U shape. The workshop leader in workshops 7 and 8 was fluent in Swedish, English and Spanish, whereas the others were fluent in Swedish and English, and the participants were fluent in Spanish, and to varying degrees in English. Just like in workshops 1 and 3, the movie “tomorrow’s news” was used in the trigger phase of the workshops (IFRA, 2000). Workshop 2 started with an idea generation phase, as a warm up exercise, based on a verbal description of the new technologies. In the scenario generation phase of the management workshops, first a few scenario ideas were generated, and then in workshops 7 and 8 one scenario was elaborated, whereas in workshop two, several scenarios were elaborated. In these workshops, payment models and desirability of services were judged in the implementation phase.

Workshop 4, 5, and 6 were conducted with different audience groups. Workshop 4 was conducted with three participants from a political group, whereas workshop 5 was conducted with five elderly participants from an IT society, and workshop 6 was conducted with ten male early adopters. Participants in workshop 4 were invited through an ad at the public mailing list of the political group, and participants for workshop 5 were invited through a personal contact with that group by the newspaper. In contrast, participants for workshop 6 were invited through an advertisement in the local newspaper and online edition. No women answered and all who answered to the ad were invited. The participants were ten males aged 20 to 68. As we experienced during the workshop most of them were technology oriented early adopters of technology. These workshops were conducted at a newspaper office room. Participants were seated together around a table, and the wall in front was used for group brainstorming. In these workshops, a verbal trigger, describing technologies was used. Workshop 4 used
a recent event as the basis for scenario creation. Workshop 5 used one recent event, and one problem from the critique phase. In workshop 6, the first scenario elaborated was based on a recent news event, and for the second scenario, first a set of news services were brainstormed and evaluated, and then the most promising scenario was elaborated.

7.3. Analysis

The future workshop can be considered being a specific kind of focus group. The workshop phases reflect a change of focus, within the group sessions, with differing amounts of facilitator intervention. The initial warm-up discussion was characterized by low moderator involvement, and also the problem phase was rather free. The vision phase was highly moderated, and the group mostly verified or discussed the interpretation of problems of the facilitators.

In focus group research, it is usually seen as sufficient to have three to five groups to achieve validity, if the groups seem to present similar views. With just one group, it is hard to say whether the results are due to the specific circumstances, such as group dynamics, at the time and place of the group session (Morgan, 1997). Here, the research design relies on two journalist groups, three management groups, and three audience groups. However, the analysis revealed that the audience groups had rather different views on the workshop topic. Therefore, the results from these workshops cannot be generalized to the audience as a group, or even to the potential audience fragments that they may represent. What is presented here is not one unified story, but different accounts. There might not be one true report of the actual possible benefits of an ELIN system, but the different accounts complement each other in respect of the viewpoints of the groups. This view on multiple views rather than one true story as the result of research is consistent with the view of Buchanan (2003).

7.4. Results

In this section, the management and media professionals’ workshops are grouped, due to the similarity of issues raised and scenarios created. The audience groups were not as coherent and are therefore treated separately. Each description starts with methodological issues, followed by a presentation of topics from the problems and visions phases. The vision phase clarified the problems of the preceding phase, by envisioning the opposite of the problem, however, here they are simply presented as issues. Then the
results of the scenario building phase are presented, with a short description of the scenarios created, and one clarifying textual scenario description.

**Media professionals**

During the critique phase, most participants contributed. Only a few of the problems resulted in more than one alternative during the vision phase, which lead to shorter discussions before the group agreed. During scenario building, some participants did not participate in the discussion with the same intensity as in the prior phases. Some participants were more active when scenario issues regarding their specific publishing competence were discussed. The scenarios regarded news production, and were more comprehensive than in the other workshops.

**Issues raised by the media professionals**

A wide range of topics was raised, most regarding production. For instance, they thought that there were expectations on some channels to always be updated, which caused repetition of news. This was seen as particularly serious for the main part of the days of the year, when no high news value events had occurred. Regarding technology, interoperability between systems, and standards were seen as problematic. Low technical quality of news videos was seen as useful only for news flashes, but not in competition from high technical quality videos. Therefore, videos with low technical quality must be distributed quickly. However, speed was seen as problematic from an ethical standpoint, and from the standpoint of quality control, and also for researching background information. Regarding parallel publishing they found the need for everybody to know all production skills to be problematic. Also, they wanted to automate part of the works, to avoid having to do the same work more than once. Regarding in depth information, they were concerned about the size of the audience, whether it would be worth the production cost. They were concerned that the audience might not want to be bothered with all decisions they could make with the new technology. Personalization was also seen as problematic, since people could miss information that they did not know that they want, or information that the newspaper really wanted people to read. Therefore they wanted a basic news package reaching all subscribers. Moreover they were concerned by the introduction of intermediary services, since customers might not be sure of where to turn, when problems would occur. Also they were afraid that their independence from advertisers might be threatened.
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Scenarios

Five comprehensive news production scenarios were created. Two high news value scenarios were elaborated; a bus accident, in workshop 1, and a military aircraft accident, in workshop 3. One feature news item was covered in workshop 3. One news item, regarding a press conference, in workshop 1, was seen as mostly targeting a specific audience group. Another scenario from the same workshop, regarding a stormy Thursday, was seen as involving the audience as sources of news. That also included the opportunity of the newspaper acting as an intermediary between the community and the newspaper audiences.

The military aircraft accident scenario: One afternoon during the annual “Water Festival” in Stockholm, a military aircraft performing an air show crashes. The local media organisation in the city where the aircraft was developed sees the need for a massive coverage of the accident.

When the news desk gets the alert through the Swedish telegram bureau (TT), the web reporter puts the telegram as a news flash on the website. The reporter also marks the telegram as a news item that should be sent out to the subscribers of the “flash-service”. The reporter later collects material for the in-dept articles that will appear in the Internet edition and the morning paper the next day, and is supported by the system which is automatically fetching related stories from the database, when the telegram is published. The animator also starts to reconstruct the event, for publication as a 3D-model.

Two teams of reporters are sent to Stockholm, equipped with portable video- and audio-recorders and necessary writing devices. The first team works with material for the printed edition, with a later deadline, whereas the second team works with media with faster deadlines, such as the web. In the radio / TV studio the producer starts to prepare an extra newscast based on information from the news desk and the web reporter. Immediately, video is purchased and broadcast. Later, the video from the own team is used. As new material is coming in, the paper updates their online news event summary.

Furthermore, a team is sent to the factory producing the airplane, which is located in the same city as the media organization. They start to interview people immediately at the gates, and then stay to attend the press conference. Two days after the accident, in depth materials from critics of the aircraft development project, from political parties and from peace activists are published. The paper hosts an online debate.
7.4. Results

Management

The critique phase of workshops 7 and 8 was extended, since it took a longer time to reach a situation where no more problems emerged. In these workshops, there was an evident dominance by some participants in leading positions. In workshop 2, there were no clear leading positions, but some participants were nevertheless more active than others.

In workshops 7 and 8, the vision phase was shortened, and positive images were created by the workshop leader without much discussion.

In workshops 7 and 8, the scenario building phase was shorter than in workshop 2, since the total workshop time was also shorter, and since previous phases were longer. Therefore, participants first brainstormed a set of future services, followed by one detailed scenario for each workshop.

The participants in workshop 7 and 8 did not want to write the ideas down on the scenario cards. One assistant working at the Segre newspaper was selected to write down the ideas presented by the participants. Another workshop leader placed these cards. This workshop leader (the author of this thesis) was responsible for the completeness of the scenario, allowing the main facilitator to focus attention on the participants. Lengthy discussions were allowed to go on, since we wanted to respect the hierarchies present in the room. It was difficult for these groups to let go of the problem image, and accept the future vision. In contrast, in workshop 2, participants had no problems in engaging in scenario building, using the workshop materials. Although some participants did not fully participate during scenario building, all participated during the scenario evaluation phase.

Management concerns

The primary concern of management was economy. Numerous issues were listed; the primary issue in all three workshops was the willingness of audiences to pay for contents on the Internet. This was complicated by a concern that the service provider gets all the revenue for their users accessing their news media sites. Considering revenues for intermediary services, they were concerned that other actors, such as food stores, were creating their own services, rather than going through the newspapers.

The remaining concerns regarded technology, competence, organization, law, credibility, and audience acceptance. They thought that technical standards were lacking, and that the technology was not sufficiently advanced. Also, they believed that audiences would not want to buy the necessary
technologies. For production, they could see a need to implement a new workflow in their own organizations, but also a need for separation of workflows, due to different quality demands on web and print content. Moreover, they would need journalists with competence in using new production technologies, and business developers. To be able to use the contents produced by the journalists for parallel publishing, copyright agreements would have to be changed. Regarding content, they could see a risk of losing credibility if the audience could not clearly differentiate between editorial and advertisement content. Also, at the time of the workshops, there was a problem with copyright for parallel publishing. Finally, the audience would have to adapt to the new technologies, which might be a problem.

Scenarios

The scenarios were aimed at audiences with good economy. The first category was intermediary services. An apartment intermediary service was proposed in workshops 2 and 8, whereas heating and housing economy were proposed only in workshop 2. Personalized services, aimed at different groups, were presented in workshops 2 and 7. In workshop 7, a news flash service for sports news was proposed, whereas in workshop 2, the services were high news value local news, business news aimed at executives, trotting tips, and pet related news. Regarding mobile advertisements, two services, a service for advertising the weekly groceries aimed at families, and a service for gourmet food were proposed.

As an example, consider the sports news flash service: David is at a sports bar, watching a game, when a newsflash about a sportsman who has been using drugs, appears at the bottom of the screen. As he is watching on a public television set, and does not have a personal subscription to the service, he does not have access to the full story. His friend Ola, reaches for his smartphone, clicks on the news-icon which has unobtrusively emerged, and reads the short version of the story. Ola then tells him what the story is, feeling good about being the first to know.

The participants of workshop 7 were concerned that the estimated cost of the service was much higher than what their market reports claimed that the audiences were willing to pay for it.

The community

Participants were engaged in discussions through the entire workshop. The problem phase was rather long, and more problems were raised and dis-
cussed in the vision phase. Also in the scenario building phase, there was a tendency to discuss broad problems, rather than the specific scenarios at hand.

**Community concerns**

The political community was mainly concerned with the impact of commercialization of the contents presented in modern media. They found that political issues were in the background, and that spectacular and entertaining news were instead in the foreground in media. They thought that their political issues were not covered well by media, and wanted more resources for journalists to conduct critical journalism. They also had a problem reaching out to new members, whereas they could reach their own members through their public mailing list. They wanted to reach and make more people visible. Moreover, they found that their own organizational capacity for writing debate articles was low. They were concerned that the new technologies would contribute to information overload in society.

**Scenarios**

One scenario was covered in the workshop, regarding a political demonstration. They wanted to avoid contributing to the information overload that they found in society. For this, they wanted to use personalized advertisements about the upcoming demonstrations, and to publish the speeches, to groups positive to their agenda, as well as to their own members.

The demonstration scenario: *A political organisation has decided to demonstrate against a war in Afghanistan, in the centre of a mid-sized town in Sweden. The demonstration will feature a speech at the main square. It is very common that various organisations organise small demonstrations and speeches in the city. Since most demonstrations take place during weekends, the local newspaper does not cover them all. In this scenario, local organisations have independent home pages, connected to a community server at the local newspaper, from which they get community news from other communities.*

*Liv is responsible for the media coverage and information to members about the upcoming demonstration. She enters information about the upcoming information, which is published at the sites of cooperating organisations, through the community server. It is then sent, through the community server, to the local newspaper online edition, as breaking news, to subscribers of community news. It is also sent to the editors “today” section covering upcoming events, published by the local newspaper.*
After the demonstration, the speech is published at the home page of the political organization, and the newspaper desk is provided a link to the information, that they may use in their online edition.

The senior citizens

The workshop was characterized by a calm discussion, and exchanges of points of view. One scenario was created based on a news event, and one on the problems which arose during the workshop problem phase. During scenario building, most proposals for technology use were presented by facilitators, but were discussed and elaborated by workshop participants. The participants had no problems to prioritize scenarios or to discuss payment models for the scenarios.

Concerns raised by the senior citizens

The senior citizens were mainly concerned with the interactive form of current news media, in particular television news. They found television news to be repetitive, with the same newscast recurring too frequently, particularly in the mornings. They wanted to be able to skip old news, and also to view other programs at times more suitable to their daily rhythm. They found it hard to follow the pace of news reporting, wanting to be able to lower the tempo in programs. They also thought that many interviews were too fragmented, and they wanted longer in-depth interviews. They also wanted more information about their age group, and more positive news about their neighbourhood. In general, they wanted better programming and more new programs, in particular at major holidays, and in particular more programs from Europe.

Scenarios

Two scenarios were covered, one weather service targeted at their age group, and interactive television features making news more accessible to them. Consider the icy streets weather service scenario: A heavy snowfall and cold weather has made the streets icy and slippery at places. Some streets are not easy to pass, since the snow is yet to be removed. Kent is going to buy a pair of gloves downtown. It is early in the morning, and he has just finished his breakfast. He has been reading about the harsh weather in the news, and wants to know whether he could get safely and comfortably downtown, from the suburb in which he lives.

Kent opens his personalized online edition, where a map is shown of the routes from his house to the centre, displaying the current state of snow removal, and warnings about
slippery streets and houses with dangerous icicles. There is also a warning about a half-hour bus delay on the closest bus downtown. Next to the map is an advertisement for studs, attachable to a normal pair of shoes, from the neighbourhood store.

He looks at the map carefully, and decides to take a different route downtown than he usually does. He also decides to bring his smartphone to stay updated on the weather condition.

**Early adopters**

During the critique phase, three of the participants proposed the main part of the 12 issues raised. The vision phase was unusually rapid, conducted in just five minutes. As in the previous phase, three participants dominated the scenario building phase, whereas two participants took a completely passive role. Still, there were discussions among the participants. It turned out to be problematic to get the participants to come up with concrete suggestions as they envisioned a future where everyone could read anything anywhere on constantly connected devices.

*Issues raised by the early adopters*

The issues raised by the early adopters concerned the interactive form, and the news contents, both the topics covered and the quality of the news items. In particular to be able to view local news whenever and wherever they wanted, and they found it inconvenient to read news on the screen. They wanted unique news material, in particular more local news. To avoid what they viewed to be fragmented news, they wanted in-depth information within reach. They wanted no distracting page elements, and carefully checked contents with more facts than speculations. They also wanted to know how credible news stories were. Moreover, in general, they often found it hard to find online services that they were looking for.

*Scenarios*

Several scenarios were proposed, and two were selected to be elaborated in more detail. One news event was detailed, concerning personalized reception of a high news value event, and one interactive form for online news, a news portal containing news from different news sources. Both scenarios regarded to be able to reach news as conveniently as possible. In a scenario regarding airbags, news was pushed intrusively to people who were in their cars, and possibly affected by an airbag malfunction. The same news was presented less intrusively to other audiences.
The airbag scenario: The local newspaper has just presented a news item about how airbags are death traps for children. Berit, who is in her car, receives the information as breaking news in the internet radio edition.

David, who is at home, reads the news when he views the online edition. He then asks for the nearest service place for their car, and receives a map with the service place marked on it.

7.5. Consensus or conflict?

When discussing consensus and conflict in this context, consensus is defined as shared visions and scenarios. Also, as stated in the introduction to this chapter, the groups in our study had different motives for their participation and different expectations of the future system.

- The elderly and the early adopters: private usage and desired services from a personal perspective.
- The community: reach a larger audience with their message through the news services provided by a media organization
- Media professionals: production of future news services and related publishing tools.
- Management: profitability through new services

Here, the visions and scenarios of the groups are compared, to find points of conflict and consensus. Naturally, there were also conflicts within groups, during the workshops, but these are not treated here. Due to the open ended nature of the focus groups, not all issues were equally well covered by all groups. As is evident from the results section, there was a consensus between the results from the three workshops with management. Also, there was a consensus between the two journalist workshops. However, there were conflicts between the audience groups. Since they thus present a view of a fragmented audience, rather than a coherent mass, no generalizations can be made regarding the audience as a mass. Furthermore, since each audience fragment is only represented by one focus group, no generalizations can be drawn about the point of view of the specific groups. Thus, it is unclear how large the audiences represented by the audience groups are, whether they only represent the specific groups during those workshops, or whether they represent any larger subset of the audience. Nevertheless, they present additional views on the ELIN services.
The way the technologies were presented to the different groups may have affected their attitudes to them. However, the technologies were by no means accepted as just positive, as shown by the sizeable amounts of issues, presented in the workshop phase dedicated at problem brainstorming.

**Interactive form and modality**

Regarding the demand or interest of news presented in alternative formats besides text, there was consensus within and between the different groups. All groups could see the value of multimedia. However, they found different uses for it. The media professionals brought up the possibility to explain complicated events in more detail with the help of animations and illustrations. This was in line with the audience groups, who however seemed to want these technologies for their particular interests. Management wanted to use multimedia to make services more attractive to particular, economically strong, groups.

The senior citizens wanted to use improved interactive forms to make contents more accessible and more convenient to use. Early adopters and management wanted interactive forms to suit particular circumstances, for instance, be more or less intrusive depending on the situation of use. The political group was particularly concerned with interactive forms that target groups differently, being more intrusive with groups with a higher interest in the information. Journalists proposed interactive contents, to give new opportunities for in-depth information to interested readers. They were not too concerned with the interactive form of their tools. Instead they were focused on the qualities of the tools, since these affect media quality.

**Personalization**

There was an overwhelming consensus regarding the benefits of personalization on a content level. In the community, they saw personalization as a means to prevent an increase in information overload which could be caused by these new technologies. The elderly saw the possibilities to filter unwanted commercials and to effectively prevent the same news to be repeated over and over again. Management and media professionals saw the possibility to reach different target groups through some sort of “newsflash” service. Management also envisioned commercial messages to specific consumers. Accordingly, there was a conflict regarding desirable uses of personalization. For instance, the audience groups wanted to make reservations of what to receive, for instance advertisements, while management
wanted to use targeted advertisements. Concerning targeted news in the form of a flash service, management focused on wealthy groups as executives, while the media professionals saw the possibility to reach not so wealthy interest groups in the healthcare sector. The political group found personalization to be a way of reducing information overload, by targeting information to people positive to their messages.

**Mobile Internet and parallel publishing**

All groups, except the political group, stressed that contents should be available all the time on demand and that it should be possible to access the news content from a wide range of devices, which meant that they were in favor of parallel publishing. The political group found good uses, for instance to inform their members about an upcoming demonstration, but they were also very concerned about information overload, which they did not want to contribute to. The community, the elderly, the early adopters and the media professionals brought up the aspect of the audience as a fast and important resource for news coverage. The political group wanted to cover the reports of events arranged by the organization, both advertisement of a demonstration, and reporting it afterwards, using a parallel publishing network. They were concerned about using the newspaper as their medium, since they did not want to be suddenly cut off from their services, whereas at the same time they were positive to the services, which could be achieved through the newspaper parallel publishing system. The media professionals mentioned the value of reports from their readers during, for example, exceptional weather. The senior citizens viewed their peers as resources of information about weather hazards, which the newspaper could mediate. This is in contrast to management who viewed parallel publishing mainly as a way of reaching targeted audiences in new ways. Thus there was a conflict of interest regarding what kind of services to produce using a parallel publishing toolkit.

**Advertisement content**

Regarding service mediation and advertisements there was a consensus between management, early adopters and the elderly. The services proposed were for instance an exclusive apartment service by management, a presentation of the nearest repair shop by the early adopters, and the ability to browse current products on sale from home before going down town. The media professionals emphasized the risk of mixing editorial and commercial content. Their strong emphasis on independence of news coverage blocked
several ideas, but they approved of the possibility of automatically associate ads with news content based on audience demographics.

**News content**

Both the elderly and the early adopters saw the value of easy access to in-depth material. Management brought up the view of in-depth and feature material as something extra, not given to the customer for free. The media professionals expressed a concern that in dept articles take a lot of time to put together and if it is not pushed to the customer it might not be read, viewed, or listened to.

Both the elderly and the early adopters mentioned the importance of local news coverage. In case of the elderly the demand of positive local news was brought up, in contrast to just local accidents. Management considered local news as their main occupation, but did not focus on that during the workshops.

In regard of the quality of the material in the news services the media professionals, the community and the early adopters agreed upon the importance of correct and checked content. The community also brought up the issue that factual matters should have the focus of attention. This corresponds to the early adopters that preferred this over speculation. Both management and media professionals saw the importance of checking facts and correct presentation of material. Management saw how more responsibility was handed to the journalists, and how the free (of charge) online newspapers were a threat to serious journalism.

An example of conflict is the early adopter’s vision of the aggregated news service, that is, a combination of different news sources into one personalized edition. This could be in conflict with the media professionals’ fear of losing the identity of the news organization, if they cannot control the context in which a news item is published.

The benefits of a fast news-flash service were widely identified. The same degree of consensus was found in relation to the importance of correct and checked content. The conflict between these two matters was only recognized by the media professionals.
7.6. Methodological lessons learned

Several observations were made during the workshops, and during analysis of the workshop materials. These give a rationale for presenting an improved phase model.

**The problem / vision phases**

It was evident that the warm-up discussion was useful to the problem phase, both by giving the participants time to get comfortable in the workshop setting, and by having evoked some issues which were the basis of some problem statements. Also, not only did the vision phase make the transition to the scenario building phase smoother, by presenting a positive vision, it also clarified the meaning of the problem statements. The vision phase was driven by the facilitator, who proposed visions based on the problem statements, but the vision statements were sometimes discussed, when alternative opposites were found by the participants. As mentioned earlier, “no resources for production” was transformed into “adequate resources”, rather than “with a maximum of resources”.

**Lesson learned**: In addition to providing a vision, as a transition to the next workshop phase, the vision phase gives an opportunity to clarify the problems, by envisioning what its opposite would be, and to question the designer's interpretation of the problem statements.

**Setting the design space**

The design space for scenario building was set somewhat differently in the workshops. All the different ways worked to some extent. Firstly, there was a technology description in all workshops, explaining the functionality of the technologies. Secondly, examples of technology use were presented, either verbally, or by use of the IFRA movie (IFRA, 2000). Even though the same technologies were presented in all workshops, the same uses were not considered during scenario building in all workshops. This was to some extent addressed by the manager/facilitator present in all workshops, who sometimes brought up ideas from previous workshops. However, since each scenario created in a workshop embodies examples of technology use, these could be used to incrementally build a base of examples that could be used in subsequent workshops. For instance, the use of mobile phone cam-
eras for audience images was recognized in the stormy Thursday scenario in workshop one, but not in the airplane accident scenario in workshop three. Arguably, having used the stormy Thursday as an example in workshop two may have made the journalists consider that technology for the airplane accident scenario as well. In any case, a broader set of technology use examples would most likely have enriched the scenario building phase.

Lesson learned: Use the workshop outcomes to incrementally build a repertoire of examples that can be used for presenting technology uses in subsequent workshops.

Setting the topic of scenario creation

Regarding the topic of scenario building, the issues brought up in the problem phase could not always be remedied by new uses of technology. On the contrary, for instance, the copyright issue for parallel publishing would inhibit the use of new technologies. Therefore, the issues alone could not always be used as a point of departure for scenario creation. Two other ways were used. First, previous news events, in several cases from a recent newspaper edition, were used as the topics of scenario creation. Second, a brief brainstorming phase was used, where participants ranked their ideas and explored the most interesting topic(s).

Lesson learned: Use recent activities or events as the point of departure in scenario creation.

Mixing stakeholders

In the workshops in Spain, it was clear that although most participants were managers, they were not equal, and negative dynamics are likely to have made participants cautious about speaking freely. In the workshop with early adopters in Sweden, the problem of silent participants was partly due to the screening procedure, which had not captured the reasons of some participants taking part in the workshop.

Rather than merely accepting or rejecting ideas presented, group dynamics in several cases contributed to the exploration and discussion of ideas. Therefore, even though the amount of proposals made by stakeholders was
not equal, that did not mean that other participants were not participating. It did, however, mean that the proposed idea was criticized, and sometimes modified, before being rejected or placed in the scenario.

For media professionals, it was clear that some participants felt more comfortable discussing their precise area of expertise, than discussing other areas. For instance, the participant representing radio production competence in one of the workshops was the most active regarding radio issues. Although this may seem self-evident, and indeed was the reason for having workshops dedicated to specific stakeholders, it raises other concerns. Since there were issues of conflict between workshops, mixing stakeholders may have lead to a fruitful discussion of those issues. However, since participants contributed with somewhat different points of view, such a workshop would have been unmanageably large. Also, all participants could not be gathered at the same time, preventing a more dynamic formation and reformation of groups during an extended workshop. Moreover, this contributed to unequal participation in the media professionals’ workshops, since not all competence areas were equally central in the scenarios created.

**Lesson learned:** Each important stakeholder group should be represented by a group, rather than by one individual, if the represented group consists of mixed competences.

### Facilitating design moves

Clearly, facilitation interfered with the discussions in the workshops. The positive side of this, was that aspects central to the construction of the ELIN system were highlighted, and that scenarios tended to be more concrete. The downside was that fruitful discussions were sometimes interrupted by the facilitator, who needed the participants to create scenario elements out of their discussions. Also, when several alternatives for the same scenario aspect were discussed, for simplicity of facilitation, only one alternative was noted. It could in many cases be advantageous to capture more alternatives. Here, facilitation was already somewhat disruptive, and capturing more aspects would have made it more so.

**Lesson learned:** Facilitation of design moves is done at the expense of disrupting group discussions
7.6. Methodological lessons learned

The phase model

The phase model, although useful, was not entirely successful. In particular, the emphasis on not mentioning problems during scenario building, as proposed by the future workshop phase model was a too extreme position. It was sometimes problematic to go from the problem phase to the scenario building phase despite of the vision phase. In light of this, it was good to de-emphasize problems during scenario building. However, during scenario creation, participants discovered new problems regarding the scenario being created, which were not captured in the scenarios. There should therefore be some means of taking note of such problems, as proposed by Muller (2001) using for instance a “things that worry us” card, rather than directing them to the implementation or problems phases, as proposed by Jungk and Müllert (1987).

If more time is available, cooperative scenario building could be used in conjunction with other methods, such as GEM (Boy, 1997). That method, which has the aim of gathering and assessing viewpoints of groups, could, for instance, be used before scenario building, to generate a more comprehensive view on what topic to explore during scenario building. It could also be used to discuss issues emerging from a scenario building session. Furthermore, scenario building could be used to focus the problem phases on concrete situations, such as was done in workshop 9 (Table 3-5).

Lesson learned: De-emphasize, but facilitate, discovery of consequences of the emerging design, during scenario building.

Proposed phase model

Based on these observations, the following improved phase model is proposed:

1. Workshop method introduction: Workshop purpose and theme, presentation of the facilitators, the participants, and the workshop phases.

2. Introduction of technologies and their functionalities.

3. Warm up discussion of the technologies in relation to the workshop theme. Focus on uses of technology.
4. Critique 1. Listing of problems regarding the technologies

5. Cumulative trigger. Presentation of examples of technology use. Videos, enactment, verbal presentations, storyboards could be used. Incorporate good examples of previous workshops, making the repertoire more varied and bigger for each workshop.

6. Critique 2. Listing of more problems, if any has been seen in the light of the examples of use. If comparison between workshops are important, themes (e.g. economy) proposed in previous workshops may be mentioned by the facilitators. Rank the most important problems.

7. Vision. Turn the problems to positive images. Encourage discussion of alternative visions. This makes the problems less ambiguous.

8. Scenario building: Topic selection. Use, for instance, suitable problems found in the previous phases, recent events, or brainstorm (and rank) alternatives based on the workshop theme.

9. Scenario building. De-emphasize problem discussions, but allow problems to be noted, for later reference. Decide whether more alternatives should be noted, depending on how disruptive facilitation seems to be during the actual workshop.

10. Implementation. Evaluate the scenarios using the workshop theme as the point of departure, or reuse of themes from upcoming or previous workshops, to make comparisons between groups.

7.7. Use of the scenarios in the ELIN development project

Within the ELIN project, the workshops presented initial issues with the ELIN technologies, and scenarios of use. The scenarios were further evaluated with stakeholders, during two workshops, and using one online questionnaire, to further explore the points of consensus and conflict, and to further evaluate the scenarios.

Workshop issues were used to inform the design process. For instance, the news portal was desirable from the point of view of the early adopters, but
not by media professionals, and not by management in later stakeholder workshops. Therefore, it was decided not to implement the news portal, despite it being interesting to one workshop group. Personalization, which was interesting to most groups, was not applied to all news items, due to the insistence of media professionals to have a core set of news items presented to all. In general, cases of conflict were resolved firstly in favor of management, then journalists, and lastly the audience groups. Moreover, the user group view was also negotiated by the construction team, considering constructional issues. However, that did not mean that all decisions were left to the construction team. For instance, the news portal solution was also favored by the construction team, but was nevertheless not implemented. A core set of non-personalized news items, highly valued by media professionals, were also introduced despite additional development work. Cases of consensus were used to prioritize items, such as personalized news flashes, and multimedia news. The issues of groups prioritizing different uses of the technologies thus largely remain. In the development project, to a large extent, the user needs analyst had to decide what user needs to emphasize, and to judge the impact of design proposals on user needs. Also, the user needs analyst incorporated user needs in the interface design process. Scenarios were used as a basis for interface design, in workshops discussing design alternatives for the layout of news elements presented in the workshops with journalists.

In the ELIN project, moreover, the scenarios were used for planning the evaluation of the toolkit, aiming at enacting similar scenarios in production and use. Also, issues from the initial workshops are planned to be revisited in final project focus groups.

7.8. Summary

The workshop procedure was, in general, successful, since useful scenarios and important issues were achieved. The workshop procedure resulted in clear differences in interest between stakeholder groups. Furthermore, the results show that involving just one interest, or giving a louder voice to one interest, could result in a distorted design embodying the interest of one group, at the cost of another. This may not be for the best for the organization at large. Although this is a well-known phenomenon in systems design, the approach presented here is a way of dealing with the problem. Regarding the failure of cooperative approaches to take conflicts into account, as stated by Iivari and Lyytinen (1999), this approach does not deal with the conflict between participants and designers, but highlights conflicts between
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stakeholder groups. The remaining problem is how to resolve the issues, having made them explicit. In the ELIN project, it can be seen that management was given the power to decide what to prioritize, but also that the technical design team was given considerable power over the process, considering constructional issues. Also, the user needs analyst was given considerable power in deciding what user needs to emphasize in the meetings with the entire design team of which he was a part. The systems development process has not been the object of research here, which leaves out the important research question of how to use the workshop outcomes in the best way. Also, further research could reveal conflicts between different user stakeholders, the design team as a whole, and between different design team members.

In the workshop outcomes, conflicts between participants are downplayed, even though such conflicts frequently shaped workshop outcomes, through discussions of issues arising from design ideas. The revised workshop plan makes the issues more visible in the outcomes of the design process, but does not fully address the best way to deal with them during design. That question is addressed through an analysis of the interactions between participants during design (chapter 9).

The advantage of mixing groups of more different stakeholders would have been that the groups might themselves have negotiated a common solution. However, since the different participants represented slightly different competences and viewpoints, one participant could not have represented the entire groups. Then, if negative group dynamics, such as power hierarchies had silenced that participant, the viewpoint of that entire group might have been lost. Since the points of consensus and conflict have emerged from workshops with real representatives of the groups, they also illustrate very real conflicts that must be dealt with in the design of a future news service.

Although a revised workshop plan has been presented, the different workshop phases could be used in other phase models. In that case, the recommendations for the different phases may still apply, even though some recommendations rely on the sequence of activities in the phase model. For instance, if more time is available for the workshop, there are better methods available for idea generation and discussion of issues, than brainstorming. An example of such a method is GEM, which in itself also incorporates other design methods (Boy, 1997). Also, to focus problems on specific scenarios, scenario building could be used in the problem phase, like in work-
Further research could investigate how to mix the phase model presented here with other phase models, in other projects, with other stakeholder competences and design objectives. In particular, it would be important to reveal what skills are central for facilitation. Regarding these workshops, it is studied in further detail in chapter 10.

The problems and visions of the different groups could be followed up and explored in more detail. For instance, further research could explore the visions of audience segments, since the current research revealed a fragmented audience view on the ELIN technologies. In the next chapter, the visions of the journalists will be discussed in more detail.
8. Dynamic media convergence

The media landscape is always changing, and changing technologies, are often seen as important forces in this process. At some points in time, important technologies have breakthroughs in society, like the printing press, radio, television, and the Internet. At such times, change becomes more apparent than other times, since these new media present content previously presented through other media. This process is called remediation. Often, it is done to overcome limitations of the previous medium, such as the fixed deadlines for publication of printed news. The previous medium also becomes a point of comparison. The prevailing media form that contents of the old media have is then often transferred to the new medium. (Bolter & Grusin, 1999). That is the first phase of several that contents can go through in a new media. In the second phase it exploits some of the new functionality of the new medium, until it enters the third phase where its heritage becomes hard to identify (Shepherd & Watters, 1998). The intermediate second stage seems, for instance, to be the case with online news, which has remediated printed news, overcoming the limitations of print regarding the fixed deadlines for publications, but still being readily identified as having origins in print (Ihström & Lundberg, 2003). This is a process of increasing dissimilarity, of divergence. However, the prevailing content form of the old medium may also be remediated by the newer medium, in a process of convergence. There are, for instance, examples both of televised and printed news becoming more like the web style of online news (Bolter & Grusin, 1999).
In the Swedish convergence inquiry report, four kinds of convergence are described, for instance, network, service, device, and market. This means that content services are being digitalized and that channels are becoming able to transmit all kinds of digital contents to devices that are becoming capable of displaying them all. That means that the devices will converge regarding functionally, but instead diverge according to what use the design fits best, for instance, large wall screens for social situations, and small portable devices for private communication. (Alström, Enlund, Hedman, & Hvitfelt, 2001)

Regarding media use, McQuail (2000) describes how on the one hand the audience is becoming fragmented, diverging in terms of channels and content consumed. On the other hand, the same contents become available in more markets, to a larger audience. In any case, the unitary model of all families watching one of few television channels at the same time is a phenomenon of the past, in developed countries. Instead, as channels increase, the pluralism model starts to take hold, with more distinct options and differences of viewing habits. As even more channels are added, the model starts breaking up, in a core-periphery model, where audience members can have significantly deviating habits. With further channels and options, the audience breaks up, into many diverse sets of media users (McQuail, 2000). Divergence of audience habits thus goes hand in hand with technical convergence, but is also an effect of divergence within single media. It can also be seen that different habits depend on combinations of media used, for instance the subscribers of a small sample of Swedish online newspapers had different reading habits than the non-subscribers, according to an online questionnaire (Ihlström & Lundberg, 2002a).

In this situation, companies that were previously in different markets can converge, for instance, by providing contents when previously only the infrastructure was provided. The merger between Time Warner and America Online is an example of this (Alström et al., 2001). According to Picard (1998), mergers of companies are often motivated by policy. That can be to acquire stability, for instance by acquiring companies less dependent on advertisements, in different areas, or with different cycles of profitability, or to gain scale benefits. Another reason can be to gain know-how.

Online newspapers are at the time of writing in a process of convergence. Whereas they previously were newspaper publishers, they are now becoming media houses. They diverge in what media forms they produce, adding, for instance, radio or television. These media forms are also then used in
their web editions where they converge into a multimedia newspaper. Currently, Swedish online newspapers still mainly rely on the written media form online (chapter 5), and many readers prefer news presented with the familiar broadsheet metaphor (Watters & Shepherd, 1997). Despite that, many audience members seem to have a positive attitude to sound and moving images (Ihlström & Lundberg, 2002a).

Convergent media production systems are sometimes depicted as having information sources as input in one end, having a central database in the middle, and having output devices at the other ends (e.g. Roper, 2002). The impact on specific media organizations of such a system is however unclear, although proposals of ways of working and supporting systems have been made. For instance, a prototype system has been proposed in which the media is distributed and the metadata is placed in a central database. In the system prototype, the journalists manages the story through a web interface, planning and setting deadlines, as well as assigning the content to different channels (Jonsson, Sabelström-Möller, & Hedin, 2002).

A convergent publishing system might thus support the production of many different news genres, within and between organizations. The genres produced using the system may be related in many ways. For instance, genres may compete with each other, in some situations of use. Also, contents may primarily be produced for one genre, and secondarily for another. Then, that other genre will have to adapt to, or transform, the available contents. In any case, it might be hard to change genre rules for the dependent genre, if that would imply changing the primary genre, or to create contents exclusively for the dependent genre. Moreover, one convergent organization may produce contents for all genres. Convergence might go as far as to have multi-journalists, able to create contents in all necessary forms.

The ELIN project had the aim of creating a convergent production system toolkit. It would integrate tools for a convergent media organization, and make contents available to a variety of devices for the audience, in a variety of media forms. In the case of the ELIN project, it was unclear to the participating media organization what their requirements on such a system would be, since it was unclear to the media organization what use they would have for the new technologies, and what new problems they might have to face. To evaluate to what extent such a future system of publishing tools for online newspapers could create benefits of a convergent news organization, the results of two cooperative scenario building workshops with
media professionals (workshops 1 and 3, Table 3-5) were analyzed, regarding convergence.

8.1. Data collection and settings

As described in chapter 7, two half-day cooperative scenario building future workshops were conducted in 2001 with participants from a media house in Sweden (workshops 1 and 3, Table 3-5). The first workshop was conducted with staff members from the printed edition and radio, a programmer and a news director, in total six participants and two facilitators. The second workshop was conducted with staff members from the online edition, including a web advertisement seller, and the news director from the first workshop, in total six participants and two facilitators.

8.2. Findings

During the workshops, different kinds of convergence and divergence were brought up. For instance, a view of device divergence for consumers was prevailing, with television, radio, Internet versions of the two, mobile phones, and even computer screen savers. On the contrary, journalistic tools were seen as convergent, with one tool for video, still images, and audio, when possible. Digitalization was also seen as reaching out from the computer desktop, for instance bringing press conference presentations directly to the newsroom through a wireless device used by the journalist present. Competence convergence was also seen as important, since high quality work was important for competition and lasting stories. Divergence of competence was at the same time needed, for the organization at large, to be able to exploit new media forms.

The first workshop resulted in three scenarios; the second resulted in two scenarios. The two scenarios from the second workshop and two scenarios from the first workshop are presented here to illustrate different kinds of convergence. The first scenario, the stormy Thursday, mainly illustrates convergence and divergence of traditional roles. The second scenario, the bus accident, mainly illustrates dynamic convergence and divergence of competences and roles as a news story unfolds. The third scenario, the airplane accident, mainly illustrates a media convergent organization with divergent roles. The fourth scenario, a language of symbols, illustrates a media convergent organization with convergent competences, challenging traditional roles.
“The stormy Thursday: A strong wind has soared through the city and neighboring countryside, resulting in some damage and loss of electricity at some locations.

The news manager sends out a mobile digital photo team to get high quality images and video for web TV and the printed edition. During the day, all reporters have video and camera equipment, to capture interesting situations they encounter. Furthermore, the newspaper audience are invited to send their own pictures to the newspaper, being offered 500 SEK if published. Pictures arriving at the newspaper by the various sources are selected and archived by the picture editor. Selected images and video material are edited. Video and audio is used for the web TV / radio broadcasts of the day, presented by the news anchor, and latest-news editor.

Furthermore, a journalist researches background information, such as insurance policies. An illustrator makes 3D and 2D illustrations of the storm.

As an additional intermediary service, the newspaper receives questions from their audience regarding disturbances in the telephone operations, the weather forecast, and the local public transportation. Journalists contact the companies and authorities, and sends replies to the questions.”

In this scenario, several cases of role convergence and divergence are present. First of all, all journalists are also photographers in the storm scenario, to gain as many pictures as possible. Moreover, also the readers are seen as photographers, contributing with their images. Furthermore, the media company also takes on a role of information intermediary between readers and service companies in the region. That is a case of divergence, in terms of what the organization does. The 3D illustrations are another case of divergence, since this is not something currently done by the media house.

“The Bus Accident: A school bus has had an accident in a nearby village, around four in the afternoon.

The news manager hears about the accident on the police radio and sends a multijournalist team, a reporter, and a photographer, to the site of the accident. From the site, they make a live broadcast, and in addition take high quality pictures.

Realizing the extent of the accident, additional teams are sent by the news manager, arriving at 17:30. The animator arrives at the scene and starts recreating the accident in a 3D-model, after making simple graphics such as maps. Still frames are created, for use in the printed edition. The animator also replies to questions from the newspaper office, and creates short versions for the web. (Alternatively, the animator relies on video and reports from journalists at the site, and stays at the news office) A TV-team also arrives to create
broadcast quality video, to compete with a TV team from a TV company that also arrives at the scene. A multi-journalist team furthermore arrives where the people involved in the accident has gathered. Later, the multi-journalist team moves to the hospital, making interviews.

The picture editor at the newspaper edits all video and image materials, removing any ethically questionable material. Materials are selected for web publication, images are frozen and taken out as still images, and pictures are selected for the printed edition. The web TV / radio editor makes the same selections for live broadcast. The latest news editor ties it all together, setting deadlines for various media channels.

A team at the newspaper office gathers background information, contacting the firm operating the school bus, checking if passed it’s last check-up, and makes a first contact with the hospital.”

In this scenario, there is an example of dynamic role convergence at the organizational level. The first team sent is a convergent multi-journalist team, which can cover all kinds of media. However, when it turns out that the event is more serious, competences diverge again, since one team can’t deal with all the work. Moreover, as the event increases in importance, the need for specialized competence is increased, since other professional television teams may appear at the scene.

Also in this scenario, the animator contributes with new competence to the media company. Regardless of the dynamic convergence and divergence of roles, the journalists are part of a convergent news organization, able to publish for a diversity of media and media forms.

The military aircraft accident: One afternoon during the annual “Water Festival” in Stockholm, a military aircraft performing an air show crashes. The local media organisation in the city where the aircraft was developed sees the need for a massive coverage of the accident.

When the news desk gets the alert through the Swedish telegram bureau (TT), the web reporter puts the telegram as a news flash on the website. The reporter also marks the telegram as a news item that should be sent out to the subscribers of the “flash-service”. The reporter later collects material for the in-dept articles that will appear in the Internet edition and the morning paper the next day, and is supported by the system which is automatically fetching related stories from the database, when the telegram is published. The animator also starts to reconstruct the event, for publication as a 3D-model.
Two teams of reporters are sent to Stockholm, equipped with portable video- and audio-recorders and necessary writing devices. The first team works with material for the printed edition, with a later deadline, whereas the second team works with media with faster deadlines, such as the web. In the radio / TV studio the producer starts to prepare an extra newscast based on information from the news desk and the web reporter. Immediately, video is purchased and broadcast. Later, the video from the own team is used. As new material is coming in, the paper updates their online news event summary.

Furthermore, a team is sent to the factory producing the airplane, which is located in the same city as the media organization. They start to interview people immediately at the gates, and then stay to attend the press conference. Two days after the accident, in depth materials from critics of the aircraft development project, from political parties and from peace activists are published. The paper hosts an online debate.

This scenario illustrates a case where the organization as a whole is convergent, producing several media forms, to many different devices. Moreover, organizations are converging with each other, as the buying of important news material from an agency illustrates. However, journalist work isn’t as convergent, since the amount of work demands two teams at the site of the accident, one for media with short deadlines, and one for print, with a later deadline. Also, apparently, work at the news office isn’t completely convergent either, since it seems that channel editors are needed, even when some channels like web TV and radio have the same editor.

“A language of symbols: The news desk receives a tip from one of its readers. It’s about a local association for the “Bliss” language of symbols. After a discussion with the photo editor, the news editor put a reporter and photojournalist on the job. The reporter starts with the research and prepares questions. They bring equipment; a writing pad, in addition to video, audio and still image equipment. When taking photos, the pad is used to take notes of the names of people in the photo.

After the visit to the association, the reporter prepares the article, and makes additional research, for instance finding images and explanations of the symbols in the language. Then the reporter marks the article with index terms from a list. The index terms are then used by an advertisement seller, to select relevant ads to go with the article. Then, readers with matching interest profiles are identified. It is decided that the news value of the story is too low for an SMS-flash, but enough for the personalized email news updates. The mail is then sent accompanied with the ad, to the interest group. In this way, email is like a news bill for the web.

At the news desk the photo editor and the news director take a look at the material and decide in which channels the article should be published. Moreover, they prepare interactive
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...elements of the video, explaining the meaning of the symbols in the video. Furthermore, since interest in this feature article may be associated with belonging to an interest group, it is sent to the newspaper cooperation organization, to be used by other companies with relevant interest groups.”

This scenario illustrates a typical news feature suitable for a multi-journalist team. The events unfold slowly enough to be captured by one team in several media forms. It also illustrates the remedial value of interactive news video, since it, for instance, allows explanations of the symbol language to be added to a video stream as interactive elements. This scenario also illustrates convergence at the organizational level, since the feature material is shared with other media houses. Also, it illustrates the need for news valuation, since the multi journalist team creates material for all channels, but that it is found unsuitable for at least one channel, the flash alert channel. Furthermore, it shows the opportunity to use article index terms to find suitable advertisements, which is a remedial quality, adding the same kind of speed for advertisement selling as is available for web news presentation.

During the workshops, several issues were raised regarding the remedial value of new media forms, and technical opportunities, for journalistic work. A view of audience device divergence was present through the workshops, where devices and media forms were seen as being suitable for different kinds of content. Television, and moving images, was seen as more emotional, and newspaper text as more factual. There were also interactions between technologies. For instance, the instant messaging channel through mobile phones was seen as a channel for highly important messages. To utilize it for other messages than general high value events, such as the airplane accident, personalization was seen as a key, since then particular interest groups could be targeted, while not annoying other groups. However, personalization was seen as problematic, since while it could give people more control, one value of a newspaper is news valuation, presenting news of high interest for society, and items that people might not think they would be interested in. The solution proposed was a base package of news, that all would get regardless of personalization. That, however, did not solve another question, which was to what extent resources should be spent on news items for limited audience groups.

A highly important issue was convergence between editorial and advertisement content. Whereas many opportunities were seen, most were seen as threatening the trustworthiness of the paper, since the audience may perceive the editorial material as being bought by the advertiser.
Another complex set of issues was speed, quality, role convergence, tool convergence, and deadlines for different channels. Whereas speed was seen as the major advantage of the Web edition, speed was also seen as a threat to high quality, since the time for afterthought then becomes limited. A related issue was that speed, to be able to produce breaking news with moving images, would be a reason to sacrifice quality of news footage, using cheaper tools and journalists not proficient with video news. However, in the long run, such footage was not seen as having great value. Also, with high news value events, a mix of short and long deadlines would demand different teams for the different deadlines, as illustrated in the scenarios above.

Also, whereas the editorial computer system was convergent, in the sense that it could store and distribute many media forms as digital content to different devices, the news organization had to diverge in competences to cover the different forms, for instance by adding competence for animation. Moreover, not all media and media forms could be managed by the same staff, even though television and radio was seen as convergent with the web edition, the print edition still needed some own staff, due to the difference in deadlines. The pictures editor was often viewed as directing images to different media forms and media, thus being a convergent role.

### 8.3. Discussion

In the scenarios achieved in the workshops, the media system was seen as convergent. Content was created using tools that stored content in digital form. These contents were sent to the media system, which was convergent in the sense that it could manage all these different digital media forms. This digital content was then sent to a diversity of different devices. Thus, these scenarios would utilize the same kind of system as presented by Roper (2002) and contribute to create a fragmented audience, following McQuail’s (2000) model.

However, the media organization would not be equally convergent, despite sharing a convergent content management system. Regarding the creation of contents, in the envisioned scenarios, three factors worked against the ideal of the convergent multi-journalist. First, consider deadlines. Producing contents for rapid publication was seen as rather different in the journalist view, than producing content for media with longer cycles, such as print. That meant that different content had to be produced for the different deadlines. Second, the creation of material for different media forms was
only partly convergent. Video, audio and still images could be derived from
the same source, whereas text still had to be written. Third, competence was
seen as a scarce resource, since not everyone was seen as being able to pro-
duce top quality contents in all modalities.

Regarding content management, some convergent aspects were considered,
for instance having an editor for video, who also would select still images
from the video. Also regarding channel management, some convergent as-
pects were expected, having a channel manager for both radio and televi-
sion. However, having the opportunity to produce video, this also created a
demand for video to publish. In the military aircraft accident scenario, this
caused a convergence of different media organizations, since it was seen as
necessary to buy content from other organizations, until the own personnel
could get to the scene of the accident. Moreover, the creation of video was
seen as resource consuming. For instance, in the language of symbols sce-
nario, it was seen as advantageous to be able to sell the video news item to a
wider audience, since interest was not just seen as local, but also depending
on the news content. Having the opportunity to publish news flashes on
mobile phones and email also created a problem of managing divergence of
audience interest profiles and of managing news value. Whereas the aircraft
accident scenario was seen as important enough to send to all subscribers
through their mobile phones, the language of symbols was seen as less im-
portant, to be sent to interested users through email only. Thus, more ac-
tivities were needed, despite some convergent publishing activities, and that
seemed to demand more people with more competences, than when pub-
lishing for one channel only.

Organizational convergence, and benefits of the media system, was depend-
ent both on the kind of story to cover, and on how that story unfolded.
Whereas the language of symbols was an example of a news item that a
multi-journalist team could cover, the military aircraft accident demanded
two teams, depending on deadlines and amount of work. The bus accident
instead developed form using a multi-journalist team to using two teams,
like in the military aircraft accident scenario. That would demand that the
media organization and the media system could manage both convergent
and divergent news activities, and that the system could manage a change
between the two as an event would unfold.

Regarding remedial qualities it seemed that, in some cases, resources could
indeed be utilized better with a convergent system, like in the stormy
Thursday scenario, where the audience and all journalists were seen as po-
Potential sources of images, instead of having to rely only on one team of professional photographers.

Moreover, organizational convergence would emerge on a broader level, since news organizations in two of the scenarios buy and sell content to each other. This has two consequences. Firstly, the media systems must be convergent in the sense that they can interchange information with each other. Secondly, this contributes to the same news item being seen by a wider audience, which is consistent with McQuail (2000). This would then reduce the fragmentation of the audience, who then, despite viewing different media at different times, would see the same content. Arguably, when more resources are being put to increase the diversity of delivery media and media forms, there is a risk that less resources might go into the quality of contents produced.

There are limitations of this study, in particular regarding the relatively few representatives of journalists involved, and regarding the possibilities to realistically imagine a future work situation, with cards as the only support, and no hands on experience with the technologies. This would mean that there could still be potentially good uses, which were not discovered, and that perhaps some of the problems seen when describing the scenarios verbally and with cards, would not actually occur in practice. Also, the lack of competence regarding animation created uncertainties of what that role would need, in particular regarding whether the animator needed to actually visit an accident site, or whether it would be sufficient with verbal reports from others, optionally supplemented with photo and video material.

8.4. Summary

It is concluded that convergence is not merely a unidirectional force of progressing change, with static effects on media organizations, driven by technologies. Instead, it is a dynamic process of divergence and convergence occurring within a media organization, exploiting different kinds of convergence potential, depending on the kind of event covered.

The example studied here was a future vision of a media organization with a convergent media management system, a diversity of channels, and tools for different news modalities. To deal with the envisioned scenarios, the organization and system had to be able both to cover events using several traditional teams, each producing for few modalities or for different deadlines, and to cover events using multi-journalists. Moreover, it had to be flexible
enough to change the level of convergence as a story unfolds. Finally, it had to be able to cope with a potentially sizeable inflow of media materials, to take advantage of the opportunities of audience contributions.

Also, the fragmentation of the audience is reduced with a convergent media system in several ways, despite being fragmented in terms of media viewing habits, of channels, devices, and times of viewing. Publishing the same content in several channels, and also buying and selling between media houses, means that the same news items reach a large audience anyway, through the diversity of channels. However, this raises a concern, namely that resources would be taken from producing high quality content, to producing the content in a diversity of media forms, and delivering it to a diversity of media consumption devices.

Further research could reveal whether other parties would find other advantages and problems of convergence, considering the same technologies. Also, further research could investigate similar scenarios using other methods, for instance, by trying out aspects of the scenarios with real or prototype equipment. The importance of having journalists as participants in the workshops to create the scenarios was observed at several points. The clearest illustration of that was their insistence on not mixing editorial with advertisement contents. Moreover, they were aware of the need for different kinds of work for different deadlines, the need for news valuation and careful selection of audience recipients, as well as the tradeoff between speed and quality of coverage. It is not evident that another group would have emphasized these things in the same way. Thus, for systems development it was important that representatives of the actual potential users were involved. This issue is treated in more detail in the next chapter.
As described in chapter 7, different stakeholder groups acted as co-designers in the cooperative scenario building workshops in the ELIN project. It was clear that there were both issues of conflict and consensus between stakeholders. Moreover, the analysis in the previous chapter indicated that it was important to involve actual stakeholders, since their values affected what design options they found acceptable and desirable. In design, their knowledge related to genres can be seen as their genre perspective (Figure 2-1). In general, as described in the genre perspective framework in chapter 2, when encountering an artifact, people will have experiences related to surprise, familiarity and appropriateness. If the experiences are mainly negative, then the artifact may be rejected. Thus, when designing new technologies, it can be useful to remediate current practice, materials, and tools, rather than to invent something completely new (Ehn, 1988). Doing so will make it easier to recognize the product and rely on previous experience in using it, since it then to some extent belongs to the same genre as the previous product (Agre, 1998). Remediation of practice implies that the designer must in some way introduce knowledge of current practice into the design process. It is thus not enough to have an user-centred approach, where users are testing designs, if these designs are only based on enabling goals of an activity to be reached, but do not take current practice, tools, and materials into account.
In this chapter, the design processes of three workshops are analyzed, to illuminate how design moves were conducted between participants within the workshops. The analysis shows that participants relied on their knowledge of genres during design, to create scenarios, and to negotiate design moves in cases of conflict. The analysis also showed that design work was not a harmonious dialogue between designers and other participants, in all workshops, as proposed regarding cooperative design, by Iivari and Lyyninen (1998). Implications for facilitation of cooperative design workshops are presented.

9.1. Data collection and settings

In order to investigate the reliance on genre in cooperative design work, the audio recordings of three workshops were analyzed. The study included two workshops with journalists, and one workshop with a group connected to the new social movement (from here known as the political group), as part of the context of use analysis in the ELIN project. The workshops were set up as cooperative scenario-building future workshops where a card-based method was used. (workshops 1, 3, and 4, Table 3-5). The workshop followed the method as described in chapter 7.

The first two workshops had the purpose of envisioning the impact of new journalistic tools and consumer devices on journalistic work. The first workshop was conducted with staff members from the printed edition and the radio. A programmer and a news director were also participating. There was in total six participants and two facilitators. The second workshop was conducted with staff members from the online edition, including a web advertisement seller, and the news director from the first workshop, in total six participants and two facilitators.

The third workshop, with the political group, had three participants from that organization, and three facilitators. The purpose was to envision how the future online newspaper services could affect the political group. The main objective for that organization was to make the general public aware of their message and to create opinions on important issues. Thus, one participant, the news director, was active in all three workshops, but had the role of facilitator in the third workshop.

The workshops were audio recorded, and subsequently transcribed. The transcription included hesitations, pauses, and aborted and interrupted utterances. The data was subsequently analyzed in terms of design moves.
9.2. Findings

The goal of the workshops was to achieve scenarios of situations where the technologies would be used for different ends, together with overarching risks, and visions.

The analysis of the scenario building activity showed, as expected, that this was no simple case of eliciting information possessed by the participants. The analysis showed that the first facilitator mostly facilitated the creation of the scenario structure, requesting cards to be filled in, thereby forcing the activity to a concrete level. The analysis also showed that the participants negotiated some proposed design moves, drawing upon their knowledge, experience, or preconception on the news genre. In the workshop with the political group, the second facilitator made the majority of proposals regarding the use of new technologies. This was also the case for the journalist workshop, where he was a participant. However in the journalist workshop, design moves regarding activities run smoothly, relying on the journalist experience of acting out their professional roles. In the political group workshop, the participants had no reporting roles to rely on, thereby relying more on their traditional roles of advertising their activities, and on their experience of the news genre as providing the reporting. The analysis of design moves revealed how participants negotiated design moves, relying on genre, sometimes blocking moves, sometimes blocking and then resolving moves.

**Current practice as a point of departure**

Two scenarios illustrate the reliance on participant knowledge of current activities, for scenario creation. The bus accident scenario, created by one of the journalist teams, builds upon a real event, which had happened prior to the workshop. The scenario builds upon current journalistic practice of print and still images, but adds new features, such as 3D animation and video. This scenario illustrates that journalists knowledge is not simply elic-
Chapter 9. Reliance on genre during cooperative scenario building

ited, on the contrary new journalistic tasks are added to the scenario, of which the participants had no first hand experience. For instance, the tasks of creating the 3D-model and news video, were not part of their current practice.

“The Bus Accident: A school bus has had an accident in a nearby village, around four in the afternoon.

The news manager hears about the accident on the police radio and sends a multi-journalist team, a reporter, and a photographer, to the site of the accident. From the site, they make a live broadcast, and in addition take high quality pictures.

Realizing the extent of the accident additional teams are sent by the news manager, arriving at 17:30. The animator arrives at the scene and starts recreating the accident in a 3D-model, after making simple graphics such as maps. Still frames are created, for use in the printed edition. The animator also replies to questions from the newspaper office, and creates short versions for the web. (Alternatively, the animator relies on video and reports from journalists at the site, and stays at the news office) A TV-team also arrives to create broadcast quality video, to compete with a TV team from a TV company that also arrives at the scene. A multi-journalist team furthermore arrives where the people involved in the accident has gathered. Later, the multi-journalist team moves to the hospital, making interviews.

The picture editor at the newspaper edits all video and image materials, removing any ethically questionable material. Materials are selected for web publication, images are frozen and taken out as still images, and pictures are selected for the printed edition. The web TV / radio editor makes the same selections for live broadcast. The latest news editor ties it all together, setting deadlines for various media channels.”

The political group also based scenario building on a recent event, similarly adding tasks of reporting the event. Not all of them had news reporting experience, but instead they had experiences regarding the problems of the organization to reach out and engaging people. The publishing tasks in the “demonstration” scenario were all new to the participants.

“The demonstration: A political organisation has decided to demonstrate against a war in Afghanistan, in the centre of a mid-sized town in Sweden. The demonstration will feature a speech at the main square. It is very common that various organisations organise small demonstrations and speeches in the city. Since most demonstrations take place during weekends, the local newspaper does not cover them all. In this scenario, local organizations have independent home pages, connected to a community server at the local newspaper, from which they get community news from other communities.
Liv is responsible for the media coverage and information to members about the upcoming demonstration. She enters information about the upcoming information, which is published at the sites of cooperating organizations, through the community server. It is then sent, through the community server, to the local newspaper online edition, as breaking news, to subscribers of community news. It is also sent to the editors “today” section covering upcoming events, published by the local newspaper.

After the demonstration, the speech is published at the home page of the political organization, and the newspaper desk is provided a link to the information, that they may use in their online edition.”

**Discovery and negotiation through design**

Reliance on genre by participants was apparent in the three workshops. Firstly, it was apparent that it was relied upon to create the scenario structure, by filling out the scenario cards. Often, proposals by one participant were not challenged by others. The analysis also showed that some design moves were negotiated, by several participants giving their view on an issue. During negotiation, some design moves were blocked, negotiated, and resolved. Moreover, the participants discovered consequences of design moves, both negative and positive, through the design activity.

**Facilitation of detail and reliance on genre**

The main facilitator concentrated on the scenario structure, forcing the actions to become concrete, and requesting details wherever he found details missing. Consider Excerpt 9.2 from workshop 1, where a card has just been filled out by a participant, and handed over to the facilitator. Also consider a similar facilitator intervention in workshop 4, in Excerpt 9.2. Prior to that exchange, it had just been decided that when an event is reported at the website of the organization, using their own materials, a link should be sent to the newspaper, to be added to their report of the event. In both exchanges, the persons proposed were presented as roles, given specific publishing tasks. It is thus evident that they draw upon their knowledge of their organizations, sometimes related to current genres of communication, during these situations. Also, the political group often presented traditional media as the solution to their problem of media coverage at the demonstration.

Olle: now who is that?
Arne: news graphics

Stefan: news graphics creator
Chapter 9. Reliance on genre during cooperative scenario building

Olle: what does he do?
pause: 4 seconds
Sven: he does
Arne: maps
Stefan: maps, yes exactly
Arne: weather maps

Excerpt 9.1. Journalists, facilitation of detail

Olle: but who adds this, who points out that this link is missing?
Kent: right, that’s would be the chairperson, that’s Stefan
Ture: or our media contact person

Excerpt 9.2. Political group, facilitation of detail

The journalists also discussed other issues, relying on genre, such as what channels a specific news item would be suitable for, illustrated by Excerpt 9.3 from workshop 3.

Anne: Absolutely, but as I said, such a news…
Sven: It’s not suitable for radio.
Anne: No
Sven: For instance
Erik: No, perhaps not this job
Anne: Right, it’s a typical moving image in depth kind of news

Excerpt 9.3. Reliance on genre in design

Negotiation of design solutions

Participants also negotiated the appropriateness of solutions in view of their values. For instance, consider Excerpt 9.4 from workshop 1, where journalists were discussing the dangers of “live” photography at an accident site. The conclusion was that the good judgement of journalists at the site would ensure that appropriate images would be shown. Thus, this did not block the idea of live reporting.
Kent: But in this kind of work, one will work after the principle that one collects as much as possible. But about how this is used, some decisions are made about not depicting.

Sven: No, right, live from the scene of the accident, to the reporter on the field doing a live report. Then one can’t see dead kids in the background, because that won’t work.

Arne: and that report should be given 16:20.

Sven: but then one has to trust the good judgement about the photographer and reporter out there, they select the angles of pictures here.

Excerpt 9.4. Evaluation of design ideas

Several similar issues were raised, where the journalists evaluated design ideas in the light of their view on the genre. For instance, to be able to quickly and inexpensively cover events was seen by the journalists as motivating lower quality video news “Webcams and alike, it is cheap and it is fast, right? But when… these things where the speed turns into a long relationship, well then you are in a discussion of quality”. Regarding events with a longer time span coverage, they expressed concerns about the quality of their equipment, and also about competition from television media companies. “…well, then you have to lower the quality criteria, being at several places at the same time”

Discovery through design

During design, the participants discovered new properties, properties not considered prior to the design activity. For instance, after the journalists had created a rather sizeable organization for news reporting of an event, when relating to the whole, it was discovered that “We are going to build a giant organization for crappy news”.

Multi channel publishing, at large, was thus discovered to be a risk for the media company, since the organization seemed too large, compared to the estimated news value of the event covered. The discovery was that multi channel publishing would not merely be a way of reusing the same contents in different channels, but that a considerable effort would be involved in maintaining and gate-keeping the channels, also to produce contents in the correct modalities and formats. Also, as shown in the discussions by the political group, considering technologies in a concrete scenario revealed positive consequences of technology use. For instance, they discovered that recording and publishing a speech could be a good use “I would love to have
the possibility to listen to (the speech) even though I was not able to be part of the demonstration”, and also, advertising the demonstration through mobile phone text messages could be advantageous “The whole square filled with people, can you imagine? “. Thus, in Schön’s terms (Schön, 1983), the backtalk of the design activity was directing the group towards new issues, rather than having the issues simply being elicited from their pre-workshop knowledge.

**Blocking and resolving design moves**

Some design moves were blocked, based on the participants values. For instance, automatic selection of advertisements, based on news item index terms was compared to telling the advertisement sellers about the news in advance, which was unacceptable. “Then we are getting a situation where the advertisement department knows what the paper looks like tomorrow, or what the web based paper looks like”. Blocking design moves can be advantageous. A system disregarding important values might contain functionality which if used might at worst actually harm the media organization, or might be a waste of development effort, if left unused. With too much such functionality, the entire system might be rejected. But, equally important, at some instances, new ideas were tested, and found acceptable, thus gaining benefits of the technologies without violating important values. Regarding the blocked idea for advertisement sellers, a technical solution was proposed, and found acceptable, which provided benefits without the risks of entrusting the advertisement sellers with knowledge about news contents. Similarly, in the workshop with the political group, a technology remedy to their problem with lack of technical competence was proposed. That was to utilize the media company’s publishing tools and system, to create contents without extensive technical skills. That suggestion was not well received. “I mean, make you dependent, too dependent, of some sort of patron or someone who is supporting... that could be dangerous...” There was distrust towards media organization owners, which suggested that they should be independent from them and their tools. Such blocks were common in the political group, where one participant was very critical to most suggestions. As the discussion went on, it became clear that, on the one hand, they did not want to contribute to the problem of information overflow in society, whereas they on the other hand wanted to reach everybody with their information. Balancing risk and benefit, reaching out to people in other organizations positive to their political agenda through a community portal, was seen as an acceptable solution as long as they had control over the tools providing the service.
9.3. Discussion

It is clear that knowledge about the news genre and the considered potentially recurrent situations of future use had a major impact on the scenario designs. Thus, the scenarios were scenarios of remediating current practice, through the incorporation of new technologies. The changes were technology driven, in the sense that technology possibilities were the source of potential change, but it was socially constructed in the sense that technology use was evaluated through the values and utility criteria of the participants.

The phase model of a future workshop (Jungk & Mullert, 1987) was in these cases not sufficiently powerful to direct risks to the critique and implementation phases, and benefits to the fantasy phase, since risks were frequently voiced in the fantasy phases of all workshops. Clearly, it is an advantage to introduce risks in the scenario building activity, when the participants subsequently find solutions that solves the conflict between risk and benefit. By having a Benefit and Risk card, more of the ideas could have been captured and parts of the evaluation discussion would then also become documented. It would also make it possible to have a more open discussion about risks and the benefits of solutions that otherwise might be direct rejected by critical participants in the group.

In order to get a solution which may form the basis of a sustainable genre, it is advantageous to have a critical group, where design moves are questioned, based on the values and knowledge of the participants. However, in an over-critical group, no design moves would be made at all. There were such tendencies in the political group, where one participant was very critical to most suggestions. If the participants put themselves in positions that are either too negative or too positive, and in that way disturb the balance that is needed to make a creative workshop, the facilitator could intervene. To create a balance, the facilitator could give the role of critical analysis to one of the participants and the role of over-positive to another. To maintain the balance, the facilitator could change the roles throughout the workshop, if necessary, for instance by using the six thinking hats method (de Bono, 1993). Alternatively, if participants seem too critical already before the scenario building phase begins, it would be advisable to have a shorter critique phase, and extend the vision phase with a brainstorming phase aiming at finding good uses of technology. In the political group workshop, one facilitator met the negative attitude by presenting ideas for technology use. The need for intervention, to change the balance in the group, shows that design work was not necessarily a harmonious dialogue between designers and
other participants, as proposed regarding cooperative design, by Iivari and Lyytinen (1998). That was reinforced by the emphasis on technology as a solution to problems, and on problems which could have technical solutions, which was adopted by the facilitators during scenario building in these workshops.

Although the particular suggestions made here are yet to be evaluated, it is clear that scenario building can be improved by incorporating risks and benefits more explicitly in the scenario structure. Also, realizing the degree of critical examination going on in the group, and balancing it, would be an important facilitator skill. In the next chapter, facilitator skills are examined in more detail.
In chapter 2, it is argued that genre perspectives are important in design situations, as well as affecting experiences regarding artifacts in use. The findings in chapter 7, regarding consensus and conflict between stakeholder groups, in cooperative scenario building, supported that view. In chapter 8, it was moreover noted that participants blocked design ideas based on their values. In chapter 9, design moves were analyzed, revealing that participants also negotiated design ideas, sometimes finding solutions balancing risk and benefit, seen from their gene perspectives (Figure 2-1). Facilitator interventions were proposed, to avoid too critical or too uncritical groups. Thus, the value of involving stakeholders as co-designers depended on their ability to utilize their genre perspectives in the design process. In chapter 9, that was seen as dependent on facilitator skills. In this chapter, design moves in three workshops were analyzed, to reveal critical facilitator skills.

The cooperative scenario building method analyzed here is one of many ways of involving users as co-designers. Users can conduct design activities jointly together with a designer, for instance through prototypes (Ehn, 1988), or through card-based task analysis (Lafrenière, 1996; Muller, 2001). Involving users as co-designers has the advantage of allowing participants to express themselves in terms of design solutions. However, when doing so, it is critical that participants are able to express themselves using the available representations. This has been addressed by using materials and representations that are familiar to the users. For instance, by creating interface mock-ups that users can work with, and where designers can implement changes.
based on participants design input (Bødker et al., 1987). An assumption of many cooperative design methods is thus that the everyday nature of the representational means—pen and paper or tangible user interfaces (Eden, Scharff, & Hornecker, 2002; Ernesto, Eden, Fischer, Gorman, & Scharff, 2000)—enables users to participate on more equal terms with the designers. For example, Kyng (1995) writes in relation to exploratory prototyping and mock-ups that: “The properties of pen and paper—including their ‘well-known-ness’—make such mock-ups amenable to cooperative modifications.” (p. 51). The research on knowing-in-action of designers does, however, suggest that the practices of professional designers’ entail a specialized way of working with graphical media such as pen and paper (Schön, 1983; 1987). This implies that professional designers would use card-based design methods differently from other stakeholders in a design project. Previous research have also shown that different cooperative design teams use design methods differently (Muller et al., 1995).

The question raised here is what a facilitator relying on a card based method should do to compensate for the lack of design skills in a user group, where participants have no previous experience with the design method. The question is raised since it is well known that a good facilitator is a key factor for successful cooperative design sessions, but less clear exactly what the facilitator has to be good at. The importance of the facilitator implies that it is not enough to have a good method to follow. Although facilitation of group dynamics is a well known area (Heron, 1989), it is not well known what has to be done to facilitate design moves. The notable exception is research on design education, where the teacher in some situations can act as a coach. In these situations, the coach facilitates design moves for the student, and enables the student to learn the way of designing exemplified by the design teacher (Schön, 1987).

In this chapter, the outcomes of three teams using the same card-based design method are compared. One team consisted of professional designers (workshop 9, Table 3-5), and the other teams were composed of media professionals (workshop 1 and 3, Table 3-5). The professional design team used the method to improve their current practices of user centred design, whereas the media professionals took part in a systems development project for an electronic newspaper system. It was expected that the designers would use the card based methods using the designer style of working (Schön, 1983; 1987), whereas it was unknown what style would be enacted by the media professionals. The differences were revealed by an analysis of design moves in the design cases. None of the groups was familiar with the
10.1. Knowing-in-action of professional designers

What characterizes design action performed by trained designers is well known. Schön (1983; 1987) has investigated the knowing-in-action of several different communities of practice, including design practice. In his terminology, which is adopted here, design is an exploration of the conceivable futures of the design situation at hand, where exploration means to make an intentional change (a design move) and see what happens. Designers create models to be able to conceive and predict the consequences of a certain design move. Representational means, such as sketches, diagrams or other physical models are important tools for design since they help in assessing and reflecting on the details of a solution in relation to the whole problematic context in which it is situated. Relating parts to the whole is essential to design (Bernstein, 1988; Nelson & Stolterman, 2003). The representational means also assist in exploring many possible design solutions in a larger space of alternatives. Using pen and paper speeds up the doing-seeing loop of creation, assessment and reformulation. The interplay between the designer and the graphical representation of the design situation also generates new ideas. As the designers draw, they see their problem in another way and can reformulate it in a fruitful way, perhaps because a line came out slightly wrong on the paper. This is what Schön (1983; 1987) calls the “reflective conversation with the materials of a design situation.”

The sketch as a representational means is rapid and spontaneous, but it leaves stable traces in contrast to talk, which is evanescent (Clark & Brennan, 1991). Talk is, however, important for the argumentative assessment and communication of design alternatives, which also is at the core of design activities. Designers employ a language of talking and drawing in parallel. Schön (1987, p.57) describes the work of an architectural design teacher called Quist in a session with a student:

“In the media of sketch and spatial-action language, he represents buildings on the site through moves which are also experiments. Each move has con-

Implications for facilitating card based design sessions are presented, based on a comparison between the design activities of the groups, and by drawing parallels to coaching situations of design education.
sequences described and evaluated in terms drawn from one or more design domains. Each has implications building on later moves, and each creates new problems to be described and solved. Quist designs by spinning out a web of moves, consequences, implications, appreciations, and further moves.”

The citation above is a clear statement of what much of design work is about. In terms of distributed cognition (Hutchins, 1995), it is a system where the design work is distributed over several designers and their representational means. The representational means are, in turn, physical embodiments of the culture and history in which they have evolved. The cultural practices of designers, including the spatial-action language, therefore provide the structural resources for performing experimental design moves. It is part of their knowing-in-action; the know-how revealed in spontaneous and skilfully performed actions (Schön, 1983; 1987). The spatial-action language is also constitutive of their professional communicative practice (Duranti, 1997; Hanks, 1996), the ways in which they communicate.

Novick and Wynn (1993) propose that natural discourse in participatory design teams should be analyzed to identify features of successful and unsuccessful design sessions. In contrast to Schön, they argue that design is primarily conducted through talk, but that this talk may be affected by social differences between participants and communicative conventions within a design session. A study of the verbal communication of a mixed team revealed that people participated differently, through their conversational conventions. They reach the main conclusion that attention to these differences is necessary to evaluate whether all participants have made their contribution to inform the design (Wynn & Novick, 1995).

### 10.2. Data collection and settings

In order to clarify what a facilitator has to do, to enable users without design experience to express themselves in design, we turned to the audio recordings of two workshops made with journalists at a Swedish media house (workshop 1 and 3, Table 3-5) and to the recordings of one workshop with usability designers at a Swedish software consultancy firm (workshop 9, Table 3-5). The reason for investigating two groups of journalists was to evaluate whether the facilitation issues were similar for both groups. The reason for including a designer group was to get a baseline, of comparable design actions to those in the journalist design sessions. The quality of
the designer group as a baseline was evaluated in terms of whether it showed the characteristics of design action described in the literature.

The first journalist workshop was conducted with staff members from the printed edition and the radio. A programmer and a news director were also participating. There was in total six participants and two facilitators. The second journalist workshop was conducted with staff members from the online edition, including a web advertisement seller, and the news director from the first workshop, in total six participants and two facilitators. The workshops followed the cooperative scenario building method as described in chapter 7.

The consultancy firm case included a workshop with four experienced usability designers and one facilitator. The usability designers had no previous experience with card-based methods. The workshop aimed at improving the usability work at the firm. Their goal was similar to that of the journalist workshops, in that they considered future ways of working with new methods. Their desired outcome was a plan of action for improving their own work processes.

The workshop deviated somewhat from the cooperative scenario building method as described in chapter 7. One particular aspect was that in the workshop with the usability designers, there was also a card labelled ‘problem?’ It was introduced to document any problems that became apparent during the scenario building activity. That was done, since scenario building was also used to enable problem discovery, in the problem phase of the workshop.

Audio was recorded in all workshops and was subsequently transcribed. What participants said in the workshops were compared to what they had written down on the cards and to how they had placed them. The transcription was coded according to how design moves were performed and how the process was coordinated.

One of the researchers acted as facilitator in all workshops (the thesis author). This meant that he had to reflect on his own practice. Several strategies were used for this reflection: (1) researcher triangulation was achieved by bringing in a second researcher to analyze the empirical material, (2) transcription of the recorded workshops made it easier to distance oneself from the material, and (3) the theoretical framework presented in the introduction was used for taking new perspectives on the material.
10.3. Findings

The facilitator in the workshop focused his intervention on the scenario structure, to ensure that participants were working on a concrete level, and to ensure that the scenario was reasonably detailed.

The transcripts show that the journalists primarily designed by talking, to which the facilitator reacted by requesting cards to be filled in, interrupting the work. Although filling in cards interrupted and disturbed the design discussion, the resulting card structure was used to reflect on the emerging whole of the design. In contrast, the designers used the style of design described in design literature. They designed mainly by placing cards in the scenario structure, also reflecting on the whole, but moreover they also followed up the consequences of design moves to a greater extent than the journalists did. Their card usage was thus characterized as sketching a prototype, rather than as documenting design decisions in a public protocol, as in the journalist workshops.

However, in both workshops, design was largely driven by the participants. None of the workshops had the character of an interview. Although there were elements of facilitator control over topic selection, many topics were initiated by participants. The differences between workshops are summarized in Table 10-1, regarding the main characteristics of the design work. That means for instance that journalists primarily designed through talk, not that they only designed through talk.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Journalists</th>
<th>Designers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design style</td>
<td>Through talk</td>
<td>Through cards</td>
</tr>
<tr>
<td>Reflection</td>
<td>On design results</td>
<td>In action, and on design results</td>
</tr>
<tr>
<td>Card usage</td>
<td>Public protocol</td>
<td>Sketching a prototype</td>
</tr>
</tbody>
</table>

Table 10-1. Main differences between workshops

Exploring design alternatives

Reflection on design alternatives was done differently in the journalist and designer workshops. Although several alternatives were discussed in the journalist workshop, for each topic, only one was finally selected and put on
a card. The other ideas were not followed through and further developed. It was also noted that the journalists jumped from detail to detail without relating back to the whole picture, as much as the usability designers did.

In Excerpt 10.1, we see that there is an idea for how indexation of news should be done. Gunnar says that there should be pre-decided classes where the news manager would tick a box when he gets the news piece. Sara states that it should be made early in the process and Yngve says that it either should be done by one or several editors or by the author of the news item. However, the editor does perhaps not read the whole text. It is finally decided that a photo editor and a news editor should do the indexation of news. Only one of the many alternatives expressed in the excerpt below was written down on a card and the experimental design moves happen in the talk rather than in the cards. That meant that alternatives were not documented, and that the backtalk from the material, which is the advantage of sketching, could not occur.

Facilitator: so there is indexing going on (Richard: hehe). then we write down the indexing, I think (Sara: yeah). the question is, should we put the indexing somewhere with a person here, (Sara: ((sighs))) or should we add a new person also?

Gunnar: there could be classes, that are prepared in advance, that the news manager just clicks in a box when he releases the text there (Sara: mm).

Sara: would select (Gunnar: yeah) section (Gunnar: yeah) rather early in (Nils: m right, I think that would be best) the flow. now I also thinkt that

Facilitator: is it the news manager who does the indexing (Gunnar: yeah) or is it his colleague or

Yngve: them, well, some kind editor, or the person (Richard: ((laughs))) who wrote it does that.

Gunnar: could be at the editing too (Nils: yeah) when they (Facilitator: over there) releases the thing, because when you eeh, when you sit here then perhaps it turns out that.

Sara: then one knows where it ends.

Nils: one knows what the job is.
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Gunnar: it turns out as something completely different at the other end
Sara: that’s so true
Facilitator: so these
Gunnar: it might be a story about a youth afterschool for the handicapped
Yngve: reads, does the editor read the entire article
Gunnar: right, that was the question wasn’t it?
Yngve: because the only one who knows the contents (Sara: that’s the journalist) over the entire article is the person who created it so that person would be the most suitable.
Gunnar: perhaps several people does that
Yngve: to extract the contents in it, right, if there are more people who
Yngve: or just to mark in (Nils: mark in) and then someone else makes the selection from then what that person (Richard: mm)
Gunnar: I think we had some like that was the last hand on the stuff, who is that
Sara: it is that these editors (Gunnar: there) mm
Facilitator: editor there right mm (Gunnar: I think it should be there)

Excerpt 10.1. Journalists designing by talking

Lesson Learned: The facilitator should follow up design moves, either by suggesting possible consequences of design moves, or by asking the participants to explore the consequences.

Reflecting on parts and the whole

Unlike the workshops with the journalists, the reflection in the usability designers’ workshop was part of the building of the scenario, which was realized in combined card work and talk. For example, as we see in Excerpt
10.2, Anna reflected on the relation between the parts of the scenario when she said, “Actually it’s the same as these” and pointed at the cards representing the tools.

Laura: let’s see now. tools for the visions document. yeah well I mean it’s (xx).

Anita: it’s the workshops.

Anna: actually it’s the same as these. ((points))

Anita: it’s workshops and interviews.

Facilitator: when does this happen then?

Alice: shortly after the other.

Laura: we can connect these there then, can’t we? ((points))

Anna: I think you could for these ((points)) you could need personas you need personas in the visions document as well. I mean, it’s one way to describe the user group and stuff.

Alice: yeah.

Anita: mm.

Laura: mm. but you can say that this ((points)) is actually part of that then, isn’t it?

Alice: yeah exactly. it’s an input to the visions document.

Anita: mm.

Anna: mm.

Alice: mm.

Anna: yeah all of these are actually input to the visions document. ((points))

Alice: mm.

Anita: mm

Excerpt 10.2. Usability designers designing by placing cards

Episodes such as the one above were rare in the journalist workshops, but pervading in the workshop with usability designers. They designed by combining cards while talking about it and reflection took place as part of that process. The cards worked like building blocks in a prototype constructed jointly. The usability designers had a similar drawing/talking language as the
architects in Schön’s studies had in their practice. A spatial-action language is adopted by the usability designers in what Schön (1987, p. 97) calls “the image generative” where the graphical representation is used as a means to discover consequences of moves for the whole as they experiment with it in short loops of doing, seeing and reflecting. Professional designers are used to develop expressive ideas in physical media such as the cards of this workshop or more commonly in sketches, drawings and diagrams. Let us return to the citation from the introduction of this paper where Schön (1987, p.57) described what the architecture teacher did in a session with a student:

“In the media of sketch and spatial-action language, he represents buildings on the site through moves which are also experiments. Each move has consequences described and evaluated in terms drawn from one or more design domains. Each has implications building on later moves. And each creates new problems to be described and solved. Quist designs by spinning out a web of moves, consequences, implications, appreciations, and further moves.”

This could just as well have been a description of how the professional designers in the workshop used the cards. The entire workshop with the professional designers was, however, not characterized by design by placing cards. There were also phases where no cards were laid on the table at which the participants only reflected on what they had produced.

That style of reflection was common in the journalist workshops. As mentioned above, when the design moves were carried out through their talk, the journalists jumped from detail to detail within a scenario. After these phases of design-by-talking the journalists had phases when they reflected on their design and saw consequences for the whole. The cards then worked as a public protocol of their work. Below, in Excerpt 10.3, follows an episode that illustrates such a reflection phase. In this episode the journalists reflected on what they had created, evaluated it and realized that the idea had a number of negative consequences. This reflection phase went on as they left the room for a short break and continued when they got back.

Arne: yes but it is one doesn’t need to have that hurry on this kind of news
Erik: but consider tv4 who have built the same organization, they also are there publishing this directly.
Bertil: every medium has its optimal
XXX: the news hunt there will be
10.3. Findings

Arne: consider for yourself, if you have SMS, you won’t want this kind of thing, it beeps, “young people refuses work in the healthcare sector” ((laughter))

Erik: yes you might want that

Bertil: earlier, we have decided this in the selection

Arne: we do not give a damn about that, I think

Rickard: you, right, but

Erik: don’t be so sure about that

Facilitator: it won’t go to the base package then. (Arne:no) but it goes, the SMS goes to

Stig: if we have selected a thousand people who wants to know about healthcare do not all sit and watch television, but you want to have it, you want it at the same time, but it is different media. then it must be sent both as SMS for those who sit in the car, on the television somehow, who sit at work and watch their computer, and then on the radio for those who are walking downtown, it is (Arne: but that) must do everything at once.

Arne: we are building an elephant organization for this crappy news story.

All: ((laughing))

Excerpt 10.3. Journalists in a reflection phase

When a design move is performed in the medium of talk it is easily lost and the consequences do not have stable traces that can be examined. When design moves are made in graphical form instead, they are stable and can be assessed as part of the action and details can be related to the whole composition. The risk of design-by-talking is that the designers get stuck at one level of detail without relating to the whole. As Nelson and Stolterman (Nelson & Stolterman, 2003) argue: shifting between levels of detail is vital in design activities.

Lesson learned: The facilitator should, when necessary point out, or ask the participants to reflect upon relations between part and whole.
Chapter 10. Facilitation of design moves

The use of the card structure

As we have seen, the cards were not merely documentation. They were used by journalists and the usability designers relied on for reflection. When the journalists realized that something was wrong they entered a reflective phase. To do that, the journalists relied on the cards as a public protocol, as noted above, and the designers relied used the cards to sketch scenario prototypes. However, when the journalists utilized their storytelling practices as a knowing-in-action of the workshop, they relied on the facilitator to emphasize the creation and placement of scenario cards. As shown in Excerpt 10.1, when the facilitator requested a clarification on the issue of who should index the news story, the journalists talked about several alternatives, but did not write the alternatives on cards. Finally, at the request of the facilitator, they noted one of the alternatives. Thus, either the facilitator have to make even more request for filling out cards, which would be disruptive, or some other means of recording the conversation have to be used. The facilitator did not have this role when the usability designers designed by placing cards. The facilitator is therefore more central in workshops with non-professional designers.

The cards also have a role as design documents, to utilize in subsequent design activities. Thus in that respect, this study also validates the recommendation in CARD, to utilize video for recording the design session (Muller et al., 1995). Alternatively, a designer could illustrate the talk, as in graphic facilitation (Crane, 1993). Of these two alternatives, as we have seen, creating a design representation during design has the advantage of facilitating the reflection of design alternatives and their consequences. However, doing both facilitation of design moves, and documentation of design moves, may be too much for one facilitator to manage alone.

Lesson learned: A graphic facilitator should document design alternatives, to enable the card structure to be used as a sketch and as a public protocol.

10.4. Summary

In sum, the journalists designed by talking, while the professional designers designed by placing cards. A difference was that the journalists did not follow up the consequences of design alternatives that were mentioned, to the same extent as the usability designers. In addition, the journalists used the cards as a public protocol to reflect on their design, while the usability de-
signers used them to construct the scenario and to reflect on the scenario within that process.

The findings from the analysis of the transcripts of the workshops emphasize that it is by no means the case that cards are equally easy to use for everyone, despite the use everyday materials, such as pen and paper. As also indicated by Kyng (1995), training might be necessary for equal opportunity and power in design sessions, despite that the facilitator can compensate to some extent.

To address these issues, when design is mainly conducted through talk, we propose that a facilitator should act as a coach, facilitating design action, making it more similar to the work of professional designers. Such facilitation is similar to what a design teacher does, in situations when he or she acts as a coach. Thus, such a style could also facilitate learning, so that the participants could in time act more like professional designers. This will also reduce the need for training participants in design work prior to the design activity. As suggested by design theory, such training will have to be very extensive to be effective. It normally takes a lot of time to learn to adopt the professional design style of working. Note that this issue differs from the issue of learning the rules of the cooperative design activity. It has more to do with the style of carrying out design, than the rules for laying out cards.

The suggestions for facilitation of design moves presented here, could work in similar situations where the particular style of design through talk is used. The proposals could, in the future, be tested in design settings. Such testing would most likely also bring forth more issues, and a more detailed understanding of what skills are involved in design facilitation.

Although the two workshops with journalists studied here were characterized as design through talk, this cannot be generalized to all journalists, based on just two design sessions. Furthermore, the study has not examined individual cognitive styles that can affect the process. Also, this study did not include any mixed team, with participants acting out markedly different design styles. One can also, as mentioned in the introduction, use groupware to bridge the geographical distance between stakeholder groups (Everitt, Klemmer, Lee, & Landay, 2003; Miller, Smith, & Muller, 1992). Further complications in facilitating design moves through groupware would be an interesting venue for the future. Also, computer support for facilitation could be interesting to research, since it is clearly shown here that using everyday design means such as pen, paper, and
cards, is not sufficient to get the style of design work, which is characteristic for professional designers.

In the design sessions studied here, the facilitator mainly concentrated on facilitating the rules of the design activity, encouraging participants to fill in cards in the scenario structure, noting and requesting cards wherever important cards seemed to be missing in the card structure. The lessons learned here mainly concern what else design facilitation could mean, when facilitating sessions where design through talk is the dominant style. The proposals are to facilitate the follow-up of design moves, and to facilitate the reflection between part and whole. Moreover, it is likely that a more thorough reflection on part and whole for the design through talk style, could be enabled by the facilitator, by illustrating what the participants talk about. Doing these activities at the same time may be too much for one facilitator, in which case one facilitator may mainly work as graphic facilitator. Participants could still make their preferred design moves, after reflection on alternatives, in the scenario structure. One important thing to note is that successful design facilitation may rely on an experienced facilitator, who can quickly draw design proposals, and quickly grasp consequences of design moves and see consequences for the whole, when working on parts of the scenario.
11. General discussion and conclusions

The thesis of this work was that an explicit genre perspective can fruitfully be used to guide an interaction design process. The thesis was addressed through research on online news, mainly through the ELIN project.

A genre perspective framework was used to direct the ELIN design process (chapter 2). The guiding principle was that current forms and practices should be remediated, rather than completely reinvented, to overcome limitations of previous technologies, while preserving values of the current genre. To preserve values from the current genre, previous designs were interpreted using the analysis categories from Table 2-1 (chapter 4 and 5). Furthermore, to discover possibilities and to overcome limitations of previous genres, as well as problems potentially caused by new technologies, stakeholders using and producing the current genre were involved as co-designers in the ELIN design process (chapters 6-10). Whereas the roles of user and producer have been highlighted in traditional genre theory, in this thesis the designer role is also emphasised. Moreover, characteristics of interactive systems have been incorporated as analysis categories, from human-computer interaction design theory.

Although not all studies presented in this thesis were part of the ELIN project, the findings regarding the online news genre were used to inform the design process. In this chapter, the research presented in this thesis is summarized and discussed. First, previous online newspaper designs are dis-
cussed, focusing on front page design, and on the context stream on the article pages. Subsequently, future news services, relying on new technologies, are discussed, in terms of use and production. Regarding form, hypervideo link presentation in a multimedia news site design is also discussed. Then, the role of design in genre change is discussed, with an emphasis on participation of user and producer in design, through cooperative scenario building. Finally, a genre perspective on online newspapers is presented.

### 11.1. Hypertext news

The analysis of online news started with genre rules for online newspaper front-page design, using the analysis categories of form, content, user, producer, positioning, and purpose (Table 2-1). Thereafter, it proceeded with the characteristics of the material of online newspapers, adding the analysis category of interactive form. That proceeded with the analysis of one particular interactive form element, the context stream, where use-quality criteria were separated from the purpose category. Then, possibilities of hypertext for online news were discussed, with a focus on hypervideo. Thus, analysis categories were refined along with a characterization of the online news genre.

#### Structures of hypertext streams

The first analysis in chapter 5, of three online newspapers over 14 days, regarded the form of online newspapers. It divided the form into interactive and medial form. The interactive form of online newspapers was seen as having three dimensions, namely structure, hypertext, and stream.

The analysis characterizes the newspapers in the study as remediating the medial form familiar from printed papers, through newspaper style text and images. That corresponds to the findings in a previous study of German online papers (Neuberger et al., 1998). However, it does not reflect the wider use of multimedia found in another study (Greer & Mensing, 2004). Regarding the interactive form of news texts, these were remediated as hypertexts. Hypertext organization is both the linking of article summaries and texts, and the linking of associated contents to specific articles, rather than to specific sections. The hypertexts were embedded in streams. The stream is the dynamic dimension, of replacing contents in a static position, rather than forcing the audience to browse to find new items. The streams held fairly static positions on the pages, and had predictable connections to other parts of the structure. The structure is the static dimension, for instance of
always presenting headlines at a specific page positioning, and always linking
the news to a specific section. Thus, the online newspapers were character-
ized as structures of hypertext streams. In terms of interactive form, thus,
hypermedia was prevailing, together with menus. Other interactive form
options such command lines, or forms, were not used to a great extent for
news. Compared to the notion of medial form in previous research (Bolter
& Grusin, 1999), here interactive form was treated as a separate analysis
dimension.

Hypertext front-page design

A genre analysis of eight front-pages (chapter 4), from the audience and
producer perspectives, resulted in a set of design recommendations for
online newspaper front-page design. In Table 4-2 genre rules are described
regarding purpose form, and positioning, which support each heuristic.

The design purpose / audience use category, in the design recommenda-
tions achieved in chapter 4 (Table 4-2), includes many purposes, which are
use-qualities, namely those in recommendation 2, 3, and 7 (familiarity, ease
of navigation, news value). Recommendations 1, 5-6, and 4 represent both
quality and content (overview of site contents, news updates, overview of
particular services). Recommendation 8 regards the particular interaction
style of searching for specific news items, and merely suggests that it should
be supported.

The genre rules are the conventions in society, which mediate the layer of
meaning. For instance, in recommendation 7, news value is mediated by
positioning and markers, which is consistent with findings in previous re-
search (Watters et al., 2000). Further research could reveal if these genre
rules are also shared by other genres. Thus, when creating a front-page for
another genre, or another culture, these design recommendations should be
seen in the light of the genre rules for that genre and culture.

The analysis that the recommendations were based on was restricted to the
current medial form of online newspapers, namely structures of hypertext
streams. This is reflected in the genre rules regarding form and positioning.
Also the purposes are affected by the current medial form, since new tech-
nologies might enable new form elements, which could support other pur-
poses.
**Hypertext context stream design rationale**

The first analysis in chapter 5 shows that the headlines, advertisements, and news stream elements in Table 4-2, are different kinds of hypertext streams. It seems that streams are more important to online newspaper design, than would be expected from reading general literature on information architecture (e.g. Rosenfeld & Morville, 2002). Several online news stream elements have been described in previous research (Eriksen & Ihlström, 2000), differing regarding form, and regarding the kinds of contents they contain. When a user reads contents in-depth, by following hyperlinks in the streams, the first analysis in chapter 5 revealed that the context of the articles differed between the three papers. In particular, there was often one or more hypertext stream element on the article pages. The second analysis in Chapter 5, of 77 Swedish online newspapers revealed a design rationale for the context stream element. The analysis showed that it was a common element, but one where designs differed between papers. In this analysis, use-quality criteria were separated from the purpose category.

Figure 5-5 and Figure 5-6 presents a QOC for the main options used by the papers for the context stream element, and the analytically derived criteria. A full line indicates a positive relation between a design option and a criterion (purpose), and a dashed line indicates a negative relation. As shown in the figure, design options and criteria interact with each other. Design options were grouped by overarching questions of content, form (Figure 5-5), and position (Figure 5-6) of the context stream. Regarding these aspects, three questions were formulated.

**Q1:** What content should the context stream have? (Figure 5-5)  
**Q2:** What form should the context stream have? (Figure 5-5)  
**Q3:** Where should the context stream be positioned? (Figure 5-6)

The analysis showed that several use-quality criteria were related to the design options, namely overview, orientation, informativeness, and news value. Some criteria emerge due to the interaction design of the paper (e.g. orientation), and some from the genre layer of meaning (e.g. news value). Aspects such as white space were not analyzed in detail, but included in the criterion **overview of other contents.** The composition of the page as a whole, and of other page elements, would also be related to that criterion.

The use-quality criteria could be considered parts of the set of purposes of pages, as was the case in the front-page design analysis (Table 4-2). However, it would be strange to view for instance orientation on a page as a
11.2. Hypermedia news

purpose of reading an online newspaper. Qualities, which are not purposes of reading news, can nevertheless be necessary. For instance, without orientation, it would be hard to achieve an overview of the most important current news, among many news items. All aspects of the news reading experience could affect media and news site choice, for audiences. The content-related purposes could also be seen as qualities, such as being informed. Thus although some qualities regard the primary purpose of reading news, whereas other can rather be seen as supporting qualities, all are part of the news reading experience as a whole.

Presenting design options as design rationale (as in Figure 5-5 and Figure 5-6) is an alternative to presenting design recommendations (as in Table 4-2). Using QOC diagrams, design alternatives could be evaluated and turned into recommendations, but such an evaluation would depend on design goals and constraints, which may differ between situations. The context stream element could, as an interactive form, be seen as a hypertext widget, complementing research on other characteristics of hypertexts (Pawan & Helander, 1997).

11.2. Hypermedia news

Going from hypertext to hypermedia, and from stationary to mobile services, is based on exploiting technology potential. But, as has been shown in previous research, that potential has been available for some time (Watters et al., 1998). Thus, as a force of change, technology is a necessary, but not a sufficient condition for change. Through eight future workshops (workshop 1-8, Table 3-5), problems and visions of hypermedia news incorporating hypervideo, personalized news, and parallel publishing to different devices were explored (chapter 7 and chapter 9). The scenarios of audience use revealed a consensus regarding the general usefulness of the technologies, between workshop groups. However, regarding uses and contents, there were also differences between groups, some of which were in conflict with each other. The analysis of the media production scenarios revealed issues regarding convergence, when using a parallel publishing toolkit. The research regarding form mainly regarded hypervideo link presentation for online news. Design alternatives were created, incorporated into a news site hi-fi prototype, and evaluated with three groups of media professionals, revealing what alternatives seems most suitable for online news (chapter 6). Here, the discussion is divided into the analysis categories presented in Table 2-1, although not completely, since the categories regard aspects of a whole.
Since the audience groups in the future workshops had conflicting views on future news services, no generalizations to larger audience groups can be made regarding their viewpoints. However, the conflicting viewpoints do provide different accounts of how news media use could change. The value of different accounts regarding situations of change, is emphasised by Buchanan (2003). The groups from the media organizations also had views on audience use. Since the accounts given by the three management groups were more coherent, they are here treated as one stakeholder group. That was also the case with the two journalist groups.

**Audience use**

All groups found uses of the technologies, to overcome limitations of current technologies, although there were also concerns about new problems that could be caused by the new technologies, such as information overload.

The visions roughly followed the workshop themes (Table 3-5). The senior citizens emphasised everyday situations such as the morning newscast, and going downtown in poor weather. The early adopters presented scenarios of being on the move, in many different places at different times. The political group could see themselves as suppliers of information to their members, and to friendly organizations, partly to be delivered through the newspaper system. Management focused on specific services, to be delivered to audience groups, focusing on specific audience needs, such as buying their weekly groceries, finding a nice apartment to live in, and to stay updated on topics related to hobbies.

All groups, except the political group, stressed that contents should be available all the time on demand and that it should be possible to access the news content from a wide range of devices, which meant that they were in favor of parallel publishing. Moreover, there was an overwhelming consensus regarding the benefits of personalization on a content level. Also, all groups could see the value of multimedia. However, there were some conflicts regarding the desired uses of the technologies, between groups, as shown in chapter 7. For instance, regarding personalization, whereas management wanted to target specific groups with advertisements, the senior citizens wanted to filter out unwanted advertisements, and the political group wanted to use personalization to avoid contributing to information overload in society. Whereas management proposed different services for wealthy groups, the media producers proposed news services for anyone, for instance, not so wealthy groups in the health care sector. Another con-
flicting issue was the idea of a news portal, aggregating news from different sources. Such systems have been proposed previously (Morin, 1998). Whereas the early adopters found this idea attractive, later evaluations with management in the ELIN project showed that they were concerned about the loss of identity of the news organization, with such a service.

**Content**

The future workshops revealed that, in some respects, different stakeholders also had similar ideas about what kinds of contents to present using the proposed technologies. Management was in favour of personalized services, such as a news flash service for high news value events, which was also included in journalist scenarios on content creation, in a scenario by early adopters, in a scenario by senior citizens, and a scenario by the political group. The valuation of news contents in general was similar, since all groups recognized the need for high quality local news coverage. Management also proposed intermediary services, like a heating calculation service, whereas the senior citizens were in favour of an interactive weather service, and journalists proposed to be information intermediaries between for instance local traffic companies and the newspaper audience. For some services, like a snow removal map proposed in the workshop with the senior citizens, or a heating calculation service proposes by management, in addition to the publishing system technologies considered in all workshops, other new production technologies might be needed.

From this study, no conclusions can be made regarding the sustainability of the specific services and contents, in terms of production economy, since the work here was not based on a market analysis. Clearly, too few audience groups were covered to get a comprehensive view on future news use, which would be an important topic for future research. The services are discussed in depth elsewhere (Ihlström & Lundberg, 2002b; Ihlström et al., 2002).

**Production: Dynamic media convergence**

An analysis of the publishing scenarios from future workshops 1 and 3 (chapter 8) revealed that convergence is not merely a unidirectional force of progressing change, with static effects on media organizations, driven by technologies. Instead, it can be a dynamic process of divergence and convergence occurring within a media organization, exploiting different kinds of convergence potential, depending on the kind of event covered. These
findings would relate not only to the ELIN system, but also to systems presented in previous research (Burkowski et al., 1994; Hoffert & Gretsch, 1991).

The example studied here was a vision of a future media organization with a convergent media management system, a diversity of channels, and tools for different news modalities. To deal with the envisioned scenarios, the organization and system had to be able both to cover events using several traditional teams, each producing for few modalities or for different deadlines, and to cover events using multi-journalists. Moreover, it had to be flexible enough to change the level of convergence as a story unfolds. Finally, it had to be able to cope with a potentially sizeable inflow of media materials, to take advantage of the opportunities of audience contributions of media materials, for some events.

Also, the fragmentation of the audience is reduced with a convergent media system in several ways, despite being fragmented in terms of media viewing habits, of channels, devices, and times of viewing. Publishing the same content in several channels, and also buying and selling between media houses, means that the same news items reach a large audience anyway, through the diversity of channels. However, this raises a concern, namely that resources would be taken from producing high quality content, to producing the content in a diversity of media forms, and delivering it to a diversity of media consumption devices.

**Purpose and use-quality**

In the future workshops, the media professionals’ emphasised qualities of reading, such as having good technical quality of videos. They also emphasised experiences of the newspaper as a whole, such as having no ethically disturbing contents, and to provide a clear differentiation of news and advertisements to create a view of the newspaper as independent. They also wanted high news quality, in particular, checked facts and news articles with background research. In contrast, the political group recognized the good intentions of journalists, but was cautious about economical concerns causing what they viewed as important political news to be less prioritized than more entertaining news. Thus, they did not view the news organization to be independent of economical pressures.

The senior citizens had more practical concerns, such as legibility of materials, and being able to alter the pace of information. Also, they found that
information was fragmented, and that news were often repetitive and not broadcast at times convenient to them.

The early adopters were more interested in being able to get news anytime, any place, but were also concerned about the quality of news, for instance, the checking of facts.

Use-quality, thus, can be associated with either of the analysis categories used in this thesis (Table 2-1). Some qualities, like checked contents, were mostly related to news production practices, and to the contents. Others, like legibility and pacing of information, were more related to interactive and medial form. Other qualities were more closely associated with medial form, such as television news being seen as more powerful for emotion by some individuals in the producer groups. Regarding purpose, for instance, the qualities of independence and information overload were closely related to the purpose of reaching out, which was embodied in the publishing scenario by the political group. Use-qualities associated with hypervideo presentation are discussed below.

Interactive and medial form

Since the future workshops did not address design details of interfaces for news reading in depth, design was based both on findings regarding the current genre (chapter 4 and 5), and on opportunities for future news interfaces, covered briefly in the workshops. These opportunities were studied in depth through co-design workshops (chapter 6).

In the scenarios from the future workshops, there was often a clear view of the modality of contents, and a clear view of the technologies needed for the services. Also, negative experiences were attributed to some current medial forms, rather than to the contents in themselves, such as the repetitive, fragmented, and too quickly paced morning television news experienced by senior citizens (partly illustrated in Excerpt 6.2). In the future workshops, however, there were very few indications on how to weave together technology and modalities, from old medial forms to new enhanced medial forms. An example of such an indication was the idea of a clickable news summary from workshop 1 (Excerpt 6.1).

Remediating news video, and hypermedia, hypervideo design alternatives for news presentation were created, based on previous research (Girgensohn et al., 2004; Sawhney et al., 1996). Just like for the context hypertext stream element, these can be summarized and compared in a QOC
Chapter 11. General discussion and conclusions

(Table 6-1). In contrast to previous research (Watters et al., 1998), the videos were to be integrated on the pages.

These alternatives were evaluated in three cooperative composition workshops, where alternative 8 (icon outside of video area) was seen as the most important, and alternative 4 (circle indicates link) was seen as a good additional alternative (Table 6-1). In the workshop, an interactive newspaper style front-page prototype was shown, illustrating design alternatives. The interface did thus not use alternative layouts such as collages (Christel et al., 2002). When assessing design alternatives together with a small set of potential users, preferences tended to go towards the online newspaper style of spatial layout of video clips on a page. Also, the same attitude was found in previous research (Molina, 1999). The selected alternatives were incorporated in a new front-page design (Figure 6-5). Design option 8 is shown in the bar to the left of the page in the figure. That option embodied six qualities, namely undisturbed news presentation, informative about the link to be followed, the link is easy to notice, overview of contents related to the specific news item, and the link is easy to select. It did not embody the following two qualities, satisfied by other alternatives, namely, that contents are kept secret from the audience before temporal events have occurred in the video, and that visibility of other contents is maintained. Thus, for other kinds of videos, other options might be appropriate. When, for instance, showing an entire hockey game, alternative 8 might not be a good design alternative for presenting links to goal movies. Moreover, the valuation done in chapter 6 does not regard full-screen video mode, where an icon would disturb video presentation.

To create a clickable news overview, as proposed in workshop 1 (Excerpt 6.1), a spatio-temporal context stream element was designed. It incorporated a hypertext context stream element with hypermedia elements. It combined a video stream, containing five second overview clips, with a moving highlight of the current item in the context stream. The overview was designed to be possible to interrupt at any time. A review revealed that similar solutions were presented at some current online news sites. For instance, at the time of writing, CCN.com had a similar video overview done in flash, but without the highlighting of contents in the right column, and news items were launched in an external player if selected. Since this element was not prioritized in the ELIN project, no QOC was created. If this element was to be implemented, a thorough exploration of design alternatives would be recommended. Disregarding the multimedia elements, and viewing it purely as a context hypertext stream element, the design can be
evaluated using the QOC in Figure 5-5 and Figure 5-6. Judging by Q2, it might seem odd that the stream did not have a varied layout; however, that was a constructional constraint of the ELIN project. The advantage of having a varied layout did not motivate changing the constraint, at considerable development costs.

The design in Figure 6-5 thus incorporates thoroughly explored design aspects, such as the hypervideo design alternatives, and the hypertext aspect of the context stream. It also incorporates less well explored design options, such as, a full screen mode where hidden page elements could be folded in over the screen, by placing the pointer near the edge of the screen. Although the design in Figure 6-5 roughly follows the design guidelines for online news front-page design (Table 4-2) several designs could be created which follows the guidelines. Also, the incorporation of hypervideo leaves questions unanswered, such as, how to give a news overview in mixed modalities. If one item is only presented as text, another only as sound and a third only as video, then it is not evident how they can be integrated in a coherent presentation. The current design provides two coherent kinds of viewing, through a newspaper style reading of news texts, and through a news video presentation through an audio or video stream. For it to work in a coherent way, it would seem that all items presented in a stream should be available through one modality, with the other modality as an add-on. Alternatively, all items could be in all modalities, although that might be impractical. Also, different streams could have different dominant modalities.

11.3. Design

Historically, genre has been conceptualized as a relation between user and producer. Although that is an important relation, this thesis shows that the designer also can have an important role, in genre change. For instance, when publishing through the ELIN system, some genre rules can be violated and changed by journalists during daily publication, but other rules cannot be so easily changed. For instance, the front-page design in Figure 6-5 depicts a design where all headings in the context streams always have a uniform layout. Whereas the genre rules for formulation of texts and composition of images can be violated each time a news text is published, to change the uniform layout of the headlines element, the publishing system page template must be re-designed.

That genre conventions become enforced by publishing systems does not necessarily mean that users and producers have no influence over genre
change. In this thesis, two design methods were mainly used to achieve the results presented above, namely the genre analysis method and future workshops methods. Other methods were also used in the ELIN project, but the analysis is here limited to these two methods. For instance, an interesting, but not well understood method for cooperative composition was also used. As mentioned, the genre perspective thus guided analysis to focus on specific aspects.

Through the genre analysis method, genre rules from previous designs were identified, which preserves the influence from users and producers on these designs. The use of the method resulted in genre specific advice on the design of online newspapers (chapter 4 and 5), integration of interactive multimedia (chapter 6) and parallel publishing systems and organization (chapter 8). Placed in the scheme of Atwood et al. (2002), this method relates to the design rationale cluster, being near the top of the design theorist’s cluster. It also relates to the notion of design exemplars (Löwgren, 2001), and to canons of design (Baljon, 2002), conceptualizing previous designs as related to genres.

Through the cooperative scenario building method, users and producers got a more direct influence on the design, and that influence was examined in chapters 7, 9 and 10. The analysis of cooperative scenario building in chapter 9 also pointed at specific facilitator knowledge needed to utilize the implicit reliance on genre by participants. Moreover, the analysis of design styles in chapter 10 contributed to that end, by providing advice on facilitator competence needed to overcome differences between design through talk, and design through cards. Placed in the scheme of Atwood et al. (2002), this method relates to the top of the user-centred design cluster, being near the participatory design cluster.

**Genre analysis**

The genre analysis methods used in chapters 4, 5, and 6 can be seen as illustrative examples of a genre approach to the analysis of interactive artifacts, although the application of the methods was not studied in depth.

The heuristics for front-page design presented in chapter 4 are on the one hand more concrete in their recommendations than general heuristics for interactive artifacts (Nielsen, 1992; Nielsen & Molich, 1990), but are on the other hand specifically created for online newspaper front-page design, focusing on a specific set of common content elements. To take the users expectations of the genre into account has previously been seen as impor-
tant (Agre, 1998; Crowston & Williams, 1997). The analysis also illustrates one way of achieving heuristics, which incorporate genre rules. For instance, in recommendation 7 (Table 4-2), news value is mediated by positioning and markers. The reliance on cultural norms, such as genre conventions, makes genre analysis a cultural-historical approach.

The analysis of the context stream element (Chapter 5), and hypervideo links (Chapter 6) constitute a way of achieving design rationale, which can be re-used, as proposed by Carroll (2002). These analyses show that options and use-quality criteria of the context stream QOC partly depend on genre conventions, which are part of the layer of meaning in the news genre. The genre approach thus highlights that use-quality can be mediated between user and producer by means of genre conventions, and that these qualities are important to consider in design.

The video hyperlink QOC (Chapter 6) was more genre neutral. However, through three cooperative composition workshops, it was highlighted what qualities would be most central in the news genre. Since no current genre conventions existed, the genre could not act as a layer of meaning, to indicate the presence of video hyperlinks. Also, media conventions of the Web, to underline links, only apply to text, whereas many video objects were not necessarily accompanied with text in the video.

Regarding the dimensions for describing and modeling interactive systems genres (Table 2-1), the style of design, related to other pages from the same time period, such as discussed by Schmid-Isler (2000), was not analyzed in this thesis. However, this thesis describes the style of the online newspapers in the studies, regarding interactive and medial form, as structures of hypertext streams. Also, the design recommendations presented in chapter 4 are related to the current zeitgeist, regarding what elements are on the pages. For instance, the importance of news updates, and knowing the latest news, may shift depending on trends in society. The categories as such are not new, but have previously been used in media studies, and in interaction design. The analysis categories in Table 2-1 were related to other design perspectives in chapter 2, as a genre perspective on interaction design, based on the generic interaction design perspective framework by Hult et al. (2005). Thus, genre perspectives, such as the genre perspective on online news which concludes this chapter, can be compared with other perspectives, such as the tool, media, architecture and HCI perspectives described by Hult et al. (2005).
Future workshops: lessons learned

Useful results were achieved through all future workshops, in all workshop phases, despite the relatively inexperienced facilitators, and despite that the stakeholders acting as co-designers only received a very short briefing on how to participate. Each workshop phase was manageable enough, to achieve useful results. In particular, the cooperative scenario building phase, which was the most complex method, also gave useful results. However, an analysis of the method, both through its results, and the manner in which it was conducted, revealed issues, which could be useful for future practitioners to consider.

In particular, the analysis of the future workshop method indicates a set of critical facilitator skills, a modified scenario structure, and the addition of a scenario card. The findings regarding facilitator skill regards cooperative scenario building when participants design style is design through talk. Thus, this thesis reveals some aspects of what it means for a design method to be no better than its practitioner, as stated by Löwgren & Stolterman (1999), by arguing that some specific skills are important to possess. Following that view on design, these findings are not to be seen as normative, in the sense that they should be followed, but as lessons learned, which other practitioners can consider when encountering situations similar to the ELIN design case.

Facilitation

The facilitator in the workshops focused his intervention on the scenario structure, to ensure that participants were working on a concrete level, and to ensure that the scenario structure was reasonably detailed. That was done since previous research had noted that not all groups will fill in all kinds of cards, unless prompted to do so (Müller, 2001). The analysis of design moves in workshops 1, 3 and 9 suggest that facilitator competence involves a set of additional issues, when design is mainly conducted through talk, as it was in the journalist workshops (chapter 10). These issues affected the design work, in addition to group dynamics (Heron, 1989).

Often, in workshops 1-8, there were several suggestions for design moves, but the consequences of the different alternatives were not followed up. Thus, in contrast to working with prototypes, such as in the UTOPIA project (Ehn, 1988), scenario building is detached from the direct experience of work situations, and consequences of design moves are therefore not experienced within practice by the participants. Therefore, the facilitator
should follow up design moves, either by suggesting possible consequences of design moves, or by asking the participants to explore the consequences.

Also, in contrast to the professional designers in workshop 9, other participants acting as co-designers jumped from detail to detail in the scenario structure, relating less to the emergent whole of the scenario during design. When participants did relate to the whole, they sometimes made interesting discoveries. Therefore, the facilitator should, when necessary point out, or ask the participants to reflect upon relations between part and whole.

Since design was conducted mainly through talk, enforcing participants to fill out the card structure was both disruptive and ineffective in situations when the pace of the discussion was high. Therefore a graphic facilitator could document design alternatives during these situations, but allow the participants to fill in cards representing their decisions or main alternatives.

Based on an analysis of interaction between participants during design in workshops 1, 3, and 4, it was also evident that an important facilitator skill is to moderate the degree of critical analysis of design ideas in the workshop (chapter 9). On one hand, if the participants are too critical, then too many ideas may be blocked, without the group searching for solutions to the block. On the other hand, if the group is too uncritical, then ideas that would not pass critical analysis may get through – and if indeed the ideas would be rejected later, then the workshop opportunity to provide solutions to the block has been missed. To create a balance, the facilitator could give the role of critical analyst to one of the participants and the role of over-positive to another. To maintain the balance, the facilitator could change the roles throughout the workshop, if necessary, for instance by using the six thinking hats method (de Bono, 1993). Alternatively, if participants seem too critical already before the scenario building phase begins, it would be advisable to have a shorter critique phase, and extend the vision phase with a brainstorming phase aiming at finding good uses of technology.

In chapter 9, it was shown how participants blocked design moves, by pointing out risks with the solutions. These may or may not, looking closer at them, be important and unavoidable. By having a card that had the criteria’s of benefit and risk written on it, more of the blocked ideas could be captured, rather than just kept out of the workshop outcomes, and the rationale for blocking the ideas would also be documented. It might well be the case that blocks could be resolved in subsequent design work. Alternatively, the same ideas could re-emerge in other design activities, in which
case both benefits and risks could be reconsidered. Such a card would also make it possible to have a more open discussion about risks and the benefits of solutions that otherwise might be rejected by critical participants in the group. Related to the work of Muller (2001), this card would belong to the “description” category. This card isn’t identical to the “breakdown,” or “things that worry us” card, proposed for the CARD method, which describes a negative event, or a worrisome thought (Muller, 2001). Those cards do not incorporate any benefits that may be coupled to the solution, which was involved in the breakdown, or related to the worry. At some points, it will be sufficient to do note breakdowns and worries, whereas in other situations, it will be advantageous to also discuss benefits, coupled to the risk, through some aspect of a design.

**Group composition**

Since there were issues of conflict between workshops, mixing stakeholders may have lead to a fruitful discussion of those issues. However, since participants contributed with somewhat different points of view, such a workshop would have been unmanageably large. It was also clear that some participants felt more comfortable discussing their precise area of expertise, than discussing other areas. Also, considering that negative group dynamic might silence participants, it is recommended to represent each important stakeholder group by a group, rather than by one individual, if the represented group consists of mixed competences. In this case, all participants could not be gathered at the same time, preventing a more dynamic formation and reformation of groups during an extended workshop. That might be possible in other cases.

**Workshop structure**

Based on the initial observations, an improved phase model was proposed (chapter 7). It is presented here, also incorporating the more detailed findings regarding the cooperative scenario building phase, found in the analyses of design moves (chapter 9 and 10). This model is not to be seen as a prescription of how to conduct a future workshop with cooperative scenario building. Rather, it should be seen as a point of departure, for adapting the method, or some part of the method, to the design task at hand and skills of participants and facilitators.

1. Workshop instruction: Workshop purpose and theme, presentation of the facilitators, the participants, and the workshop phases.
2. Introduction of technologies and their functionalities.

3. Warm up discussion of the technologies in relation to the workshop theme. Focus on uses of technology.

4. Critique 1. Listing of problems regarding the technologies

5. Cumulative trigger. Presentation of examples of technology use. Videos, enactment, verbal presentations, and storyboards could be used. Incorporate good examples of previous workshops, making the repertoire more varied and bigger for each workshop.

6. Critique 2. Listing of more problems, if any has been seen in the light of the examples of use. If comparisons between workshops are important, themes (e.g. economy) proposed in previous workshops may be taken up by the facilitators. Rank the most important problems. Scenario building could also be used in the critique phase, do discover problems regarding some specific scenario.

7. Vision. Turn the problems to positive images. Encourage discussion of alternative visions. This also makes the problem less ambiguous. If participants seem too critical, it would be advisable to have a shorter second critique phase, and extend the vision phase with a brainstorming phase aiming at finding good uses of technology.

8. Scenario building: Topic selection. Use, for instance, suitable problems found in the previous phases, recent events, or brainstorm (and rank) alternatives based on the workshop theme.

9. Scenario building. Facilitation can focus on detail and concreteness, by requesting cards to be filled in. It can also focus on consequences of design alternatives, for instance by sketching design alternatives, which are merely talked about, thereby enabling backtalk with the material. Also attention could be directed to the emergent whole. Moreover, facilitation can deal with consequences which are in fact seen, balancing the level of risks and benefits found, through interventions such as the six hats method (de Bono, 1993). To deal with conflicts, a card labeled
“benefit and risk”, could be used, documenting both sides of an argument.

10. Implementation. Evaluate the scenarios using the workshop theme as the point of departure, or reuse of themes from upcoming or previous workshops, to make comparisons between groups.

Consensus and conflict

The future workshop method does address some kinds of conflicts. In particular, the workshop outcomes highlight conflicts between stakeholder groups. Also, there can be conflicts within the groups, and here proposals have been made to make such conflicts more visible in the outcomes. Furthermore, there can be conflicts between the stakeholders invited as co-designers, and the facilitators guiding the work. For instance, there could be conflicts regarding what problems to focus on during scenario building, since the facilitators in this project, as most likely is the case also in other projects, were mainly interested in problems that could be solved through technology. Also, there can be a conflict regarding the degree of critical analysis, since a too critical or too uncritical group is not ideal for scenario building.

Task analysis

It has been reported that traditional task analysis methods have problems with modelling situations where goals are changing or are less work oriented (Dyk & Renaud, 2004; Karat et al., 2004). In genre analysis, goals are not ill-defined. Genres are on the contrary supposed to satisfy sets of purposes for different stakeholders, and the connection between goal and the form and content of a prototypical genre instance might be rather clear, such as in the analysis in chapter 4. Secondly, although the page designs do not restrict what goals one can have in use to those found in an analysis, they certainly make some goals more convenient to reach. It would seem plausible that a user would be a happy browser, as long as their current goal matches one in the set of purposes satisfied with the design. They may change their goal in mid-surf, perhaps when the eye passes a page element that evokes their interest, and still be happy surfers as long as the new goal is also satisfied. Shifting between tasks on the front-page of an online newspaper is often trivial; the eye just has to move to another page element, although in some
cases scrolling the page might be needed. In other cases, one might have to reach for a navigation element, which would also be within reach on a typical online newspaper.

As shown in chapter 5, the context stream is closely connected to the task. A context stream might enable the user to continue pursuing their present purpose without having to go back to the front-page, or navigate to a section page. The hard issue would be to guess what goal most users will have. Will they want more of the front-page items, or are they going after more of the news in the same section, for instance. In chapter 5, thus, there is an implicit task analysis, where the task might be to read front-page news, through the hypertext overview stream on the front-page, through article pages, and the hypertext context stream on the article pages. The same holds for the analysis in chapter 6, which includes both the context stream, and browsing hypermedia news items. Therefore, task analysis is what adds the dynamic character of browsing, to an otherwise fragmented analysis of static pages.

Accordingly, what seems missing from task analysis is a method of modelling of shifting goals and tasks in mid-surf, answering the question of what other ends are ready at hand, and what effort is needed to maintain or change ones goal. Also, genre analysis also allows the analysis to include aspects such as supporting qualities, which are intended to emerge in use, of a composition or design element. Since genre analysis is a rather informal method, it should be easy to extend. However, the advantage of many task analysis methods is that they are formal, adding preciseness of expression, allowing for instance automatic generation of help files. Such extensions to genre analysis might be possible with a further merger with task analysis.

The following might for instance be part of the goals of different online news stakeholders:

- **Attract**: Present entries to new content/services, so that a reader/user can be persuaded to change his/her goal to pursue the purpose of the alternative content/service. Alternatively, if the user goal is just satisfied, to offer a new attractive goal to pursue. For instance, perhaps the user has read all the headlines… then perhaps he/she would be interested in reading the lunch menu of a nearby restaurant?
- **Seduce**: The experience of reaching the goal is pleasant (or whatever the user prefers), so that the user will like to continue pursuing it. In
Chapter 11. General discussion and conclusions

this case, interruptions and inconveniences are to be avoided. This goal would be important for any site harbouring advertisements.

- Fuzzy goals: The user can easily be convinced to change the goal of the activity, or might change it suddenly. Then it is vital to provide bridges to the new goals, through an easy “task”.
- Leisure goals: The goal isn’t directed towards a work domain, but to the domain of personal interests, or experiences.
- Clear goals: The user will pursue the goal, even through considerable difficulties. There is no need to bridge to alternative goals, but rather to support the user in reaching the current goal. For instance, the reader might be searching for a specific news item.

Further research is needed to design a modelling method combining genre and task analysis.

**Using the methods together in design**

For the ELIN project, the news genre can be related to Cross (2000) levels of specification, namely alternatives, types, and features. To specify at the level of *alternatives* means, for instance, to have the freedom to propose any news related solution. That could mean to broaden organizational activities into, for instance broadcast television. The level of *types* regards the product range, for instance different kinds of online newspapers. *Features* regard, for instance the kind of headlines element that should be used. Using this characterization, the initial future workshops in the ELIN project had a freedom of exploring design ideas roughly between the levels of alternatives and types. Design was restricted by technologies, to the new technical features of the ELIN project (Table 3-1). That gave the freedom both to propose alternatives broadening news company activities, and to propose new products that would merely add to the product range. It was, moreover, possible to propose specific features to use in new products, or to enhance old ones. Thus, proposing to utilize the technology of web news video could mean to introduce news video production for a web news video channel, broadening the scope of activities, at the highest level. For a company already producing for instance television news, it would instead mean to broaden the product range, at the second level. It could also, at the third level, mean merely to add news video as a feature in current online newspaper products. In any case, from a genre perspective, proposing news products demanding new production of contents, is rather different from proposing a news product which can re-use, or fully rely on contents which are already produced (chapter 7 and 8). The analysis of the future workshops mainly regarded
prioritizing, and selecting functionality to include in the toolkit, based on how central and desirable they seemed in the scenarios.

The genre analyses provided design alternatives and guidelines, and therefore regarded the level of features (chapter 4 and 5). Design alternatives for interactive video were also achieved, and then discussed in the cooperative composition workshops (chapter 6). Also, in the interfaces for handheld devices, which have not been reported here, the same page elements as in the PC interface were used. They were composed differently, and had different interactive form, but had the same purposes.

Thus, what the methods all had in common was the reliance on existing news genres, as the starting point of design. The future workshops revealed broadly what the consequences of design solutions, at the audience interface level, would be at the organizational level. To merely add video as a feature for some news items, would not affect the organization greatly, since it would merely be a feature of existing products. Adding video as a coherent news presentation style for an entire stream, would, at one of the news organizations, mean new production, and a new area of work, whereas at the other media organization, it would more easily broaden their news product portfolio, since they could rely on existing news video production.

However, it is not possible to give a reliable scientific account of the design process of the ELIN project as a whole here, since the point of view of other project participants has not fully been taken into account. In particular, for this, interviews and observation of work of the entire ELIN development team would have been needed.

**A genre perspective on online news design**

As shown in chapter two, in Figure 2-1, genre perspectives have a particular role in design. A genre perspective includes aspects of a genre, which the designer relates to in design. As seen in Figure 6-6, designers can focus on different aspects during design. This was also the case during the workshops, where stakeholder groups acted as co-designers. Ethical aspects were, for instance considered by the media professionals, regarding the contents of pictures at accident sites, and by the political group, regarding their contribution to information overload in society. In this thesis, shifting quality perspectives and shifting design perspectives, in the cooperative scenario building workshops, was not analyzed in detail. Facilitation of perspective shifting could be an important facilitator skill in cooperative design workshops.
In this thesis, the aspects of the design, which have been explicitly modelled, are users, producers, form, content, purpose, and use-quality (Table 2-1). Also, the designer role has been considered, in particular regarding cooperative scenario building.

When considering design action, it can be useful to relate the results achieved in this thesis to the genre framework in chapter 2. By doing so, the differences and similarities between specific interaction design perspectives, in this case, the online newspaper genre, and specific genre perspectives, can be made explicit. That is similar to how the differences and similarities between design perspectives in general, and genre perspectives, were made explicit in chapter 2. By relating to the genre perspective framework, the online news genre is summarized below, based on the research reported in this thesis.

The users: The audiences and producers were characterized as having news related purposes satisfied by the current online news genre, such as presenting or using the latest news, or the most important current news (chapter 4). Also, they were seen as having purposes not currently satisfied by the online news genre, such as receiving and delivering personalized news, both produced by media houses and by audience groups (chapter 7). Other services, such as a snow removal map, were also seen as useful by specific groups, but further research would be needed to evaluate how these specific services would be judged by other groups.

The artifacts: In this thesis, mainly online web sites available through web browsers or through video players were considered. The current news presentation in news sites was characterized as structures of hypertext streams, mainly remediating the medial form of printed papers. Front-page design was related to genre rules, which are presented in Table 4-2, motivating design recommendations. The context hypertext stream used in current hypertext papers can be conceptualized as having a design rationale, shown in Figure 5-5 and Figure 5-6. Regarding future online newspapers, hypervideo link presentation can be characterized in terms of the design rationale in Table 6-1. Producers have expressed preferences for alternative 8 (permanent icon outside video area), and to some extent for alternative 4 (circle indicates link in video area). The front-page design is also seen as dependent on the publishing system, which may enforce some genre rules, making them static. The system, in turn depends on tools for creating contents.
11.3. Design

**Context:** In the design of the hypermedia news front-page, current hypertext paper designs were seen as an important context (chapters 4, 6, and 6). For the evaluation of current hypertext papers, the printed editions were seen as an important historical context. This historical context was conceptualized as genre rules (chapter 4), and design options related to genre rules (chapter 5). The implementation efforts in the ELIN project, and digital materials were seen as an important part of the context, being part of the constructive constraints of the prototype designed in Chapter 6. Thus, design was seen as an important context. Also, production resources were seen as important in the future workshops.

**Activities:** The recurrent societal motive addressed here is to provide a society with news. In particular, use of news has been attended to, through the design and analysis of online new presentation, in Chapters 4, 5 and 6. It has also been analyzed in the scenario building workshops, where different use scenarios were designed, reported in chapter 7. Moreover, production activities were considered in the workshops, and the analysis paid particular attention to convergence and parallel publishing, in chapter 8. The research on the current genre thus regards genre rules, whereas the research on future activities to some extent regards possible violations of current genre rules.

**Central relations:** In this thesis, one important relation is between multimedia formats for audience use (Chapter 6), and the production capabilities of producing organizations (Chapter 8). Another central relation is between different interactive forms, and different medial forms, for coherent news presentation, as discussed in chapter 6. Moreover, there are important historical relations between news genres, regarding both production and consumption, analyzed as genre rules. Here, important relations between designer, user, and producer, were analyzed regarding design work, analyzed in chapters 7, 9 and 10.

**Communication:** The online news genre and future possibilities analyzed here mainly rely on computer mediated mass communication. The direction is mainly from media house to users, although the opposite is also possible through, for instance opinion polls. The interaction is also seen as occurring on the level of genre rules.

**Perspective-implied use-qualities:** The qualities considered here regard, firstly, the front-page, and concern some of the aspects in the design purpose / audience use category in chapter 4. Secondly, qualities for the context stream
were modeled in chapter 6, and qualities for hypervideo were modeled in chapter 7. Important qualities were for instance news value, overview, informativeness, and orientation.

Described by: The genre has been described in terms of user, producer, form (interactive form, medial form, style, positioning), content (e.g. section news, headline news, most recent news), purpose (motives in society, actors’ purposes), and use-quality criteria.

Future research

The characterization of the online newspaper genre, in terms of a design perspective, reveals areas, which are open for future research. Since this research followed the design of the ELIN system, it covered several aspects of interaction design of online news, but for each aspect, there are several aspects left to explore. The role of different design perspectives, or quality perspectives, other than the genre perspective, in the cooperative scenario building workshops were not analyzed in detail, but that is a promising question for future research.

The user view was rather fragmented, regarding the audience. The current research (chapter 7) indicates that audience groups may have rather different needs. Although the different needs are part of the societal motive of the news genre, the specific need, differ between groups. Further research could focus on specific groups, such as senior citizens, or focus on mapping a broad range of audience groups. Regarding the producers, the view was more held together. A limitation was that no participant in the workshops in Sweden had television production competence. Further research could focus on hypervideo for television companies, rather than for online newspapers.

Regarding artifacts, the exploration of hypervideo was focused on the question of how to present hypervideo links. Many issues remain, most prominently how to create coherent news presentation elements in multimedia, since creating all messages in all modalities seem unpractical. The activities of audiences as publishers, explored in scenarios, were not followed up with prototypes and system functionality in the ELIN project. That could be addressed by further research. Central historical relations remaining to be explored regarding for instance an in-depth exploration of video news forms in television and on the web.
Research on communication in this thesis mainly regards the form of messages, but also the contents of messages may be affected by a changed form. The research here points at several possibilities, such as in-depth materials, or fewer news stories, but in several modalities. Research could reveal the effect of new news story medial and interactive forms on the contents.

The research on design methods also indicated some areas for future research. Regarding involvement of users, in the design of online news services, many issues remain, for instance, verifying and complementing the findings regarding cooperative scenario building in further design workshops. Further research is, for instance needed to discover how hard the cooperative scenario building method is to learn, and how fruitful it is regarding other genres. Also, further research could reveal critical facilitator skills for other design styles than design through talk.

The method of cooperative composition, which was used in the design workshops, seems promising. It supports two ways of designing, both by drawing, and describing by referring to design alternatives. It was successfully used in both the Swedish and Spanish settings, but further studies are needed before any general conclusions can be made.

Furthermore, the use of genre as a framework for creating descriptions for design reuse, as design rationale or as design recommendations should be studied further. Firstly, they can be related to other descriptive frameworks, such as design patterns. Secondly, research can reveal critical skills needed to create and use such descriptions. Also, research could address how to integrate genre analysis with task analysis.

11.4. Conclusions

The thesis is that an explicit genre perspective can fruitfully be used to guide an interaction design process. The research can be summarized as three contributions to the understanding of the thesis.

1. Characteristics of a genre perspective on interaction design.

2. Characteristics of the online newspaper genre, regarding design recommendations of hypertext front-pages, context stream element, and presentation of video hyperlinks in a seamless hypermedia news site. Also, implications for publishing systems were achieved.

3. Design method implications.
Chapter 11. General discussion and conclusions

The characteristics of a genre perspective on interaction design were described in chapter 2, through the synthesis of concepts from interaction design, and aspects from genre theory. This thesis also introduces the difference between interactive and medial form for genre analysis (chapter 5 and 6), and furthermore includes the analysis category of use-qualities from interaction design. The perspective guided the selection of design methods by the idea that current forms and practices should be remediated, rather than completely reinvented.

This thesis resulted in a characterization of the online newspaper genre, in terms of the perspective framework. In chapter 5, the interactive form of online newspaper news presentation was characterized as structures of hypertext streams, based on a content analysis of three online newspapers over 14 days. Genre specific design recommendations for the online newspaper genre were also achieved. The eight design recommendations for online newspaper front-page design, presented in chapter 4, were based on a content analysis of newspaper front-pages, together with the user and producer views on the pages, involving 153 user representatives and 13 producer representatives, from 9 online newspapers. The design rationale of the context stream element presented in chapter 5, was based on a content analysis of 77 Swedish online newspapers. Another contribution is the interactive integrated multimedia front-page design for online news, based on the findings from chapters 4 and 5, and a design rationale analysis of hypervideo link presentation for interactive video, which was evaluated through 3 design workshops (chapter 6). Based on the analysis of scenarios from two workshops with media professionals (1 and 3), it is argued that a dynamic process of divergence and convergence of roles will be advantageous within a media organization, exploiting different kinds of convergence potential, depending on the kind of event covered (chapter 8).

This thesis has provided recommendations on how to integrate genre explicitly in design, and how to draw upon the genre knowledge possessed by participants in cooperative design activities. The approach used to achieve genre specific design recommendations, through using the genre model to specify genre rules (chapter 4), could be used both to update the recommendations when the genre changes, but also potentially to create design recommendations for other genres. It was also shown that the genre model can be used to conduct a genre analysis as a complement to prototyping and as means to achieve a design rationale (chapter 5). Further research is needed to discover how difficult this method is to learn, and how fruitful it is regarding other genres. The main design method contribution was the
11.4. Conclusions

analysis of cooperative scenario building, which both resulted in an im-
proved workshop procedure, and recommendations regarding facilitator
skills (chapters 7, 9, and 10). Since the analysis of design styles was limited
to comparing design through talk with design through cards, further re-
search could reveal critical facilitator skills for other design styles (chapter
10). Important facilitator competences for drawing on the genre knowledge
of the participants during design have been presented based on the analysis
of design moves of workshops 1, 3 and 5. Also, conclusions regarding the
composition of stakeholder groups taking part in the workshops as co-
designers were made in chapter 7.

Future research regarding online news could, for instance, explore the cur-
rently emerging technologies for integrated hypervideo, where many design
aspects remain to study. Moreover, the methods for genre analysis explored
here could be examined further, and the advice given regarding cooperative
scenario building could be evaluated in future studies.


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## Appendix A

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Table 4-1. Navigation element


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<tr>
<td></td>
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<td>Bb 3</td>
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<tr>
<td></td>
<td></td>
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<td>Normal</td>
<td>Bt-C 4</td>
</tr>
<tr>
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<tr>
<td>Nr 3</td>
<td>Normal</td>
<td>Bt-Bb 2</td>
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</tr>
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<tr>
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<td>Normal</td>
<td>Bt 2-3</td>
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<tr>
<td></td>
<td>Most-read stream</td>
<td>Bb 1</td>
</tr>
<tr>
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<td>Categorized stream</td>
<td>B-C 1,B-C 2</td>
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<td></td>
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<td>Bb-C 3</td>
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<td></td>
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<td>Most-read stream</td>
<td>Bb-C 2</td>
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<td>Stream</td>
<td>C 1,C 1-2</td>
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<td>Nr 7</td>
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Table 4-2. News steam element
### Table 4-3. Headline element

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### Table 4-4. Search/archives element

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<td>Archive field</td>
<td>Bt 1, Bt 4</td>
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<td>Search/Archive field</td>
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<td>Nr 5</td>
<td>Search/Archive field</td>
<td>Bb 1, Bb 1</td>
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<tr>
<td>Nr 6</td>
<td>Search/Archive field</td>
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<td>Nr 7</td>
<td>Search/Archive field</td>
<td>Bb 3, Bt 4</td>
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### Table 4-5. Advertisement element

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