

Genre Structured Design Patterns - the case of online newspapers

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Abstract: *In this paper, we use genre theory as a structuring principal for interaction design patterns. We add to our previous research, extending a framework for identifying genre characteristics, by proposing a) a model for genre based pattern language hierarchy, and b) a genre based presentation format for design patterns. We argue that this genre based structuring principal is more complete than several of the previously suggested in pattern research. The framework could serve as a starting point in the development of an interaction design pattern language.*

Keywords: *Interaction design patterns, genre, structuring principle*

1. Introduction

Lately, there has been great interest in design patterns as an alternative to design guidelines and standards for communicating design (Borchers, 2003; Erickson, 2000; Pemberton & Griffiths, 2003; Tidwell, 2003; van Welie & van der Veer, 2003). This interest has grown from the view that principles in guidelines are too universal, and standards can be too detailed to provide guidance in deciding a solution in a specific context (Mahemoff & Johnston, 1998b).

Design patterns suggest solutions for recurrent design problems, show earlier appropriate solutions, and are more concrete than guidelines. Each pattern is expressed in a format, patterns are described at different levels, and a hierarchy of patterns, form a pattern language (Mahemoff & Johnston, 1998a).

Good design and design knowledge can be accumulated in design patterns, and thereby be a link between theory and practice in a way that is easy to understand and communicate (Tidwell, 2003). Design communication is important amongst designers as well as between designers and users. Patterns hold the potential of providing a lingua franca, a good way of capturing and transferring knowledge, the possibility of reuse and support for the whole design process (Erickson, 2000).

The overall goal of design pattern research is the development of a pattern language, e.g. “an entire body of design knowledge” (van Welie & van der Veer, 2003, p. 527). They argue that only when a community agrees upon a collection of patterns, it is possible to speak of a pattern language. The organizing and structuring principles are considered to be the prerequisite for obtaining this overall goal (Fincher, 2002; van Welie & van der Veer, 2003). Fincher and Utting (2002) argue that “structuring principles are surprisingly difficult to identify, and successful ones are intimately connected to domain” (p. 200). This is in line with the observation of van Welie and van der Veer (2003), that the organization and structure of patterns is becoming a practical problem when writing interaction design patterns. Pemberton (2003) also argues that there is no obvious structure for patterns in interaction design.

Pattern organization and structure should support applicability in a broader context as well as support the selection of individual patterns (van Welie & van der Veer, 2003). Design patterns that refer to, for example, web sites in general should also hold for a subgenre, such as an e-commerce web site. In addition, a subgenre should also have specific patterns (Erickson, 1997).

The idea of using genre theory for structuring hierarchies of design pattern language has earlier been proposed by Pemberton (2000). She discusses that “a shared understanding of the features of a software genre can facilitate communication in the design process” (p. 2). She draws on Swales’ (1990) use of

genre theory in the field of linguistics. However, design issues have lately drawn attention in research of digital genres (Shepherd & Watters, 1998; Toms & Campbell, 1999; Crowston & Williams, 2000).

In this paper, we use genre theory for structuring design patterns. We propose a model for genre structured pattern languages and a genre based presentation format. By this we add to previous research, extending a framework for identifying genre characteristics (Ihlström & Åkesson, 2004).

In section 2 and 3 the concepts of design pattern and genre are described. In section 4 the framework is presented, followed by a discussion in section 5 and section 6 concludes the paper.

2. Design Patterns

“A design pattern is a structured textual and graphical description of a proven solution to a recurring design problem.” (Borchers, 2001, p. 7)

2.1 What are design patterns?

The idea of patterns originates from architecture (Alexander *et al.*, 1977) as a common language between the different actors involved in solving design problems. The concept has been used in software design (Gamma *et al.*, 1995) and in recent years it has attracted a lot of attention in the field of interaction design (e.g. Borchers, 2001; Tidwell, 2003; van Welie & van der Veer, 2003).

In architecture, patterns express the core of implemented solutions to design problems in a social context, and the forces influencing the solution. These forces may be of social, economic, natural or physical nature (Alexander *et al.*, 1977). The patterns are intended to be of guidance to solve recurrent design problems in new creative ways (Alexander, 1979). Patterns in interaction design tell the designer when, how and why the solution can be applied and explicitly address the problem in the specific context (van Welie *et al.*, 2000). But design patterns do not supply the answers, since people need to exercise their own creativity to implement a pattern (Pemberton, 2003).

A design pattern is a way of representing and accumulating knowledge of good design (Tidwell, 2003), and design knowledge can be both tacit and explicit. The concept of patterns incorporates the idea of capturing design experience and makes it explicit. The architect Alexander called the idea of capturing the tacit qualities “the quest for the quality without a name” (Alexander *et al.*, 1977, p. 129). Design patterns can therefore serve as a medium for transferring design knowledge.

There is no exact method to identify and write patterns. Alexander (1979) describes the process as starting with observation to get a good feel, identify the

subject of the pattern, identify the problem and, finally look for positive “best” examples of solutions. When good design solutions are difficult to find, examples of bad design solutions, cf. anti-patterns, can show how *not* to solve the problem, to inspire new thinking (van Welie *et al.*, 2000). As new good solutions to recurrent design problems are implemented or new design problems occur, new design patterns are written. In addition, existing patterns are revised and changed as new design solutions occur (Erickson, 2000).

A set of related patterns form a pattern language, organized in a hierarchy with links, connecting related patterns. Each pattern is described with features organized in the same sequence and form, presented in a pattern format (Alexander *et al.*, 1977).

2.2 Design patterns in interaction design

Design patterns in interaction design, has attracted attention at workshops at CHI, the annual international conference for human-computer interaction, since 1997. The discussions have been focused on the benefits of applying design patterns to interaction design as well as with different ways of using patterns, how to structure pattern languages etc.

There seems to be a consensus about the argumentation for design patterns as a way of overcoming the problems with guidelines concerning selection, validity and applicability (van Welie & van der Veer, 2003). As patterns incorporate the contextual forces, experience and tacit design knowledge, they have a dimension not included in guidelines. They are supportive to the processes of solving the design problem rather than expressing the solution. Other arguments for design pattern are, for example, the need for a lingua franca (Erickson, 2000), and the need to facilitate user participation (Borchers, 2001; Finlay *et al.*, 2003). These arguments build on patterns as being consistent, easy to read and easy to understand.

One approach to design patterns in interaction design is the usability approach (Mahemoff & Johnston, 1998a,b; van Welie *et al.*, 2000; Borchers, 2001). This approach incorporates the usability goals in Human Computer Interaction (HCI) with the design pattern concept from a user point of view. Another approach is from a designer perspective (Tidwell, 2003; van Duyne, *et al.*, 2003). These perspectives complement each other since design problems can be seen from both perspectives, some are related to usability problems and some are related to the communicative purpose of the design.

2.3 Design pattern features

In interaction design there are several design pattern collections using different structures for features and format. The most detailed design pattern is Common Ground by Tidwell [1], but other collections have been suggested by e.g. Mahemoff and Johnston, 1998b; van Welie *et al.*, 2000; and van Duyne *et al.*,

2003. Frequently occurring features among these pattern collections are: *problem*, *solution*, *context*, *forces* and *examples*, but they all vary in sequence and additional features. Tidwell, as well as van Welie, has chosen to reduce the number of features and express them in an everyday language as they have continued to develop their pattern collections on their web sites [1; 2].

2.4 Problem with structure

Since design patterns are new to the field of interaction design, there still exist unsolved problems. One problem discussed is the problem of structure. This structure problem can be divided in four interrelated dimensions; a) principle for hierarchy, b) features and presentation format, c) coverage, and finally, d) invariance.

First, the problem of finding a structuring principle for hierarchy of design pattern languages in interaction design is noted by e.g. Fincher (2002) and van Welie and van der Veer (2003). In architecture there is a natural hierarchy based on the scale of the pattern, from the large to the small. This is not the case in interaction design (Borchers, 2001). Second, as previously mentioned, there are different approaches to handle features and presentation formats. There is a lack of consensus about how patterns should be structured and how they should be written down (van Welie *et al.*, 2000). Third, the coverage dimension of the structure problem concerns that individual sublanguages do not draw on others, which leads to patches of patterns covering some areas of the whole design domain, but also to some redundant and some blank areas (Pemberton, 2000). Finally, the invariance dimension concerns the fact that invariance of the 'good' solution, supported by the structuring principle, should not be related to the physical properties, but to the particular quality of the relationship between the physical and psycho-social, i.e. the context (Fincher, 2002).

There are suggested structures for design pattern languages as well as for how to structure and write down patterns, i.e. presentation formats. A taxonomy for design patterns in interaction design was suggested at the CHI'97 workshop, including three dimensions for classification; level of abstraction, function and physical dimension (Borchers, 2001). A principle for scale based on usability is proposed by Mahemoff and Johnston (1998a). A structure based on application domain is described by Borchers (2001). Fincher (2002) means that a structuring principle should be an invariant principle, and suggested cognitive dimensions as a possible structuring principle. Finally, van Welie and van der Veer (2003) discuss a top-down approach to organize patterns for interaction design hierarchically, based on scale of problem.

We argue that none of these suggested structures clearly address all dimensions of the structure problem. As the organizing principles are considered to be the prerequisite for obtaining the overall goal for patterns research (e.g. Fincher, 2002; van Welie & van der Veer, 2003), it is essential to address this problem

from all of these aspects. We propose the use of genre theory for addressing all dimensions of the problem.

3. Genre Theory

“The concept of genre offers the possibility of recognizing similarities even in the midst of great diversity.” (Shepherd & Watters, 1998, p. 97)

3.1 What is genre?

The notion of genre originates from rhetorical theory but was brought to Information Systems (IS) in the early nineties by Yates and Orlikowski (1992). They used genre theory as a way of identifying types of organizational communication, e.g. the memo genre. Orlikowski and Yates (1994, p. 543) define genre as: “a distinctive type of communicative action, characterized by socially recognized communicative purpose and common aspects of form.”

Genres exist within communities ranging from the small work group to the organization and finally, to the level of national culture. Genres also exist on different levels of abstraction, cf. hierarchies, with lower levels labeled as subgenres (Yates & Orlikowski, 1992).

A specific genre consists of a set of genre rules, from which the genre is enacted and recognized. These rules form and are formed by the genre as it evolves over time. Not all but enough distinctive rules must be followed for a particular instance of a genre to be recognizable, i.e. it has the character of ‘taken for granted facts’. These genre rules may operate tacitly or may be standardized on different levels (Yates & Orlikowski, 1992).

Yates and Orlikowski (1992) state that genres are produced, reproduced and changed over time. Genre change can be described as when “...a new conjunction of form and purpose becomes recognized by its community as different from the old” (Orlikowski and Yates, 1994, p. 545). The potential of genre modification is inherent in every act of communication. This is described as a recursive cycle with every act being maintaining, elaborating or modifying. Modifying acts may be triggered by material or perceptual changes (i.e. in social, economic or technical contexts (Yates & Orlikowski, 1992). When changes to established genres become widely shared among members of a community, genre variants or even new genres may emerge. Such changes may be triggered by the introduction of a new communication medium (Yates & Orlikowski, 1992; Yates, *et al.*, 1997).

3.2 Digital genre

The combination of computing devices and the Internet has broadened the genre research agenda beyond organizational communication to include digital

genres (Shepherd & Watters, 1998; Crowston & Williams, 2000; Eriksen & Ihlström, 2000; Ihlström & Åkesson, 2004). The Digital Document Track of the annual Hawaii International Conference on System Sciences (HICSS) has become a frequently platform for presenting results [3]. Erickson (1997, p. 15) has suggested the following definition of digital genre:

“A genre is a patterning of communication created by a combination of the individual (cognitive), social, and technical forces implicit in a recurring communicative situation. A genre structures communication by creating shared expectations about the form and content of the interaction, thus easing the burden of production and interpretation.”

Digital genres are described as a classification system for kinds and types of digital products by Schmid-Isler (2000). During the last years several aspects of digital genres have been studied. Roberts (1998), for example, suggested the home page as a distinct genre, while the idea of genre as an interface metaphor was elaborated by Toms and Campbell (1999) who mean that a document provides various cues that enable users to quickly grasp its form, purpose and functionality. Crowston and Williams (2000) found that many web pages do not communicate the intent to the user and mean that emphasizing the genre, could be a useful way of overcoming this problem.

3.3. Genre elements

Shepherd and Watters (1999) argue that while non-digital genres can be characterized by the genre elements content and form, digital genres are characterized by content, form and functionality as the medium has functional capabilities. In relation to design of digital genres, Ihlström and Åkesson (2004) have suggested the inclusion of the positioning element.

According to Shepherd and Watters (1999), functionality cannot be discussed without reference to the goal or purpose of the genre. The purpose must be viewed from the perspective of the author of the site and thus, the functionality incorporated into the site is driven by this purpose. This view is shared by Schmid-Isler (2000) who defines a digital genre by its purpose or function.

Genre awareness is a concept of how users and designers reduce the complexity of the web (Eriksen & Ihlström, 2000). Rather than learning and recognizing each and every site, users categorize sites as belonging to distinctive genres. For designers, genre awareness helps target audiences. When establishing a new site with a purpose similar to existing sites, the genre characteristics may be copied and refined to reflect resemblance to an existing genre, i.e. designers may want to draw on already accepted genres that correspond to their design purpose (Crowston & Williams, 2000).

4. Genre Structured Design Patterns

Our previous research has resulted in a framework for identifying genre characteristics by analyzing the front pages of the 85 Swedish online newspapers (Ihlström & Åkesson, 2004). In this paper we extend the previous framework by adding a model for genre based pattern language hierarchy and a genre based presentation format for design patterns.

4.1 The framework for identifying genre characteristics

This framework was built on genre theory using the elements content, form and functionality. To this, we added positioning, to enable communication of design solutions and layout of the screen. The positioning was handled according to a column and section grid.

To identify these genre elements in the analysis we asked the following questions: What content is presented on the screen?; In which form(s) is the content presented?; What functionality does the content require?; and Where is the content positioned on the screen? We regard the relation between the elements as follows: The screen layout consists of content items - each content item is presented in one or several forms, is sometimes requiring functionality and is positioned on the screen.

In the analysis of the 85 Swedish online newspapers, the following set of genre characteristics (including general web characteristics) was identified. These characteristics for the online newspaper genre are presented in table 1.

GENRE ELEMENTS	GENRE CHARACTERISTICS
Content	Navigation, nameplate, search item, advertisement, classifieds, video item, sound item, web TV, web radio, news article, news stream, feature material, news archive, hard composite, soft composite, entertainment, traditional services, added services, issue, contact, poll, forum for chat, letter to the editor, membership, debate
Form	TOC, menu, logotype, photograph, image, section head, body text, caption, headline, date, bar, tab, drop-down menu, link, icon, text box, radio button, banner, timestamp, button, e-mail link, link list
Functionality	Interaction, real time interaction, personalization, searching, showing video, playing sound, downloading, e-mailing, broadcasting, login functionality

Table 1. Genre characteristics of online newspapers

To exemplify the relations between content, form and functionality we give the following examples; The content *search item* can be presented in different forms such as a *textbox*, a *button* or an *icon* and requires the functionality *searching* enabled by the medium; The content *video item* can be presented in different forms such as an *icon*, an *image* or a *link* and requires the functionality *showing video* enabled by the media.

4.2 Extending the framework

To extend the framework, we start by discussing the applicability of genre to design patterns. Thereafter, we propose a model for a genre structured design pattern language and a genre based presentation format.

4.2.1 Applying genre to design patterns

When applying genre to design patterns we started with identifying similarities between the concepts, and *not* on identifying differences. From this comparison, implications for a structuring principle are drawn, by discussing the applicability of genre concepts in interaction design patterns.

Genres exist in communities (or social settings), and design patterns are focused on the relation between social context and the artifact. The social dimensions that influence recognition and response as well as conception of quality, could be made explicit when genre is integrated with design patterns. In the case of news, there exist socially and culturally inherited expectations on news reading, incorporated in the newspaper layout and refined during centuries of use, which is transferred online. These user expectations are to some extent, transferred to the online newspaper genre.

The fact that both concepts build on hierarchical structures, holds the prospect of genre being suitable as a principle for a pattern language hierarchy. Design patterns can be written for a genre, pointing to a subgenre, with its design patterns and so forth, together constituting a pattern language. For example, a general pattern for the web, as a genre, can be written on one level and more specific patterns can be written for a subgenre, such as online newspapers. Using the genre concept also includes the possibility of connecting pattern languages already developed.

Genres consist of elements and design patterns consist of features, both being conceptual structures. The genre elements may therefore be useful in structuring design pattern formats. Further, genre elements can be used to give hierarchy to the design patterns within a genre. In the case of online newspapers, for example, patterns can be written for the genre specific characteristics, listed in table 1, with links to related patterns on lower and higher levels.

The evolution of a genre is a process driven by recurrent communicative acts in a recursive cycle and interaction design can be regarded as a communicative

practice facing recurrent design problems to solve. In the case of online newspapers, the design reflects the communicative act. Online newspapers are published daily, and thereby design decisions have to be made recurrently. As design patterns are solutions to recurrent design problems these concepts complement each other.

Genre rules are formed by, and form the communicative act, and thereby also change the genre and how it is responded to. In design patterns forces formed by the context, have an influence on how design solutions are perceived. Awareness of these rules or forces can be supportive in designing for a particular genre. The genre rules of newspapers, for instance, are enacted by both news producers and consumers in the daily production and consumption of news. Considering the long history of newspapers, it is not surprising that there exist a set of genre rules that enable people to distinguish a newspaper from, for example, a magazine.

Genre rules can be tacit or standardized. Design knowledge is described as having a tacit dimension, and design patterns are aimed at capturing parts of this dimension. Genre awareness, e.g. of the online newspaper genre, is a form of tacit knowledge which could be made explicit in design patterns.

Genres change over time and design patterns are intended to evolve constantly as new solutions and new problems arise. There is a potential that an integration of the notion of genre in the design patterns concept will hold over time. As the online newspaper genre evolves, design patterns could follow this evolution in constant development of the design patterns.

A summary of similarities in concepts is presented in table 2.

GENRE CONCEPT	DESIGN PATTERN CONCEPT
Exist in communities	Context focus
Hierarchical structure	Hierarchical structure
Genre elements	Pattern features
Recurrent (communicative) act	Recurrent design problems
Genre rules	Forces
Rules tacit or standardized	Design knowledge tacit and/or explicit
Change over time	Constant revision and change

Table 2. Comparison of concepts

4.2.2 Genre structured design pattern language

To meet the problem with structure by applying genre theory, we propose a conceptual model for genre structured design pattern languages (figure 1). In figure 1, *scope* represents the range of digital genres covered by a design pattern

language, whereas *scale* represents the genre structured hierarchy for a pattern language.

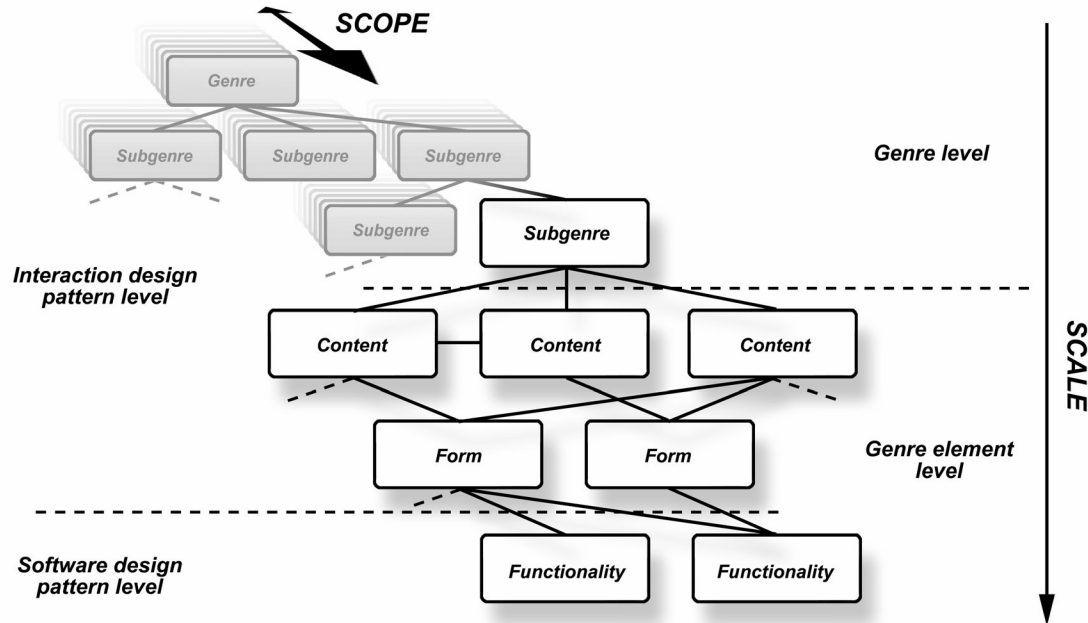


Figure 1. Conceptual model

To exemplify the genre level in the conceptual model, we first refer van Duyne *et al.*, (2003), who suggest that the web (the medium) could be considered as a genre, with subgenres such as e-commerce sites, news mosaics and educational forums etc. One could argue that e.g. news (the media) is a genre, with subgenres like TV news, radio news and online news. Online news, in turn, could have subgenres like web magazines and online newspapers.

On the genre element level, online newspapers, for example, are characterized by genre specific elements of content, form and functionality expressed in design pattern formats. In figure 1, the genre element of functionality would then be the lowest level of design patterns and could also be regarded as software design patterns.

4.2.3 Genre based presentation format

The structure of the pattern format is inspired by the features from Alexander's format as well as from formats in existing interaction design patterns. The features best matching the genre elements were chosen. In table 3, the design pattern format with integrated genre elements is presented.

Pattern name	The name of the genre, content or form that the design problem is related to	
Design problem	Description of the design problem (and conflicting forces) concerning the decision of how to present content, give form, position (and possibly functionality)	
Solution	Description of <i>how</i> the solution has been implemented	
Example(s)	Picture of solution, example 1	Picture of solution, example 2 (or more examples)
Use why?	Explanation of the communicative purpose and why the solution works from a user perspective, with an explanation of how the solutions meet the design problem (intended to be of guidance in judging applicability in a specific design situation)	
Related patterns	Names of related patterns at higher, lower or at the same level, that are connected to this pattern	

Table 3. Presentation format with integrated genre elements

The elements and features are handled according to the following principles: The “*Pattern name*” is the equal to the genre or genre item. The “*Design problem*” is described as the problem (forces and rules) of presenting the item, for example the choice of forms, function and position for a content item. “*Solution*” describes how the solution has been implemented. “*Examples*” are chosen amongst the design solutions with the best look and feel. The answer to the question “*Use why?*” is a description of the communicative purpose of the solution and why it works from a user perspective. These descriptions are intended to be of guidance in judging the applicability in the specific design situation (for a specific genre).

We exemplify the integrated format on online newspaper genre specific items; the news stream (table 4) and the timestamp (table 5). A news stream is a content that presents the headlines of the latest news with timestamps. A timestamp is a form that presents the time of day.

Pattern name	NEWS STREAM	
Design problem	Presenting the latest news in a limited space, still giving a sense of the content, presenting publishing time. The choice of position depends on the publisher priority of providing news valuation or actuality. Consider the choice of highlighting the time, category or navigation when choosing forms.	
Solution	In example one the latest news article in each category is presented with a headline and a timestamp. The category is highlighted using red color and the timestamp is more discrete with a grey tone. The second example highlights navigation by providing a navigation string. It also emphasizes the links by presenting blue underlined text. The last example, in turn, highlights the publishing time by presenting a prominent timestamp before the link to the article.	
Example(s)	<p>TT-nyheter.</p> <p>Inrikes Knutbysmisstänkta åtalas om en månad [15:51]</p> <p>Utrikes Svenskar gripna i polisrazzia [14:53]</p> <p>Ekonomi Räntan på rekordlåga 2,0 procent [16:01]</p> <p>Sport NHL-spelare landslagsdebuterar [14:19]</p> <p>Nöje Dunkers kan få europeiskt museipris [16:07]</p>	<p>Senaste nytt</p> <p>► Brittisk minister tvingas gå (14:08)</p> <p>► Mordoffer ännu inte identifierade (13:01)</p> <p>► Sverige förstärker i Kosovo (12:57)</p> <p>► Nyhetsbevakaren ► Alla nyheter på en sida</p> <p>► Sverige ► världen ► sport ► ekonomi ► nöje</p> <hr/> <p>Senaste nytt</p> <p>14:47 Eldstrid på mentalsjukhus i Betlehem</p> <p>14:43 Bank räddar Roma</p> <p>14:37 "För snäv språkmetod i Stockholms skolor"</p> <p>14:26 Brittiska migrationsministern avgår</p> <p>14:15 Dortmund dumpar Amoroso</p>
Use why?	Meeting the expectations from a user interested only in the updates, i.e. the latest news, it is important to position the news stream in a top position on the front page and emphasize the timestamp. To users most interested in a particular category of news, e.g. sports, a classification of the news stream is supportive. Allowing for active navigation an additional navigation string helps users be in control.	
Related patterns	FRONT PAGE (higher level), HARD COMPOSITE (same level), HEADLINE (lower level), CAPTION (lower level) and TIMESTAMP (lower level)	

Table 4. News stream pattern

Pattern name	TIME STAMP
Design problem	<p>Presenting time is, in some cases, related to the target audience, since time is presented in different ways in different language areas. In Anglo-Saxon countries time is representing 12 hours dividing day and nighttime with the abbreviations am or pm. In Europe, for example, time is representing 24 hours.</p> <p>Publishing time is important information for news, but stand alone it is no central information. The position has to be close to the related item. The form is digits with choice of color and framing.</p>
Solution	<p>In example 1, the timestamp is presented in a prominent position highlighted with red color. The next example shows an Anglo-Saxon timestamp within a given time zone. The timestamp is positioned after the related article headline. In the last example a categorization is presented in conjunction to the timestamp.</p>
Example(s)	<p>17:52 Svält hotar i Gazaremsan ></p> <p>Abba Musical 'Mamma Mia' Generating Cash 2:37 p.m. ET</p> <p>Mitt drømmelag er tilbake [16.32 :sport]</p>
Use why?	<p>The timestamp is a way of communicating actuality and publishing time. The user can thereby get a quick overview of what is new since the last visit to the site. Many users of online newspapers have expectations of constant updates during the day and the timestamp fills an important roll in meeting this expectation. If updates are a priority of the online newspaper, example 1 is preferable. If the content of an article is more important, the next two examples are more functional.</p>
Related patterns	<p>NEWS STREAM (higher level) ARTICLE (higher level), DATE (same level)</p>

Table 5. Timestamp pattern

5. Discussion

The idea of integrating the notion of genre with the design pattern concept is a step towards overcoming the structure problem. A genre structured design pattern language meets all four dimensions of the structure problem. First, it gives a structuring principle for hierarchy that classifies design domains, gives hierarchy within a genre, and gives structure to individual patterns. This principle also includes the social and cultural value system connected to the context of use. Second, when using genre elements to structure design pattern formats, the patterns can be compared within a genre as well as between different genres. Third, this principle for structuring makes it possible to add new genres to a pattern language as well as include already written collections. Using this structure, gives the potential of covering blank areas and avoiding redundancy. Finally, the invariant quality of a design solution is in this structure expressed as a quality related to use in a specific genre, and not as the physical design solution.

We have proposed a framework for identifying and capturing genre specific design to facilitate communication between the actors involved in the design process. This framework consists of one part for identifying genre characteristics and another part for writing design patterns. We argue that this is a more complete structure than several of the previously suggested in pattern research. This is because it builds on a vertical as well as a horizontal thinking, including scope as well as scale. A pattern language built on this framework holds the potential of capturing practice on a level of abstraction that makes it applicable in a broad context as well as being supportive in the selection of individual patterns. The structuring principle and presentational format allows comparing through different genres as well as different subgenres in a coherent manner. For example, the web genre would have a link to the subgenre online news, in turn the news genre, independent of medium, would have a link to online news.

Our view is that the usability approach is a prerequisite for interaction design patterns, and not a question of structure. We also agree on that patterns must be expressed in such a way that they are consistent, easy to read and easy to understand, in order to improve the communication amongst designers and users in interaction design. Using genre can help creating a common language for capturing, communicating and transferring design knowledge within the design community by providing a common structure.

6. Conclusions and Further Research

The organizing and structuring principles are considered to be the prerequisite for obtaining the overall goal of pattern research. We have shown that integrating the notion of genre can be a feasible way of overcoming the structure

problem of design patterns. Our framework can serve as a starting point for obtaining this goal. However, more empirical research in real life design settings is needed to develop the framework further.

In our future research we will develop and use interaction design patterns when designing e-newspapers on mobile displays with e-ink paper technology. This work will include collaboration with newspaper designers, readers and interaction designers.

In conclusion, to obtain the overall goal, there has to be an agreement on the structure of an interaction pattern language, the language has to be developed in collaboration and it has to be put in use in the whole design domain. This is a challenge for pattern research.

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