



Memorial Design Pattern Catalogue – Design Issues for Digital Remembrance

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Abstract. The digitalization and commercialization of the Internet have led to a digital culture of remembrance in recent years. This change is difficult; negative examples are subject of ongoing discussions. These discussions are elucidating that the collective remembrance culture, especially within the digital domain, is a sensitive field. Currently there is no guidance available for the development of innovative concepts of digital memory products. “Best practices” collections, which might provide guidance to the development of novel products and services linked commemorative culture, are so far missing. In this paper we will describe the current status of the ongoing project Memorial Design Pattern. The presentation of the theoretical approaches to the culture of collective remembrance, the design patterns concept as well as best-practice researches initiate this work. We present the concept of a catalogue and knowledge base for best practices in the field of digital memorial design pattern. We also present our approach for the identification of patterns and a set of selected examples of design patterns in digital-media based commemorative culture. Finally, the paper provides a discussion on future work for building up a memorial design pattern repository.

Keywords: Digital heritage · Commemorative culture · Design pattern
Memorial website · Virtual reality · Interactive maps · Interactive timelines

1 Introduction

The culture of remembrance is subject to a constant transformation process depending on current events as well as social, political and technical changes [1]. For this, each generation remembers differently [2]. The current culture of remembrance 2.0 is characterized by the technical advances and the commercialization of the Internet [3]. The number and diversity of these offers has risen sharply in recent years [4]. These developments require clear didactic concepts and guidance in the development of new multimedia applications and services within the culture of remembrance. Best practices as a guide to design decisions counteract unforeseen and unwanted effects as well as pure “histotainment” offerings.

Against this background, our research targets to extract and gather practice knowledge in terms of best practices, as well as to induce general principles. The objective is to provide identified smart practices in the field of digital memorial and

culture in an online repository, to be furthered and managed in virtual collaborations with international experts in the field. We foresee that the memorial design pattern catalogue will provide a comprehensive reference of best practices for products and media-related artifacts in the field of memorial and culture. It will serve as a knowledge base providing a standard vocabulary to support design debates between experts.

The remainder of this paper is structured as follows: First we will discuss related work, specifically on remembrance in commemorative culture in a media context, then on “best practice” research in general as well as in the field of commemorative culture. Further, we will present our design pattern approach, followed by a presentation and brief discussion of selected patterns from commemorative culture. A short summary and a sketch of further work completes our contribution.

2 Related Work

Our approach mainly relates to the field of commemorative culture studies, but it also applies concepts and methods from the field of Learning from Practice, particularly the theory of design pattern.

2.1 Digital Remembrance in Commemorative Culture Studies

Remembrance represents one of the most important subjects in defining cultural identity [5]. Collective memory, in this field, is typified as a repository of knowledge and information in the memories of social groups or nations. Public memory is often linked to historical places and memorials such as the Holocaust memorial in Berlin (Germany) or Yad Vashem in Jerusalem (Israel). This refers directly to Nora’s “lieux de memoire” (places of memory), where collective memory crystallizes [6].

Inside this discourse, remembering the Holocaust represents a well-studied research field from different disciplines: historical science, literature, photography, film and art [7]. Analyzing remembrance culture in digital media was initially neglected. In the last few years, however, first investigations have emerged in this area, in particular on digital media related topics, on commemorative recollection in the social media and with regards to individual websites [8, 9]. In this context, best practices of using new media in commemorative context can be added in the field of Holocaust education [10–12]. Memorial websites, forms of remembrance in social media and applications in a memorial context are described for teaching aspects. They include empirical studies to measure the impact of teaching about the Holocaust with digital media in school context.

In summary, there are rarely described best practices in a non-pedagogical context [8, 13]. An interdisciplinary view on the object of the investigation is missing so far. One main challenge concentrates on the exponential increasing number of web offerings, applications and digital learning objects including new technologies. Hence, a compendium of single studies about the topic was published. What is still missing is an overview with respect to national and international best practices, extracting the ideas and structures behind single examples.

2.2 Learning from Practice

In this paper we refer to research related to work targeted to learn from practice and proven concepts from the field. Best practices research is an approach to extract and gather practice knowledge, as well as to induce principles. It can be defined as “the selective observation of a set of exemplars across different contexts in order to derive more generalizable principles and theories” [14].

Design Patterns [15] represent a recent and very successful approach to the documentation of good practices. Originally developed in the field of architecture to cover elements of environmental design at various levels of scale, design patterns describe reusable forms of solutions to design problems based on a semi-formal approach. Based on a defined pattern structure, corresponding solutions are analyzed with respect to a number of aspects and perspectives. The pattern structure thereby provides both a scaffold for the analysis and a support for the comparison of patterns.

Today, identification of good practice as a source for patterns is usually linked with the metaphor of mining [16]. This involves capturing solutions that are both good and significant [17], while not stating obvious solutions to trivial problems or covering every possible design decision [16]. For pattern mining, two principal approaches can be distinguished: inductive and deductive [18]. Inductive approaches can be considered the most manifest based on the definition of a design pattern, if possible also related to the agreement of a number of experts in this analysis. However, in practice design patterns have been extracted applying deductive thinking methods in a large number of cases. For instance, based on a transfer of attributes and functions of an artifact to another based on a metaphoric perspective (from metaphor to pattern), an expert’s analysis of a specific concept and its implications, or based on an expert’s analysis of a problem (from experience to pattern) [18].

The Design Patterns approach was successfully adapted to different domains, such as software development, providing descriptions of good practices in context of software design [19], human-computer interaction [20], web programming [21] and education [22]. Design Patterns nowadays are widely accepted to identify, describe, manage and analyze design problems in a structured way.

3 Approach and Concept

The aim of this project is to extract intelligent solutions for hypermedial offers in a commemorative and a remembrance context. In this context the design pattern approach allows best-practice solutions to be documented. These patterns are intended to serve as future orientation for the development and design of media-related artifacts, which is particularly relevant with regard to a heterogeneous memory community [8].

The applied pattern mining process is based on a deductive approach. According to this, our work is more clearly based on theory in related fields to commemorative culture. For this, we reviewed products of collective memory and work related to general and well-known “best practices” in our research fields, not necessarily related to information technology and media. Pierre Nora’s theory of collective places of memory represents a good example in this context [6]. Based on the extracted good

practices in general, we analyzed how those practices have been transferred to applications in the web and other types of multimedia applications. Thereby an inductive element is introduced to avoid collecting patterns not just by academic invention, but also allowing for a more focused analysis of existing solutions. Further, we also utilized existing expertise in the fields on HCI patterns, media education and visualization, targeting to relate corresponding best practices in commemorative culture to existing design patterns in those fields [23–25].

In our ongoing project we target to develop a catalogue and repository for best contextualized practices for multimedia applications and products in the field of memorial and culture. While there exist various variations of design pattern descriptions, there are on the other hand similarities in the approaches and there exist commonalities in the structural elements. We draw from typical approaches in this field, and our structure provides for the following elements (Table 1):

Table 1. Description of the design pattern structure

Pattern element	Description
A pattern name:	A descriptive name identifying the pattern, also indicating its context and purpose
A problem description:	A description of the concrete problem or challenge requesting for the solution the pattern provides; this is usually written in a brief and user-oriented way
Context:	A thorough description of the specific context where the problem is arising and where the provided solution has proven to be smart and effective; In our case, all patterns are related to the general context of commemorative culture; In addition, we foresee a discussion on the regional (regional what?), since rites in commemorative culture often depict a distribution in local contexts only
Solution:	A description of the general solution strategy and its elements applied to solve the problem based on this pattern
Rationale:	A reasoning why the pattern works, reinforcing the solution; This section provides a separation of rationale information from the proposed solution to make the solution easier to scan and consume
Discussion:	A brief discussion of the pattern, also allowing for a critical analysis
References:	A list of references to related work and approaches, also providing for a relation to theory in the field
Examples:	A brief description of examples depicting this pattern, to illustrate and to substantiate the pattern
Related patterns:	A list of related design patterns, including from other domains, (e.g., human-computer interaction, web-technology, education), as well as from non-digital backgrounds, with a short description and reasoning of the specific relation

Our pattern structure has been extended by necessary elements for managing patterns in a repository, including names and affiliations of authors, the date of the latest version of the pattern, a pattern version history, and a section for general comments on

the pattern. These elements have been omitted in the presentation and discussion of pattern examples in the following sections for clarity and space reasons.

4 Memorial Design Patterns

In the following chapter, we present and discuss extracted design patterns from the field of commemorative culture. Three patterns were selected to illustrate our use of the pattern approach in the field. For better ease of reading we will only represent the whole pattern structure of one pattern in detail and add some shorter versions of other examples.

4.1 Pattern “Virtual Tour Based Memory”

Memorial places are fundamental to remembering. The accentuation of places in the culture of remembrance refers to the French historian Pierre Nora [6]. These anchor points of remembrance are often transient. Historical buildings of the Nazi era, such as concentration camps, were converted, expired or are often no longer recognizable as such. Virtual reconstructions of the places of memory enable online-based excursions. Simple virtual tours are possible through 360° shots. The use of interactive 3D technologies, on the other hand, represents an extensive format of the online excursion [26]. The potential is seen in form of an exploration of partly no longer existent or no longer accessible buildings.

The following table shows a short pattern description (Table 2):

Table 2. Memorial design pattern “virtual tour based memory”.

Pattern name:	Virtual tour based memory
Problem description:	Historic places are an integral part of the memory and commemoration culture. These places testify to a high degree of historicity that needs to be constructed by users. The visitor needs more background information to understand the historical meaning of the place
Context:	Memorials are an important part of the culture of remembrance because of their inherent historicity. The construction and preservation of memorial sites is one of the most important goals of the culture of remembrance. Visiting a monument is part of a commemoration rite. These memorials offer areas to remember the victims and explain the historical events that have taken place
Solution:	The medial or virtual excursion of a memorial site can be realized by different media. Common solutions are 360-degree images of the memorial rooms. The navigation of the virtual tour is controlled by the user. The solution is to integrate information modules into the excursion. In an international context, 3D representations of the places of remembrance are presented

(continued)

Table 2. (continued)

Pattern name:	Virtual tour based memory
Rationale:	Virtual excursions can be considered an optimal complement to a real memorial visit. In addition, ensure the preservation of the Holocaust memorial sites. The advantages are seen especially in the preparation and follow-up of the real memorial visit
Discussion:	Virtual tours cannot replace the real visit of memorial sites. The capture of the memorial site in its complexity and its contextualization is only partially possible. This is justified by the lack of a thorough work on the content of the history of the place. However, it is also possible to explore non-existent sites of memory in the virtual space. Also questionable are the effects of technology use on the memory process. An increased immersion and emotionality is suspected. The navigation of the web applications could be problematic, a good usability of interacting seems to be essential. The effects of virtual excursions on the memory process, in particular on the immersion and emotionality of the user, should also be investigated
References:	Bernsen, D., and Kerber, U. (Hrsg.). (2017). Praxishandbuch Historisches Lernen und Medienbildung im digitalen Zeitalter. Opladen Berlin Toronto: Verlag Barbara Budrich. Gellert (2009) https://www.kz-gedenkstaette-dachau.de/station01.html https://museenkoeln.de/ns-dokumentationszentrum/medien/rundgang.aspx?rnr=0_0_1&lang=de http://www.gedenkstaette-neustadt.de https://web.annefrank.org/de/Subsites/Home/Betritt-das-3D-Haus/#/house/20/
Related pattern:	Interactive floor plans and maps

In the following, two examples of virtual tour based memory databases are presented.

NS Documentation Center Cologne

The NS Documentation Center Cologne offers a virtual tour of the building [6]. The operation of the virtual excursion can be done via mouse interaction. Orientation is provided by green arrows, which serve as guideposts. Further information on the individual stations can be called up in text or audio form. Audio icons provide hints where the user can get additional information.

The Secret Annex Online

Based on Anne Frank's diaries, an online three-dimensional tour was created. The user can navigate her/himself through this "lifelike and colorful visualization" [27] of rooms. When entering the room, the user receives information about the room via the auditory channel and the symbols indicate further sources of information. The virtual 3D reconstruction also includes historical relics that are not present in the real place of remembrance in Amsterdam. Inaccessible real rooms, such as the private office of Otto Frank, can be viewed in the virtual tour.

4.2 Further Memorial Design Patterns

In the following, two more extracted memorial design patterns are briefly described.

Memorial Site Based Memories

This pattern thematizes the memory places of the collective memory [28]. The interactive digital map allows an individual a self-guided exploration of the places of memory. This pattern is a well-suited approach, especially in terms of orientation and integration of extensive content into a small space. A good example is the website “Hotel Silber”, with the subtitle “The Virtual History Place” [29]. To make the virtual memorial place accessible, the “memorial site based memories” pattern is used to provide orientation and information to the virtual visitor of the place.

The following paragraph presents the pattern timeline based memories:

Timeline Based Memories

Collecting historical knowledge plays an important role in the memorial context. For a better understanding of historical events a chronological order and contextualization is used and these practices are presented within a timeline. The second Memorial Design Pattern, Timeline Based Memories, includes the classification of historical events in a dynamic and interactive timeline. This pattern provides a solution for individual access to historical events made available through interaction with the system. For this, the timeline supports the comprehension of the impact of single events inside a greater historical coherence. All pattern examples share graphical arrangements along a horizontal line. This line puts all mentioned events into one chronological relationship. Hyperlinks and navigation bars help to navigate and explore the presented digital heritage. Furthermore, presenting content in multimedia context supports learning effects. A good example of this is the timeline of the German historical museum [30].

5 Summary and Future Work

The presented memorial design patterns were extracted on the basis of theoretical research in the fields of memory culture and design patterns, using the method of pattern mining. Patterns give novices a synopsis through the representation of problems, relations and applications in the context of remembrance. Thus, the patterns support the discussion with people who are not among the specialists of the domain. Successful solutions can serve as a template and support for future projects [31].

There are some open research fields, for example memorial design pattern with a connection to web 2.0. technologies. Furthermore, all developed patterns are going to be validated by qualitative interviews with memorial experts. A web-based platform is going to be built up to distribute and discuss these extracted patterns.

The use of reusable patterns may make the development of websites more effective and efficient in the context of memory. In order to secure a long-term quality improvement of the various web offerings the research project should generate comprehensive sample catalogues.

References

1. Assmann, J.: *Ma'at: Gerechtigkeit und Unsterblichkeit im alten Ägypten* (2. Aufl.). Beck, München (1995)
2. Erll, A.: Kollektives Gedächtnis und Erinnerungskulturen. Eine Einführung **2**, 21 (2005)
3. Gellert, M.: *Erinnerungskultur 2.0: kommemorative Kommunikation in digitalen Medien; [Basis für den vorliegenden Band bildet die im November 2006 veranstaltete Tagung ... an der Justus-Liebig-Universität Gießen]*. (E. Meyer & C. Leggewie, Hrsg.). Campus-Verl, Frankfurt am Main (2009)
4. Meyer, E.: *Erinnerungskultur 2.0: kommemorative Kommunikation in digitalen Medien; [Basis für den vorliegenden Band bildet die im November 2006 veranstaltete Tagung ... an der Justus-Liebig-Universität Gießen]*. (E. Meyer & C. Leggewie, Hrsg.). Campus-Verl, Frankfurt am Main (2009)
5. Assmann, J., Czaplicka, J.: Collective memory and cultural identity. *New Ger. Crit.* **65**, 125–133 (1995)
6. Nora, P.: Between memory and history *Les lieux de mémoire*. *Representations* **26**, 7–24 (1989)
7. von Keitz, U., Weber, T.: *Mediale Transformationen des Holocausts* (2013)
8. Hein, D.: *Erinnerungskulturen online: Angebote, Kommunikatoren und Nutzer von Websites zu Nationalsozialismus und Holocaust*. UVK Verlagsgesellschaft, Konstanz (2009)
9. Neiger, M., Meyers, O., Zandberg, E. (eds.): *On Media Memory: Collective Memory in a New Media Age*. Springer, London (2011). <https://doi.org/10.1057/9780230307070>
10. Short, G., Reed, C.A.: *Issues in Holocaust Education*. Taylor & Francis, Abingdon (2017)
11. Manfra, M.M., Stoddard, J.D.: Powerful and authentic digital media and strategies for teaching about genocide and the Holocaust. *Soc. Stud.* **99**(6), 260–264 (2008)
12. Riley, K.L., Totten, S.: Understanding matters: Holocaust curricula and the social studies classroom. *Theory Res. Soc. Educ.* **30**(4), 541–562 (2002)
13. Assmann, A.: The Holocaust—a global memory? Extensions and limits of a new memory community. In: *Memory in a Global Age*, pp. 97–117. Palgrave Macmillan, London (2010)
14. Overman, E.S., Boyd, K.J.: Best practice research and post bureaucratic reform. *J. Public Adm. Res. Theor.* **4**(1), 67–84 (1994)
15. Alexander, C.: *A Pattern Language. Towns, Buildings, Construction*. Oxford University Press, New York (1977)
16. Dearden, A., Finlay, J.: Pattern languages in HCI: a critical review. *Hum.-Comput. Interact.* **21**(1), 49–102 (2006)
17. Fincher, S., Utting, I.: Pedagogical patterns: their place in the genre. *ACM SIGCSE Bull.* **34**, 199–202 (2002)
18. Baggetun, R., Rusman, E., Poggi, C.: Design patterns for collaborative learning: from practice to theory and back. In: *Proceedings of ED-MEDIA 2004* (2004)
19. Gamma, E., Helm, R., Johnson, R., Vilissides, J.: *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley, Reading (1995)
20. Tidwell, J.: *Designing Interfaces - Patterns for Effective Interaction Design*. O'Reilly Media, Sebastopol (2011)
21. Vora, P.: *Web Application Design Patterns (Interactive Technologies)*. Morgan Kaufmann Publisher, Burlington (2009)
22. Bergin, J., et al. (Eds.): *Pedagogical Patterns: Advice for Educators*. Joseph Bergin Software Tools (2012)
23. Aigner, W., Miksch, S., Müller, W., Schumann, H., Tominski, C.: Visual methods for analyzing time-oriented data. *IEEE Trans. Vis. Comput. Graph.* **14**(1), 47–60 (2008)

24. Müller, W., Schumann, H.: Visualization for modeling and simulation: visualization methods for time-dependent data-an overview. In: Proceedings of the 35th Conference on Winter Simulation: Driving Innovation, pp. 737–745 (2003)
25. Weber, M., Alexa, M., Müller, W.: Visualizing time-series on spirals. In: Andrews, K., Roth, S.F., Wong, P.C. (Eds.), Proceedings IEEE Symposium on Information Visualization 2001 (InfoVis01), pp. 7–14. IEEE Computer Society (2001)
26. Ahlheim, K.: Erinnern als Chance – auch gegen Rechtsextremismus?: Die Vielfalt der Erinnerungsorte ist eine Chance für wirksame politische Bildung. *Erwachsenenbildung* **63** (2), 64–66 (2017). <https://doi.org/10.13109/erbi.2017.63.2.64>
27. NS Dokumentationsszentrum Köln. https://museenkoeln.de/ns-dokumentationszentrum/medien/rundgang.aspx?nrnr=0_0_1&lang=de. Accessed 10 Aug 2018
28. Alavi, B. (Hrsg.): Historisches Lernen im virtuellen Medium: dieser Band ... dokumentiert die Ergebnisse einer im März 2009 an der Pädagogischen Hochschule Heidelberg durchgeführten Tagung. Mattes, Heidelberg (2010). <https://web.annefrank.org/de/Subsites/Home/Betritt-das-3D-Haus/#/house/20/>. Accessed 10 Aug 2018
29. Oggolder, C.: Essay: Das Internet als Ort der Erinnerung. *Glob. Media J.* **6**(2), 8 (2016)
30. Geschichtsort Hotel Silber. <http://www.geschichtsort-hotel-silber.de>. Accessed 10 Aug 2018
31. Lemo – German Historical Museum. <http://www.dhm.de/lemo/>. Accessed 10 Aug 2018
32. Riehle, D.: The perfection of informality: tools, templates, and patterns. *Cutter IT J.* **16**(9), 22–26 (2003)