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**Interior Textiles and the Concept of Atmospheres – A Case Study on the Architectural Potential of Textiles in Danish Hospitals Interiors**

Jeppe Emil Mogensen, Anna Marie Fisker & Søren Bolvig Poulsen

**Introduction**

In the planning and development phase of new hospitals, built these years, a new tendency has gained ground, and concerned with the patients’ hospital experience, the design concept *healing architecture* is introduced. As a contrast to contemporary modern hospitals, often criticised of being too clinical and institutional, the vision of healing architecture is set to promote the patients healing process through stimulating and accommodating physical surroundings.

Nevertheless, while the overall architectural focus has turned towards more experience-based and patient-supportive environments, another tendency is seen in the interior scale of Danish hospitals. Here the traditional textiles are being phased out, as the cleaning process is optimised to greater efficiency. Curtains and upholsteries that earlier resembled a familiar and homely environment, are now replaced by interior window blinds and plastic coated furniture that often imbue an even more institutional and clinical atmosphere.

Although this reduced use of interior textiles may share financial benefits of an improved efficiency in cleaning and maintenance, it is concurrently conflicting with the overall visions of healing architecture. From an architectural perspective, it seems obvious that if the patients should gain from this vision, suggesting a more aesthetic approach to the experience of hospital architecture, it is essential that also the interior scale are prioritised and designed accordingly. The visionary design are nevertheless difficult to fulfil, if the materials for use are limited to plastic, vinyl and gypsum, as we see in hospitals today.

By observation of the interiors of Danish hospitals, the purchasing of furniture and textiles seems to be mainly based on rational priorities of cleaning and maintenance; and while these aspects are formulated in guidelines and standards the more experience-based and aesthetic aspects, that by their intangible nature are more difficult to articulate, appears de-emphasised in the requirement specifications for new furniture materials. This has promoted the use of plastic coated upholsteries, confining the patient comfort, and the hospital atmosphere. In the authors’ perspective, this diminished attention on interior materials is challenging the visions of healing architecture, and in order to promote the future design of hospital interiors, the awareness of the textiles’ architectural potential should ideally be enhanced.

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6. Research by the authors in regards to the PhD project: "Smart Textiles in Future Hospitals", conducting exploratory interviews and observations on Danish Hospitals.
8. Gentofte Hospital, *Design Manual – Gentofte Hospital*, (Gentofte Hospital 2014).
By readdressing focus on textiles in hospital interiors, the purpose of this paper is thus to accentuate the textiles’ architectural potential, and to explore if the theoretical framework of atmosphere, can be a way to articulate the qualities of textiles in regards to hospital interiors. This will be done by conducting an analytic case study on health care related interiors, aiming to unfold the textiles qualities, and to present these in a new research-based conceptual framework that supports future decisions on the use of textiles in hospital interiors.

Theoretical perspective – introducing the concept of atmosphere

With this paper focus is directed towards the architectural potential of textiles, and concerned with the visions of healing architecture, as to stimulate the healing process through positive and stimulating architectural experiences, we will in this paper explore how the concept of atmosphere can be used as the theoretical framework for accentuating and articulating these qualities in regards to hospital interiors. This philosophical concept is considered a relevant point of departure for discussing the immediate experience of space that is closely linked to the discussion of architectural quality.

By introducing the concept of atmosphere in architectural research, focus has been directed towards the experienced quality of space, understood as a holistic interplay between a wide range of both physical and social design aspects. It is these design aspects of form, colour, light, acoustics, materials and texture; combined with social elements of symbols, culture, and behavioural norms; that mutually affect each other and defines the space and the architectural experience – the atmosphere.

“The notion of atmosphere always concerns a spatial sense of ambiance”, and as a concept in architecture and interior design, atmospheres are an interesting subject. The presence of atmospheres is rarely doubted, and neither is its importance. Through language, spaces are skilfully defined as joyful, serious, majestic, cold, or cosy, but although the surrounding atmosphere may be easily described, the term atmospheres is used because the feeling is so peculiarly intangible.

German philosopher Gernot Böhme defines atmosphere as a new aesthetic concept that relates to the sensuous experience of space, architecture and design:

“Atmosphere is something between the subject and the object; therefore, an aesthetics of atmosphere must also mediate between the aesthetics of reception and the aesthetics of the product or of production.”

With this statement, Böhme also touches upon the presence of atmosphere, as something floating between us as sensing bodies and the physical objects of the surrounding space. Thus, experiencing an atmosphere is to perceive the surroundings with all our senses, and to be mindfully aware of the feeling in that particular space. This sensitive experience of space is naturally relating to the personal sense of it, namely the mood, but “the space also has an objective constitution and much of what belongs to it is not part of [the personal] sensitivity.”

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12 Böhme, ”Atmosphere as an Aesthetic Concept” 27.
The experience of atmospheres is according to Böhme thus considered quasi-objective, understood as a subjectively based experience, we still are able to communicate and discuss with others.\cite{Bohme2013} As in the theatre, where the stage set is designed to imbue the audience with a certain atmosphere, which would be pointless if the atmosphere were a purely subjective experience.\cite{Buhme2006}

Architectural atmospheres are fundamentally an aesthetic concept, dealing with the immediate experience of the physical environment, as it affects our perception of space in a most essential manner. While the experience of space may be personal, it still shares quasi-objective perspectives, relating to our cultural and sensuous aesthetic perception, and from these factors of atmosphere, we may advance our understanding of the architectural potential of textiles.\cite{Zumthor2006}

**Materials and the concept of atmosphere**

While Böhme’s philosophical approach provides a fundamental understanding of the concept of atmosphere and the significance in regards to architectural experiences, we will need to relate more closely to the field of architecture, in order to link the aesthetic concept to the use of architectural materials. In 2006, Swiss architect Peter Zumthor, published his well-cited contribution to the discussion on architectural atmospheres, in which he elaborates on his approach to architecture as a purpose of providing spaces of atmosphere. Where Böhme is leaving his elaboration on atmospheres in architecture on a more abstract level, Zumthor as a practitioner goes further and identify a range of architectural aspects, which he consider when working with atmospheres.\cite{Zumthor2006}

Zumthor is in his understanding of atmosphere closely related to the philosophical writings of Böhme, emphasising that “we perceive atmosphere through our emotional sensibility,”\cite{Zumthor2006}, and that this emotional response to the surrounding space is founded by an immediate, spontaneous appreciation and unconscious perception.

### Factors of atmosphere

<table>
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<th>Factors of atmosphere</th>
<th>9 chapters on constructing atmosphere</th>
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<tr>
<td>“Material Compatibility” (Sensitive compositions of different materials)</td>
<td>“The Body of Architecture” (Material presence - defining space)</td>
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<td>“Tension between interior og exterior” (Transitions and crossings defining the sense of place)</td>
<td>“Levels of intimacy” (Bodily relations to building scale)</td>
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<td>“Between Composure and seduction” (Involving movement through visual and virtual pathways)</td>
<td>“The Sound of Space” (Sounds and their associated memories)</td>
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<td>“The temperature of space” (Physical and psychological ways of tempering architecture)</td>
<td>“Surrounding objects” (Personalize spaces through objects)</td>
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<tr>
<td>“The Light on things” (Light and shadows defining the surfaces)</td>
<td></td>
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</table>

*Figure 1. Architectural factors of atmosphere. Peter Zumthor (2006).*\cite{Zumthor2006}

In Zumthor’s approach to the construction of atmospheres, he defines a very sensuous and aesthetic approach to the work with architectural atmospheres, with a strong emphasis on the materials and the deliberate composition of their inherent qualities. With references to the

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\cite{Zumthor2006} Zumthor, *Atmospheres*.

body of architecture, as the physical frame of architecture, Zumthor is explaining how the material presence of architecture, has a sensual effect on him, and how he understands the combination of different materials as one of the great secrets of architecture. The use of materials to define and communicate the architectural space, are fundamentally an essential part of the way we perceive architecture, where the natural materials share an authenticity that cannot be reached with the machine-made materials of today. The textiles may from this theoretical perspectives be considered a potential generator of atmospheres, and to unfold how this unique material contribute to the experience of space, we will relate to a case study to accentuate and articulate the architectural potential of textiles in regards to hospital interiors.

Case Studies

Acknowledging that the interior objects affect the atmosphere, we will in this case study focus on how textile-based objects are applied in health care related architecture, and analyse how they contribute to the experienced atmospheres. The outcome of this case study is aiming to accentuate specific design qualities of textiles, and to provide a new conceptual framework to better articulate the architectural qualities of textiles in regards to future hospital design.

The method of case studies is generally intended as the empirical inquiry to investigate a contemporary phenomenon within its real-life context, which makes it well operable for the study on the architectural potentials of textiles. The cases are thus related to contemporary health care architecture, where the use of textiles constitutes a significant aspect in the interior design. It is conceivable that more inspiring or aesthetically stimulating cases of textile interiors could be found outside the health care sector, but as the “architectural quality is perceived in relation to its context and its special preconditions”, the cases should relate to this particular context. The cases for this study is therefore composed by a recently build Cancer Counselling Centre in Herning, Denmark and a Hospice at Ringkøbing Fiord, Denmark. In both these cases, interior textiles have been applied as a deliberate design strategy to define a more accommodating atmosphere, with associated references to the visions of healing architecture. The analysis of both cases is based on a visit to the locations in order to experience the atmosphere personally, and to analyse more specifically how the textile based objects relates to this overall atmosphere. As the main focus has been to accentuate the qualities of the textile based objects in regards to the concept of atmosphere, this approach is considered achievable, although it may be discussed if an observing researcher is having the same experience of atmosphere as the diseased patients, for whom the design is intended.

18 Böhme, “Atmosphere as the Fundamental Concept…”.
19 Böhme, “Atmosphere as Mindful Physical Presence…”.
20 Zumthor, Atmospheres.
Case 1: Cancer Counselling Centre
Livsrum, Herning, Denmark

The newly opened Cancer Counselling Centre in Herning, Denmark is designed by architect Claus Pryds, and provides adjacent facilities for support of cancer patients and their families. By its exterior appearance, the house is reinterpreting the classical archetypical Danish house, which most people associates with “home”. When moving inside, the balance between the public and homely atmosphere is expressed in the scale of the interior spaces as well as in the material compatibility. The new extension has walls of wooden veneer and polished concrete floors, providing an untypical conceptual simplicity that is not associated directly with either a private home or the hospital. By the choice of materials, you are by this special character reminded of where you are, which in a phase of reiterated stays at doctors and the hospital, must give a certain comfort and inner peace. In contrast to this architectural body of hard surfaced veneer walls and the concrete floor, the textile-based objects are contributing with recognisable and homely associated elements, balancing the visual and sensuous perception of the interior atmosphere, while ensuring a material harmony. It is therefore the significant balance between the smooth veneer and the textiles sensuous movement that, together with the additional surrounding objects, defines the level of intimacy, and the experienced atmosphere of quietness, attention and most importantly care.

Despite giving some important acoustic advantages, the textiles are applied in different areas of the house to define some physical touch points with the users. In the lounge areas, the upholstered furniture acts as contrast to the other materials, and defines a physical space as well as a supportive zone for conversation. The associate pillows and blankets in these lounges are unconsciously recognised and identified as homely objects, providing an ideal setting social relations as an internal space-in-space for contemplation and social support. The curtains are traditionally used as shades and screens for adjusting the direct sunlight, but are also applied as hanging screens in the room. Again providing a textural contrast to the hard surfaced veneer, the vertical textile walls imitate movements through the unruly falling shape and spatial appearance. Fundamentally, the curtains are offering the users a certain degree of individual control of the environment. Whether they would like to control the lightning, shadows, views or colour perception by adjusting the different window curtains, the users have a personal influence on the architectural experience and the room atmosphere. This provides a sense of control of the physical structure, and the use of textiles is relating closely to the architectural vision of balanced homeliness, and contributes to the experience of a warm, supportive and caring atmosphere.
Anker Fjord Hospice was opened in 2006, setting new standards for the modern hospice, and for well-designed health care architecture. The vision of the hospice, as a place where dying patients may anchor in the final phase of life, has resulted in the overall form of the building, where the anchor arms contains the 12 apartments. The basic materials of the architectural body is restricted to the use of prevalent material types, where the white walls and perforated acoustic ceilings, provide a certain characteristic that may be associated with more well-known typological health care architecture. This essentially optimises the daily maintenance and facilitates the functional concerns of handling bedbound patients. Sharing immediate references to typological modern hospitals, the levels of intimacy at Anker Fjord are instead unfolded in the interior scale of the hospice. Here textiles and textile-based furniture apply to the material compatibility, as a significant part of the home-like atmospheric concepts, experienced at Anker Fjord. These accommodating arrangements, contributes to the warm and including atmosphere, turning the otherwise sombre and serious mood to a surprisingly remarkable and warm life-affirming experience. In this confident and safe environment, the attentive team of staff has managed to direct the primary focus on life rather than death, and the vision of not resembling a hospital seems succeeded.

The common facilities are situated around smaller central lounges, where textile weaver Puk Lippmann’s remarkable landscape carpet is placed. The carpet contribute in the hall area by creating a clear zone of accommodation, and by its characteristic texture and colour composition, representative elements from the surrounding nature are elegantly included in the interior of the hospice. The differentiated weaving gives the carpet a three-dimensional surface, providing a multisensory synesthetic experience, and by uses of references from nature the carpet creates a transition between the interior and exterior.

In addition to the central common areas in the atrium, the anchor arms provide smaller living areas, shared amongst the surrounding patient apartments. Here a smaller kitchen and an adjoining lounge setting create a more homely atmosphere, supported by the deliberately well-designed environment. The classic sofas designed by Finn Juhl (1912-1989), decorated with blankets and pillows as textile accessories, are divided from the kitchen by bookcases and define a distinctive zone. Although the scale of this setting is limited, the recognisable homely elements and the use of textiles as furniture, curtains and accessories, promotes a relaxed and familiar atmosphere, facilitating conversations between patients and relatives from the different apartments. Anker Fjord is with its special character, contributing to an ideal hospice setting, and despite the typological health care related associations, the carefully designed interior and the manifold use of textiles promotes an accommodating and safe atmosphere.
Findings and discussion

Having presented these two case studies, where focus has been directed on the experience based architectural potentials of interior textiles, we will in the concluding part of the paper link the findings to the future of Danish hospitals. It should be mentioned that the case studies are not intended to present all the various qualities of textiles, but rather to accentuate the potentials that could be linked with the visions of healing architecture in terms of improving the experienced architectural atmosphere. It is, nevertheless, clear that the textiles contribute with a wide range of architectural potentials in the case studies. First of all improving the acoustic experience, relating to Zumthor’s definition of ‘the sound of space’, the textiles are reducing the noise and provides a calm and relaxing environment for contemplation and conversation. The sounds are an important aspect of the experienced atmosphere, and where hospitals today often are found to be noisy and disturbing, textiles may provide spaces and recesses for private conversation - also in the hospitals. Also the ‘light on things’ are closely related to the use of interior textiles. As curtains, the textiles control the direct sunlight, the diffuse light and shadows, and filtering the daylight, the light experience is strongly influenced by the use of textiles. Today blinds in the hospital windows are casting fixed sharp-edged shadows that relates to the cold interiors, while an elegant curtain instead could imbue the interior with a soft and gentle touch of light and shadow. The curtains furthermore relates to the ‘tension between exterior and interior’, providing visual shading or framed views, that enable the patients and users to control and define their personal experience of space. In both cases textiles are used to define recesses and zones, acting as a spatial divider of the ‘body of architecture’, and as a light and elegant contrast to the hard surfaces of the more traditional material, this harmonic composition provide aesthetic and functional balance in the ‘material compatibility’.

Relating solely on cold materials in the hospital interior, the atmosphere is not likely to appear accommodating and stimulating, and here the use of textiles could balance this current institutional perception and provide recognisable and sensuous pleasing materials to the hospitalised patients and their visitors. Fundamentally, the dynamic nature of textile structures produces variability and changeability in the architectural experience, and involving virtual imitations of movement, the sculptural falling shape of hanging curtains and textile objects dissolves the static nature of architecture. While providing tactility and details, the textiles compliment the architecture with a sensuous effect that potentially embrace the patients with a human architectural touch, and this haptic feature of textiles are considered a significant aspect of unfolding the ‘levels of intimacy’ as the bodily relations to the building scale. Finally, the textiles are included in the interior as recognisable ‘surrounding objects’ that personalises space, referring to well-known homely environments, relating again to the ‘level of intimacy’ to balance the experience of large-scale health care systems.

Based on these findings, a new conceptual framework on the architectural potential of textiles in hospital interiors is proposed. By summarizing the case study findings, the specific architectural potentials of textiles are related to the factors of atmosphere, and the specific preconditions of the hospital context.

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In today’s hospitals, criticised of being institutional and clinical, the current architectural experience is most likely to improve by the use of interior textiles. In the case studies, the textiles provided both functional and aesthetic perspectives, and shared a significant role in defining the experienced atmosphere. As discussed, most of these textile qualities could also be utilised in regard to hospital architecture aiming for improved healing outcomes. Thus, if patients in future hospitals should benefit from the visionary intentions of healing architecture, the use of interior textiles could be a way of balancing the institutional experience of the traditional material compositions. Of certain interest would be spaces already aiming for relaxing and distressing atmospheres, including waiting areas, hallways and social day rooms, where the accommodating, homely atmosphere is already requested by patient reports.  


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**Conceptual Framework**  
Architectural Potential of Textiles in Hospital Interiors

<table>
<thead>
<tr>
<th>Case Study Findings</th>
<th>Factors of atmosphere (Zumthor 2006)</th>
<th>Notes on contextual preconditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Improving the acoustics</td>
<td>&quot;The Sound of Space&quot;</td>
<td>Noise of medical equipment and other patients are challenging the need for calmness and rest, and the wish for private conversations. Acoustics are therefore traditionally an aspect of healing architecture (Frandsen et al. 2009).</td>
</tr>
<tr>
<td>- Providing flexible screens and shades</td>
<td>&quot;The Light on things&quot; &quot;Tension between interior and exterior.&quot;</td>
<td>The possibility to control the physical environment is highlighted as an important aspect of healing architecture (Ulrich 1997), and controlling the daylight and diffuse light in the physical environment will affect the room atmosphere and the architectural experience.</td>
</tr>
<tr>
<td>- Defining zones and a sense of place</td>
<td>&quot;The Body of Architecture&quot;</td>
<td>By virtually and physically defining smaller zones with textile based objects, a private place may be defined in the otherwise large scale hospitals.</td>
</tr>
<tr>
<td>- Providing variability and changeability</td>
<td>&quot;The Body of Architecture&quot;</td>
<td>Hospitals are today built as small cities and variability in different areas of the hospital may support wayfinding (Frandsen et al. 2009) and define the different wards and areas with a distinctive sense of space.</td>
</tr>
<tr>
<td>- Increasing the sensuous and tactile qualities</td>
<td>&quot;Material Compatibility&quot; &quot;The temperature of space&quot;</td>
<td>Materials of hospitals today are often limited to plastic, vinyl and gipsam. As a contrast material to these hard surfaced elements, textiles may balance the sensory perception of vision and touch. Also giving a warmer impression of the environment compared to the otherwise cold materials.</td>
</tr>
<tr>
<td>- Relating to homely references</td>
<td>&quot;Surrounding objects&quot; &quot;Levels of intimacy&quot;</td>
<td>The interior objects of most hospitals are often promoting the institutional and clinical impression of the physical environment, and here textiles may relate to homely references and increase the levels of intimacy and human scale attempting to personalise the surrounding space.</td>
</tr>
</tbody>
</table>

Figure 2. Findings from the case study related to Zumthor’s architectural factors of constructing atmospheres, and the authors notes on how the hospital potential in regards to the vision of healing architecture.
Concerned with the textiles’ influence on the architectural experience, Zumthor’s and Pallasmaa’s more practice related interpretation of atmosphere, progress the concept to an operational level, on which basis the architectural potentials of textiles has been addressed. From this theoretical perspective, the sensuous and tactile dimensions of architecture are considered essential, and the concept of atmosphere is thereby deployed to articulate the aesthetic and experience-based qualities of textiles through analytical case studies. In regards to exploring the aesthetic dimensions of healing architecture, the concept of atmosphere is thus found to be an appropriate theoretical perspective, which also could be used in other fields than textiles.

As presented in the conceptual framework, it is especially the tactile and sensuous qualities of textiles that will promote the current clinical and institutional atmosphere of contemporary hospitals. However, besides these aesthetic dimensions, the textiles are also found to contribute with more functional aspects, where acoustic improvements, control of daylight and flexible decoration of interiors are related to the inherent qualities of textiles, supporting the positive experience of the hospital environment.

Even though some of the architectural potentials, accentuated through the case studies, may be claimed to be basic findings, this theoretical approach, has provided a new research-based conceptual framework to promote the articulation of the textiles’ qualities. In the decision process on future hospital design, this framework is considered relevant for decision makers and hospital managers, who are not usually accustomed to deal with design related aspects. As seen in current practice, the aesthetic aspects of interior design are often under prioritised compared to the more strictly defined rational and functional standards of hospital cleaning, etc., and here the conceptual framework could be a tool to better articulate and recognize the aesthetic and experience-based qualities of interior textiles. Further research, in the field of materials and healing architecture, would therefore be advisable to further progress the aesthetic experience of hospital interiors. With this paper we have initiated the discussion and with strong hopes for future hospital design, we advise that the current rational and functional considerations on use of interior materials will be balanced with the experience-based aspects, also relating to the aesthetic dimensions of architecture and design. The conceptual framework, suggested in this paper, could in this regard be a tool to articulate the challenge of combining these aesthetic, functional and technical demands of hospital interior design. The awareness of the materials influence on the perceived hospital atmosphere is considered essential in order to meet the visions of healing architecture, as the interior scale of the hospital is relating closely to the patients’ architectural experience. From this perspective, we at least hope that the textiles’ architectural potential will be reconsidered before deciding how to furnish our future Danish hospitals.

Acknowledgement

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