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# Designing dynamic atmospheres

## *Highlighting temporality as design concern within interaction design*

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**Abstract.** *This paper addresses the notion of atmospheres from a designerly perspective, and discusses temporal challenges facing interaction designers when acknowledging the dynamic character of it. As atmospheres are created in the relation between body, space, and time, a pragmatic approach seems useful, in order to encompass dynamic atmospheres as intertwined, constantly shifting negotiations between the rhythms of the environment and of the body. The contribution of this paper is to unravel these negotiations of diverse rhythms, in order to approach dynamic atmospheres from an operational perspective. The potentials and implications are presented through a design case, Kidkit, highlighting temporality as design parametre within interaction design.*

**Keywords:** *atmosphere, interaction design, temporality, rhythmanalysis, sound*

## Introduction

In his book “Atmosphere”, Swiss architect Zumthor (Zumthor, 2006) presents nine perspectives on how to approach atmospheres through architectural means. Being inspired by music, he endeavors to create tensions of space as known from musical masterpieces (*ibid.*: 13). Zumthor composes atmospheres through tools e.g. materiality, temperature, and lighting, and although he mentions that architecture, like music, is a temporal art he treats temporality with distance (*ibid.*). This is also the case with German Philosopher Böhme suggesting atmospheres to exist in the relation between body and space (Böhme, 2001). Turning to the field of Human-computer-interaction (HCI) there is an increasing interest in physico-spatial and social aspects of interacting with technology. The notion of atmospheres is a natural continuation of existing experiential perspectives on computing, (McCarthy & Wright, 2004; Kinch, 2011), as it encompasses the bodily felt experience of a social space. To comprehend the inclusive character of atmospheres, this paper suggests a pragmatic approach (Wright *et al.*, 2008).

The temporal dimensions of atmospheres cannot be neglected, as we carry with us a repertoire of knowledge from past experiences and embodied predispositions (McCollough, 2005). Moreover, expectations and anticipations of what we are about to experience are brought into our encounter when entering an unknown space (Dalsgaard, 2009). This paper ventures into the dynamic aspect of atmospheres, arguing that temporality should be approached as an intertwined and interconnected relation with embodied and spatial concerns. The paper outlines as follows: First, theoretical foundations of atmosphere within the field of HCI are presented, emphasizing the importance of designing computational technologies for embodied experiences. To approach the temporal aspect of atmospheres, building upon Thibaud (2011), Lefevbre’s rhythmanalysis (2004) is presented as it shapes the funda-

ment for approaching temporality as embodied rhythmic experiences. Finally, the thoughts of the paper are articulated through a design case, Kidkit, being an interactive piece of furniture designed to investigate the embodied and temporal aspects of atmospheres in hospital environments.

## Related work

Approaching atmospheric qualities within HCI, Kinch (2011), takes an architectural approach to designing computational artefacts, pointing towards the understanding of how atmospheres are mediated through a bodily experience of space. This is presented through the concept of middle ground experiences *“that condition the manner in which we experience the world in framing our embodied perception and actions by providing a sense of spatiality in our relation to the physical, social and cultural world”* (Kinch, 2011: 216). The concept denotes the missing spectrum between the foreground of attention and the background of awareness (Ishii *et al.*, 1997). This bodily “inbetween” is essential in order to approach atmospheres as a new experiential perspective within HCI. Kinch puts emphasis on the dynamic character of atmospheres, as the foreground of attention, the middle ground of experience and the background of awareness are presented in a continuum, where seamless transitions from one state to another characterize our being in the world (*ibid.*).

The temporal aspect of atmosphere is also presented by Dalsgaard *et al.* (2009) suggesting an expanded notion of the Böhmian atmosphere related to HCI practice, by supplementing the notion of atmospheres to encompass technological, social and temporal concerns. Concerning temporality they highlight that the atmosphere should be constructed as a processual and not static phenomenon *“implying that the dimension of time is essential to understanding atmosphere”* (*ibid.*). The temporal aspects are not further articulated as it is subordinated in more palpable concepts such as space and technology. A few attempts of describing how to unfold these temporal concerns in design have been proposed both in Hällnäss and Redström and their design agenda Slow Technology, focusing on presence instead of use by learning from the *“time arts”* (2001). Löwgren (2009) approaches temporality in interaction design suggesting four concepts of aesthetic experiences within interaction design, where rhythm and dramaturgical structure account for temporal structure of an interactive artifact. What our perspective in this article thus seems to demand is a tighter, elaborated connectedness of these temporal thoughts, with the bodily and the spatial awareness coined together in the notion of an atmosphere.

## Designing dynamic atmospheres

In this section we will approach how to design dynamic atmospheres in interaction design, through stressing the need to compose for middle ground experiences as a method to embody the temporal aspects, thereby making them operational as parameters in a design process. Taking the call of Hällnäss and Redström (2001), to learn from the time arts we will build upon Thibaud (2011), and Lefebvre (2004), as their perspectives on temporality, being closely connected to the sensing body and the space, seem useful as methodological operations in opening and unraveling the *resonances of* and *rhythms of the atmosphere*. Doing this we hope to take a few premature steps to close the gap between the theoretical thoughts of how to work with a dynamic atmospheres and how to address these in future design processes.

### *Resonance and rhythm*

Thibaud describes how atmospheres are closely connected to the temporal as they dynamize and gives life to environments, described through the notion of resonance between the

sensing body and its surroundings. The atmosphere sets *the tone* of a situation, and in this way is understood as not being something outside us, but in constant vibrations with the sensing body. We do not passively sense an atmosphere, as the body resonates according to it in a constantly shifting consonant and dissonant relationship. Using the concept of resonance and other acoustical metaphors as e.g. tone, keynote or tuned room, (Böhme *gestimmter Raum*, in 2001: 47), “reveals the structural identity between phenomena of lived synchronism and the world of sounds” (Thibaud, 2011: 1). Both sound and atmosphere as phenomenon in this perspective emphasize the inbetween and the temporal interconnections of the body and the space, and are therefore relevant in developing a relational thought to help us tune into middle ground experiences (Kinch, 2011) as a way to understand how to establish dynamic atmospheres.

Elaborating on this structural identity between thinking of sound and music as phenomenon and the embodied atmosphere through middle ground experiences, (Kinch, 2011), Henri Lefebvre’s rhythmanalysis, (2004), seems productive. He uses the concept of rhythms as a tool of analysis thereby entering into everyday practice and use, rather than just as an object (*ibid.*: 69) describing how “everywhere where there is interaction between a place, a time and an expenditure of energy, there is rhythm”, (*ibid.*, 15). It is important to notice, that rhythms not only refer to traditional concepts of rhythm related to sound and music, but also constitute a pervasive phenomenon emerging in the ecology between the human and the surroundings. It is in this “psychological, social, organic unity of the ‘perceiver’ who is oriented towards the perceived, which is to say towards objects, towards surroundings and towards other people, that the rhythms that compose this unity are given”. (*ibid.*: 77). The presence is therefore of an innately temporal character and can only be grasped through the analysis of *rhythms*, a concept that is even more closely related to the temporal unfolding than that of a *tone*. Acknowledging both resonance and rhythm to be equally essential Lefebvre’s dynamic approach shed light on new aspects of designing for atmospheres in interaction design.

### *Listening with an attentive ear*

Considering the ontological status of atmospheres, one can claim, that it is not possible to design the dynamic structures of atmospheres. Indeed, stage setting through e.g. physical and auditive means affect atmospheres. However, the constant modification of a felt atmosphere can never be predicted, as the way we sense atmospheres, depends on how we sense ourselves in the surroundings we are part of. Therefore designing dynamic atmospheres cannot be reduced to trying to design rhythms and resonances of the surroundings without taking the sensing body into account.

Lefebvre’s theory of rhythms is founded on the experience and knowledge of the body, in outlining a method for analyzing the rhythms of everyday life and space and the effects of those rhythms on us in a so-called “temporalised space”, (*ibid.*: 89). The core concept of *listening* not only relates to sounds and music but invites us to listen to e.g. the body, buildings and the environments as an “audience listens to a symphony” making the self more sensitive to times than to spaces, (*ibid.*: 22), thereby highlighting the awareness of phases, periods, shifts and recurrences when experiencing different atmospheres. By listening to the temporalities and the shifts of a dynamic atmosphere we can gain an “attentive ear”, (*ibid.*: 27), enabling us to make sense and order of chaos, by differentiating the multisensorial inputs of the dynamic atmosphere. This attentive listening is obtained through a sort of meditation as a practice connected to the artistic by engaging with the rhythms, in order to resonate with it in a consonant way. We can only listen to and perceive our surroundings and their rhythms as being fast or slow in relation to other rhythms, and giving that we are always in a body, the *cyclical rhythms* of the body (e.g. heartbeat, breathing) are always an important reference in our experience of an atmosphere. These natural and organic *cyclical*

*rhythms* (e.g. heartbeat, dawn, waves), always new when returning, are perceived as favourable in relation to the *linear rhythms* described as monotonous repetitions of the fact (e.g. clock, metronome, drop of water, engine). The relation between these two types of rhythms are always intertwined and struggle in a dialectic relation (*ibid.*: 8), and are important to address and reflect on in the design process in composing a dynamic atmosphere. This could help the designer to rethink the temporal as being something not only fleeting and outside ourselves but as an embodied, temporal way of thinking of the production of space, with a multisensual approach always in relation to the rhythms and resonances of the body.

The idea of rhythm as a complex relationship between body and space could nuance the underlying view of the perceiver merely adapting to the tonality of a place, (Thibaud, 2011: 3), as a rhythmic or dynamic atmosphere not “placed” inside or outside but in the shifting relation between the interconnected rhythms of the self, the other and the environment, (Lefebvre, 2004: 99). This seems highly relevant in the perspective of interaction design and by using Lefebvre and his ubiquitous concept of rhythms, we wish to enable the perceiver to become a cocreator, rhythmizing, resonating, thereby unfolding, and situating the atmosphere. Through highlighting an awareness of these different rhythms in the design process, and by understanding the basic dynamic identity of the atmosphere as connected to sound as phenomenon, the temporal aspects become operational design parameters and essential models of understanding how to design for interaction in a tight relation to the environment and the body.

For Böhme sensing an atmosphere is a fundamental feature of finding one’s place, habituating and thereby making sense of a place at a specific time (Böhme, *Sich-Befinden*, in 2001: 45). This is not a static state, given beforehand in the room, but is an ungoing and temporal negotiation. The aim of this paper is to articulate these temporal negotiations as rhythms and resonances, in an ecological relationship between the body and the environment through middle ground experiences (Kinch, 2011). In the next section Kidkit will be analysed and presented in this perspective.

#### *Kidkit – Designing dynamic atmospheres in hospitals*

Kidkit is a flexible and interactive piece of furniture that allows for collective and playful exploration of the soundscape of a neurointensive care unit, Aarhus Sygehus. It is designed to explore how to prepare young children at the age of 3-7 years to meet a hospitalized relative. The idea behind the prototype is to enable the child to embody the future atmosphere of the bedroom while staying in the waiting room. To soften the transition from one space to another Kidkit introduces the sounds from the bedroom equipment e.g. alarms through sound triggers sewed into the fabric of the furniture (see figure 1). Secondly, the mobility of Kidkit allows children themselves to wheel it from the waiting room to the bedroom – and transform the seating to a stairway to accommodate the meeting between child and patient.

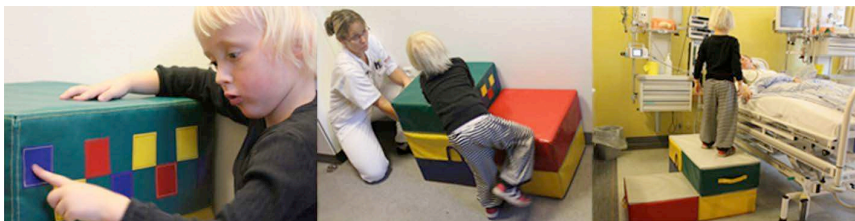


Figure 1. Kidkit, an interactive piece of furniture

A crucial problem in this setting is that the linear rhythms of the environment (alarms, machines and clinical organisation) affect the cyclical rhythms of the child, leading to a feeling of stress, as the aroused bodily rhythms shape the perspective from which the atmosphere is created. As the aim of Kidkit is to welcome and make the child feel secure, these fast cyclical rhythms seem as an obvious dissonance to address from the beginning of the visit. In line with our proposals for designing dynamic atmospheres, it would be a fallacy to just try and work with slow and calming rhythms in the environment to gain a calming atmosphere, e.g. through slowly changing colors or calming sounds, as these would appear too far away from the rhythms of the visitor and therefore an obstacle in creating a dynamic embodied atmosphere.

To address this issue the child is encouraged to resonate and rhythmize the atmosphere themselves by triggering the linear hospital sounds in her own rhythm in the waiting room. The embodied experience of these concrete rhythms of the environment enables the child to habituate and have a feeling of control. In this way we try to get the child to *listen* to the hospital, gaining an *attentive ear* giving them room to meditate and differentiate the sounds from each other. By controlling the rhythm of the sounds, the child can synchronize them with the rhythms of the self. In this way the linear rhythms could appear cyclical and could reduce the feeling of the rhythms of the body being faster than the linear rhythms of the environment. In this temporal and embodied cocreation of an atmosphere in the waiting room, and afterwards bringing the furniture with them, we hope to affect the way the child will experience the bedroom when entering afterwards.

Another dynamic approach for making the child more comfortable is the embodied way of interacting with Kidkit through rhythmic folding and unfolding manouevres. The simplicity of the quadrangular shapes of the five poufs is similar to building blocks and the shape of Kidkit allows for flexible play practices. The children create meaning through rhythmic embodied action, the act of transforming the furniture invites for bodily repetition, and as such embodied preparation as unfolding the furniture into a stair in the bedroom (see picture). Further, the embodied actions suggest that the child takes ownership both before, during and after the visit and makes a spatial anchoring in a confusing environment.

To sum up our experiences of working with the dynamic features of interactive furniture in creating a welcoming atmosphere, we addressed this by being *"more sensitive to times than to spaces"* (Lefebvre, 2004: 22), using sound as material, addressing the shifts and designing the rhythm of the furniture itself in a malleable form, taking different shapes shifts throughout the visit, thereby qualifying the embodied temporality of the atmosphere.

## Final remarks and future work

This paper addresses the importance of expanding the notion of atmospheres to include dynamic considerations in the process of designing for interaction. The claim of the paper is, that temporality should not be approached as standalized units through which spatial qualities can be measured and described. Therefore, temporal metaphors are introduced through Thibaud and Lefebvre as a way to operationalize the design of embodied atmospheres. The main contribution of this paper is to stress the interconnectedness between an atmosphere and the embodiment of the temporal, always engaging the rhythms and resonances of the body as a ubiquitous reference.

The thoughts revealed in this paper calls for further investigations and in order to the limited space of this paper we have left social considerations undescribed, although we acknowledge that atmosphere encompasses not only the embodied experience of temporal space. In the case of Kidkit the collaborative investigations of the furniture between the nurse and the child are essential to enable the child tuning into a secure atmosphere.

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