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Stine Louring Nielsen

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# Light Affects

## Towards a Body-sensory Approach in Lighting Design

*Abstract. Informing current research on how light effects our performance, hormones and moods, this paper presents a body-sensory approach to study atmospheric affects of light. Presenting ethnographic data from three studies on the bodily feel of colour illuminated spaces, the paper shows how architectural lighting designs go beyond their immediate potential of supporting visual needs and aesthetic delight, by their ability to attune bodily sensations and states of being. Consequently, the paper argues for a qualification of current methodologies within lighting research and calls for an atmospheric mindful awareness of the sensory body when designing with chromatic lighting technologies for architectural spaces.*

Stine Louring NIELSEN<sup>1</sup>

**Keywords.** *Light, Colour, Atmosphere, Bodily Sensation, Architecture, Design*

### The Body of Luminous Atmospheres

Designers and architects have long been doing multiple types of aesthetic work on giving materials and spaces a certain presence, radiation or feel (Böhme, 2013b; Edensor and Sumartojo, 2015). With the introduction of chromatic lighting technologies, the possibilities within the tinting of spaces have expanded. From smart-home lighting technologies to tuneable LED spots of sensory delivery rooms, coloured illuminations have made their way into our private homes and public spaces. While we know of some of their psychophysiological effects on performance, hormones and moods (Küller et al., 2006; Lockely et al., 2006) and their sociocultural affects and attunements of everyday practices and social dynamics (Edensor, 2017; Bille, 2019), studies on their affective feel have become ever more crucial, in order to inform the designs and applications of chromatic lighting technologies in architectural spaces. Zooming in on the somewhat intangible sensory interaction between body and lit space, this paper deals with how we actually feel within our new tinted and tintured world.

Lighting up a path to approach the body-sensory affects of lit spaces is the concept of atmosphere. While acknowledging that atmospheres are entangled in social and cultural worlds, constituted in a dynamic force field of multiple elements of people, materials, conditions and constitutions, the particular scope of this paper addresses the concept of atmosphere as a general theory of perception (Böhme, 1993). As conceptualized by Böhme, perception “is basically the manner in which one is bodily present for something or someone or one’s bodily state in an environment” (ibid., 125). Thus, we are forever present within and perceiving this world via our body. Unfolded by a prominent contributor and speaker for the significance of the body in space, architect Juhani Pallasmaa, our human perception occurs with our entire body

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1. Aalborg University Copenhagen - Lighting Design Research Group, Denmark, [stm@create.aau.dk](mailto:stm@create.aau.dk)

(Pallasmaa, 2012). With reference to Merleau-Ponty, Pallasmaa states “I grasp a unique structure of the thing, a unique way of being. Which speaks to all my senses at once.” (ibid., 23) Our multisensorial bodily sensations and presence within a space can thus be found at the core of any atmospheric phenomenon.

As such, atmospheres are evidently an intermediate phenomenon of the co-presence of subject and object (Böhme, 1998, 114). On the matter of lit space, Böhme notes how light has the power to provide a space with distinctive qualities by affecting the way surfaces appear (Böhme, 2017b). Böhme calls this the ‘ecstasies’ of objects, connoting an object’s ability to step out of its own tangible boundaries and impose itself on the environment. Or more precisely: “it does not relate to the determinations of things, but to the way in which they radiate outwards into space, to their output as generators of atmospheres” (Böhme, 2013b, 5). As such, according to Böhme, by imbuing a certain quality to a space, light serves as a generator of atmosphere (2017, 203) for the human body to perceive. Hence, emerged by a co-presence of body and space, atmospheres hold the capacity to “imbue everything, they tinge the whole of the world or a view, they bathe everything in a certain light, unify a diversity of impressions in a single emotive state” (2013b, 2).

### **Bodily Sensations as a Means of Inquiry**

Taking multisensorial experience and perception of lit space as a starting point, the three studies converged in this paper are essentially based in a phenomenological, sensory ethnographical methodology (Pink, 2015, xi). As such, the methodological approach dissociates from the early anthropology of the senses, proposing a comparative anthropology separating our sensory modalities, and instead thinks about and does ethnography from an understanding of the senses as interconnected in human perception (Pink and Howes, 2010, 332-334). Consequently, the studies are concerned with bodily sensations as a means of inquiry, and not solely as an object of study. Moreover, by mixing and adding to the current methodologies within lighting research and addressing designerly potentials of coloured illuminations, the methodological framework of the three studies essentially takes on an interdisciplinary approach depending on other disciplines for its foundational ideas, in line with a sensory ethnographical approach.

On that note, the three studies have been structurally inspired by design research as laid out by Koskinen et al. (2011), taking place in ‘the lab’, ‘the field’ and ‘the showroom’. Hence, drawing from natural science, social science and the art world, the studies have respectively and chronologically occurred between 2017-2019 in a performance art manifestation (the showroom), a maternity ward counting a sensory delivery room (the field) and a lighting laboratory (the lab). Despite their different settings, all three studies have been rooted in and driven by an ethnographic methodology, primarily relying on and collecting data on sensory experiences by (participant) observations and interviews (Madden, 2010). Yet, the showroom study was also informed by data from cultural probes (Nielsen, Friberg, and Hansen, 2018), the field study by photos and mappings (Nielsen, Bille, and Barfoed, in review), and the lab study informed by video recordings and psychophysiological data, collected via an Empatica4 wristband sensor (Nielsen et al., submitted). Following a multisensorial approach to the study of experience and perception, the showroom study and lab study have furthermore considered sensory and embodied aspects of chromatic light beyond visual perception, in order to sharpen a conscious perception of the feel of colour illuminated space. Hence, people in these two studies were both blindfolded and non-blindfolded, while being bodily present in a space lit up by different spectra of light.

The following representations of bodily feels of lit spaces addresses the four spectra of white, blue, amber and red, and rest solely on the ethnographical interviews and observations collected during the three studies. Evidently, being personally, culturally and socially situated and skilled in the world, the expressions of bodily sensations of the particular light spectra have varied across people and studies. However, following a phenomenological body-sensory approach and carrying out extensive thematic analysis, some particular patterns have shown across both bodies and studies. A selection of these are presented below.

## **Bodily Sensations in Colour Illuminated Space**

### *White*

A bodily feel of being in an energized state was common to people being present in white illuminated space. Participants of the lab study would express how they felt “a higher tone” in their body, “like pfff!” or “like a busy bee.” Some felt it difficult to breathe and “a need of clarity and sharpness” in their movements. Comparatively, midwives working in the bright lights of a hospital experienced their bodies in a certain alert state: “Just try and feel it, it’s not very enjoyable, this light we are sitting in right now... I just don’t like being in it. I would never choose this light if I were to feel safe or relaxed or work,” one midwife expressed.

The energy of the white light could nonetheless serve as a supporting element for focus and speed in midwifery practices, if for example they had to apply a vacuum extractor (to pull the baby out of the womb), needed to see properly (while stitching up the perineum) or wanted for the birthing mother to “be woken to be ready.” Similarly, participants of the lab study felt more “rational” and detached from their “inner private mood,” when being bodily present in white illuminated space. In this relation, they perceived the space as a “big,” “neutral,” “dead” and “cold” “non-space” with a “rough,” “squared” or “hard” texture. As such, to some it was like the white illuminated space allowed them “to be physical without being in a certain mood.”

### *Blue*

People across the three studies generally sensed the blue illuminated space as “infinite,” “distant” and “diffuse.” Some participants of the showroom and lab study compared it to “going into an aquarium” or the feeling of “being in a spaceship.” These spatial perceptions were followed by bodily movements and feels of “fluidity in the body,” sensations of having “a fish-body” or being “alone in a weird way.” One participant in the lab study comparatively expressed how she “felt more lost and not knowing where I was,” in the bluely lit space.

In this regard, people across the showroom and lab study described how they sensed a “silence,” “more space inside” and feeling “intuitive,” “more tactile” or “fragile.” When asked about if she knew a space like this, during the showroom study, one informant expressed: “Yes... Inside myself... It is melancholic and heavy... (...) Like being on deep water...” Furthermore, a cooling sensation was experienced in the blue across all three studies. One participant in the lab study expressed how “It was sort of a chilly calm... It is like at ease but icy.” In relation, midwives in the maternity ward experienced the blue illumination as “cold,” “brash” and “diffuse,” in which one midwife found “it hard to find peace.” Thus, midwives would generally favour the warmer hues and mainly introduce the more bluish lighting to support a “change in energy” to the birthing situation.

### *Amber*

In the amber illuminated spaces people across the three studied felt the most supported, welcomed and protected. During the showroom study, one informant noted her bodily sensation as: “(It is) like maybe someone is carrying you... like a mother carrying you... it feels heavy and safe, like there is something all the way around you... like you are protected.” Another informant stated how “It feels like I belong to this space...” and a third how “It feels like an onion and that I am in the middle of it... well protected.”

Similarly, participants of the lab study would comparatively feel the space like “hugging me” or as “a good friend.” Furthermore, in the amber illumination, they smiled and expressed feeling “happy,” “careless” and “content” the most. One participant more-over sensed “a supportive atmosphere” where one “could just move.” At the maternity ward, this showed in midwives’ practices of searching the ward to track down adjustable architectural lamps. To them it all came down to reduce bright lights. As one midwife stated: “I’m trying to get [the light] as dimmed as possible, to create a sort of cave-like atmosphere.”

### *Red*

Being bodily present in the red illuminated space people generally found their bodies in a “calming”, “dense” or “small” space across the three studies. During the showroom experiment, one informant had an intense bodily feel: “(It) is like I want to get out but I am not able to... It is not friendly at all... It is like something is keeping me back... I feel like a stone or a rock (...) I am stuck.” Another informant of the same study similarly stated a “feeling of not being alone... Because there is someone on top of you.” In line with the bodily sensations of slightly-pushing density, participants of the lab study generally moved in a more downwards manner by rolling, crawling or sliding around in the reddish illumination. One participant also noted how “I definitely felt the space pushing down... Not in a bad way but I was grounded.”

In the maternity ward, the reddish illumination of the delivery room was experienced less intensely, as “soothing,” “soft” and “cosy.” “I think... the word ‘gentle’ just comes to my mind. It’s such a gentle way to say welcome... where the light is not hard,” one midwife stated, while another experienced how “you lower your shoulders a little and feel welcome,” and a third midwife noted how she was “a bit more careful in there... I think that I am a little slower...”

## **Towards a Body-sensory Approach in Lighting Design**

As laid out in above merging of empirical data of three studies on bodily sensations of lit space, different spectra of light seem to carry affective qualities to attune our bodily presence in different ways. From the energizing detachment of white, to the distant chill of blue, over to the caressing support of amber and the warm and slightly-pushing quality of red, luminous “atmospheres can suffuse all spatial contexts, in some spaces this is more affectively, emotionally and sensually profound than in others” (Edensor and Sumartojo, 2015, 252). Noting the awareness of bodily attunement in midwifery lighting practices, not only contextualizes the bodily feels of certain spectra of illumination from the showroom study and lab study, but moreover shows how chromatic illumination can attune certain practices, e.g. of focused work (in the white), changing energies (in the blue), intimacy (in the amber), or slow movements (in the red) in the delivery room. As such, the potential of designing with coloured illumination goes beyond visual needs and aesthetic delight by affecting our bodily existence and ways of practicing our world.

Thus, despite the evermore technology-entangled reality of our everyday lives, including new technologies of chromatic lighting, people insists on their bodily existence (Böhme, 2013a). Showing how luminous atmospheres are a fundamental part of human perception, that is, of the way in which we sense at once where we are, atmospheres of light shape a person's being-in-the-world as a multisensory whole. This is why atmospheres are extraordinarily significant for the theory and practice of architecture (Böhme, 2017a, 70). However, by taking on a body-sensory approach to study and understand the significance and potentials of today's chromatic lighting technologies, it becomes apparent how something is missing from the research on which we base our architectural lighting designs of today. While studying how light has an effect on performance, hormones and moods, recognition and considerations of our very bodily feel and existence within lit space are diminished. As such, this paper argues for qualifying current methodologies within lighting research by a body-sensory approach, which evidently calls for a revised and revived atmospheric, mindful awareness of 'the bodily feel' of lit space when designing with chromatic lighting technologies for architectural spaces.

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