

# **SENSE TRAINING AS BASIS FOR AESTHETIC EXPERIENCE**

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## **ABSTRACT**

Many systematic and schematic assessments reveal that they are based on vague concepts about the aesthetic, if the theme at all has managed to make a parametrisation of the 'reason of meaning'. That is fundamental for realisation of the sensuous experiences design engineers aim to offer their users. It is a special problem for design engineers, who must guarantee the aesthetic, ethical and utilitarian qualities of products in a product development process. It does not matter whether they or other designers have conceived the product idea. It has been found that sense training can open up to aesthetic experiences, and thereby provide a platform for connecting sensory experiences with that which triggered them. The understanding of these connections gives a starting point for a parameterisation of the aesthetic. The articulation of the basis of experiences rests on criteria known from the aesthetic subjects. Group discussions in connection with establishing assessment matrices can also contribute to a clarifying of demands for the aesthetic qualities of product. This study examines the appropriateness of a series of exercises for supporting design engineers students in developing their aesthetic experience and train their specification of the basis for aesthetic experiences. The context for the study is a course and a project in interaction design about designing rehabilitation products, where undergraduate students must develop a project program with focus on theoretical scientific research and experiment, and they must involve user and experts with experience from practice.

*Keywords: Sense training, Baumgarten's aesthetics, aesthetic experiences, objective properties.*

## **1 INTRODUCTION**

The contradictory and vague concepts of aesthetics have long been a problem in thinking in general. In the collaboration between the humanities and engineering sciences, it represents a special problem for engineers, because they traditionally work with precise concepts. This can be concluded from Kyndrup's book 'The aesthetic relation'. [1] From Friberg's discussions in 'The Aesthetic Experience' it can be further deduced that education can contribute to clarification of vague concepts about the aesthetic of the design. The function of aesthetic experience is to open up to a greater sensitivity towards diverse phenomena in the world. The aesthetic experience acts as a resonator for our attention and as a basis for thematisation and reflection on the cause of sensations, performance of phenomena and meaning of the specific context they appear in. [2] The general model of human information processing in 'Introduction to Ergonomics' illustrates how the resonator, that is our brain's memory storage of symbolic representation of previously perceived impressions, which contributes to our interpretation of new sensory impressions. [3] Friberg also notes the importance of distinguishing between aesthetics<sup>1</sup> that relates to the general sense of learning, and aesthetics which relates only to sensations that go beyond utilitarian and functional connections. [2] The present study is based on a course and a project; which both are based on a didactic model with focus on thematisation and articulation of aesthetic experiences. [4] Such teaching can contribute to conceptualisation in the education of design engineers that rests on both the humanities and engineering sciences. The context for the study was a course in interaction design and a project about design of rehabilitation products, where undergraduate students must develop a project program with focus on theoretical scientific research and experiments, as well as the involvement of patients and experts with practical experience, The 29 students' research of physiotherapists and their patients' challenges revealed that the patients'

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1 The German term 'Asthetik' has no official English translation, therefore is 'aesthetics' selected [5].

primary challenge were to maintain the motivation, the secondary was doing the exercises accurately and the third was to relate the various training tools to each exercise. The students could thus relate to aesthetics when they experimented with and sought knowledge about training of musculatures and registrations of training effects. Furthermore, they could relate to aesthetics when they focused on creating something that could fascinate the patients or give them sensuous enjoyment of such a nature that it persistently motivated them to exercise. The students' own motivation for solving the task grew, when they discovered that it is a growing societal problem that patients abandon rehabilitation and thus only partially achieve full working capacity. It is one thing to achieve an initial clarification of vague ideas about the aesthetics, and it is another to parameterise the basis for such ideas. The need for parametrisation of the bases for aesthetic experiences occur when design engineers engage in systematic and schematic assessments and must ensure the same consideration of the aesthetical and ethical aspects as other aspects in a product development. Systematic evaluations using assessment matrices are known from Pahl & Beitz [6], Ulrich & Eppinger [7] and others. Kyndrup's colleague at Aarhus University, Bundgård, states in his book 'Art' that there should not be anything that form an obstacle to make objective specification of aesthetic aspects of a product: "So far there are permanent properties of aesthetic objects, in so far as the existence of these properties can be inferred from the description, and so far as it is possible to ascribe the terms 'property' or 'structure' a real categorical content, then you can easily talk about objective knowledge in the humanities." Thus the aesthetic experience paves a way for the aesthetic reflections that allow identification of objective properties or with Bundgård's words "fixed properties about aesthetic objects." [8] Even the founder of aesthetics, Alexander Gottlieb Baumgarten, came with some considerations which can provide basis for parameterisation. Students often use Baumgarten's idea about using nature as a starting point and his idea that the connections between different parts of a work are of particular importance. The above-mentioned argument supports the theory that it is possible to translate sensory impressions into parametrical descriptions of the basis for aesthetic statements, which are so clear that the patients will act on them. The problem this study seeks to answer is: What exercises can challenge students in such a way that they recognize that their own sensory experiences of the specific aesthetic properties are the prerequisite for developing and evaluating the aesthetic qualities of a product. In the wake of such exercises follows the challenge of supporting the students in moving from the aesthetic experience to articulating what it was that triggered the aesthetic statements or that which Kyndrup denotes 'reason of meaning'.

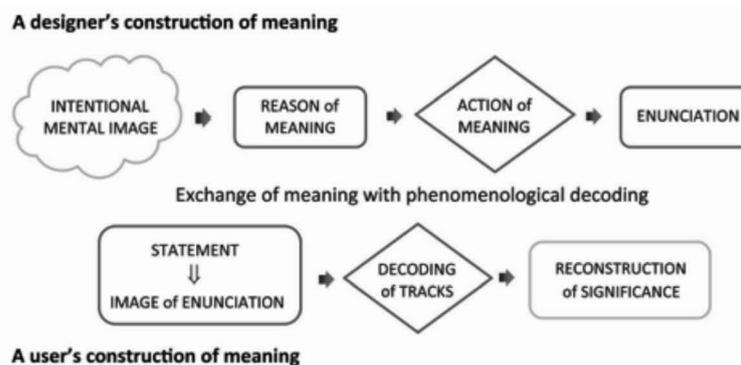


Figure 1. The hermeneutic system of understanding

### 1.1 From sensory training to aesthetic experience

The didactic principle about how sense training opens up to aesthetic experience refers back to Baumgarten's aesthetics, but it rests on Galen Cranz's approach, which he expresses with: "I revive the older concept of aesthetics rooted in physical experience, sensory knowing, and the body's reptilian brain. --- One can choose to tune into the sensory and the perceptual and let social-emotional and ideational-rational-technical knowledge and awareness recede to the background." [9] One can also choose the didactic model of an art-school, where students alternate between challenging their susceptibility, unfolding their power of expression, and challenging their reflective powers. [4] Paul Linden defined this approach back in 1994, where he named it 'somatics' and pointed out that it involves "the whole human being, focusing in a practical way on the interactions of posture, movement, emotion, self-concept, and cultural values" [9]. A somatics approach to design involves

what Cranz has called a “body conscious design”. Cranz exemplifies the importance of having a somatics approach to design through a study of how much furniture design can inhibit utilization of the body’s “position mechanical advantages”. He also reflects on how customs and rituals can block the recognition of inappropriate design. Cranz underlines that “Aesthetics could be said to be a science - the science of how we learn and know through our senses. This return to the root meaning of the term allows aesthetics to become a powerful tool for creating and assessing experience”. [9] In this study, the connection between the student’s intentional mental image of the user’s aesthetic experience and the actual experience the user has or the importance the user attaches to the product is illustrated by the hermeneutic system of understanding that lays the ground for the reconstructive method; see Figure 1 [1]. The purpose of the exercises was in relation to the hermeneutic comprehension system, firstly, to make students able to articulate demands for an action of meaning. It covers the activities that create an aesthetics enunciation of a product, which must be sufficiently clear, so users will track a meaning that agrees with the designer’s intentional enunciation. And secondly, to makes the students able to identify the triggers or ‘reason of meaning’.

## 2 SENSE TRAINING

The training was directed towards the basic senses: hearing, touching, smelling, movement and balance in interaction with a product, one sense at a time despite the fact that people naturally integrate all sensory impressions in their perceptions. Additionally, the aim was to draw attention to the possibility that designing to several senses may give the user a more experiential rich interaction with the products. In the following sub-section, the exercises used are presented along with reflections on their effects.

### 2.1 The sense of touch

It is through the sense of touch that people first experience the world. According to Juhani Pallasmaa: “Touch is the sensory mode that integrates our experiences of the world and of ourselves. Even visual perceptions are fused and integrated into the haptic continuum of the self; my body remembers who I am and how I am located in the world” and adds that “Touch is the unconsciousness of vision, and this hidden tactile experience determines the sensuous qualities of the perceived object.”[10] The first exercises were based on Sonneveld & Schifferstein, who has developers who have developed exercises for the sense of touch and to make students aware of the importance of the relationship between texture experience and movement direction. [11] A blind test exercise where the students had to describe the material and texture of unknown professionally produced objects by using the Tactual Experience Guide went exactly as it should. Armed with the experiences from the exercise, the students were asked to make a stick-shaped sample with a pleasant end and an unpleasant end as a prelude to designing surfaces of interaction. In the introduction to the exercises, it was emphasized that the sense of touch is everywhere in the organ that encloses soma – the skin. The skin is so sensitive that it can feel through the single layer of textile or leather, although the signals are reduced. Generally, the surface character of the stick-shaped samples was so rough that it was more suitable for testing by rolling against a shirt sleeve than running over a palm. In relation to transforming ‘tactual experience’ into a specification of interaction surfaces, two of the categories of the guide were a challenge for the students. The categories ‘gut feelings’ and ‘affective behaviour’ had to be set in relation to the student’s project theme. The concept ‘gut feeling’ refers to a mental state or physical sensation resulting from stimulation of the sensory system, or derives from an internal bodily change. Clearly, that category includes both aesthetic, communicative and usability aspects. Therefore, the category was subdivided into:

- **Intellectual appeal** that is triggered by tactual ideational content which thus conveys an aesthetic statement.
- **Emotional appeal** that generates mental or physical emotional effects.
- **Tactile-communication:** Informational content be decoded and perceived as synonymous concepts. Such texture can animate the user to perform an action or refrain from same.
- **Tactile-usability** means that the texture is pleasant to touch and e.g. easy to maintain.
- **Materiality and tactility of surface:** Focusing on the ability to combine supporting and preserving the possibility of sensations that act as aesthetics trigger.

Under the category ‘affective behaviour’, the students had to observe if the tactile surface triggered the expected response or action as well if as the interaction with the product triggers reactions beyond the expected. The exercises did not give the intended result, because it was not possible to place the samples into a product in the program phase and because most of the texture samples turned out to be too crude to work as real interaction surfaces. In relation to the transfer of the acquired knowledge and experience to the project, only tactile-communication and tactile-usability were specified in the students’ programs. The reason for this might be the need for active interactive communication between the user and the product in this project. Some of the projects included actual pressurization of the sense of touch as several solutions based part of the interaction on vibrating surfaces.

## **2.2 The sense of hearing**

The acoustic image had been a form of auditory icon or earcon - a complex phonetic symbol with an abstract symbolic meaning because the acoustic image should convey both a functional and an aesthetic enunciation. The exercises were inspired by Emma Murphy and her colleagues’ model of learning through design panel sessions [12]. The model consists of proposed presentations for a design panel that discusses the proposals and contributes to the development of non-speech sound signs for product ideas. The students had to take turns forming design panels for the other students, and this did not give the students the opportunity to spar with professional designers and composers as Murphy’s model proposes. By contrast, it gave the students an opportunity to discuss and develop a transparent basis for assessment that embodied the communications qualities: scalable characterization of parameters that express the relationship between the acoustic image and interaction type, timbre and mood, intensity of frequency relative to the user scenario and the cognitive as well as the aesthetic reference of the acoustic image. The last part means that user can draw on a parallel meaning in their decoding of the abstract symbolic meaning of the acoustic image. The model consists of three design panel sessions which are modified to:

1. The proposer begins by introducing a target group, its characteristics and user scenario for the primary user of the product idea. The panel coaches the proposer with a description or by visualizing a syntagma for either an auditory icon or earcon; the panel focuses on how the individual sound components can be produced. The visualization of an earcon (a chain of sound elements) is comparable to the development of a picture puzzle.
2. After the proposer has presented her syntagma and proposal for a sound sign, the panel coaches the proposer to further development of both sound signs as well as the soundtrack of the user scenario. As far as possible the proposer should also present a recording of ‘backdrop of sounds’ for the product interaction in order to give the panel a chance to assess the interaction in relation to other activities in an exercise room.
3. The proposer presents the finished non-speech sound sign with its syntagma. The panel’s task is to ensure that the syntagma clearly conveys how the earcon can be made and possibly to coach the proposer with the finishing touches of the syntagma or the sound sign.

After each session the panel has to review and develop the basis for their assessment. Participation in a panel thus helps to coach the sense of hearing and reflection on ingredients of perceptions as well as train articulate sound signs by using pictorial characters - a picture puzzle that can be included in the program. Before the sound sign clearly communicated the interaction, the panels had experiences with acoustic images which had unintended cognitive references, which would keep some students from using the products. The result was that a panel collected a number of professionally developed earcons which they played for the entire group of students and asked them to guess the cognitive and aesthetic reference. This initiative was an eye opener to how aesthetic expression can be achieved by orchestrating a varied sound image with pleasant and interesting references.

## **2.3 The sense of smell**

Design of fragrances for a product is something of a niche in the field of aesthetics which designers immediately associate with offering consumers a special experience when they buy a new car, want to strike a special atmosphere in their home or relax at a wellness centre. Within the sense ergonomics Daams has explored the possibilities in relation to design [13]. Her study indicates that smells picked up by the olfactory senses can make people relax or tense up for instance, and that both phenomes and flavourings can trigger the memory or mental time travel. Ludden & Schifferstein’s study also shows that scents affect our choice of products [14]. Despite these studies, it has proved not possible to find

scientific studies about the connection between phenomes and stimulating effects. According to Thybo, NSF Innovation Centre offers drinking water with flavouring which generates different mental time travel depending on which flavourings that are used as triggers [15]. Therefore, it was obvious that the students should challenge their olfactory senses, so that they themselves could achieve experiences with the effects of smells and consider the possibility of using phenomes as an accessory. Some people are allergic to certain phenomes, therefore fragrances should be used only as an accessory. During the exercise, the students were divided into two teams, one orange and the other blue, who each were given their own smell and 30 minutes to work on sketching for their product ideas. The orange team worked with Sweet Sunrise which had sweet orange and cedar fragrance sticks and the blue team with Hammam Secret which had Fresh Eucalyptus fragrance sticks. The orange team had in average 2.7 new ideas in addition to the 3.8 they already had and the blue team had in average 1.5 new ideas more than the 3.0 they had in average from the first sketching exercise two days earlier. The results suggest that the orange smell was more effective than the blue.

#### **2.4 Sense of movement and balance**

This part of the study focuses especially on exercises that challenge the students' sense of movement and balance (the proprioceptive and vestibular senses). In order to assess whether movement helps to increase susceptibility, the somatechne model was developed. It focuses, among other things, on whether the students use techniques in combination with reflection on sensory experience of impressions during the form-creating process. [4] Since shifting techniques as well as materials challenge the senses, one exercise worked with sheets of expanded aluminium. These make it possible to create double curvature surfaces with the help of three simple techniques adopted from the silversmith's art: driving a mould over a convex shape with a soft round mallet, squeezing the small bars of the mesh of material with nose pliers or expanding the openings in the mesh with a punch.

The students were free to choose an organic form, just as long as it was big enough to provide adequate physical challenge for the students' sense of movement and balance. Such a challenge requires that the students either move the object by use of a substantial part of the body's musculature or e.g. crawl around and over the object. The form one student created was assessed by a group of students from a different project group. The group assessed the form on basis of Favrholt's criteria [16], which the group initially had assess the relevance of, and then they supplemented with their own criteria. All students had previously taken a course in which they made two physical forms of clay and they had passed four projects modules with teamwork in which the design process was finished off with a visual model. Some project teams made their model using 3D printing, but not all students participate in that part of the work. Actually, in the end only half of the models delivered double-curved surfaces for which they consequently received very low scores in Favrholt's criteria: technique. The outcome of the exercise was assessed using the lens 'the three somas'. [4] The exercise completely met the first of the three somas: The individual and physical soma; but it did not meet any of the other somas. The students were then given an exercise to train their social soma. In this exercise they had to produce a model of function for a human-product interaction, but because some of the students showed poor skills in model technical, the exercise was first realised in connection with the following project. The two projects that worked with training for children's motor skill and balance, the projects about aids for rehabilitation of adults who suffered from back or shoulder injury as well as one project about agility exercise for people's neck or shoulder muscles for those with sedentary work, proved particularly suitable. This was due to the students' self-testing of the usability of function models and due to the fact that they used each other as subjects. This also applied to the training apparatus for children, because children at the age of 6 or 7 quickly lose interest in testing things that do not really work as intended.

### **3 DISCUSSION**

This study has focused on exercises that support students in developing aesthetic experience and the clarification of the foundation for aesthetic experiences. The exercises focusing on training of the senses: touching, hearing, movement and balance were mainly based on interaction with objects developed by the students themselves. The idea of involving the students in the manufacturing process is questionable given the fact that only half of the students managed to produce objects, which through interaction could trigger the same nuanced sensory experiences as the professionally-made objects which they used in the first exercise. From an aesthetics training perspective, the first feeling exercise

worked better than the last one with the stick-shaped samples. In relation to achieving aesthetic experience, the professionally-made objects were problematic because for them the ‘intentional mental image’ is rarely known. That means that the students must try to trace the ‘reason of meaning’ without the possibility of checking whether they actually reached the designer’s ‘intentional mental image’. It does challenge the students’ reflective powers to reach an answer; but it is much easier to train the clarification of the foundation for the aesthetic experiences when both sides of the hermeneutic system of understanding are known. The students brought professionally-made objects to the first feeling exercise and the dialogue between the sentient student and its group proved suitable for identifying objective properties of which some were aesthetic. The exercise worked as an eye opener for what the aesthetic can be. In the hearing exercise however, the students started without a professional example and through the coaching experience they need to include professionally produced earcons. It should be pointed out that these are examples of two different things, namely the aesthetic and an orchestration. Therefore, the sequence of exercises is important for learning. For the coaching groups, the complexity of the exercises also increases from the first exercise where the groups rely on the Tactual Experience Guide to the second where the design panel must make up their own assessment matrix. It is debatable whether the jump was too big or the exercise was too short. In the hearing exercise the students experienced sensing of both individual combinations of sound images and the overall message, but the students did not go beyond the functional. The students worked in their projects with vibrations, earcons, music and even story telling as a means to maintain the patients’ motivation or the children’ interest in playing with the product. Therefore, it can be argued that this sense training course managed to make the students try their hands at integrating anything that could give the users an aesthetic experience. As the fragrance exercise did not yield a result, in the future the students must read some articles on how scents affect the choice of products and they will be encouraged to seek the connection between scent and effect.

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