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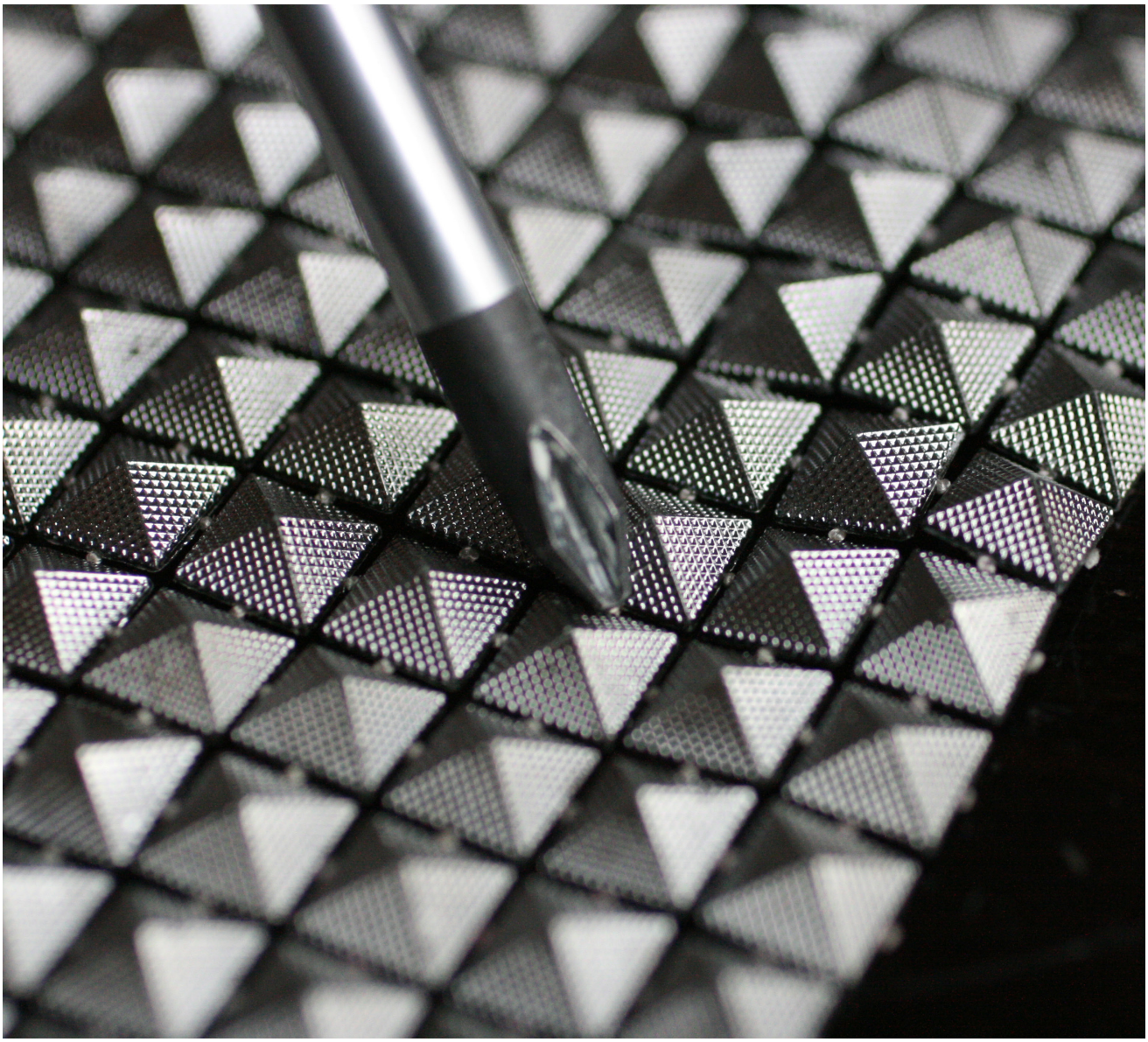

FORMakademisk

Table of contents:

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Janne Beate Reitan

Open access to scientific publishing

Interest in open access (OA) to scientific publications is steadily increasing, both in Norway and internationally. From the outset, FORMakademisk has been published as a digital journal, and it was one of the first to offer OA in Norway. We have since the beginning used Open Journal Systems (OJS) as publishing software. OJS is part of the Public Knowledge Project (PKP), which was created by Canadian John Willinsky and colleagues at the Faculty of Education at the University of British Columbia in 1998. The first version of OJS came as an open source software in 2001. The programme is free for everyone to use and is part of a larger collective movement wherein knowledge is shared. When FORMakademisk started in 2008, we received much help from the journal Acta Didactic (n.d.) at the University of Oslo, which had started the year before us. They had also translated the programme to Norwegian. From the start, we were able to publish in both Norwegian and English. Other journals have used FORMakademisk as a model and source of inspiration when starting or when converting from subscription-based print journals to electronic OA, including the Journal of Norwegian Media Researchers [Norsk medietidsskrift]. It is in this way that the movement around PKP works and continues to grow to provide free access to research. As the articles are OA, they are also easily accessible to non-scientists. We also emphasise that the language should be readily available, although it should maintain a high scientific quality. Often there may be two sides of the same coin. We on the editorial team are now looking forward to adopting the newly developed OJS 3 this spring, with many new features and an improved design for users, including authors, peer reviewers, editors and readers.

Two Reports on OA

The Ministry of Education [Kunnskapsdepartementet] (KD) has recently commissioned two reports on OA, both of which were launched last summer. One was by a national committee called the Brekke Committee [Brekke-utvalget], named after committee chairman Torkel Brekke from the University of Oslo. The committee should find common standards for open publication in Norway. A national archive and financing that rewards publishing in open journals are among the most important recommendations. According to Norwegian Minister of Education, Torbjørn Røe Isaksen, "The Government's aim is that research funded by public money should be freely available to the same public. This will promote both academic work and the use of research in society. Therefore, we have been waiting for the committee's work" (Regjeringen, 2016). The European Union (EU) has recently aimed to adopt full OA by 2020. The "EU's objective of full transparency by 2020 are ambitious, and we think that Norway must support this goal," as reported by Brekke (Regjeringen, 2016). Brekke also stated, "I have expectations that the recommendations will help us to speed up the work on open access in Norway and also contribute to this important work internationally" (Regjeringen, 2016).

The Brekke Committee's key recommendations are as follows:

- Norway must support the EU's ambitious resolutions and objectives of full transparency by 2020.
- The committee has proposed the introduction of a requirement that scientific articles must be stored in a national repository. This will affect payments to institutions (so-called performance-based redistribution).

- To allow researchers to meet this requirement, the committee proposes various measures to improve infrastructure and support services, including increased resources to maintain the Norwegian center for research data's [Norsk senter for forskningsdata (NSD)] (n.d.) register of good publishing channels, better functionality geared towards OA to research information systems at the Current Research Information System in Norway – CRIStin (n.d.) and information measures in institutions to support researchers.
- To introduce an additional factor for open publishing (gold OA) in publishing indicator to make it more attractive to choose this rather then closed publication in subscription-based journals.
- Norway must engage actively in international cooperation in negotiations with publishers regarding the transition to OA.
- It is important that top leaders of research institutions be involved in the work ahead.
- The committee has proposed the establishment of a national steering committee at the top leadership level for monitoring the work ahead.

In addition to Brekke from the University of Oslo, the committee consisted of Petter B. Brandtzæg from SINTEF, Tove Klæboe Nilsen from the University Hospital of North Norway, John-Arne Røttingen from the University of Oslo and the Norwegian Institute of Public Health [Folkehelseinstituttet], Oddrun Samdal from the University of Bergen, Margunn Aanestad from the University of Oslo and John Waage Løvhaug from the Research Council of Norway (Regjeringen, 2016).

We at FORMakademisk hope the authorities follow up on these advices from the Brekke Committee. None of the participants seems to represent scientific editorial boards, which we see as a weakness when the topic is to develop common standards for open publishing. Especially, the "additional factor for open publishing" could have a substantial positive impact in that authors will choose to publish in FORMakademisk, which is an OA journal with a good academic reputation.

KD has also asked the Nordic Institute for Studies in Innovation, Research and Education [Nordisk institutt for studier av innovasjon, forskning og utdanning (NIFU)] to investigate the introduction of a citation factor in publishing indicator in funding for universities and university colleges. This study was led by Gunnar Sivertsen from NIFU. He describes options that are simulated based on a combination of data from CRIStin (n.d.) and a citation database based on Web of Science (Thomson Reuters, n.d.). The strengths and weaknesses of the alternatives are discussed, taking into account that educational institutions have different academic profiles and that a citation indicator may lack validity in a number of subjects. On this basis, the report provides specific recommendations about how a citation indicator may optionally be used to modify indicator publication points at the institutional level (Sivertsen, 2016a). The report *Emphasis on research quality* [*Vekt på forskningskvalitet]* (Sivertsen, 2016b) has clear reference to the report *Emphasis on research [Vekt på forskning],* a new system for documenting academic publishing (Universitets- og, høgskolerådet, 2004), where Sivertsen also was a key individual. To avoid introducing a citation factor that affects negative subjects with little tradition of citations, Sivertsen says, "Both the calculation of the institution factor and citation indicator keeps you outside the humanities and jurisprudence, pedagogy and education, media and communication, gender studies and social anthropology" (2016b, p. 40). This means that articles in FORMakademisk will probably not be covered by a possible citation indicator.

Two Debate Meetings about OA

NIFU, The Norwegian Association of Higher Education Institutions [Universitets og høgskolerådet (UHR) and the Research Institutes Common Arena [Forskningsinstituttenes fellesarena (FFA)] (Abelia, n.d.), in cooperation with the National publiseringsutvalget in UHR, were invited on September 1 to a seminar on how to achieve quality in publishing OA. Participants at this meeting were mainly employees at the library in the higher education sector, as well as people from the ministry. We received the invitation to the meeting via contacts at the Oslo School of Architecture and Design. It seems no editors were invited to the meeting. On behalf of FORMakademisk, I pointed out in the debate that the editorial office's efforts to maintain the high quality of the published science was not mentioned in the reports. After the meeting, I was approached by several individuals who supported this view, but this issue was not mentioned by that those who are responsible for this. Among others present at the meeting was among others Bjørn Haugstad, Undersecretary of KD.

The Norwegian Journal Association [Norsk tidsskriftforening], of which FORMakademisk is a member, and the Norwegian Non-fiction Writers and Translators Association [Norsk faglitterær forfatter- og oversetterforening (NFF)] organized a breakfast meeting on 20 September. They asked whether OA means that scientific journals stand on the edge of a cliff or if this was simply an allegation, as Lars Egeland, Director of the Learning Centre and Library at Oslo and Akershus University College of Applied Sciences [Høgskolen i Oslo og Akershus (HIOA)] suggests (Egeland, 2016).

Nils Petter Gleditsch at the Peace Research Institute Oslo (PRIO) stated that OA:

> …has gained wind in its sails in the fight against rogue capitalists who have screwed up the prices of subscriptions so it has taken toll on library budgets ... But, this is not the situation Humanities journals in Norway! Here are the publishers associations, institutions and publishing houses with low incomes. (Egeland, 2016)

I agree thus far, but at the same time, those representing journals independent of publishers should be more active in asserting our opinions. There is a tendency for those representing the publishers, with the University Press [Universitetsforlaget] spearheaded, has the greatest capacity to participate in debates and hearings also in this country. Even though they do not to the same degree stack up financially to the journals they publish. In an article in the independent online newspaper Khronos by HIOA, Egeland writes,

> Janne Beate Reitan told that FORMakademisk is a scientific OA journals in design and research in design education. The magazine struggling economy with a grant from the Research Council and a claim for the corresponding self-financing. The technology platform is operated by the HIOA library. FORMakademisk is an example of a journal that should be able to join an OA consortium thus gaining earnings for the operation of editorial tasks. (Egeland, 2016)

As the editor-in-chief of FORMakademisk, I pointed out at both these meetings that the editorial team's role is to maintain the same academic level in journals with OA as in those printed with subscription arrangements, was absent in both these reports.

Consultation statement from FORMakademisk

FORMakademisk pointed out the same argument in its consultation statement on the Brekke Committee's report, which we reproduce here:

> FORMakademisk—Research Journal of design and design education—supports the proposal to establish a national consortium of humanities and social sciences journals with open access,

> where the Research Council of Norway's publication support is included as a block grant and the remainder of the funding is raised at the institutional level based on an annual clearing of each institution's publishing scope.
> It is important that the work of collecting the deductible for support from the Research Council not impose on the editors of each journal. Editors should get priority to spend time ensuring the quality of the editorial work and the published articles. Some of the revenue from publications should also go toward compensating the extensive and decisive efforts of editorial members to ensure the quality of the published articles. Today, only the costs of the production of journals are supported by the Research Council, not the editorial work. The new funding must therefore also secure financial support for the editorial work, which is a prerequisite for maintaining a high quality of what is published, in print and in open access.
> FORMakademisk also supports the academic and professional councils of UHR in giving level 2 priority to channels with open access if they have the choice between several channels of similar quality. Furthermore, we advocate for the introduction of a separate factor for open publishing in the publishing indicator to encourage a greater degree of open publishing.
> For FORMakademisk, it is still important to choose not to be affiliated with a publishing company to gain financial aid. (Regjeringen, 2016b)

We at FORMakademisk hope this consultation statement is read by the responsible authorities and that the editorial team's efforts will be appreciated largely to maintain a high level of scientific publication.

Count of editorial work

The Research Council of Norway now requires that Norwegian journals that receive production subsidies be published with OA for all. There is also increased pressure from the Research Council that Norwegian journals that receive support be published with OA for all (Egeland, 2016). However, financial support for scientific journals that comes from the Research Council only covers production, not editorial costs. There are large differences in the degree to which various educational and research institutions provide for editors, and editorial staff members are working to secure the editorial quality of scientific journals. Many are 'allowed' to use their own research time on this, something that goes beyond their own scientific production, which is what counts when it comes to publishing points. However, those who do all the work to actually consider and publish scientific articles that get publication points are not being favoured in any way. This stands in strong contrast to the scientific work of doctoral commissions or commissions for jobs and promotions, which of course are paid assignments. Editorial work should both be given exemption from teaching and tuition, count for promotion and pay off wage increases. This should the scientific journals' editorial teams claim from the government and fight for together!

Articles in this Issue

Cheryl Akner-Koler, Professor in Theoretical and Applied Aesthetics at the Department of Industrial Design, Konstfack, University College of Arts, Crafts and Design, Stockholm, and ***Parivash Ranjbar***, Affiliated Researcher at Örebro University, School of Health Sciences, both from Sweden, present in their article *Integrating Sensitizing Labs in an Educational Design Process for Haptic Interaction* new design methods for educating designers that are needed to adapt the attributes of haptic interactions to fit the embodied experiences of users. This article presents educationally framed aesthetic sensitising labs: 1) a material lab exploring the tactile and haptic structures of materials, 2) a vibrotactile lab exploring actuators directly on the body and 3) a combined materials and vibrotactile lab embedded in materials. These labs were integrated in a design course that supports a non-linear design process for embodied explorative and experimental activities that feed into an emerging gestalt. A co-design process was developed in collaboration with researchers and users who developed

positioning and communications systems for people with deafblindness. Conclusion: the labs helped to discern attributes of haptic interactions that supported designing scenarios and prototypes showing novel ways to understand and shape of haptic interactions.

Ulf Rydningen, Assistant Professor at the Faculty of Technology, Art and Design, ***Dorte Lybye Norenberg***, Assistant Professor at the Faculty of Health Sciences, and ***Inger Marie Lid*** (Professor at the Faculty of Health Sciences, all from Oslo and Akershus University College of Applied Sciences, discuss in their article universal design as a theme in the higher education experience, with a three-year collaboration between programmes in occupational therapy and construction engineering. The purpose was to provide students with knowledge of each other's field of knowledge and methods to contribute to a shared knowledge base of universal design within each subject. By analysing specific areas/tasks, students should justify and critically reflect on universal design. Further, the purpose is to strengthen universal design as a theme in research and education. The article concludes that the students appreciated getting to know and work with each other, and they found that their own profession had a knowledge monopoly on universal design. Students found that other professions have different knowledge bases, and cooperation provided insights into the complementary knowledge that can be valuable in a future profession in connection with universal design.

Adedapo Adewunmi Oluwatayo, Lecturer at the Department of Architecture, Covenant University, Ota, Ogun State, Nigeria, investigates in the article *Criteria for the Selection of Architects by First-Time Clients* the questions: which factors do individual clients consider when selecting an architect for the first time and how does the importance attached to these factors vary with the procurement method? These questions are answered in a questionnaire survey of recent clients of architects commissioned for residential projects in Lagos, Nigeria. The respondents were asked to rate the importance of certain criteria in their selection of architects. A principal component analysis of the variables investigated reveal that the factors defining the selection criteria used by these clients are the responsiveness, perceived professional competence, personality and prominence of the architect. Other factors are acquaintance with the architect and the budget of the client. The most important factor for each procurement method was identified. Only the factors within the control of the architect are considered in this study. The study identified areas that are most important to clients, which architects could improve on to enhance their chances of reaping from the new housing market. The findings of this study suggest areas that architects could improve on to improve their chances of being selected by clients in search of residential architectural services.

Book Reviews

Beata Sirowy, Senior Research Fellow at the Norwegian University of Life Sciences, Department of Landscape Architecture and Spatial Planning, has reviewed the anthology *Architecture Beyond Criticism: Expert judgment and performance evaluation* edited by Wolfgang F. E. Preiser, Aaron T. Davis, Ashraf M. Salama and Andrea Hardy and published by Routledge in 2015. She claims that both architectural criticism and building performance evaluation (BPE) aim to assess the quality of architectural works. Beyond this shared motivation, these domains seem to have little in common. The anthology puts this separation into question, arguing for the need to bridge the gap between architectural criticism and BPE. The major claim of this book is that that these two frameworks can not only co-exist but can also, to a great advantage, supplement each other, enabling comprehensive quality assessment in architecture and, in the long term, improving the quality of our everyday environments. She recommends this book to academic and professional audiences interested in the history and development of architectural criticism or building evaluation studies. One of its strengths is the variety of perspectives within—the book offers insights from around the globe, written by

researchers, curators, critics and professional architects at different stages in their professional and academic careers. Such diversity has implications for the final product—the book is to be read primarily as a document mapping the variety of perspectives within building evaluation studies and architectural criticism, rather than a systematic discussion of a framework for integrating the two domains. Yet, the idea of such a framework presented by the editors in the introduction is a worthwhile and promising attempt.

Good reading - in open access!

Oslo, December 2016
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Editor-in-chief of FORMakademisk

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Cheryl Akner-Koler and Parivash Ranjbar

Integrating Sensitizing Labs in an Educational Design Process for Haptic Interaction

Abstract

New design methods for educating designers are needed to adapt the attributes of haptic interaction to fit the embodied experience of the users. This paper presents educationally framed aesthetic sensitizing labs: 1) a material-lab exploring the tactile and haptic structures of materials, 2) a vibrotactile-lab exploring actuators directly on the body and 3) a combined materials- and vibrotactile-lab embedded in materials. These labs were integrated in a design course that supports a non-linear design process for embodied explorative and experimental activities that feed into an emerging gestalt. A co-design process was developed in collaboration with researchers and users who developed positioning and communications systems for people with deafblindness. Conclusion: the labs helped to discern attributes of haptic interactions which supported designing scenarios and prototypes showing novel ways to understand and shape haptic interaction.

Keywords: vibrotactile, material, tactile, embodied study, deafblindness

Introduction

For over a decade, there has been growing interest in developing a foundation for embodied interaction that questions the dominance of visual interfaces (Dourish, 2004). Haptic interaction research responds to this shift by exploring ways to design interactive systems that are integrated in our everyday physical activities and in tangible forms. However, few haptic interaction design solutions have improved life quality for end-users thus far.

The challenge dealt with in this paper is how to develop an art-based, educationally framed aesthetic method to improve haptic interaction. Our work is within the area of haptic-audio interaction design. We are exploring how to increase a more sensuous and meaningful usability of interactive artefacts by emphasizing haptic somaesthetic experiences during the art/design process (Dourish, 2004; Shusterman, 2013, Schiphorst,& Fraser, 2011). Karana's research group in material-driven design highlights the need for design methods that focus on the experiential aspects of material properties (Karana, Barati, Rognoli & Zeeuw van der Laan, 2015).

To deal with this challenge, we further developed aesthetic sensitizing labs that explore ways to improve tactile and haptic experiences through physical and technical interaction with materials, sensors and actuators. To test the relevance of these sensitizing labs, we integrated the labs in an aesthetic-oriented design process explored through a course for industrial design students developed by Cheryl Aker Koler. The core subject of the course emphasizes the aesthetic gestalt process with roots in a sculptural design tradition that starts with the inner movement and forces of form and their effect on the shape and expression of form and space, founded by Rowena Reed Kostellow (Greet Hannah, 2002). This aesthetic-driven course is integrated, in a provocative way, with a semiotics product design approach (Monö, 2004), which strives to guide the development of signs and symbols in products by exploring shapes developed in the process on four levels: describe, evoke, express and identify. A co-design team (Sanders & Stappers, 2008) was created incorporating the students in collaboration with external partners who shared their work with a number of vibrotactile interactive aids for persons with deafblindness (DB), deafness (D) and blindness (B). This

group had competence in audiology and computer engineering as well as experienced people with D, B and DB, together with instructors and interpreters. The challenge for the co-design team was to better integrate and express the interactivity of the haptic technology with a tangible form and appropriate material choices. The combined aesthetic/semiotic approach is only briefly outlined in this paper to allow for focus on the sensitizing labs that deal with the choice of material in relation to haptic technology.

Aims

The educational perspective we take in this paper is to develop teaching methods that support the learning processes for design students. These methods are also relevant for researchers and professionals working in the field of design. This paper focuses on the following two aims:

• To develop sensitizing methods to experience tactile/haptic properties of physical materials in relation to sensors and actuators to support haptic interaction.
• To integrate the experiences from the sensitizing labs within an aesthetic-driven, non-linear design course that engages design students in a co-design process.

Limiting the field of aesthetics and haptics

Aesthetics

There is a great need for aesthetic research that links properties of physical materials, actuators, sensors and signal processing methods, which are adapted to human and preferences (Johnsson, 2007; Persson, 2013). There is also an equal need to bridge aesthetic studies to a product/interaction gestalt process to support a more expression-oriented design process (Lim, Stolterman, Jung & Donaldson, 2007; Hallnäs, 2011; Schiphorst & Fraser, 2011). However, we lack knowledge in the aesthetics of haptic interaction (Stenslie, 2013).

Dewey (1980) explains, from a pragmatist aesthetic approach, the importance of supporting the full force of an immediate experience at the very moment one becomes aesthetically involved. He sees this immediacy as a key experience that builds emotional involvement and recognizes the holistic features of the gestalt. “It cannot be asserted too strongly that what is not immediate is not aesthetic” (Dewey, 1980, p. 119). In their article “Aesthetic turn”, Lars Udsen and Anker Helms Jørgenson (2013) explain how the interaction design community recognizes the importance of aesthetic reasoning in the design process. Their pivotal article presents these four approaches: cultural, functionalist, experience-based and techno-futurist. We work with a functionalist and experience-based approach integrated in a sculptural aesthetic discipline (Akner Koler 2007) that supports a dynamic gestalt process. This kind of sculptural aesthetic discipline is not represented in Udsen and Jørgenson’s (Udsen and Jørgensen, 2013) chart; however, we would like to inform the reader of our sculptural base. It is a base that works with principles of aesthetic abstraction and procedures that were passed down and further developed through the sculptor Rowena Reed Kostellow and the painter Alexander Kostellow and founders of the first industrial design school at the Pratt Institute in the US (Greet Hannah 2002). Through an art approach, we can open a channel to art movements, schools and institutions that use applied aesthetic reasoning driven by artists. The work of Ingrid Maria Pohl and Lian Loke (2014) on the changing tactile qualities of surfaces reflects a strong artistic profile in the way they created their method and a toolkit for the emerging art of touch-based design. Their work is relevant for the work we present in this paper. Thecla Schiphorst (2010, 2011) is a leading artist in developing haptic and embodied interactive work. Using her background in dance and interest in textiles, she has contributed to expanding the field of tactile and haptic interaction. In Stahl Stenslie’s (2013) emphasizes somatic performative activities where the experience of touch is considered an artistic material. He is interested in studying virtual touch and the somoa-

esthetic-felt experience of two-way touch, where one touches an artefact and the artefact mediates haptic feedback through technologies. In his early work, he used sculptures to express audio-haptic structures. All these artists explore haptic perception and experience through their connoisseurship of aesthetic skills and knowledge that can help to expand the field of interaction design.

Play, User/Player

Play is considered one of our first aesthetic activities, according to Friedrich Schiller (2004), because it engages our body in spontaneous, emotional and immediate ways where interaction and movement are central. A *player* is driven by desires and fantasy, which is very different from the concept of *user,* which relates to needs and function. In this paper, we would like to introduce the hybrid word *user/player* (U/P) approach, which underscores both the functional needs of the user and the more hedonic desires of the player. We show that U/Ps can be both the students during the sensitizing labs and the people with DB.

Haptics

Haptics is defined by Aristotle as the ability to grasp or touch, which involves the process of recognizing objects and textures. In the first major review of Human Haptic Perception, the editor Martin Grunwald (2008) summarized the field of haptics as follows:

> Since the beginning of scientific research into touch, the most varied of scientific disciplines have investigated one aspect or the other of this sense (haptics). The questions posed and the methods used to conduct such research are just as varied as the disciplines devoted to it. The particular results of these efforts, however, have not yet led to a comprehensive theory of the sense of touch. (Grunwald, 2008)

Given the illusive nature of the field of haptics, we have limited our approach to three areas of haptics that have relevance for the present study: *haptic aesthetic sensitivity*, *haptic communication* (for people with DB) and *haptic technology*.

Haptic aesthetic sensitivity

Haptic aesthetic sensitivity refers to the immediate physical experience and emotional response from probing material textures, structures and shapes. It is about actively exploring properties through indirect experience with tools and directly with fingers, hands, lips and eventually the whole body. Figure 1 (page 4) shows the *Fusion of the senses – haptic attributes,* identifying nine haptic attributes related to the hand.

This new model shows nine attributes for the hand that combines Lederman and Klatzky's (1987) six haptic explorative procedures with the added attributes of thickness, vibration and breeze. The aesthetic aspect of haptics involves our embodied and emotional awareness that links to our level of sensitivity. Being sensitive to a certain haptic property does not necessarily correlate with conscious embodied awareness or preference. For instance, if we are very sensitive to cold surfaces, this does not mean we have an aesthetic experience or prefer them. A common assumption in the aesthetic discourse is that an aesthetic experience is connected with "pleasure". Haptic preferences are not only about seeking hedonic "pleasure"; they also deal with, as Grunwald (2008) shows, the entire spectrum of human haptic perception, including repulsion, irritation, pain etc. We maintain an open attitude and treat the idea of aesthetics as a driving force that captures our attention and engages us in the world through all human experiences.

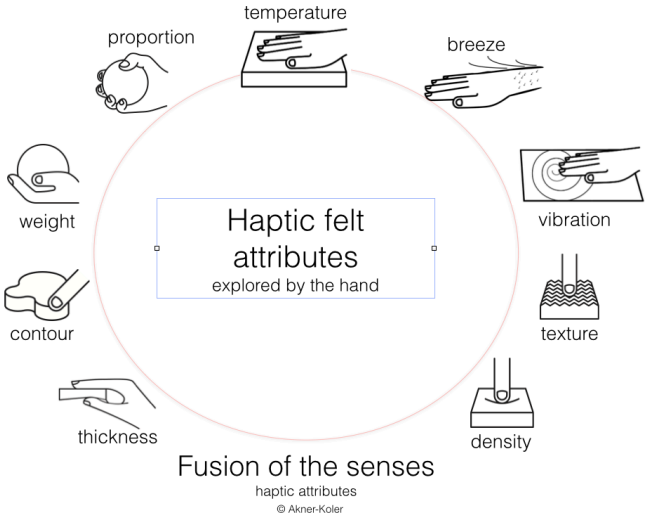
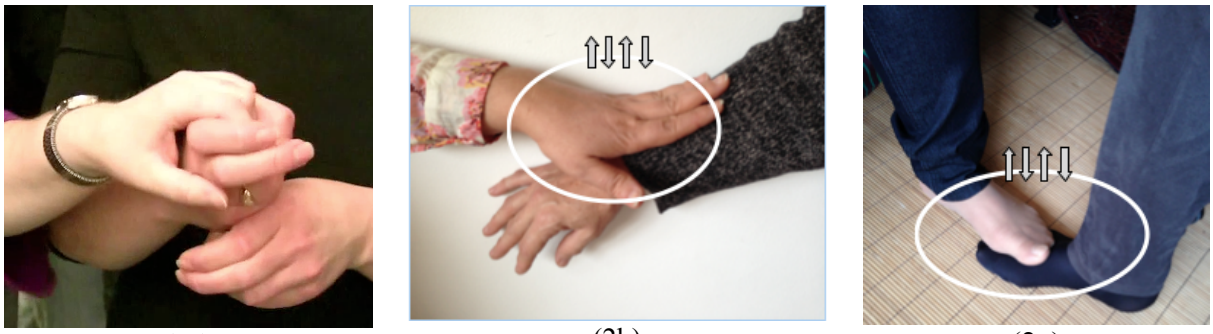


Figure 1. The "Fusion of the Sense – haptic attributes" model, by Cheryl Akner Koler, shows nine haptic attributes explored by the hand. The model is a further development of the Lederman and Klatzky (1987) model.



(2a) (2b) (2c)

Figure 2. Communication methods for deafblind people. (a) Example of haptic sign language meaning "try". Two examples of social-haptic communication of the "yes" feedback by (b) hand-to-arm and (c) foot-to-foot – inspired by Lahtinen (2003).

Haptic communication (for people with DB)

Haptic communication is a form of non-verbal communication and emotional expression, where information and feelings are received via active touch on the body. It has always been part of everyday human communication, for example patting on one's shoulder to show approval/disapproval, shaking hands etc. People with DB use different subgroups of haptic communication, such as tactile sign language, Tadoma and social-haptics. In tactile sign language, the "listener" with DB has her/his hand on the speaker's hand to perceive the sign language, gestures or finger spelling (see Figure 2a). In Tadoma, the "listener" with DB perceives the spoken language by feeling the vibrations from the speaker's larynx and movements of the speaker's mouth. Social-haptic communication for deafblind people has recently become a field of research and was established by Riitta Lahtinen (2008) in close collaboration with Russ Palmer. Lahtinen refers to touch messages between two or more people in a social context (person-to-person), usually combined with tactile sign language. Figures 2b and 2c show two different ways to communicate "yes" given by the encircled person who moves her hand or foot up and down to be felt by the person with DB. The person with DB is able to give and receive haptic gestures that carry information and emotional

expressions that communicate complex content. Research in haptic communication shows that touch can communicate complex emotions such as anger, fear, happiness etc. (Hertenstein & Weiss 2011).

Haptic technology

Haptic technology refers to interaction with users through the sense of touch and grip by applying such things as forces, vibrations and temperature. Examples of haptic devices include computer joysticks in game environments, mobile phones and 3D applications for modelling, navigation and micro/nano-manipulation. The research by Camille Moussette (2011) and his team developed a series of haptic prototypes to introduce different types of haptic interaction and terms to explain key characteristics of the devices. Their hypothesis was that by making simple haptic models, the participants will acquire a more acute sensitivity and knowledge of haptic systems. In the second study, another research team (Moussette, 2012) refined the modular series and introduced a design process with simple box-like mock up prototypes. The work of David Ledo and collaborators (2012) introduced their interesting "Behavior Lab", which lets programmers explore and "feel" available forms of haptic feedback that is later applied in design projects. In our study, we are interested in experimenting with a wide variety of materials yet limit the haptic technology to vibrotactile stimuli. The vibrations delivered to the skin through a vibrator are detected by different mechanoreceptors in the skin. The vibratory sensitivity of the skin varies depending on the properties of the vibrator (e.g. the size of contact area), the vibrations (e.g. frequency and intensity) and the person (e.g. body site and individual sensitivity). Thus, when designing different devices based on vibrotactile technology, the differences in the vibrator, vibrations and the vibratory sensitivity of the person should be considered. The haptic sense can be improved by training through different sensitizing methods (Spens & Plant, 1983).

Methods

To investigate how to improve haptic interactivity integrated in the use of digital haptic technology, we further developed sensitizing labs. These labs begin with procedures for embodied exploration that emphasize the important role materials play in the design process. The labs support ways to combine haptic interactive research and industrial design processes to impact design education. Our methods have developed over a number of years in different research and educational contexts. The present paper shows an educationally framed study conducted in a five-week course involving 12 industrial design (ID) students with an even amount of females and males working in mixed groups. The first phase of the course was run by Akner Koler exploring aesthetic abstraction and semiotic exercises as well as *sensitizing labs*. In the second phase of the course, both authors worked with the same 12 ID students in collaboration with two researchers; a medical doctor in audiology and an electronic / systems engineer. In this phase we merging an aesthetic-driven design process with a product oriented project with the aim to create aids for persons with DB.

The main focus of this paper is on the sequence of sensitizing labs integrated within a design process; however, due to lack of space, we are not able to give an in-depth description of the entire design process.

Sensitizing labs

We presented three explorative lab sessions we call aesthetic *sensitizing labs,* which were performed in a sequence from material-labs to vibrotactile-labs to combined material/ vibrotactile-labs. The labs were conducted in a playful and supportive atmosphere so that the participants felt engaged in their haptic exploration of the materials and interactive technology.

The three labs are as follows:

- The *material-lab* explores and assesses tactile and haptic experiences of the texture and structure of materials through mediated and direct touch, gradually engaging all of the senses.
- The *vibrotactile-lab* maps the individual sensitivities and preferences of the haptic experiences of a vibrotactile actuator placed on different parts of the body.
- The *combined material/vibrotactile-lab* explores and assesses the tactile and haptic experiences of how vibrotactile signals are transferred through materials to different body parts.

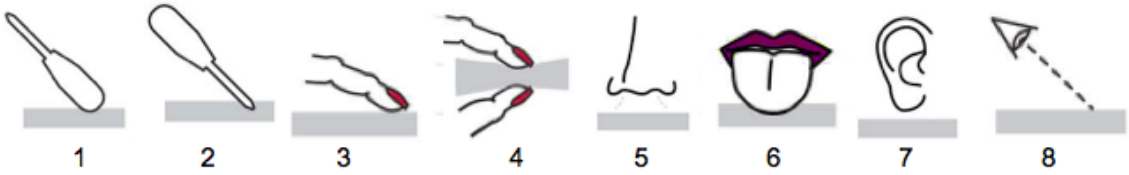
Group participation

All three labs were performed by the same group. The participants were 12 ID students in a design course accompanied by a few guest researchers. They were divided into four groups of three to four participants, who were assigned different roles: host (lab leader), blindfolded guest (U/P) and secretary/camera operator.

(3a)

(3b)

(3c)



(3d)

Figure 3. Sensitizing material-lab. (a) The blindfolded U/P explores the texture of the chosen material with the blunt end of a screwdriver. (b) A close-up image showing the sharp end of the screwdriver in the U/P's hand. (c) The group working together around the table; the host guides the fingers of the blindfolded guest. The last row of icons (d) show the eight stages on the chart: 1–2: tool – the blunt and sharp ends; 3–4: finger and grip-texture and density and thickness; 5–6: nose and mouth – smelling and tasting, which include exploring the haptic attributes defined in Figure 1; 7: ears – listen; 8: eyes – see.

Material-lab

This lab is a revised version of the "mediated touch" lab further developed by Akner Koler. The lab was developed to systematically sensitize the participants to the aesthetic haptic properties of selected materials. To start, each participant independently chose a material they liked from a large collection of industrially manufactured materials. They then placed their chosen material in an envelope to hide it from the other members and returned to their group.

Each group received a chart for each member, which was specifically developed for this lab outlining eight stages through which to systematically explore the properties of each chosen material. The first lab leader instructed the U/P to put a blindfold on and then placed the chosen material on the table in front of the U/P. Then the lab leader guided the U/P to explore the properties of the material, first by probing the material with a tool. The property of the tool magnifies particular attributes of the material and focuses the attention of the U/P to improve their sensitivity. The sharp tip of a screwdriver was placed in the hand of the blindfolded U/P, who then received instructions to gradually feel the structure of the material through the blunt end of the handle (see Figure 3a–c, page 6). The secretary filled in the chart by taking notes on the comments made by the U/P under each stage (see Figure 4a). The tool (screwdriver) was then flipped around so that the blunt handle was placed in the U/P's hand, and the material was explored with the sharp end, revealing different properties. In the following stages, the material was directly felt by the fingers, hands, nose, mouth, ears and finally eyes. – see Figure 4c. Figure 4b shows a U/P listening to the material by moving her finger over the surface, the sounds offer information about the folded patterns on the surface. This lab is a revised version of an earlier lab called "mediated touch" developed in collaboration with Teo Enlund (Akner Koler & Enlund 2011).

(a) (b)

Figure 4. Sensitizing material-lab. (4a) Example of a chart with eight stages; (4b) a participant moving her fingers along the material to feel the structure and simultaneously create sounds.

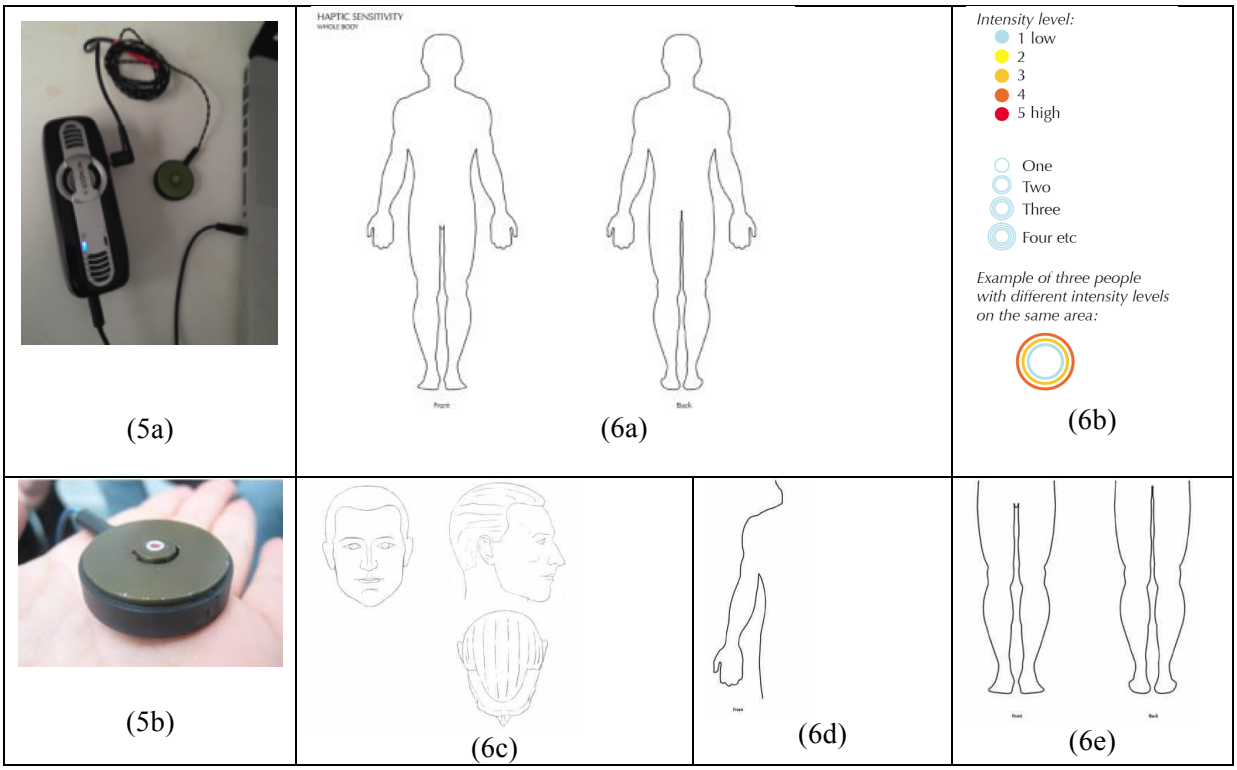
Vibrotactile-lab

In the vibrotactile-lab, the participants were asked to explore their individual threshold of sensitivity for different sine waves from a vibrator. Each group received papers with number of body map and vibrotactile kit as explained below (see figures 5–6, page 8). The lab took two to three hours.

The kit developed by Parivash Ranjbar consisted of a vibrotactile actuator (C2-Tactor vibrator, with a frequency range between 10 and 350 Hz) and a modified amplifier (Wowpotas) (see Figure 5a–b, page 8). Three recorded sine waves, 100 Hz, 180 Hz and 250 Hz, were used as test stimuli and were sent to the vibrator through a media player to control volume and vary the intensity. The technology and test stimuli was based on research in vibrotactile aids for environmental perception for person with profound deafblindness (Ranjbar & Stenström 2013).

The body maps consisted of a silhouette of the entire body: front and back (see Figure 6a–c, page 8) and particular parts of the body, including head and face, arm, torso and legs

from front and back. The participants stayed in the same groups to explore the different vibration frequencies at various volumes. Each group hooked up the vibrator to a laptop and turned on the sine wave for an initial exploratory test. The participants took turns placing the vibrator on different body parts and recording their level of sensation on the body map (see Figure 6). The groups were asked to use a color-coded legend (see Figure 6b) with five different intensity levels from high (red) to low (blue), as shown. A concentric circle code was used to indicate the number of participants. Each sine wave needed to be recorded in a separate set of body maps.



Figures 5 and 6. Figure 5 is the left column, which shows the vibrotactile kit. (5a) Amplifier, vibrator and computer; (5b) close up of vibrator. Figure 6 shows the body maps of tactile sine wave 180 Hz. (6a) Whole figure body; (6b) colour code; intensity level: low 1, high 5, 1= blue, 2= yellow, 3= light orange, 4= dark orange and 5= red. Each participant is marked by a concentric circle. Ex.: 3 circles = 3 participants. (6c) Head; (6d) arm; (6e) legs.

Combined material/vibrotactile-lab

In this lab, the participants worked in the same groups and rotated through the same roles: lab leader, U/P and secretary/camera person. This lab explored combining material properties with vibration signals using the same vibrotactile kit described earlier. The participants were asked to either document their experiences on a newly developed provisional chart (see Figure 7b, page 9) or freely record them on a blank piece of paper. Each U/P took approximately 10–15 minutes to complete the lab. The lab leader/host placed a material sample over or around the vibrator and gave it to the U/P, who could choose to use a blindfold or not (see figures 7a and 7c). The volume level was controlled via the computer, with a suggestion of using four different intensities: 25%, 50%, 75% and 100% of the total volume. In the provisional chart, the vertical axis showed three sine curves (100 Hz, 180 Hz and 250 Hz), and the horizontal axis showed volume (0 to 100%). It also included four symbols (see Figure 7b) for the following experiences: does not feel anything (outlined circle); feels pleasant/good (filled

circle); feels distinct/explicit (diamond) and feels unpleasant/hurts (triangle). As soon as the U/P felt they could respond to the stimuli, they were asked to describe their feelings. The secretary recorded the responses on the chart or freely developed a way to record the experience.

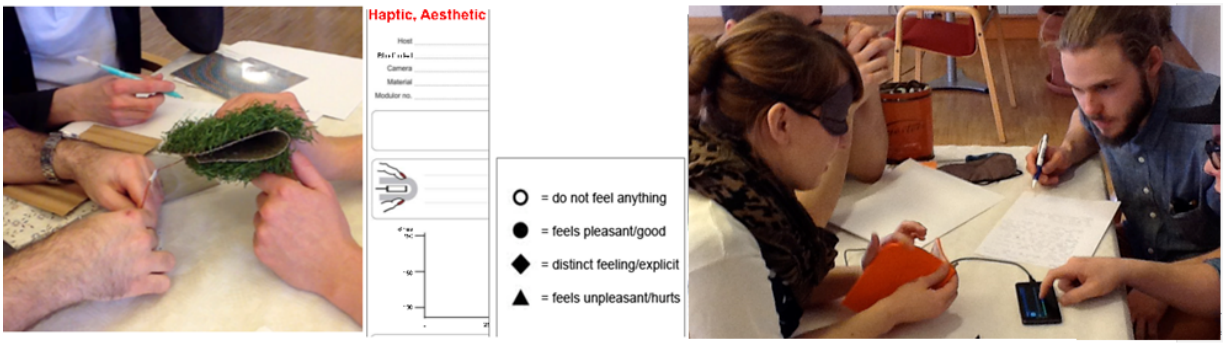


Figure 7. Combined material/vibrotactile-lab: (a) Artificial grass pinched around the vibrator; (b) chart to record the participants' level of sensitivity; (c) vibrator surrounded by soft foam material.

Design process/course

To test the relevance of the sensitizing labs within a design process, the labs were integrated into the introductory phase of a five-week aesthetic-driven industrial/interaction design course developed by Akner Koler. The course underscores the importance of embodiment and the formgiving process in which designers apply previous knowledge of aesthetic compositional principles of form and space and model-making skills to produce "tangible" 3D sketches throughout the entire process from concept development to final solution. The idea is that by making things tangible, it is easier to gain empathy for the user's situation and develop sensitivity to technology in order to better shape the i*nteractivity attributes* (Lim, Lee & Kim, D., 2011) of the product's physical properties. The course has an art-oriented profile and was initially developed for ID students to combine their experience in 3D *aesthetic abstractions* (Akner Koler 2007) with *semiotics* (Monö, 2004), by working in *co-design* teams (Sanders & Stappers, 2008) of two to three members, collaborating to develop a gestalt process.

Following is a brief introduction to aesthetic theory: *aesthetic abstraction* emphasizes the inner structure of form and how movements and forces in form can activate, enclose, expand and shape space. This approach to form and space is rooted in the work of Rowena Reed and Alexander Kostellow (Akner Koler 2007; Greet Hannah, 2002) and was further developed by Akner Koler to adapt to a Swedish formgiving culture at the Department of Industrial Design at Konstfack University College of Arts, Crafts and Design. The course applies taxonomy for aesthetic abstractions based on geometric law-bound structures in relation to the human body. It supports a non-linear dynamic design process with several *loops* feeding backward and forward. In this process, the designers strive to develop a tangible solution that applies insight into the user's embodied situation (see Figure 8, page 10). In this course, we also introduce haptic interaction design technology in the sensitizing labs by collaborating with a team of medical and technical researchers who work mainly with vibrotactile technology in projects for impaired U/Ps.

A general inter-looping network of a 10-stage design process is illustrated in Figure 8 and further described in Table 1 (page 11). It starts with an introduction of the course content and presentation of ongoing haptic research project(s) combined with sensitizing labs that introduce material and haptic technology. It continues with user studies, background research,

embodied studies, scenario development and making sketches and prototypes that test concepts, stimulating an emerging gestalt leading to a final design solution. The final design solution is a manifestation of the entire dynamic inter-looping process and serves as a basis for examination.

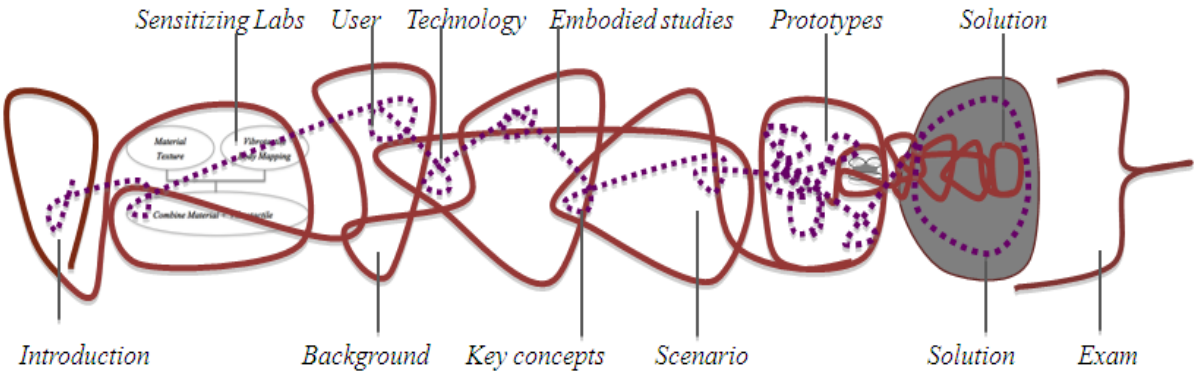


Figure 8. A 10-stage design process with non-linear looping activities that feed backward and forward. The solid line outlines the different activities and how they overlap with each other. The dashed line represents the formgiving process within the overall design process where 2D and 3D sketches, models and prototypes are developed that physically test ideas and manifest aesthetic abstractions and semiotic signs and symbols that eventually feed into the emerging gestalt, expressed through the final design solution. Figure by Akner Koler.

Research team: haptic research projects

A number of user-based haptic research projects were presented by the research team to inspire the students in their design project (see below). They all require some sort of body-worn sensors/actuators that receive signals and transmit instructions/information about on-going activities. An example is the Ready-Ride project, which is a positioning and communication training system to support autonomous horseback riding for persons with DB in a riding arena (Stranneby et.al. 2011)). Through interaction with vibrotactile technology involving mobile senders and receivers, a trainer can send position instructions such as left, right, forward and stop as well as modulate and evaluate activities, such as slow, good, continue etc. (see student project inspired by Ready-Ride under Design course section, Table 3.) One important challenge in all the projects was to expand the space for interaction between people with DB and their instructors and assistants, thereby supporting autonomy. Haptic interaction technology can complement tactile sign language and body communication from a distance. A second challenge from a design education perspective was to create embodied interactive qualities (Dourish, 2004; Pallasmaa, 2011) that smoothly integrate the shape of the forms with the intuitive movements of the U/P. A third challenge is to create a physical expression of the haptic interaction integrated within the gestalt of the product form.

The outline of the design course in Table 1 gives the reader some insight into the type of activities involved in this aesthetic-oriented design course. However, the focus is not on describing the entire design process. Instead, the focus is on showing how the aesthetic experience and haptic concept development gained through the sensitivity labs inspired activities in the design process.

Table 1. Design process (non-linear looping activities).

Process	Description / instructions
Introduction by leaders	Present the theoretical and practical aspects of the course. Introduce the collaborating guest research team and the research projects. Group the students in co-design teams and discuss the course and research projects
Sensitizing labs	Take part in the sensitizing labs to explore the materials and technology in relation to the body. Document the labs through video films and notes, group the students in co-design teams and discuss the course and research projects. Write a report explaining the process and summarizing the experience from one of the labs.
User/Player (U/P)	Prepare and conduct a team interview with deafblind people, i.e. U/Ps Assign each team a specific U/P profile inspired by one of the projects. Conduct an onsite visit in the U/P's environment that engages all senses with emphasis on haptics. Prepare and conduct an interview with the U/P
Background	Obtain background information on the historic, medical, aesthetic and social situations of the U/P and the role technology has played in aiding their situation/impairments. Limit your "screen" time with the Google search engine. Make a presentation of the background information using images + text. Continue to build up a presentation on a daily basis.
Technology	Read up on the suggested technology. Experiment with the haptic technology kit.
Embodied studies	Create "embodied" experiences of situations that expose the team to the experience of your U/P and the material/technology. Playfully explore the observed patterns of movement expressed by the U/Ps from an embodied and spatial perspective. Invite others to take part in embodied studies to gain awareness of individual variations. Examine and categorize the experiences gained from the studies. Create a playful, embodied working environment for the team that has an atmosphere and materials that continue to sensitize the team members to the qualities meant to be expressed in the design solutions. Stay embodied through the design process!
Engage experts	Attend the lectures and supervision meetings with invited experts, including people with DB. Contact experts in the field and visit their work/play space.
Key concepts	Formulate a number of key concepts that both drive the process and define the intentions of the emerging gestalt. Test these key concepts on others and ask for constructive feedback in relation to the process and gestalt.
Scenario /storyboard	Develop a scenario/storyboard as a unique fictional story about people, events and environments that presents alternative versions of future solutions. Develop "personas" as credible hybrid characters that represent many different aspects of the U/Ps. Draw a series of 3–5 framed sketches that show the persona in a situation that unfolds over time.
Prototype: explore, test and engage	Develop prototypes throughout the process to study specific problems, test different concepts and express interactive attributes. Explore different prototypes that clarify the intentions and expressions of an emerging holistic gestalt. Categorize the models in relation to the problems, tests, concepts and gestalt. Adapt the key concepts as the prototypes develop. Remember: the key concepts are not fixed!
Aesthetic abstractions & semiotics	Apply and analyze aesthetic principles by abstracting the inner structure and movement of the physical forms and determine how the parts relate to the overall organization and their effect on space. Apply and analyze semiotic signs and symbols carried through the properties of form, material and space.
Prototype: intention of the gestalt	Develop prototypes that express physical and possible technical functions. However, the prototypes do not need to function technically. Aim to clarify the intentions and expression of an emerging holistic gestalt. Describe the development of the different prototypes that support the same gestalt process.
Solution	Explain why a particular prototype was developed into a final solution.
Final presentation	The final presentation is 20 min plus 10 min for feedback. It should give insight into the entire design process, including the early labs and embodied studies. Select several 3D sketch models that show how tangible form is used to drive the design process. Define the key concepts and explain how these concepts developed. Present a relevant scenario that illustrates the embodied/haptic activity integrated in the design solution. Formulate an analysis of aesthetic abstractions that explain the overall composition in terms of volumes, proportions, inner axial movement of form and space etc. Use the specific aesthetic terminology outlined in the taxonomy. Motivate and articulate the semiotic arguments interpreted from the composition. Explain the gestalt process that led to the specific shape of the product form. Clarify the way materials and technologies are integrated in the gestalt process. The final model should be scaled 1:1. Use the best material that shows the 3D features of your final solution. Show a 2D rendering of the final model that can convey colour combinations and surface structure.
Exam committee	Demonstrate how to handle the form and engage in the interactive attributes that are manifested in form, material and technology. Engage guests/critics through a creative performance to share the process. Encourage guests/critics in haptic interaction with prototypes. Articulate the learning outcomes for the course, i.e. aesthetic abstractions, semiotic signs and symbols, material choice and haptic interactivity. Formulate questions for the discussion with guest critics, teachers and students.

Results

The results are presented in two parts; the first part concerns the three sensitizing labs and second part the design process. The results were developed by reviewing (i) the video films, (ii) student reports from the labs and (iii) the constructive and critical feedback from the *world café method (2013)* and at the final presentation as well as (iv) by the authors discussing their direct observations during the entire project.

Three sensitizing labs

Material-lab

The lab started with blindfolding the U/P, who was guided through a mediated experience of texture, which emphasized tactile and haptic impressions. The majority of the U/Ps became relaxed and present in the moment. Moreover, the secretary and the camera person helped create an atmosphere of conscious awareness and trust by actively listening and documenting the experiences and comments from the blindfolded U/P. They also cultivated a mindful and attentive experience.

The material samples were industrially produced, and many were made up of compound properties with layered or woven structures, often making it difficult to attain a coherent aesthetic experience of the sample from one stage to the next. Despite this uncertainty, and at times frustration, many participants felt that the lab helped them become aware of how mediated touch through a tool could separate certain qualities and how their different senses could slowly unveil particular qualities of the materials. Given the complexity of the response to this lab, we found it useful to discuss the results in Table 6 in two ways: 1) *exploration*, which explains the immediate actions, tools and situation and 2) *assessment*, which takes a step back and gives an overall comment on the exploration.

At the exploration level, the U/P actively probed the materials through indirect (tools) and direct embodied experiences, such as actively touching and moving a finger (or other body parts) across the material to check out local patterns and structures. As they explored the materials, they received feedback from their actions as if the material itself returned the action. This reciprocal feedback through touch and grip helps determine properties such as hardness/softness, roughness/smoothness, heaviness/lightness etc. This very basic explorative level can carry hedonic reactions, arousing emotions that can feed forward in an ongoing explorative process (Hertenstein & Weiss, 2011). We believe this explorative level that arouses emotion can also feed an emerging gestalt process.

Table 2. (short version) Two of the results recorded on a three-column table showing Type of Probing, Exploration and Assessment. (Appendix 1: long version)

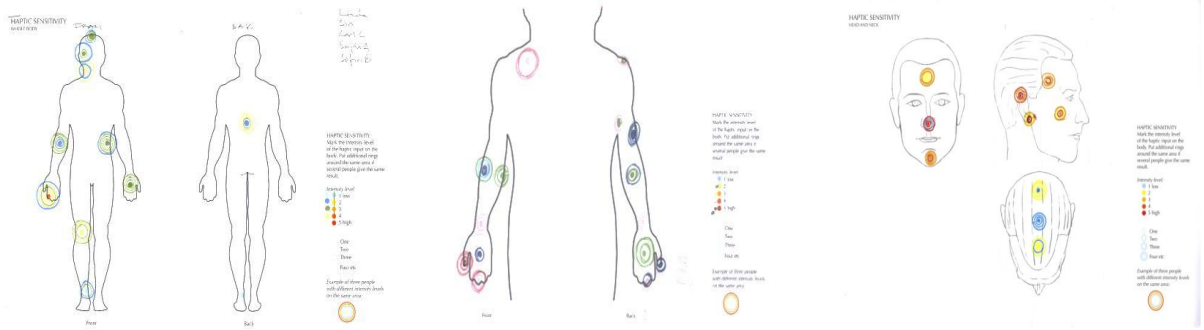
Type of Probing	*Exploration*	*Assessment*
	The tool was held with the shaft so the blunt end of the handle probed the material. When pushing down on the material, one received a mediated sense of the density (hardness or softness) of the material. By moving the tool across the material, it was possible to feel its large-scale 3D textural properties as well as how polished or rough the material was.	The feeling of bluntness was due to the broad round shape of the handle as well as the rubber material the handle was made of. It was easy to assess the difference between the material's density (hard/soft) and friction (polished/ rough), while the details of the material's texture were not possible to discern. Despite the tool's blunt character, it conveyed a certain refined sensitivity for large-scale patterns.
	The materials are brought close to the ear to hear the sounds produced through twisting, flexing etc. Fingers and finger nails were often used first then other body parts could be used to create sounds.	Hearing the structure of the material gave it a new dimension. Surface sound qualities could give clues to the properties of the materials, such as metal, wood, hollowness, density, smoothness etc.

At the assessment level, the U/P brought the features from the explorative level together through assessing the overall haptic dimensions of the material. At this level, they searched for patterns, such as repetitive or non-repetitive textures, symmetries or non-symmetries, how properties such as polished or rough surfaces were distributed throughout the form and how contours continued or changed course as they moved through the material. Three-dimensional, overall, physical qualities were assessed, such as curved or complex surfaces, contrast in proportions throughout the material and how the shape and details interrelated. As the U/P assessed the immediate properties, s/he began to search for meaningful expressions in physical qualities.

To summarize, the material-lab gave the participants a deeper, more discerning understanding of the tactile and haptic aesthetic experience of material textures and structures. Table 2 (in Appendix 1) shows an outline of the results discerning the *exploration level* from and *assessment level*. Table 4 shows a few representative examples of from this outline.

Vibrotactile-lab

The results from one group that performed the vibrotactile-lab are shown in the body maps in Figure 9 using one tactile sine wave (180 Hz) as stimuli. The maps show that sensitivity levels for vibrations could both be similar and vary between individuals, depending on (i) the placement of the vibrator on the body, (ii) the quality of the vibration signal and (iii) individual perception/sensitivity. For example, several participants felt strong vibration sensations on the nose causing their eyes to water, while one person felt only a low sensation (see Figure 9c). One observation was that the mixed gender group of students needed to gain a certain amount of trust for each other because of the level of intimacy the lab entailed. There are social body zones for touching such as hands, arms, upper back and shoulders, which are usually included in everyday communication. However more intimate zones, such as the face, neck and front of the body, are more sensuous, and each student needed to provide consent as to where the test in these zones could be conducted. These intimate zones, and the hands, are extremely sensitive, so they must be included in order to learn about the possible placement of the vibrator. The results of this exploratory study are about sharing and comparing felt experience caused by the stimulants of vibrotactile signals on each student's body.



(a) (b) (c)

Figure 9. Body maps showing individual sensitivities of vibrotactile stimulation with three to five participants in each group. Map (a) shows the sensitivity of different participants in one group testing the entire body. Map (b) shows the results from the back and front of the arms and map (c) from the front and side of the face as well as the top of the head. Each circle shows one individual response, while each colour represents a different level of intensity.

Combined material/vibrotactile-lab

The results of the combined material/vibrotactile-lab show that the choice of materials greatly affected the participants' experience of the vibration. It was interesting to note that very different materials could transfer vibrations in similar ways – for example, a thin natural cork material in relation to a thin foam plastic material. Moreover, the opposite was also true: two materials that visually looked the same could transfer vibrations quite differently – for example, two soft materials used as computer mouse mats. Although the participants were told they could freely record and explore ways to combine materials and vibrators, many of the groups ended up using the provisional chart shown in Figure 7b. This chart offered a way to plot out the sensitivities (none–explicit) and preferences (pleasant–hurt) to sine waves in relation to volume transferred through material. To deal with the complexity of combining materials and vibrotactile technology, both the preliminary chart and the structure of the lab need to be improved. One suggestion from a number of students to improve the lab was to develop a design task that could define a meaningful intention for using this combination.

This combined lab explored ways to generate embodied experience and conceptual knowledge about material in relation to vibrotactile signals. The students used a free choice language method to describe their experience triggered by the dynamic patterns of haptic interactivity involving emotions and a more reflective exchange between the U/P and the members of the team. These more complex and emotionally charged experiences are important driving forces in the gestalt process needed as the design activities progress. By setting the stage for students to share affective responses in the early phase of the design process, before they know the design challenge, the students may take the opportunity to enhance interpersonal embodied communication on a deeper level. However they may also become frustrated because the lab does not frame a design space, which includes intentions and meaningful challenges. It is still defined as a haptic lab with a focus on attributes. The combined lab and the open instructions that engage perceptual/emotional feelings offered the students a way to work with a spectrum of hedonic tones and values that is necessary in the next stage of the course involving the design process.

Design process/course

The results of the design course showed that the students managed to integrate an expressive sensorial material dimension with haptic interactive technology within their design process. We found that by presenting the sensitizing labs at the very beginning of the course, we kick-started the making process, inspiring the students to test ideas and create prototypes and share sensuous and emotional experiences early in the course. The design process also emphasizes the importance of conducting *embodied studies* for the team members to explore their own *felt experience* of forms and patterns of interaction inspired by studying the U/P's situation. These forms and patterns are shared by the design team with the U/P and the researcher during different phases of the process.

In the sensitizing studies, the students were offered only a kit for modulating vibrotactile actuators; however, we found that the students could playfully work with other types of interactive technology for receiving and sending signals. Given that ID students are not very experienced in interactive technology, it is usually hard for ID students to playfully perform or conceptualize complex interactivity attributes. We believe that the combination of sensitizing labs that included function interactive technology, studying the U/P in their situation and doing embodied studies gave the design process a strong aesthetic awareness yet retained a certain level of applied haptic conceptual theory, which sparked playfulness and creativity. This non-linear design process weaves together different modes of abstraction from semiotic to aesthetic with intuitive embodied experiences through the creation of prototypes and scenarios. By observing the way the students worked during the design process, we could

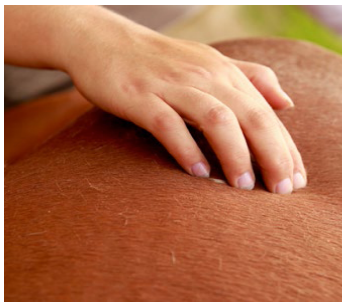
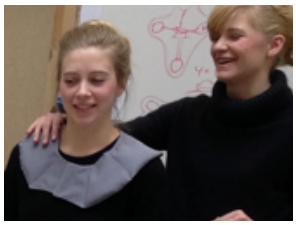
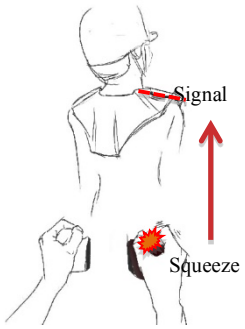
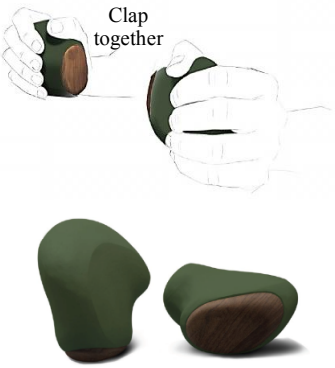
see they managed to maintain a creative and critical framework based on the findings from the sensitizing labs. As shown in Table 3, the students continued to do explorative embodied studies where haptic engagement was central. They were curious about the felt experiences of the team members and also conducted studies with other students/people to explore the semiotic attributes of the solutions leading up to the final gestalt.

Haptic horseback riding guide

A representative design project inspired by the Ready-Ride research project (Stranneby et.al 2012) is presented here, which involved giving people with DB horseback riding instructions for position, direction and intensity of movement (see Table 3). The design process led to the development of a scenario that showed a sequence of images illustrating how the instructor can give direct, gestural signals to the rider. In the scenario, the following three design solutions were presented: a pair of riding instructor *handles to be held in each hand* and *a collar* and *headband* worn by the rider. The instructor's handles were made of soft material that could be squeezed to indicate 1) the direction to ride, such as to the right, left or straight ahead or 2) the amount of tension to use on the bridle's reins. The vibration signal was received by the rider with DB on the top of the corresponding shoulder or at the centre of the upper back and neck region. At the base of each of the soft handles is a flat wood surface with an embedded microphone/haptic pressure sensors. The wood surfaces could be clapped together to create both an audio sound and interactive signal (see solutions in Table 3) to mimic a traditional clicking sound for "giddy-up" or start. Clapping the two surfaces together created both audio and haptic signals from the same gesture, so DB and D riders, as well as hearing riders, could receive the same instruction from the trainer. An algorithm transferred the signal adapted to the frequency range of the skin and the vibrotactile actuators that were placed on the riders with D/DB.

To get further feedback for the process and solutions, the students presented their work to the Ready-Ride advisory board meeting. The riding instructor had had years of experience training riders with D/DB on a competitive level and is a leading expert in the field. She was impressed by the haptic interactive qualities that were designed in an intuitive way that could be integrated with her own instructive gestures. Although at this meeting the mock-up prototype of the handles did not function technically, the instructor grasped the handles and imagined the interactive attributes of the haptic squeeze and the clapping gestures for conveying instructions. She had had prior experience with the earlier Ready-Ride technology and was therefore able to understand this more advanced chain of movement-based interactive events that involved translating her own gestures to the vibrotactile components in the collar of the rider with DB. The work therapist also felt an affinity for the two handles and underscored the importance of gesture-related interaction. She questioned the use of a visual interface, because it interferes with a more direct and intuitive relationship between instructor and rider. Both the instructor and the work therapist have been adamant about developing haptic interaction solutions for the riding instructor's handles. This has led to a quick working prototype using two phones (instead of one) that are placed in each hand to send the gesture based signal expressed by the instructor. A group discussion developed around how a more intuitive haptic interaction, as opposed to visual interaction, would improve the timing and quality of the instruction as well as reduce errors due to visual distraction. Several vibrotactile actuators were available to play with at the meeting, which stimulated a discussion of the somaesthetic qualities of the vibration. An important issue concerned the individual preferences of how and where the vibrotactile signal could be received and experienced. The results of the vibrotactile sensitizing lab showed that there is great individual variation between how people experience haptic vibration. Persons with DB often have other physical disabilities that could also affect haptic sensations.

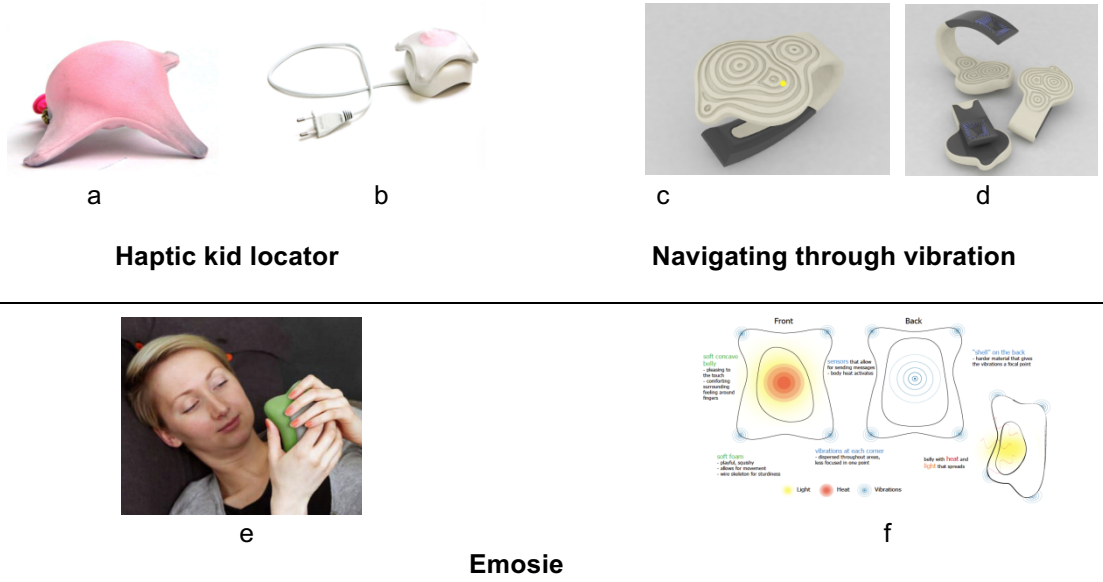
Table 3. Design process: Haptic horseback riding guide (inspired by Ready-Ride).

Different stages in the process	**Images**
Embodied study Left: Blindfolded student with hearing protection rides on the shoulders of team member acting as horse. Right: Haptic signal on the back of a horse to guide the horse's movements.	 
3D physical sketching Left: Blindfolded students explore haptic experiences of form. Right: Exploring the haptic relationship between form, material and plasticity.	 
Prototype Left: Test placement of vibrators/pressure actuators on headband. Right: Test collar with signals on shoulder and back.	 
Scenario/storyboard Left: IR waves radiate from headband to detect obstacles and give haptic feedback through the actuators on the head band. Right: The trainer squeezes the hand-held unit in the right hand, which translates vibrotactile instructions to the right side of the collar.	 
Design solution Left: Two hand-held units used by the trainer to instruct the rider: 1) Sensors and processors are embedded in the wooden surfaces that create haptic signals by clapping surfaces together. 2) Squeezing the soft handles sends a signal to control the reins. Right: Haptic feedback technology is integrated in the collar and helmet for the DB rider.	 

Other design solutions

The three design projects in Table 4 show other forms of interactivity developed by design teams in the course.

Table 4. The three other design team solutions: a–b) Haptic kid locator, inspired by Monitor; c–d) Navigating through vibration, inspired by Ready Ride; e–f) Emosie, Long distance communication – Inspired by Monitor (Ranjbar & Stenström 2013).



The *Haptic kid locator,* inspired by Monitor, came from an interview of a father with DB who needed to know where his children were in the home. A vibrotactile actuator that translated the relative distance and position of the children was mounted at the tip of each arm of the starfish-shaped artefact. To convey urgency, an inflatable air bag was designed at the core of the starfish that could be triggered by very loud sounds that signalled a potential emergency. The shape of the prototype is a merged superficial ellipsoid in the centre with two crossing axes at right angles. The soft transitional surfaces between the arms make up the organic contours of the starfish, which also happens to be a symbol for DB.

Navigating through Vibration is inspired by Ready Ride. The students found through the second sensitizing lab that the inside of the wrist was sensitive to vibrotactile signals. The bracelet is designed of soft flexible materials to both magnify the vibration and hold the vibrator in place. The sound pattern designed on the wearable interactive system is meant to communicate vibration through semiotic expression.

Emosie is a long-distance communication device. Three interactive technologies (heat, vibration and light) are integrated into the product to allow children and parents to send and receive expressive messages to and from each other through haptic experiences. The idea is to bring them closer together despite long distances and to ease the difficulty of separation between them in a positive way. The soft shape of the "mother" form is like a teddy bear that express and evokes a hug. It is made of memory foam to evoke the sense of touch; the back is hard to give the vibration a focal point and the heat and light radiate form the belly.

Discussion

Here we discuss the results and how the methods support the students' learning process, starting with the sensitizing labs and the link between the labs and the design projects.

Sensitizing labs

In the *material lab,* the students' learning process was enhanced by blindfolding the U/P, thereby emphasizing their tactile and haptic perception and building trust between the other members in the group. We observed that the student's choice of materials in the third lab (see below) was more informed about haptic material structures. By zooming in on material through the properties of a mediating tool, a screwdriver, the major patterns of the surface were felt through the tool's blunt handle, while the small details were felt through its sharp tip (see Figure 3 and top of Table 2). Exploring textures through tools heightened the awareness of patterns and small details, which could exaggerate the role of these features in relation to the overall experience of the material. The material of the tool also had a great effect on the probing experience. For example, the screwdriver had a material on the handle, so a feeling of friction was apparent when moving it across the material. The learning experience is about discerning the properties of the tool in relationship to the properties of the material sample.

Going from mediated touch to direct finger touch merged the participants' overall tactile sensitivity for patterns, minute details and temperature. By then grasping the material, the overall haptic experience of the material was expressed. Exploring haptic properties through the lips, teeth, tongue and mouth gave a very precise sense of the material's structure and tactile surface. Since the participants were blindfolded and knew the industrial material was not meant to be eaten, they were not very willing to explore the materials with their mouth. Perhaps some natural culinary materials should be included with the range of industrial samples in order to compare the differences between artificial and natural substances.

In the *vibrotactile-lab,* we chose sine waves with three frequencies so that the students could experience how different frequencies require different amplification in order to be sensed by the same body part. It is well known that skin sensitivity varies across body sites (Verrillo 1963, 1980; Whitehouse & Griffin, 2002). By using one sine wave at a time, the students could learn about their own and other's sensitivities. Given the fact that these labs were all performed by the students with no formal lab leader, it was important that they could playfully determine the conditions of the lab. The lab increased the students' awareness of the substantial individual variation of vibratory sensation on the same body parts. For example, when sensing vibrations on the nose, some students experienced tears welling up, others felt a tickling sensation and a third felt almost nothing. These affective reactions have a strong correlation with emotions such as crying, laughing or indifference, which has relevance for designing the placement of the vibrotactile actuators for haptic interaction. The students experienced their own immediate response to the vibration and witnessed other participants' reactions to the vibration. This combination of mapping individual and group responses supports the emergence of a *somaesthetic* form of knowledge (Shusterman 2000, 2013), making it possible to later recall both the emotional and physical experience during the design process. Such experiences can be drivers within an aesthetic gestalt process.

In the *combined material/vibrotactile-lab,* we found that to improve the students' learning process this lab could be done in two general ways: 1) blindfolded in order to isolate the tactile/haptic and vibration qualities or 2) without a blindfold in order to integrate the visual properties with the tactile/haptic and vibration qualities. This sensitizing lab should be adapted to the needs of the participants and the project. If visual properties are not important, then we suggest doing the lab blindfolded; however, if visual properties are important (which they often are), then the lab should be done without blindfolds or a combination of both. There are pros and cons to both ways. Although some students felt frustration during this lab because of the level of complexity and the more free explorative nature of this lab, the majority of students claimed the labs emphasize the problems involved in the real embodied

experience of combining materials with vibration. It was apparent that the choice of materials used on working physical prototypes greatly affected the haptic aesthetic experience of the vibrations.

Our conclusions relating to the charts used in this lab to record the test results made it possible to compare between direct vibration and vibration mediated through materials on the same body part. However, offering these charts could decrease the drive to create alternative ways to record haptic experiences. This chart could be improved by including icons of all of the senses and the blunt and sharp end of the tool from the *material lab* to remind the U/P to explore with all the senses. Other relevant research projects that also use charts/worksheets to record touch-based design experience and reflection on the tactile perceptual qualities are those of Pohl and Loke (2014) and Ledo et al. (2012).

To summarize, the students' learning process was enriched by offering methods for experiencing, observing and comparing the immediate haptic reactions of students. The purpose of all three labs is to explore for the sake of experiential knowledge. The students also learn about how vital it is to collectively conduct direct embodied exploratory experience of material and technology together with the design team in order to expand the team's creative capacity for designing interactive attributes and gestural patterns. We validate the proposed design process (which includes sensitizing labs) by arguing for the value of mixing rigor with playfulness. The systematic charts give a rigorous way of exploring that offers a certain conceptual precision for the blindfolded U/P and the team members documenting the comments and the explorative gestures using tools and materials. By blindfolding the U/P, the visual speculative assumptions about the material and tools are suspended, supporting a more authentic and direct experience. The charts and maps offer a way to maintain conceptually organized results which help the students reflect back on their collective and individual experience in the coming stages in the design process.

Design process

An important learning experience for the students in the design course is that they work in collaboration to integrate their prior experience from the sensitizing labs with the intentions of the design project. They switch from an explorative phase to an experimental phase which is framed by one of the projects for persons with DB presented by the research team. At this point in the design process, they drive productive inquiries (Schön, 1983) involving tests and comparative studies that strive to both learn about the DB situation and at the same time change their situation by creating forms and using design probes (Mattelmäki, 2006) to playfully provoke and test possible solutions.

The link between the sensitizing labs and the student design projects is evident in their process and final design solutions, as illustrated in this representative example of a student project: the *haptic horseback riding guide.* In this project, the students applied their previous experience from the sensitizing labs as they experimented with different materials for the riding instructor's handles. By combining soft materials with flat, hard wood materials and embedding sensors in these materials, they show how the haptic material properties contribute to the novel shape and pattern of the handles and dynamic pattern of interaction. The "soft" material properties evoke a "squeezing" response (triggering pressure sensor) (Schiphorst 2010) and the "hard" material properties evoke clapping gestures (triggering pressure sensor), which we assume have been directly derived from the students' experiences in all three of the labs: *material-lab, vibrotactile-lab* and *combined material/vibrotactile-lab.* The entire haptic horseback riding guide system shows how students embedded sensors and actuators in the material with haptic responsive properties in order to creatively manage to design for interaction (Lim, Stolterman et al., 2007; Löwgren & Stolterman, 2007; Mazé, 2007; Hallnäs, 2011; Lim, et al., 2011; Moussette & Banks, 2011; Moussette, 2012). Although the

technology applied here involves pressure-sensitive technology and not vibrotactile technology, we believe students were able to see parallels between different interactive technologies due to their explorative experience in the sensitizing labs. Furthermore, the design process introduces the students to aesthetic abstractions, user experiences and embodied studies as well as the skills of making prototypes, all of which are applied in the design of materials and haptic technology with the user's experience in mind.

One discussion during examination and later with the advisory board concerned how to transfer the design solutions to other user situations. For example, the vibrotactile horseback riding guide system could also offer an alternative method for training hearing riders who receive verbal instructions. There are inherent problems in giving verbal instruction while moving: the hearing riders might not be able to hear all of the instructions or they could have cognitive challenges with applying the instructions such as discerning right from left. The vibrotactile signals can reinforce what the instructor wants to communicate through simple signals agreed upon in advance. Receiving non-verbal instructions could be preferred at certain phases in a training program – for example, to support riders in developing more embodied contact with the horse. It is possible to develop an intellectual non-verbal consciousness for basic equestrian lessons through haptic signals. Placing the vibrator close to the parts of the body that are involved in the movement creates a more direct channel between the instructor and the rider. This design project supports the growing field of research in movement based interaction that problematized linguistically centred classification of movement and gesture (Hansen & Morrison, 2014).

Others in the field

There are a number of interesting educational research projects (Lim, Lee et al., 2011; Moussette 2012) that have some similarities to this project. In Camille Moussette's (2012) work in simple haptics, workshops are set up to expose students to the different haptic interactivity attributes. The strength of his research is in supporting students in hands-on making and sketching in hardware and programing to generate explorative gestural interaction systems. The similarities between Moussette's work and ours is in our shared interest in creating new haptic interactive patterns; however, we differ by emphasizing the role materials play in exploring possible gestures. Our work, however, does not go into the specifics of hardware and programing. We make semi-functional prototypes that emphasize the haptic attributes of materials.

Thecla Schiphorst's (2010) work in soft textile modelling and interactive kinetic garments develops interactive technology that responds to touch. Her work also involves workshops where playful "experience modelling" is done. She explores technical hardware and programming and puts great effort into creating experiences that build on bodily gestures and textile materials. The main difference between her work and ours in in the educational framing and in the close relation to users with impairments.

A major educational design challenge has been to find ways to avoid overloading the students with information and technology when merging an art-based industrial design process with interaction design. The students were given time to do in-depth sensuous exploration in a collaborative atmosphere where they shared direct and vicarious experiences. These lab hours were an important investment aimed at enriching the students' learning experience before they were challenged with a design problem. The visual model of the non-linear design process clearly illustrates the 10 stages that the design process should loop back and forth through engaging the student in a variety of playful and rigorous activities.

Contributions & conclusions

As stated in the introduction, there is a need for method development in the fields of both *material-driven design* (Karana et al., 2015) and *user-driven design* that supports ways to design dynamic patterns of haptic interactivity. We argue that the presented educational method carried through a complex design process can contribute to development in both fields. Design researchers and educators are now recognizing some of the problems associated with visual and audio interfaces in interactive devices. Haptic technology is advancing; however, there is little educational material to support teachers in developing courses that evoke meaningful and new forms of embodied interaction to apply this technology. By working with persons with deafblindness, we were able to clearly recognize the needs of users for haptic interaction that does not rely on vision or audio interaction. The presented *sensitizing labs* offer ways to improve designers' ability to both explore the tactile and haptic properties of materials blindfolded and to combine these properties with attributes of vibrotactile interaction experiences. Through a systematized exploration, the students could reflect on and formulate their immediate felt experiences and compare their experiences with those of others. These sensitizing labs started with clear conceptual categories for haptic attributes and gradually shifted to free choice language that captured the students' emotional responses and search for meaning. The lab experiences were then integrated within a complex non-linear design process concerning a real practical situation for DB users/players. The representative case illustrates one possible scenario that was developed through this educational method. The course strives to underscore how embodied explorative and experimental activities eventually feed into an emerging gestalt, which shapes the physical and interactive composition of the final design solution, where the solution is not fully developed. We encourage others to apply and modify this method and send us feedback so we can continue to improve the stages of the method to enrich the students' learning experience and prepare them for professional challenges in the merging fields of industrial and interaction design.

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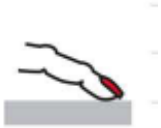
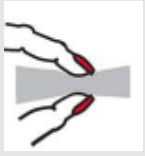
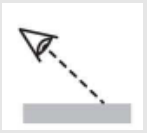
Appendix 1- Long version of Table 2. Results of using the systematic chart on the exploration and assessment levels.

Types of probing	**Exploration**	**Assessment**
 Holding the screwdriver by the sharp end and probing with the handle	The upside down tool (screwdriver) used to probe the material gave a blunt feeling. When pushing down on the material one received a mediated sense of hardness or softness in the material. Moving the tool across the material, it was possible to feel its large-scale 3D textural properties as well as how polished or rough the material was.	The feeling of bluntness was due to the broad round shape of the handle as well as the rubber material the handle was made of. It was easy to assess the difference between the material's density (hard/soft) and friction (polished/ rough), while the details of the material texture were not possible to discern. Despite the tool's blunt character, it conveyed a certain refined sensitivity for large-scale patterns.
 Holding the screwdriver's handle and probing with the sharp end	The sharp end of the tool gave a very different experience than the blunt end. The sharp tool could probe deep down in the 3D texture of the material, making it possible to discern properties such as loops, cut-out holes, wrinkles, woven textures, etc. The hard tip of the tool also inspired repetitive movements that created sounds.	The sharp point made it possible to probe back and forth (in textile materials) between the dimensions of the material and the dimensions of space. However, the exact shape of the loop or hole was not easy to grasp. Sensing friction was not apparent, because of the minimal area of contact between the point of the tool and the material. Listening to the material through properties of the tool engaged hearing in relation to haptic probing.
 Probing-finger	Touching with one finger gave the immediate feeling of temperature, which was sometimes very surprising. Temperature helped them discern the type of material, for example metal, plastic or natural fibers. The finger also felt how polished or matte the surface was. A sense of large-scale patterns and detailed textures merge together.	The finger provided a more nuanced sense of what the material felt like and made it easy to create a more comprehensive image of the material. However, by merging pattern and texture together, there can be less awareness of the small details.
 Probing- thumb and finger.	Squeezing the material between thumb and finger gave a feeling of how thick, soft, or rough it was which added to what was felt when probing the surface with one finger. By grasping, twisting, pulling and stretching the material the U/P gained a more enriched feeling for the combined tactile and haptic structural properties of the material.	Grasping materials creates an all-around three-dimensional haptic feeling for the material. Playing with it reveals the qualities of elasticity, flexibility and fiber strength
 Probing- nose	Instructing the participant to smell the material often caused an immediate protective reaction, as the participant moved the material close to her/his face and nose.	Smell triggers situational memories that relate to a more intimate or emotional experience by connecting our body with the environment and temporal events. Most of the industrial materials did not have a discerning scent.

 Probing- mouth	Exploring material in the mouth involves haptic and tactile experience combined with smell and flavor (without smell there is very little taste). The taste of the materials was markedly different, ranging from no recognizable taste to extremely pungent. There were adverse reactions to the stronger tastes. When the taste was not too strong, the participants were more open to exploring the sensation of the material on their teeth, tongue and mouth, which all gave high-resolution experiences.	The participants knew the materials were not edible, which perhaps can explain their adverse reactions to strong taste. Some materials could be recognized because the participants had tasted them in the past and could thus relate to them. The materials with a strong unfamiliar taste blocked other haptic impressions.
 Probing- ear	Hearing the structure of the material gave it a new dimension. Surface sound qualities could give clues to the properties of the materials, such as hollowness, density, etc.	Sounds produced through deforming the material revealed internal properties.
 Probing- eye	Seeing the color, shadows, light and dark values, and the contrast expressed in visual patterns could either strengthen or weaken the images that had been built up by the earlier stages. Some participants were very surprised when they were finally able to see the material, and others found the visual image to match what they had expected.	Vision was the final stage in the lab and most participants felt it gave the strongest impression, because it unveiled the color and overall contour of the material and gave the participant the visual codes to determine what the material was. The visual impression aims to connect many of the previous impressions into an organized whole.

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Ulf Rydningen, Dorte Lybye Norenberg og Inger Marie Lid

Universell utforming som tema i høyere utdanning

Sammendrag

For å sikre muligheter for deltakelse av og velferd for alle, er samfunnet avhengig av stadig kunnskapsutvikling og samhandling mellom ulike samfunnssektorer. Universiteter og høgskoler er arenaer hvor kunnskap skapes, læres og anvendes for å sette studenter i stand til å håndtere situasjoner som må løses til beste for samfunnet. Universell utforming er nedfelt i flere lover som en plikt å gjennomføre for nye tiltak. Dette krever kunnskap om hvordan arbeide med universell utforming i praksis. I denne artikkelen beskriver vi erfaringer med et treårig samarbeid mellom utdanningene i ergoterapi og byggingeniørfag om universell utforming. Hensikten var å gi studentene kjennskap til hverandres kunnskapsfelt og fagmetoder for å kunne bidra til felles kunnskapsbase om universell utforming innen hvert fagområde. Gjennom å analysere konkrete områder/oppgaver skulle studentene begrunne og kritisk reflektere over universell utforming. Videre er formålet med samarbeidet å styrke universell utforming som et tema i forskning og utdanning. Studentene verdsatte høyt å bli kjent med og samarbeide med hverandre, og de erfarte at egen profesjon ikke hadde kunnskapsmonopol på universell utforming. Studentene erfarte at andre yrkesprofesjoner har ulike kunnskapsgrunnlag, og at samarbeidet gav innsikt i kompletterende kunnskap som kan være verdifull i senere yrkesutøvelse i forbindelse med universell utforming.

Nøkkelord: universell utforming, kunnskapsutvikling, tverrprofesjonelt samarbeid, ergoterapi, byggingeniør

Innledning

Studenter fra fakultet for helsefag og fakultet for teknologi design og miljø, som utdanner seg i dag, må påregne å arbeide med universell utforming i sitt daglige arbeid. Det kan variere hvordan dette kunnskapsfeltet formidles, men temaet universell utforming bringes nå inn både i planleggingsfag, helse- og sosialfag. Fordi universell utforming er et tverrfaglig kunnskapsfelt, er det relevant å undersøke hvordan den tverrfaglige kunnskapen utvikles, deles og erfares.

Universell utforming dreier seg ikke kun om Byggteknisk forskrift til plan- og bygningsloven (TEK10) eller de syv prinsipper for universell utforming (The Center for Universal Design, 1997). Universell utforming handler om å skape et inkluderende samfunn for å fremme likeverdig aktivitet og deltakelse. Hensikten er å utvikle et samfunn som ivaretar inkludering og likeverd og motvirker diskriminering på grunnlag av funksjonsevne, alder og bosted. Studenter som utdannes i dag må gis et godt grunnlag for å arbeide med universell utforming innenfor ulike sektorer.

I denne artikkelen fokuserer vi på et samarbeidsprosjekt mellom to utdanningsprogram, ergoterapi- og byggingeniørutdanning ved Høgskolen i Oslo og Akershus. Artikkelen belyser utviklingen og gjennomføring av et tverrprofesjonelt studieopplegg for 3. års byggingeniør- og ergoterapistudenter. Vi vil argumentere for betydningen av at det skjer en tidlig kunnskapsdeling. Vi undersøker hvorvidt universell utforming kan forstås som mer enn å lære studentene å arbeide med TEK10 og de syv prinsipper for universell utforming. Hvordan kan studenter utfordres til kritisk refleksjon knyttet til universell utforming i høyere utdanning? I artikkelen reiser vi spørsmålet: Hvordan kan et tverrfaglig undervisningsopplegg bidra til å styrke kunnskaps- og forståelsesgrunnlaget innenfor to profesjonsutdanninger? Med det

tverrprofesjonelle samarbeidet ønsker vi å bidra til at samfunnet kan utdanne profesjonsutøvere med et godt kunnskapsgrunnlag for å arbeide med universell utforming på ulike nivåer i samfunnet.

Artikkelen innledes med en kort beskrivelse av verdigrunnlaget for universell utforming. Deretter beskriver vi utdanningene som er involvert i denne studien og status for forskning på universell utforming som tema i høyere utdanning. Dernest utdyper vi opplegget som har vært gjennomført med fokus på læring i tverrprofesjonell sammenheng. Datagrunnlaget bygger på studentrapporter, tilbakemeldinger og fokusgruppeintervjuer. I diskusjonen vektlegges det tverrfaglige ved universell utforming, studentenes mulighet for kritisk refleksjon, brukermedvirkning og hvordan disse faktorene kan ivaretas i undervisningen.

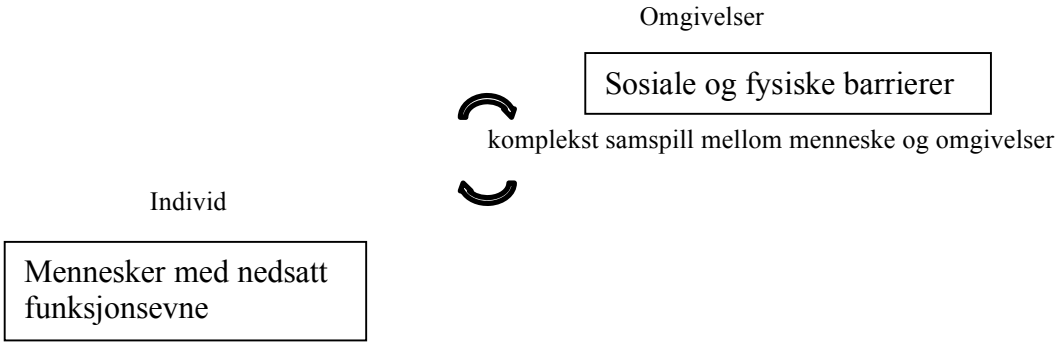
Likeverd og mulighet for samfunnsdeltakelse

Det er en grunnleggende demokratisk verdi at alle skal oppleve å bli respektert som likeverdige mennesker. Et rettferdig samfunn er kjennetegnet av at alle borgere har rettigheter og gis mulighet til å delta i samfunnet. En viktig politisk målsetting i Norge er deltakelse og likestilling for alle. Manneråkutvalgets utredning *Fra bruker til borger* (NOU 2011:22) viste at diskriminering av personer med nedsatt funksjonsevne er omfattende, og at den erfares på alle samfunnsområder (Sosial- og helse-departementet, 2001). Dette skyldes både holdninger, fysiske så vel som arkitektoniske barrierer i de bebygde omgivelsene. Det er slike ekskluderende barrierer universell utforming har til hensikt å motvirke (Lid, 2013; Sosial- og helsedepartementet, 2001).

Universell utforming kan betraktes som både en visjon, en strategi, et virkemiddel og en fagterm. Verdigrunnlaget omfatter likeverd og likestilling, og målet med universell utforming er å oppnå tilgjengelighet som ivaretar mennesker som likeverdige (Lid, 2013, p. 17). Implementering av universell utforming bygger på faglig og tverrprofesjonell kunnskap sammen med bevissthet om verdigrunnlaget.

Mange personer med funksjonsnedsettelser har gjennom tidene opplevd at omgivelsenes utforming hindrer likeverdig deltakelse i samfunnet. Noen erfarer eksempelvis at det er vanskelig å komme seg inn gjennom bygningers hovedinngang på grunn av trapper som er umulig å forsere, og henvises da til å måtte be om assistanse. En sosial modell forklarer at *funksjonshemming* er forårsaket av måten samfunnet er organisert på. De bygde omgivelser gir «arkitektskapte barrierer» som hindrer likeverdig samfunnsdeltakelse (Grue, 2011). Fokus er der altså på de fysiske barrierene, og nedbygging av disse barrierene kan skje ved «typiske» tiltak for eksempel å bygge en rampe i tillegg til trappa, slik at noen rullestolbrukere kan komme seg fram. Det ender opp med å bli en økonomisk avveining av hvilke «typiske» tiltak som kan «løse» behov for enkelte grupper av personer med funksjonsnedsettelser.

Problemet med den sosiale modellen er at kunnskap om individuelle og kroppslige forhold ikke verdsettes høyt nok. Men paradoksalt nok er det slik at hvis man skal oppnå likeverdig tilgjengelighet uavhengig av funksjonsevne, er det nødvendig å ha mye kunnskap om individuelle forutsetninger og menneskelig mangfold. Universell utforming er derfor med nødvendighet et tverrfaglig fagområde, en trenger både kunnskap om menneskers ulike funksjonsevner og funksjonsnedsettelser, og om forhold i planlagte og bygde omgivelser som kan støtte opp under enkeltmenneskers mulighet for samfunnsdeltakelse. FN-konvensjonen om rettighetene til personer med nedsatt funksjonsevne vektlegger derfor funksjonshemming som relasjonell (Bickenbach, 2012; Lid, 2013, 2014).



Figur 1: Den relasjonelle modell for funksjonsnedsettelser

Figur 1 illustrerer samspillet mellom individet og de enkelte barrierene som det møter, ved at personer opplever samme barriere på ulike måter. En medisinsk modell fokuserer på den individuelle funksjonsnedsettelsen og en sosial modell fokuserer på den kollektive forståelsen av nedbygging av (f.eks. fysiske) barrierer. Funksjonshemming, forstått som en hindring for deltakelse, er, i denne relasjonelle tolkningen, beskrevet som et produkt av disse person-miljø forhold, hvor man ikke bare tar utgangspunkt i en abstrakt gjennomsnittsperson med funksjonshemming, men inkluderer et stort mangfold mennesker med ulike funksjonsevner.

Forskning på universell utforming i tverrfaglig undervisningsopplegg

I sin forskning på universell utforming i arkitekturpraksis fant Finch, Ormerod, & Newton (2005) at mens designere er opptatt av å sikre at bygninger og deres omgivelser fremmer sosial inkludering, er det betydelige barrierer for å oppnå dette, særlig på grunn av en manglende forståelse av funksjonshemming og hvordan en person med en funksjonshemming samhandler med en bygning, og hvordan lover og forskrifter kan støtte dette samspillet i stedet for bare å gi minstestandarder (Imrie, 2000). Dong (2009) diskuterer dilemmaet at hvis universell utforming innføres som et eget emne i studiet, så vil studentene ha en tendens til å behandle det som design for spesielle behov.

En undersøkelse av Hitch et. al (2012) belyser noen sentrale spenninger mellom ergoterapeuter og arkitekter når de jobber sammen for å design bygde miljøer, både for enkeltpersoner og lokalsamfunn. Viktige funn i studiet var forskjellene mellom de to yrkesgruppene i deres grunnleggende tilnærming til design. Hvor arkitekter kan fokusere på kunstneriske attributter i design, er ergoterapeuter generelt mer opptatt av designens funksjonelle egenskaper fra perspektivet til personer med spesifikke behov. Dette kan føre til misforståelser mellom profesjonene og kan være en barriere til god universell utforming i praksis. Det finnes få studier av tverrfaglig samarbeid mellom ulike profesjonsutdanninger om universell utforming. Resultater fra forskningslitteraturen beskriver tverrfaglig samarbeid mellom studenter fra helse- og sosialfag og ulike bygg-, planlegging- og designprofesjoner.

Et samarbeid mellom studieretningene for ergoterapi og trafikkplanlegging på Lund Universitet (Iwarsson & Ståhl, 2003) forsøkte å standardisere terminologien i dette fagområdet ved posisjonering og definering av begrepene tilgjengelighet, brukervennlighet og universell utforming. Ved Deakin University i Australia, ble potensialet for bygge en inter-faglig utdanning i forhold til universell utformingspraksis for ergoterapi og arkitekturprogrammer identifisert som en mulighet til å utvikle kandidater som er godt forberedt på å jobbe i disse nyere praksisområder (Larkina, Angb, Watchorna, Hitcha, & Tuckerb, 2014). Noen studier rapporterer om samarbeid mellom ergoterapi og designstudenter (Dong, 2009; Falzarano, 2010).

Andre eksempler på tverrfaglig samarbeid om universell utforming beskrives av Price, Zavotka, & Teaford hvor et universitet med deres fagmiljø innenfor fagfeltene interiørdesign, gerontologi, og ergoterapi tok initiativ til å samarbeide med lokalsamfunnet og handelsnæringen for å se på hvordan man kan legge til rette for at en større andel av de eldre i befolkningen kan fortsette å bo i sine hjem.

Rapporten «Bakgrunn for kompetanse satsingen om universell utforming i utdanningsinstitusjonene» (2005) har sin bakgrunn i lovendringen som førte frem til diskriminerings- og tilgjengelighetsloven (DTL) som ble gjort gjeldende i 2009. Det ble sett som nødvendig å få frem status for hvilken kompetanse om universell utforming som fantes på norske utdanningsinstitusjoner (Øvstedal & Høyland, 2005). Konklusjonene i rapporten er at det skal satses mer på undervisningsopplegg i teknologiske, arkitektoniske, og planleggingsfag. Helsefagene blir ikke trukket frem som et satsningsområde. Videre konkluderes det med at det varierer på studiested og studieretning i hvilken grad og på hvilken måte universell utforming tas inn i undervisningsplanene. Rapporten fremhever at universell utforming handler om å sette fokus på brukbarhet sett i lys av brukergrupper med ulike forutsetninger for å delta. Denne rapporten er i liten grad fulgt opp med strategier fra departementet, viktigst å nevne her er etableringen av *Universell* ved NTNU, som skal være en pådriver for universell utforming og læringsmiljøutvalgene ved norske utdanningsinstitusjoner (Knarlag, 2016).

Denne artikkelens bidrag er å beskrive og analysere et samarbeid mellom ergoterapi- og byggingeniørutdanningene. Vi vil nå beskrive disse utdanningenes kunnskapsgrunnlag.

Ergoterapeuters kunnskapsgrunnlag

Ergoterapi er et helsefag og har ofte utgangspunkt i et individperspektiv. Ergoterapeuters anliggende knyttet til universell design handler om omgivelsenes betydning for individets aktivitetsutførelse og deltakelse. Ergoterapeuters kompetanse bygger på aktivitetsvitenskap med analyse av aktivitet som en grunnleggende ferdighet. Omgivelsenes betydning, aktivitet og deltakelse er sentrale dimensjoner i menneskelig utfoldelse og basis i ergoterapifaglig tilnærming. Aktivitet forståes i alt fra det å kunne kle på seg til å ferdes og delta i det offentlig rom. Ergoterapi bygger på en systemisk forståelse av sammenhengen mellom aktivitet, person og omgivelser (Kielhofner, 2002; Townsend, 2002). Ergoterapeuter kan bidra ved planlegging og prosjektering av bygg og utemiljø slik at omgivelsene får universell utforming og brukervennlige for alle. Ergoterapeuter identifiserer og analyserer faktorer i omgivelsene som påvirker menneskers muligheter til å delta i og utføre meningsfulle aktiviteter i samfunnet. Kunnskapsgrunnlaget i utdanningen bygger naturvitenskapelige, samfunnsvitenskapelige og humanistiske tilganger. Fokus på helse og at borgernes livskvalitet i hverdagslivet, uavhengighet av alder og forutsetning, er blitt et politisk imperativ jevnfør *Folkehelsemeldingen* (Helse- og omsorgsdepartementet, 2013a) og *Morgendagens omsorg* (Helse- og omsorgsdepartementet, 2013b).

Byggingeniørers kunnskapsgrunnlag

Rammeplanen for ingeniørutdanning (Kunnskapsdepartementet, 2011) fastsetter at kandidaten skal ha grunnleggende kunnskaper i matematikk, naturvitenskap, relevante samfunns- og økonomifag og om hvordan disse kan integreres i ingeniørfaglig problemløsning. Videre heter det at kandidaten skal ha kunnskap om teknologiens historie, teknologiutvikling, ingeniørens rolle i samfunnet samt konsekvenser av utvikling og bruk av teknologi . Byggingeniører er regelstyrte, de er forpliktet til å forholde seg til lover og forskrifter som styrende for byggesaker og arealplanlegging. Vi erfarer at mange byggingeniørstudenter har en noe reduksjonistisk tilnærming og vurderer at TEK 10 (Kommunal- og moderniseringsdepartementet, 2010) er en kravspesifikasjon som skal oppfylles, og dersom disse er tilfredsstilt så har man ifølge loven oppnådd noe som er universelt utformet.

Byggingeniører arbeider ofte sammen med ulike profesjonsgrupper, hvor både vitenskapelige prinsipper, individuelle behov og samfunnets behov skal avveies, og hvor normer og praksis i de ulike bedrifter spiller en avgjørende rolle. Tverrprofesjonelt teamarbeid og problemløsing er en del av ingeniørens problemløsningsprosess.

*Universell utforming i profesjonsutdanningene ved HiOA*Både ergoterapistudentene og byggingeniørstudentene har, gjennom hele studiet, fag som gir bakgrunn for å kunne arbeide med universell utforming. Ergoterapistudentene får en innføring om universell utforming i første studieår med prosjektoppgaver hvor de blant annet bruker lånte hjelpemidler i læringsprosesser (Dale & Leknes, 2002). I undervisning om bærekraftig byutvikling i byggingeniørenes kurs 'areal- og transportplanlegging' omtales universell utforming som del av den sosiale bærekraftdimensjonen, sammen med andre fagtemaer som blant annet kriminalitetsforebyggende design, trafikksikkerhet og planleggingens verdigrunnlag.

Høyere utdanning er styrt fra departementet gjennom rammeplaner. I programplanen for ergoterapiutdanning studentens sluttkompetanse beskrevet:

> *[studenten] har bred kunnskap om samspillet mellom mennesker, aktivitet og omgivelser gjennom livsløpet og bidra i planarbeid for å muliggjøre tilgjengelighet, tilpasse omgivelse og påvirke til universell utforming på systemnivå. (2015)*

I *Nasjonale retningslinjer for ingeniørutdanningen* beskrives universell utforming som en del av et forslag til tolking av læringsutbyttebeskrivelse: «Universell utforming tar hensyn til bredden av brukere, og er i likhet med helse, miljø og sikkerhet, HMS, nødvendig i ingeniørprofesjonen.» (Nasjonalt råd for teknologisk utdanning, 2011, p. 49).

I *FN-konvensjon om rettighetene til personer med nedsatt funksjonsevne* (Barne-likestillings- og inkluderingsdepartementet, 2013), som ble ratifisert av Norge i 2013, er det flere artikler som gir føringer for utdanningen på alle nivå. Det er derfor, med utgangspunkt i norsk lovgivning og norsk og internasjonal politikk, grunnlag for å hevde at universell utforming bør inkluderes i profesjonsutdanningene. Men universell utforming er et tema som overskrider akademiske rammer ved at også interesseorganisasjoner og kommunale og fylkeskommunale råd har viktige roller i arbeidet med å arbeide i tråd med universell utforming. Dette forholdet får også betydning for hvordan studentene lærer om universell utforming ved at (bruker)medvirkning bør inkluderes.

Alle som underviser i universell utforming skal ikke nødvendigvis forske i temaet, men det er viktig for undervisningen at slik forskning foregår. Forskning og undervisning innen universell utforming vil kunne bidra til en bedre begrunnelse for de krav som fastsettes i lover og forskrifter. I FN-konvensjonen fortolkes universell utforming som en strategi for å styrke borgerskap og mulighet for samfunnsdeltakelse, og ikke som en minstestandard eller som en universell løsning som kan brukes i alle situasjoner.

Læring i samarbeid

Tverrfaglig og tverrprofesjonelt samarbeid bygger på samhandling og dialog. De to utdanningene har ulikt begrepsapparat, noe som innebærer at ord og begreper brukes ulikt og betyr forskjellige ting i de ulike kunnskapstradisjonene. Begrepet *rehabilitering* brukes for eksempel om mennesker innen ergoterapi og om bygninger i byggsammenheng. Et annet begrep som brukes ulikt er «(bruker)medvirkning» I helsefagene brukes begrepet *brukermedvirkning* mens *medvirkning* fra borgerne brukes i planfagene. Pensumlitteraturen var derfor i hovedsak litteratur som var skrevet nettopp for en tverrfaglig målgruppe. Studentene samarbeider og lærer emnet gjennom å erfare det i praksis. Erfaringslæring henter inspirasjon fra flere pedagoger. Kelly (1955, sitert av Simonsen, (2007) presiserte at en ikke kan lære noe uten å aktivt handle og samtidig reflektere over det som skjer. Schön (2001) understreker at

bare ved refleksjon i handling («reflection-in-action») har individet mulighet til å konstruere nye handlingsteorier og alternativ praksis.

En grunnforutsetning ved å lære i samarbeid, er at det pedagogiske opplegget innebærer erfaringslæring. Samarbeid og samhandling handler om relasjoner i nå-situasjoner, og kan ikke læres gjennom teoretiske studier alene. Det er gjennom opplevelse og erfaring at denne type handlingskompetanse utvikles (Bruner, 1996; Dewey & Fink, 1974; Kolb, 1984). Dette betyr at en viktig del av tverrprofesjonell samarbeidslæring bør foregå i en praksiskontekst. Med interaktive pedagogiske opplegg kan det å møte studenter fra samarbeidende yrkesgrupper i denne utdanningskonteksten ha en verdi. Konkret samarbeidslæring må erfares i konkrete samhandlingsprosesser som innebærer å handle, respondere og interagere i autentiske samhandlingssituasjoner.

Tverrfaglighet er essensielt for å kunne løse mange av de viktige oppgaver i dagens samfunn (Dong, 2009), for eksempel når det gjelder utfordringene innen klimaendringene (Warburton, 2003) og helsespørsmål (Leathard, 2003). Også for universell utforming vil de gode løsninger kunne finnes ved at mange i større grad går fra den tradisjonelle disiplintenkningen og i stedet mot en mer holistisk tenking. Men organiseringen av arbeidsliv og utdanningene er ikke umiddelbart lagt til rette for å endre situasjonen fra de tradisjonelle strukturer og prosesser. Dette reiser spørsmål om det ikke burde være et behov for nytenking innen profesjonsutdanningene for å kunne arbeide på tvers av sektorer, siden universell utforming er et fagområde som er altfor bredt til å bare kunne forstås innen ett fagfelt alene.

Plan- og bygningsloven §1 (formålsparagrafen) nevner universell utforming som et tydelig ansvarsområde som skal fokuseres på i all planlegging og byggesaksbehandling. Men innenfor helsesektoren ser vi likevel at verken Helse- og omsorgsloven (Helse- og omsorgsdepartementet, 2012c) (2011-2012), folkehelseloven (Helse- og omsorgsdepartementet, 2012b) eller forskrift om rehabilitering (Helse- og omsorgsdepartementet, 2012a) beskriver forpliktelser til å bidra til et mer universelt utformet samfunn. Ingeniørutdanningen retter seg mest inn mot de tekniske spesifikasjonene som er beskrevet i plan- og bygningslovens forskrifter, mens ergoterapistudentene er faglig mest opptatt av deltakelse som rettighet og brukbarhet for enkeltmennesker. Begge utdanninger skal utdanne profesjonsutøvere som kan praktisere i tråd med verdiene likeverd, likestilling og å motvirke diskriminering.

Beskrivelse av undervisningsopplegget

Det faglige utviklingsarbeidet med universell utforming har utviklet seg gjennom å arrangere en felles undervisningsuke for studenter på 3. års-utdanninger i ergoterapi og byggingeniør i perioden 2012–2015. Undervisningsopplegget er gjennom disse årene blitt en integrert del av de to utdanningene og videreføres for hvert nytt studentkull. Det pedagogiske innholdet i denne fordypningsuken består av fire deler:

(1) Felles forelesning for alle 120 studentene fra ergoterapi og byggingeniør
(2) Felles pensum leses og drøftes i tverrfaglige studentgrupper
(3) Gjennomføring av gruppearbeid (befaringer, analyser og rapportskriving)
(4) Presentasjon av gruppearbeidet

Innholdet i opplegget dekker flere tema, blant annet brukermedvirkning, kunnskap om menneskelig mangfold, etiske dilemma, teorigrunnlag, utvikling av praktisk kunnskap og begrunnelser for ulike prioriteringer. Gjennom å analysere konkrete områder/oppgaver var hensikten med prosjektet at studentene skulle begrunne og kritisk reflektere over universell utforming samt kunne samarbeid med relevante fagpersoner. I dette inngikk å gjøre seg kjent med aktuelle offentlige føringer. Gruppearbeidet skulle resultere i en skrevet rapport på 3–4 sider og en muntlig og gjerne visuell presentasjon for medstudenter og lærere.

Blant ergoterapistudentene har hele kullet deltatt, mens studieretningen teknisk planlegging vanligvis utgjør 25–40% av byggingeniørkullet. Dette betyr at kun 25-40 % av byggingeniørstudentene har deltatt i opplegget. Studentene fra de to utdanningene hadde ulike krav til innlevering av rapport etter undervisningsopplegget. De to utdanningene hadde ikke felles læringsutbyttebeskrivelser. Første året, i 2012, var opplegget ikke obligatorisk for byggingeniørstudentene. Dette førte til at få deltok i gruppearbeidet. I 2013 klarte vi å få opplegget obligatorisk for alle studentene, men vi hadde ikke felles pensum og læringsutbyttebeskrivelser. Dette året deltok alle studentene også i gruppearbeidet, men arbeidet som ble levert bar preg av at studentene i for liten grad selv hadde arbeidet med teori og litteratur. I 2014 hadde vi både felles pensum og felles læringsutbyttebeskrivelser. Nå så vi at studentene hadde et bedre grunnlag for å arbeide med universell utforming og arbeidene som ble presentert siste dag i fordypningsuken var bedre begrunnet. Fra 2014 har brukermedvirkning vært inkludert i opplegget ved forelesninger av representanter for funksjonshemmedes organisasjoner. I 2015 ble studentene engasjert sterkere inn i forelesningene ved at de fikk ansvar for å presentere de to utdanningenes kunnskapsgrunnlag for hverandre.

Målet har vært at studentene fra byggingeniør og ergoterapi skulle møtes og delta i undervisning sammen. De skulle få erfaring med å arbeide tverrprofesjonelt om en konkret og praktisk oppgave. Ergoterapeutene skulle lære om hva som er byggingeniørenes bidrag til arbeidet med universell utforming, og byggingeniørene skulle lære om ergoterapeutenes kunnskap. Ergoterapeutene skulle også se hvordan fysisk planlegging kan brukes for å gjennomføre universell utforming i praksis. Byggingeniørstudentene skulle lære om ergoterapeutenes kunnskap om aktivitet, deltakelse og funksjonsnedsettelse på individnivå, som er viktig for et praktisk og konkret arbeid med universell utforming. Slik handler prosjektet om å forstå, lære og arbeide sammen, altså om tverrfaglighet og om universell utforming og ansvar for å legge til rette for like muligheter for samfunnsdeltakelse.

Aksjonsforskning: forskning i praksis

Vi har valgt å bruke ulike kvalitative metoder for å etablere et datamateriale om temaet som vi ønsker å belyse i denne artikkelen (Alvesson & Sköldberg, 2009). Vi har valgt å basere vår artikkel på aksjonsforskning med noen få fokusgruppeintervjuer og samtaler med våre studenter (Kvale, 2007). Aksjonsforskning er en tilnærming og et perspektiv som passer når forskerne arbeider med en konkret problemstilling som har betydning for praksis (Adelman, 1993; Bell, 2000). Metoden er egnet for vårt formål fordi universell utforming er et relativt sett nytt tema som implementeres i utdanninger og praksis. Målet er å lære gjennom å gjøre. Ved å implementere universell utforming som tverrfaglig tema vil vi på en systematisk måte involvere studentene i forskings- og undervisningsprosessen.

Etter at vi hadde dannet oss et overgripende inntrykk av prosjektet ut fra studentenes rapporter og refleksjonsnotater, gjennomførte vi gruppeintervjuer med studenter. Intervjuer som ble gjort til dette studiet ble tatt opp med diktafon, og etterpå transkribert. Det ble gjennomført intervjuer med 16 studenter i 2013, hvorav 14 fra ergoterapi- og to fra byggingeniørutdanningen. Intervjuene ble foretatt en måned etter at samarbeidsprosjektet var avsluttet. Intervjuguiden tok utgangspunkt i forutbestemte temaer, men det ble foretatt delvis strukturerte intervjuer. I begynnelsen av hvert intervju ble det stilt spørsmål om utdanningstilhørighet. Denne typen informasjon beskriver den kontekst som informantene befinner seg i, som ifølge Krippendorff (2004) gir større mulighet for overførbarhet av studienes resultater. Videre inneholdt intervjuguiden spørsmål om intervjuobjektets holdning til universell utforming, om opplevelsen av møtet med studenter fra den andre utdanningen, og ellers erfaringer med undervisningsopplegget og arbeidsmengde. Intervjuene ble ikke kodet for analysering.

Materialet som analyseres kommer fra studentenes grupperapporter, refleksjonsnotater, samt fokusgruppeintervju. Dette materialet gir innsikt i studentenes erfaringer med å delta i fordypningsuken og arbeide med stoffet i en tverrprofesjonell kontekst. Vi har sett tilbakemeldingene og erfaringene fra studentene i sammenheng med de gjeldende læreplaner som legger føringer for utdanningenes innhold.

Etter gjennomføring i 2012 ble det gjort intervjuer med et utvalg av ergoterapistudenter, byggingeniørstudenter og forelesere. Underveis i studieopplegget brukte begge utdanningene refleksjonsnotater fra studentene for å styrke muligheten til å reflektere kritisk over læringsprosessen (Smith, 2011). På denne måten fikk studentene anledning til å reflektere over temaet og arbeidet i lys av det de har lært i utdanningen så langt.

Materialet er analysert i felleskap av forfatterne. Analyseprosessen har vært styrt av interessen for å se hvordan studentene erfarte å møte studenter med et annet kunnskapsgrunnlag enn dem selv, og hvordan de brukte sitt eget kunnskapsgrunnlag inn i dette tverrprofesjonelle arbeidet.

Studentenes læring og opplevelse av undervisningsopplegget

Studentene har vært delt i grupper på tvers av utdanningene hvert av årene. Når vi ser på innholdet i gruppenes rapporter, så ser vi at studenter fra de to studiene bringer inn ulike kunnskapsgrunnlag. Det vi i 2013 kunne lese ut ifra gruppenes rapporter om bruken av TEK10 og de norske standardene for universell utforming, gjorde at vi fant mange vurderinger som var basert på krav og normer fra disse. Da vi i 2014 la vekt på at studentene skulle bruke sine respektive utdanningers faglige skjønn, fant vi at rapportene viste bedre faglig skjønn enn tidligere. Studentene trakk da inn temaer fra andre fag i sin utdanning, blant annet ble temaer som kriminalitetsforebyggende design, menneskelig skala, lokalklima, overvann, blå-grønne områder, stedsanalyse og aktivitetsskapende funksjoner nevnt. Dette er emner som byggingeniørstudentene lærer om i faget «areal- og transportplanlegging» fra teoriundervisning og studieturer. Ergoterapistudentene trakk frem det å ta hensyn til aktivitet og deltakelse, samt tiltakenes brukbarhet. Disse studentene evaluerte de konkrete oppgavene i forhold til universell utformings 7 prinsipper.

Alle disse temaene er med på å sette kunnskapen om universell utforming i en naturlig faglig sammenheng, og bidra til bredere kunnskap. Ergoterapistudentene påpekte at deres kunnskapsgrunnlag er styrket av at de har deltatt i samarbeid med byggingeniørstudentene, da det er et mål i ergoterapiutdanningen å fremme betydningen av ergoterapeuters kompetanse inn i arbeidet med universell utforming. I fokusgruppeintervjuene, som for det meste ble gjort med ergoterapistudentene fordi disse var mest interessert i å delta, kom studentene også inn på forskjellen mellom universell utforming som visjon og konkret fagområde. Studentene var positive til at alle skal ha like muligheter til samfunnsdeltakelse, samtidig som det ble hevdet at dette er vanskelig å oppnå helt konkret fordi mennesker er ulike og har forskjellige behov for tilretteleggingar. Flere av studentene trakk frem brukermedvirkning som verdifullt. Dette var forholdsvis nytt for byggingeniørstudentene, mens ergoterapistudentene var mer kjent med brukerperspektiv i utdanningen. Vi vil nå trekke frem noen sitater fra studentenes skriftlige tilbakemeldinger i 2014. Temaene er samarbeid på tvers av utdanninger, arbeidsfordeling og forutsetninger.

Flere studenter viste til at det var verdifullt å arbeide med studenter fra en annen utdanning. Det ble vist til at de da fikk lære om nye teorier og fikk styrket egen kunnskap ved å lære av den andre utdanningens teorigrunnlag. En student beskrev dette på denne måten:

> *Jeg tror ergoterapistudentene hadde spesielt nytte av teoriene til Jan Gehl, byggforskserien mm, samtidig som vi ingeniørstudenter hadde stort utbytte av å få større fokus på det menneskelige perspektivet i utformingen av spesifikke løsninger.*
>
> Student 1, byggingeniørstudent

Studentene erfarte også at de hadde ulik tilnærming til universell utforming. I praksis kan dette bety at de ulike profesjonsgruppene i konkrete samarbeid er opptatt av ulike forhold: Ergoterapistudentene er opptatt av at menneskets muligheter til deltakelse skal ivaretas. Deres arbeid vil derfor ofte rette seg inn mot brukbarhet, og tilgjengelighet for ulike individer er viktig. Byggingeniørstudentene var på sin side opptatt av å ivareta forskrifter og komme frem til konkrete løsninger som kunne fungere. Dette ble formulert slik av en av studentene:

> *Ergoterapeutenes hovedfokus var menneskers ve og vel, og hvordan de ulike utfordringene påvirket personene direkte, mens vårt hovedfokus var utformingens praktiske løsning og de utfordringene de kunne gi.*
>
> Student 2, byggingeniørstudent

Samme temaområde ble av en ergoterapistudent omtalt på et mer prinsipielt nivå:

> *Personer med bakgrunn i helse- og sosialfag jobber ofte på et individuelt nivå og har viktig kunnskap om samspillet menneske-miljø ut fra ulike individuelle perspektiv. I motsetning til dette så ser ingeniører på å tilrettelegge bygg og områder slik at alle i samfunnet kan bruke det på en praktisk måte.*
>
> Student 3, ergoterapistudent

Flere kom også inn på det forhold at studentene fra de ulike utdanningene har forskjellige forutsetninger og motivasjon for å engasjere seg i arbeidet med universell utforming. For mange innen ingeniørutdanningen er det å kunne praktisere i tråd med gjeldende forskrifter en viktig motivasjon i seg selv. Mange ergoterapeuter hadde derimot mindre bevissthet om regelverkets føringer for praksis. Dette ble av en ergoterapistudent formulert slik:

> *Ingeniørene ser ting ut fra regler og lovverk, mens ergoterapeutene er mer opptatt av brukervennlighet.*
>
> Student 4, ergoterapistudent

Opplegget ga imidlertid også byggingeniørstudenter en påminnelse om at hensynet til universell utforming ikke er et frivillig hensyn, men faktisk formulert som krav i plan- og bygningsloven med forskrifter. En byggingeniørstudent fremhevet på denne måten sin nye bevissthet om universell utforming som plankrav i utbyggingssaker slik:

> *Før dette prosjektet har ikke disse kravene skilt seg ut spesielt, annet enn at det i noen grad har vært sett på som et pengesluk i nye byggeprosjekter.*
>
> Student 5, byggingeniørstudent

I utsagnene fra studentene kommer den ulike tilnærmingen og vektleggingen av universell utforming mellom byggingeniør- og ergoterapistudentene tydelig frem. Refleksjonene dokumenterer også at studentene erfarer betydningen av å lære av hverandre og få innsikt i

samarbeidende profesjoners kunnskapsgrunnlag. Utformingen av undervisningsopplegget blir likeledes verdsatt gjennom å skulle løse en konkret oppgave – samtidig som studentene bringer inn innspill på endringer. Refleksjoner knyttet til fremtidig samarbeid i det reelle arbeidsliv for å utvikle gode løsninger for et inkluderende og likeverdig samfunn, løftes bare i liten grad inn.

Hva lærer studentene i samarbeid?

Å lære sammen fra forskjellige ståsteder er et hovedmål for studentenes samarbeid om fordypningsuken, uke 43. Dette har vist seg å være krevende men nyttig og lærerikt, ifølge studentene. Detaljkunnskap om tekniske forskrifter har ikke vært viktigst i dette opplegget, men å kunne delta i lærende prosesser sammen med studenter som har en annen kunnskapsbase enn dem selv. Studentene må kjenne til hvordan barrierer som hindrer deltakelse oppstår og kan forhindres, og de må vite noe om materielle, fysiske og arkitektoniske forhold som har betydning for deltakelse. I tillegg trenger studentene også å utvikle forståelser av komplekse menneske-omgivelser interaksjoner. Denne forståelsen kan, når studentene kommer ut i arbeidslivet, føre til at de kan bidra synergieffekter til utvikling av nye og mer tilpassede tiltak for universell utforming. Også det at ergoterapeuter blir oppmerksomme på at de kan bidra tidligere i planprosesser og byggesaker, vil trolig føre til at behov for ombygginger av nye bygninger minsker.

Det å involvere eller ikke involvere interesseorganisasjoner for funksjonshemmede i undervisningen må overveies og ses i sammenheng med den tverrfaglige dimensjonen. Som nevnt var det særlig byggingeniørstudentene som satte pris på å lære av brukerrepresentanter. Som ansvarlige for prosjektet opplevede forfatterne imidlertid at dette perspektivet ikke ble tilstrekkelig integrert i oppleggets helhet første år, som var 2014. Delvis som en konsekvens av dette, har vi derfor etablert et «spin-off»-prosjekt som konkret omhandler å utvikle brukerperspektivet i universell utforming[1]. I 2015 ble dette prosjektets vitenskapelige assistent, som er oppnevnt av og representerer Norges Handikapforbund, engasjert inn som foreleser og respondent på studentenes gruppeoppgavene. Tradisjonelt har funksjonshemmedes organisasjonene vært «vaktbikkjer» mer enn samarbeidspartnere for forskning og undervisning. Noen av organisasjonene har utarbeidet normer/'best practice'- løsninger som ivaretar deres behov (Henriksen, 2011). Det er imidlertid viktig at vurderinger som gjøres i praksis bygger på en mest mulig mangfoldig forståelse av menneskers individuelle forutsetninger. Hvordan brukermedvirkning best kan ivaretas er et komplekst tema, som det er nødvendig å gjøre flere erfaringer med både i forskning og undervisning.

Universell utforming er med nødvendighet et tverrfaglig emne fordi det involverer ulike utdanningers kunnskapsgrunnlag. Studentenes skriftlige rapporter og refleksjonsnotater viste at de hadde gjensidig nytte av et slikt tverrfaglig samarbeid. Mange påpekte at dette ville være til nytte i framtidig yrkesutøvelse. Selv om det er områder av synergi mellom ergoterapi og byggfag i universell utforming, har hver profesjon sine egne styrker og ferdigheter å tilføre design- og planprosesser. For begge utdanninger er det en utfordring å bevege seg fra bruk av standard og retningslinjer til en kritisk refleksjon over hva som er oppnådd og hva de ikke lyktes med i de ulike gruppeoppgavene. I en slik refleksjon vil studentene ha mulighet til å trekke inn både etiske aspekter og konkrete utfordringer de erfarte i gruppearbeidet. At studenter leverer inn skriftlige arbeider er en del av prosessen å lære kritisk refleksjon (Smith, 2011). Gjennom å skriftliggjøre erfaringene må studentene tenke gjennom hva de har gjennomført og hvilke dilemmaer de har støtt på i arbeidsprosessen.

Studentene ble altså utfordret på å redegjøre for sin kompetanse i samspill med studenter fra en annen profesjon, og de har måttet reflektere over nye og andre problemstillinger knyttet til universell utforming. For byggingeniørstudentene har det i undervisningen i faget «areal- og transportplanlegging» blitt satt krav til å være bevisst på og å redegjøre for planleggingens verdigrunnlag i arbeidet med egne reguleringsplaner, i analyser av boligområder og på

studieturer om bærekraftig byutvikling. En god kritisk refleksjon av disse delene av besvarelsene er nødvendig for å vise stor nok faglig dybde, som igjen er viktig for å forstå fagenes samfunnsansvar (Steinfeld & Maisel, 2012). Ut fra lesing av refleksjonsnotater kunne vi se at noen av byggingeniørstudentene hadde utviklet en god evne til å reflektere kritisk over både samarbeidsprosess og kunnskapslæring, og at samarbeidet med ergoterapeutstudenter hadde gitt dem innsikt i en annen type kunnskap som er verdifull for universell utforming. Denne type kunnskap er viktig, og ville uten dette samarbeidsprosjektet, lett kunne blitt oversett.

I vårt studie av gjennomføring av felles undervisning om universell utforming har vi erfart at byggingeniørstudentene ble mer bevisste på individer og grupper med ulike behov i forhold til universell utforming. Kunnskapen om at ergoterapeuter kan bidra med viktig kunnskap om individperspektivet. Ergoterapistudentene lærte om TEK10 og universell utforming i arealplanprosesser og viktigheten av å kunne få inn synspunkter tidlig i planprosessen, slik at man slipper unna dyre endringer i etterkant.

Mange som underviser på bachelorutdanningen har lite forskningstid, noen ganger ingen. Dette kan få konsekvenser for universell utforming som tema i høyere utdanning fordi læreren kanskje ikke har tid satt av på sin arbeidsplan til å sette seg inn i nytt kunnskapsområde. Da kan det være en fare for at undervisning om universell utforming kun handler om å lære studentene å arbeide etter gjeldende forskrifter og regelverk. Tredje års studenter skal også lære seg den kompetansen de trenger for å reflektere kritisk over kvaliteten i konkrete løsninger som presenteres i lover og forskrifter. Å kunne forstå og bruke begreper og modeller i sitt arbeide er også en del av denne læringen.

Etter at diskriminerings- og tilgjengelighetsloven ble gjort gjeldende fra 2009 og FN-konvensjonen om rettighetene til personer med nedsatt funksjonsevne ble ratifisert i 2013, skal alle kjenne til hvordan man skal kunne ivareta universell utforming innen sine ansvars- og fagområder. I motivasjonen for dette faglige utviklingsprosjektet har vi også valgt å gå litt videre og forberede studentene på å arbeide sammen med studenter som har en annen fagbakgrunn enn dem selv, og de har fått erfaring med å diskutere konkrete prosjekter med studenter med en annen kunnskap enn de selv har. Her har vi vært opptatt av å utvikle universell utforming som et integrert emne i profesjonsutdanningene. Men samtidig kan universell utforming også være spesialiserte etter- og videreutdanninger og masterutdanninger. Her må det være et begge deler, ikke enten eller, men for dette prosjektets formål er integrert emne det viktigste.

Studentene ved ergoterapiutdanningen har lært om universell utforming i sitt første studieår, og gav i 2013 uttrykk for at undervisningen i tredje studieår måtte være en progresjon fra det de hadde lært i første studieår. Flere ergoterapistudenter meldte i 2013 at deres læringsutbytte var noe mindre enn hva byggingeniørstudentene rapporterte samme år, dette fordi ergoterapistudentene mente at de hadde bedre forkunnskaper om universell utforming enn byggingeniørene. Opplegget ble endret noe i 2014 ved at innholdet i forelesningen om «Byggingeniørens faglige utgangspunkt i arbeidet med universell utforming» delvis omhandlet temaer som ikke var forelest i før for begge studieretningene, eller ble ytterligere utdypet (reguleringsplaners rettslige grunnlag, innhold og eksempel på reguleringsplaner og-bestemmelser, medvirkningsprosesser). I tillegg ble byggeprosessen og arealplanprosesser kort redegjort for.

De største utfordringene er å forankre dette tverrfaglige undervisningsopplegget bedre i utdanningenes egne studieplaner slik at undervisningen ikke kolliderer med andre fag i prosjektuken, og derfor kan få førsteprioritet blant studentene på begge studieprogrammene. Vi ser også behov for mer forskning for å bedre forståelsen for hvordan tverrprofesjonelle undervisningsopplegg kan bidra til å styrke studentenes kunnskapsgrunnlag. Dette er særlig

viktig for universell utforming som bygger på ulike profesjoners kunnskap sammen med brukerkunnskap fra ulike individuelle perspektiv.

Konklusjon

Innledningsvis stiller vi spørsmålet «Hvordan kan et tverrfaglig undervisningsopplegg bidra til å styrke kunnskaps- og forståelsesgrunnlaget innenfor to profesjonsutdanninger?» Erfaringene fra dette tverrprofesjonelle samarbeidet har ført til et undervisnings- og forskningssamarbeid hvor vi stadig diskuterer hvordan vi skal gå videre med arbeidet. Prosjektet avdekket forholdsvis stor avstand mellom forståelser av universell utforming, som en teknisk spesifikasjon og som en strategi for å oppnå aktivitet og deltakelse. Gjennom prosjektperioden ble det derfor prioritert å utvikle felles læringsmål og pensum for både byggingeniørstudentene og ergoterapistudentene om universell utforming. På denne måten har det vært mulig å styrke studentenes mulighet til kunnskapsdeling i løpet av studiet ved at de leste samme pensum og arbeidet i tråd med felles læringsutbyttebeskrivelser, men med ulike faglige utgangspunkt.

Vi fant klare indikasjoner på at studentene, gjennom å delta på dette felles tverrfaglige opplegget, fikk et bredere perspektiv på universell utforming. Begge studentgruppene fikk større forståelse for kompleksiteten i universell utforming som fagterm og politisk strategi for deltakelse. Også lærerne som var involvert opplevde at egen kunnskap ble styrket gjennom det tette samarbeidet om planlegging og gjennomføring av undervisningsopplegget. Vi så også en sammenheng mellom kunnskapsdeling og kritisk refleksjon. Når studenter arbeider sammen med studenter fra en annen utdanning enn sin egen, reflekterer de mer over sin egen utdannings bidrag. Imidlertid ser vi også at det å lære studentene kritisk refleksjon over et emne tar tid og krever mye av undervisningsopplegget. Nettopp dette kan være en begrunnelse for å implementere universell utforming som eksplisitt tema i profesjonsutdanningenes undervisning. Hvis ikke dette gjøres kan universell utforming lett reduseres til det å bruke noen enkle sjekklister, mens konkrete dilemma og kunnskapsbehov som oppstår i konkretiseringen av universell utforming kanskje blir oversett.

Vi ønsket også at disse to studentgruppene skulle jobbe sammen også etter at dette formelle samarbeidsprosjektet var ferdig. Derfor oppmuntret lærerne studentene til å samarbeide om å skrive bacheloroppgaver på tvers av utdanningene. Så langt har det ikke vært noen av studentene som har videreført samarbeidet på denne måten i etterkant av fordypningsuken.

Vi ser at det er et behov for mer forskning på tverrprofesjonalitet i undervisning og forskning for å kunne møte fremtidig behov for kunnskap innen universell utforming.

Takk

Vi ønsker å takke Husbanken som gav delfinansiering av pilotopplegget for 2012, og Universell* ved NTNU som gav støtte til planlegging og gjennomføring av prosjektuken i 2013. Også en takk til alle de tre instituttene ved HiOA som har vært involvert i dette arbeidet, og som har gitt medarbeiderne mulighet for å utvikle undervisningsopplegget. Det er etablert en referansegruppe som består av de tre instituttlederne, og lærerne som er involvert i opplegget. Rapport for prosjektet som ble gjennomført i 2013 og 2014 er tilgjengelig hos Universell*. Fagboken Universell utforming: Verdigrunnlag, kunnskap og praksis (Lid, 2013) ble utviklet med støtte fra Husbankens kompetansemidler og ble skrevet i forbindelse med utvikling av undervisningsopplegget i 2012.

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Referanser

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Criteria for architect selection and satisfaction among first-time private sector clients

Abstract

For sustained profitability, architects must position themselves to attract new clients. This involves understanding potential clients' choices and how these might impact on subsequent satisfaction. The study ranked criteria for architect selection and how these predict satisfaction among first-time private sector clients in Lagos, Nigeria. Data from a questionnaire survey were analysed using descriptive statistics, relative importance index and categorical regression, identifying timely delivery, cost of service and quality of previous services as the most important criteria. Although personal relationship has been said to influence selection of a professional service provider, this criterion was found to be of relatively low importance here. To attract private sector clients, architects should prioritise improved service delivery and construction skill development.

Keywords: architectural service, first-time client, private sector client, Nigeria, selection criteria, service provider selection

Introduction

To position themselves to compete effectively and attract customers, businesses must understand customer choices. In the relationship between service provider and client, selection of the right provider is a crucial first step, determining value and satisfaction for the client and new customer acquisition for the provider. In professional service circles, customers are often referred to as 'clients'; according to Bailey (2000), a client *procures* professional services while a customer *buys* goods and services. This is a pertinent distinction for professional services such as architecture, especially in the light of the increasing failure of firms due to their inability to attract more jobs from prospective clients as noted by Pearson, Egan and Nakazawa (2003) and Larsen (2005).

Architects provide services for both public and private sector clients. In the public sector (which includes government agencies and different tiers of government), there are often well-defined criteria for the selection of service providers, and the process is often managed by persons working in related fields As indicated by researchers such as Sporrong (2011), Mathonsi and Thwala (2012) and Rönn (2014), this can make it easier for architects to position themselves to target public sector projects.

In contrast, potential private sector clients may include individuals, families or privately run organisations, and services are often heterogeneous because they are tailored to client needs (Kugyte & Sliburyte, 2005). Additionally, private sector clients may not have written criteria for selecting service providers, and Kugyte and Sliburyte (2005) note that selection may be based on subjective attributes. Anecdotal evidence also suggests that for first-time private sector clients, information on architectural services providers or the services they provide may be inadequate, not least because some of the services that architecture delivers are not tangible.

For present purposes, the term *first-time private client* is used to refer to someone engaging the services of an architect for the first time. Such clients may lack adequate knowledge of statutory requirements, of which service provider would best meet their needs or of what architectural services entail, and it is the architect's responsibility to educate these

clients. Duhan, Johnson, Wilcox and Harrell (1997) suggested that clients may often seek recommendations from family and friends, selecting service providers they like or feel they can trust (Demkin, 2008)—in other words, the choice of architect may be influenced by personal relationships. In addition, first-time private sector clients are often unsure what they want and will often rely on the architect to define the problem before proposing an architectural solution. For this reason, the choice of architect is very important, as it is likely to affect the service outcome and, ultimately, client satisfaction with services rendered. Clients in this category therefore create an interesting scenario precisely because of their lack of knowledge about what engaging an architect entails. Additionally, they may be unable to assess architectural services before paying because of the simultaneity of production and consumption. As alternatives are not easily identifiable, it may be difficult to make comparisons, especially for first-time clients. In turn, the architect may know little about how best to satisfy such clients, who are crucial as a potential source of new business.

The criteria applied in the selection of professional services providers have been discussed by a number of authors, including Araloyin and Olatoye (2011), Razzouk, Seitz and Webb (2004) and Cheung, Kuen and Skitmore (2002). Based on a synthesis of previous studies in the accounting, automobile insurance, commercial banking, mortgage banking, copy services, medical, architectural and engineering services sectors, Kugyte and Sliburyte (2005) concluded that these criteria are likely to vary according to both service type and client type. It is therefore reasonable to expect variation in the importance assigned to selection criteria, but very little is known about the ranking of such criteria among architecture services clients, or about how this influences satisfaction.

Nigeria provides an appropriate setting for exploration of this issue in light of Vision 20:2020, whose objectives include infrastructural development. Strategies to achieve this objective include the provision of affordable and accessible housing, and new layouts are being opened to encourage the private sector to participate in this drive. This government effort reflects the fact that the middle class in Nigeria has expanded (Standard Bank, 2014), leading to further development of the construction industry, as demand for housing has also gradually increased. Since 2008, the contribution of the construction industry to Nigeria's Gross Domestic Product has been more than 3% (Waziri & Bala, 2014).

In particular, Lagos provides an interesting context for this study. First, as the country's commercial centre, Lagos is highly urbanised; the property market has grown substantially, and several informal settlements have emerged to provide shelter for the influx of people and businesses (Opoko, 2013). In addition, Lagos State has designated nine model cities: Ajara Action Area, Otto, Meiran-Amikanle, Ikorodu-Epe, Apapa, Agege-Ifako Ijaiye, Mainland, Badadry, Lekki and Ikoyi-Victoria Island (Capital, 2010). The Lekki Free Trade Zone is another element in the drive for infrastructural development.

Lagos is also of interest in the present context because most of the architectural firms registered to practice in Nigeria (213 of a total 613) are located in various parts of the city (Architects Registration Council of Nigeria, 2010). The clients of those firms are the subjects of this study. The objective of the study is to assess the criteria used by first-time private sector clients in selecting an architectural services provider and how the satisfaction of the clients is determined by these selection criteria. To that end, the study addresses the following four questions. 1) What are the principal criteria used by first-time private sector clients in selecting an architect? 2) How do these criteria vary according to service requirement? 3) How do these criteria vary according to building type? 4) Which of these selection criteria are good predictors of client satisfaction with services provided? By ranking the criteria that first-time private sector clients use in deciding which architect to engage, the present study will help architects to position themselves, using appropriate marketing strategies to expand their

client base. From the client's perspective, empirical data on these criteria will help to ensure better service satisfaction.

Literature Review

The search for a service provider can broadly be described in terms of three key criteria: *search, experience* and *credence*. While search criteria (which include pricing, convenience and previous projects) can readily be evaluated prior to selection, Kugyte and Sliburyte (2005) noted that experience (core services and service encounter) and credence (encompassing reputation and brand name familiarity) may be less easily evaluated until the service has been rendered. These attributes were derived from a synthesis of findings regarding the selection of service providers from fields categorized as service shops, professional services and generic (mass) services.

According to Chappell and Willis (2000), the services provided by architects may range from design to administration of construction projects. It might therefore be expected that the criteria adopted by first-time private sector clients would vary with the type of service required. The American Institute of Architects (AIA) (Demkin, 2008) identified three general criteria for selection of an architect: value, cost and qualifications. However, these apply only when the direct hire option is not used. Qualifications-based selection (QBS), used mostly in the public sector and by multiple-project clients, has been widely studied (e.g. Sporrong, 2011). This approach is based on criteria that include the architect's competence, experience and reputation, related to Kugyte and Sliburyte's (2005) credence and pre-purchase knowledge, suggesting that QBS assigns less importance to relational selection criteria. The QBS has been criticised for tendency to hinder new firms from being selected.

Value-based selection, said to be popular among inexperienced clients, is based on criteria such as the architect's capacity to produce innovative solutions and their commitment to the client's interest. Cost-based selection, based mainly on cost efficiency, is thought to be most popular among private sector clients. It has been suggested that clients who emphasise value tend to focus less on cost as a selection criterion, and vice versa. However, Bayazit and Karpak (2013) are among those who posit that this process is often based on multiple criteria. While the criteria for rating alternative providers have been investigated in the context of the decision-making process, less is known about the relative importance of these multiple criteria. The present study addresses this knowledge gap.

Criteria used in the selection of professional service firms are known to include reputation (Scott & Watt, 1995; Almossawi, 2001; Razzouk, Seitz & Webb, 2004; Araloyin & Olatoye, 2011) and interpersonal skills (Razzouk, Seitz & Webb, 2004); some of these criteria have also been identified in the selection of architects. For example, Day and Barksdale's (2003) qualitative study identified three broad criteria used by clients in selecting architectural and engineering services providers: core services, service encounter and reputation. The core services criterion relates to service providers' perceived understanding of client requirements, as well as experience, expertise and competence. The service encounter criterion relates to service providers' perceived relationship and communication skills. Finally, the reputation criterion assesses the likelihood that the service provider will conform to contractual agreements, based on track record as accessed through previous projects or clients. Cheung, Kuen and Skitmore (2002) found that real estate developers in Hong Kong also place emphasis on professional qualifications and consultancy fees as criteria for selecting architects. Their findings differ from previous studies in that reputation rated low as a selection criterion, and criteria were found to vary according to services required.

Focused on limited competitions in Sweden, Rönn (2014) found that selection criteria included quality of design, innovative solutions to architectural problems, collaboration with client/contractor, professional competence and resources, as well as the architect's reputation.

However, it should be noted that, in such competitions, the call for entries often comes through architectural associations (as in Rönn's study) or is confined to a few reputable firms. Designs and company profiles are submitted prior to selection, enabling a choice to be made on the basis of design quality and the profile of the architect or firm. In contrast, individual clients may not have access to an architectural association in sourcing an architect, and the process of organising competitions may be unduly resource-intensive, as assessors must be engaged and paid. For this reason, these clients are likely to opt for direct hire, often based on the recommendation of a friend, another client or another architect who has had a professional or personal relationship with the architect, or sometimes on the architect's wider reputation.

As mentioned earlier, it can be difficult to evaluate services before purchase in the context of a professional service like architecture. As a result of this characteristic of services, which has been described as *intangibility* (Kindström, Kowalkowski & Nordin, 2012), Kugyte and Sliburyte, (2005) noted that clients seeking information on professional service providers often rely on personal information or referral (see also Chappell & Willis, 2000). This is partly a result of the personalized nature of services provided and the no-advertising rule that governs most professional services. Kugyte and Sliburyte (2005) therefore suggested that reputation would play a greater role than price in the selection of professional service providers, in contrast to other areas where services can be evaluated prior to purchase, the consequences of failure are minimal (given the possibility of a refund or redo) and comparison of products is possible. In addition, unlike fields where price is of greater importance, Kugyte and Sliburyte (2005) suggested that the assessment of architects' referral information may be subjective. This presupposes that price is not important in the selection of professional services, although this assumption requires further investigation.

Selection of a service provider is often based on client service expectations, and this may determine subsequent client satisfaction. As defined by Masrom and Skitmore (2010), satisfaction is determined by whether a product or service meets the customer's aspirations or expectations. When a client selects an architect, it is in the hope that the required services will be satisfactorily provided; in many cases, then, the client's focus determines whether the right service provider has been selected. Building on previous research, the present study investigates the criteria used by private sector clients in selecting an architect that they have never commissioned before, and how these criteria relate to subsequent client satisfaction.

Research Methods

To recruit participants for the study, architectural firms registered to practice in Nigeria (ARCON, 2010) were first contacted to obtain their consent to access a list of their clients for the previous two years. Fifty-seven firms agreed to participate in the survey, each providing a list of five clients; to allow for non-responses, four clients were then randomly selected from each list. Where the number of clients was less than four, all the firm's clients were selected. These clients were then contacted to obtain their consent for participation. In total, 228 clients agreed to participate in the study.

A questionnaire was developed for the purpose of data collection, with the help of ten potential clients to ensure that the issues investigated were of relevance to the target population. The questionnaire was pre-tested and fine-tuned to ensure its validity and the clarity of questions. The aim was to ensure standardised questions, allowing responses to be compared. Client judgments of the importance of criteria for architect selection were measured on a 5-point scale (from 1 = *not important at all* to 5 = *very important*). Cronbach's alpha testing confirmed the scale's reliability (Cronbach's alpha = 0.734) (George & Mallery, 2003). Satisfaction was measured using a single scale. In line with Mbachu and Nkedo (2007), respondents were asked to indicate on a scale of 1 to 5 how satisfied they were with services received, from 1 (*not satisfied at all*) to 5 (*very satisfied*).

In total, 196 questionnaires were returned, representing a response rate of 86%. Criteria were assessed using the relative importance index (RII), measured as RII = ∑W/H*N, where W is the weight attached to criteria by respondents, H is the highest weight for each criterion (in this case, 5) and N is the number of respondents. A categorical regression was performed to determine which selection criteria significantly predicted satisfaction among first-time private sector clients.

Results

The results indicate that 31.6% of these first-time clients engaged architects solely for design services (Table 1). However, a higher percentage (51%) engaged architects for design and construction projects, and just 9.7% of engaged architects for renovation or interior design services. This suggests that most of the services provided by these architects in Lagos related to design or design and construction (otherwise known as design-build). This confirms the earlier findings of Oluwatayo (2009), although an increase was observed in design-build services. In the present study, the least procured service was project management (2.0%), followed by construction-only services (5.6%). This result is interesting, as it suggests that architects are also being contracted to provide construction services. However, further investigation showed that some of these architects were registered as consortiums involving other construction professionals, enabling them to handle construction services.

Table 1. Project profiles.

Measures	Items	(%)
Type of service	Design	31.6
	Construction	5.6
	Design and construction	51.0
	Project management	2.0
	Renovation/ interior design	9.7
Building type	Residential	64.8
	Office	11.2
	Educational	12.8
	Religious	3.6
	Industrial	3.6
	Healthcare	1.5
	Entertainment	1.0
Client satisfaction with service	Not satisfied at all	1.7
	Undecided	12.8
	Satisfied	66.1
	Very satisfied	19.4

Most of these first-time private clients (65.8%) engaged an architect for residential projects, which may reflect the increased drive for home ownership accompanying the expansion of the middle class. Few clients engaged the architect for educational (13%) or office projects (11.4%), and still fewer for industrial (3.6%), religious (3.6%), healthcare (1.6%) or entertainment projects (1%). Most of those clients who sought services for residential projects procured either design-only or design and construction services. It is interesting to note that none of the clients who engaged architects for religious, industrial and healthcare projects procured design-only services; these building types are often specialised and require the involvement of more than one professional, even at the design stage. Table 1 also shows that

most respondents were satisfied (66.1%) or very satisfied (19.4%) with the services they received from their chosen architect; very few (1.7%) were not satisfied at all. A closer look at the data shows that all those who were not satisfied with the services they received had procured design and construction services for residential projects. The reason for this finding is not immediately clear; some clients suggested that design and construction services are often flawed, with cost overruns, but this needs to be further investigated.

To answer the first research question, the relative importance index was used in establishing the relative importance of the criteria investigated in the study. The relative importance index (RII) ranged from 1 to 5 (where 1 = *completely irrelevant* and 5 = *very relevant*). The results in Table 2 reveal that the most important criterion for first-time private sector clients when selecting their architect is timely delivery (RII = 0.883), followed by cost of service (RII = 0.845) and quality of previous projects (RII = 0.844). The least important criteria are personal relationship and the gender and religion of the architect. These results suggest that the core service and reputation components identified by Day and Barkdale (2003) were more highly ranked than the service encounter selection component. It would therefore appear that service expectation may be more important to the client than existing relationships when selecting an architectural services provider.

This result appears to conflict with Kugyte and Sliburyte's (2005) assertion that reputation would play a stronger role than cost in the selection of a professional service provider. However, it supports the finding of Cheung, Kuen and Skitmore (2002) that consultancy fee ranked higher than reputation in the selection of architects by real estate firms. As shown in Table 3, this was also the case when type of service procured was considered. These findings also align with previous studies in that cost efficiency is identified as a criterion for architect selection in the context of private sector clients, as in Sporrong (2011). The overall ranking of criteria also shows that reputation ranked higher that competence and experience of the architect for these clients. This conflicts with the findings of Cheung, Kuen and Skitmore (2002) and Rönn (2014), who found that professional competence and experience ranked higher than reputation in the selection of architects by real estate firms and organisers of public sector limited competitions. However, relative to competence, the importance of reputation as an selection criterion appears to be a function of service type.

Table 2. Relative importance of criteria used by first-time private sector clients in selecting architects.

	RII	Rank
Timely delivery	0.883	1
Cost of service	0.845	2
Quality of previous projects	0.844	3
Reputation in specific area of need	0.794	4
Competence in particular project area	0.790	5
Experience in the industry	0.780	6
Capacity for innovation	0.749	7
Variety of services offered	0.723	8
Personal relationship	0.676	9
Gender	0.523	10
Religion	0.492	11

Table 3 (on page 8) shows that reputation ranks higher than competence only for project management, interior design and renovation services. The RII reveals further significant differences in the ranking of selection criteria by type of service procured. Although timely delivery ranks as the most important selection criterion when considering all services together, it was of only moderate importance when each services is considered separately, ranking sixth or eighth. On the other hand, quality and cost were highly ranked, irrespective of the type of service. It is also interesting to note that religion, which ranked least important overall, was highly important to clients seeking project management services. This may suggest the place of perceived religious affinity for this type of service, which may entail that the architect taking control of an entire project from conception to actualisation, on behalf of the client. A further look at the data however revealed that the clients that sought project management services sought this for religious and entertainment buildings. It therefore appears that the importance of religion as architect selection criterion is a reflection of the building type. This needs to be further investigated. Gender was also an important consideration for clients who selected architects for project management services.

Another interesting result was that personal relationship with the architect was of only moderate importance when the client sought design-only and project management services, contrary to earlier findings such as those of Duhan et al. (1997). This suggests that clients are more objective in their assessment when an architect is required to provide architectural services. Sporrong's (2011) suggestion that clients who emphasize cost tend to place less emphasis on value is confirmed overall, as shown in Table 2. While capacity for innovation was ranked very low, cost was ranked as more important, but this was not an absolute rule when considering specific services (Table 3). For design services, cost was ranked first while innovation was ranked eighth. Similar trends were observed for design and construction, project management, renovation and interior design, where cost ranked first or second and capacity for innovation ranked sixth. For construction services, however, the rankings were close, with both criteria highly ranked. Innovation in construction has been identified as one of the ways of saving cost (Demkin, 2008), and it would appear that these clients are aware of this, selecting their architect on the basis of their ability to achieve cost-efficiency through innovation during construction.

Again, the importance of cost relative to capacity for innovation was not a one-way ranking when considering project type. While cost of service was a stronger consideration than innovation for clients seeking architectural services for residential, educational, office or entertainment projects, capacity for innovation was more important for clients seeking services for religious and industrial buildings. This is clear from the RII results for ranking of selection criteria across different project types, as shown in Table 4. These results also show that the most important overall criterion (timely delivery) was also most important for all except religious and industrial projects. Similarly, cost—the second most important criterion overall —was less important for clients seeking architectural services for religious and industrial projects, coming behind other considerations like timely delivery, quality of previous work, personal relationship and competence in particular project areas in the case of office projects. The importance of cost relative to reputation of service provider also varied with project type. As suggested by Kugyte and Sliburyte (2005), reputation played a greater role than price for religious and industrial projects. However, cost was more important than reputation for residential and entertainment projects. Religion, which ranked lowest overall, was understandably a more important consideration than cost and personal relationship in the selection of architects for religious buildings. Surprisingly, however, it was also more important than gender and capacity for innovation for entertainment projects, and there is again a need for further investigation of this finding.

Table 3. Ranking of architect selection criteria by type of service procured.

	Design		Construction		Design and Construction		Project Management		Renovation/Interior design	
	RII	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*
Timely delivery	.739	6	.636	8	.618	8	.8	6	.768	8
Cost of service	.855	1	.927	3	.804	2	1.0	1	.937	2
Quality of previous projects	.8	2	.818	5	.838	1	1.0	1	1.0	1
Reputation in specific area of need	.755	4	.8	6	.788	4	1.0	1	.905	3
Competence in particular project area	.757	3	1.0	1	.794	3	.6	11	.789	7
Experience in the industry	.755	4	.945	2	.754	5	1.0	1	.895	4
Capacity for innovation	.716	8	.855	4	.742	6	.8	6	.84	6
Variety of services offered	.658	9	.8	6	.726	7	.8	6	.863	5
Personal relationship	.739	6	.636	8	.618	8	.8	6	.768	8
Gender	.523	10	.418	11	.506	10	.8	6	.611	11
Religion	.494	11	.491	10	.412	11	1.0	1	.8	10

Table 4. Ranking of architect selection criteria by type of project.

	Residential		Office		Educational		Religious		Industrial		Healthcare		Entertainment	
	RII	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*	*RII*	*Rank*
Ability for timely delivery	.888	1	.873	1	.944	1	.714	7	.886	4	.8	1	1.0	1
Cost of service	.848	2	.8	5	.928	2	.629	11	.743	8	.8	1	1.0	1
Quality of previous projects	.839	3	.845	2	.824	5	.886	2	1.0	1	.8	1	.8	4
Reputation in my specific area of need	.776	4	.745	7	.88	3	.8	3	1.0	1	.8	1	.6	5
Competence in particular project area	.771	5	.809	4	.832	4	.771	5	.771	7	.8	1	1.0	1
Experience in the industry	.767	6	.745	7	.8	6	.9	1	1.0	1	.8	1	.6	5
Capacity for innovation	.738	7	.736	9	.784	7	.771	5	.886	4	.8	1	.4	10
Variety of services offered	.720	8	.736	9	.656	8	.8	3	.886	4	.8	1	.6	5
Personal relationship	.702	9	.827	3	.488	9	.686	10	.523	11	.8	1	.6	5
Gender	.491	10	.755	6	.472	10	.714	7	.543	10	.6	10	.2	11
Religion	.491	10	.6	11	.304	11	.714	7	.657	9	.6	11	.6	5

Selection of a service provider has been linked to client satisfaction, and in selecting an architect, the criteria adopted by first-time private sector clients are based on expectations in terms of services rendered. A categorical regression analysis was therefore performed to identify which selection criteria significantly predict client satisfaction. Client perception of satisfaction (on an ordinal scale) was entered as the dependent variable while the selection criteria were entered as independent variables. The results show that four of the criteria predict satisfaction among first-time private sector clients ($F = 6.49$, $R^2 = 0.613$, $p = 0.00$). As shown in Table 5, these include cost of service (Beta = -0.35, $F = 6.32$, $p = 0.002$) and reputation of the architect in the area of need (Beta = 0.49, $F = 4.25$, $p = 0.041$). Other predictors include quality of previous projects (Beta = -0.22, $F = 3.20$, $p = 0.044$) and personal relationship with the architect (Beta = -0.296, $F = 6.68$, $p = 0.00$).

Table 5. Architect selection factors predicting satisfaction among first-time private sector clients.

Coefficients					
	Standardized Coefficients		df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
Experience in the industry	.249	.179	2	1.927	.149
Cost of service	-.353	.140	2	6.320	.002
Reputation in specific area of need	.494	.240	1	4.252	.041
Capacity for innovation	-.554	.344	2	2.598	.078
Quality of previous projects	.220	.123	2	3.196	.044
Variety of services offered	.394	.281	2	1.970	.143
Competence in particular project area	.105	.105	3	1.000	.395
Personal relationship	.296	.115	3	6.675	.000
Timely delivery	.158	.105	2	2.262	.108
Gender	-.463	.239	2	3.753	.026
Religion	.449	.129	2	12.198	.000

The results further indicate that respondents who assigned high importance to the cost of services recorded lower satisfaction with services obtained, and those who rated cost of service as of lower importance recorded higher satisfaction with services. Higher rating of architect reputation in the client's area of interest, quality of previous service and personal relationship with the architect were associated with higher satisfaction with services. Another interesting result is the level of importance assigned to religion as a selection criterion, as both gender and religion also predicted satisfaction among these clients. However, while a greater emphasis on gender was linked to lower satisfaction, a greater emphasis on religion was linked to higher satisfaction. Again, this finding requires further investigation.

Conclusion

Although the public sector has been investigated in more detail, there has been little empirical work to date on the criteria used by first-time private sector clients in selecting an architect, and these clients constitute most of the new business of architecture firms. The present study contributes to the literature by providing empirical evidence of the relative importance assigned to a number of the criteria used by first-time private sector clients, and by identifying those criteria that predict client satisfaction. These findings will help architects to position themselves to attract new clients, boosting their client base and, ultimately, their profitability. Although previous studies have highlighted the importance of personal relationships in the selection of a professional service provider, the present results suggest that other criteria are more important for first-time private sector clients in selecting an architect, including timely delivery, quality of service and reputation. One implication of these findings is that architects

need to improve their skills and services, given the importance assigned to core service criteria such as competence, quality of previous projects and experience, as well as architect's reputation. The fact that the reputation of the architect ranked higher than competence and experience—and higher even than cost for most services and project types—also suggests that architects need to build a better reputation in order to enhance their prospects of securing work from first-time private sector clients.

Although the importance of personal relationships varies with the type of service and project, this is clearly a key factor in that it predicts client satisfaction, and architects' education may need to include further development of interpersonal skills. In addition, the fact that about half of these respondents procured design and construction services suggests that architects' education should include more construction-related content—all the more so because clients who were not satisfied at all with the services they received were those who had procured design and construction services, suggesting inadequacies in the provision of this type of service. The professional body might also consolidate architects' education by offering short courses in this area. In general, these findings suggest that some areas need further study, including the observed dissatisfaction in relation to design and construction services, and how and why religion is used as a criterion for selection of architects by first-time private sector clients seeking project management services.

Granted its contribution to knowledge, the study has a number of limitations. First, only the private sector has been investigated, and future studies might usefully compare public and private sector clients to elicit variations in the importance assigned to various criteria for architect selection. Second, data were collected only from first-time clients, who may have little or no experience in working with architects; more experienced clients may employ additional criteria, such as previous experience with the client, which were not investigated here. Third, the quantitative approach used in this study might be complemented by qualitative methods to elicit criteria that may not have been investigated here. Finally, this study covered only architectural firms based in Lagos, and further studies should investigate other locations in order to determine the extent to which these findings might be generalised.

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Catrine Lie og Liv Merete Nielsen

Lærernes arbeidstid i Kunst og håndverk –grunnlaget for gammeldags leseplikt i grunnskolen

Sammendrag

En lærer i faget Kunst og håndverk på ungdomstrinnet har mindre tid til for- og etterarbeid enn lærere i andre fag. I denne artikkelen søker vi etter opphavet til denne differensieringen av lærernes arbeidstid og finner det i Lesepliktutvalgets utredning fra 1977. Der er det imidlertid ingen gode begrunnelser for hvorfor *fagene får ulik leseplikt. Ti år senere legger Utvalget til å vurdere undervisningspersonalets fremtidige arbeidssituasjon (UFA-utvalget) beskrivelsene i de enkelte fagplanene til grunn for vurdering av lærernes leseplikt. Selv ikke etter innføringen av L97, der faget Kunst og håndverk fikk tydeligere innhold og lærerne større arbeidsbyrde, ble forskjellene i lærernes tid til for- og etterarbeid endret. Lærere har påpekt skjevheten, men leseplikten har forblitt uendret. Skoleledere har imidlertid gitt uttrykk for at leseplikten er rettferdig. I denne artikkelen drøfter vi hva som kan ligge til grunn for opprettholdelsen av denne gammeldagse leseplikten.*

Nøkkelord: Kunst og håndverk, skoleledere, ungdomsskole, fagkompetanse, lærere, faglærere, grunnskolen, leseplikt, undervisningstid, arbeidstid

Innledning

Utfordringene som skolepolitikere, lærerutdannere, skoleledere og lærere står overfor, er å legge forholdene til rette slik at elevene får de beste forutsetningene for å oppnå opplæringens mål på en positiv måte. Spørsmålet er om skolene gir de ulike fagene gode nok rammebetingelser i praksis. At skoleledere ansetter lærere som er kvalifiserte til å undervise i fagene og at arbeidstiden rekker til for- og etterarbeid, er slike rammefaktorer. Læreplanen i Kunst og håndverk (K06) er en faglig krevende læreplan, som forutsetter at lærere har faglig kompetanse og ikke minst tid til å forberede og planlegge gode oppgaver til elevene. Dette gjelder selvfølgelig også for alle andre fag. Kunnskapsløftets målformuleringer er ambisiøse og omfattende, og det gjøres ikke forskjell på verdsetting av fag i læreplanen. Det er derfor et paradoks at avtaleverket som regulerer lærernes arbeidstid på ungdomstrinnet differensierer mellom fag. Lærere i Kunst og håndverk har mindre tid til for- og etterarbeid enn lærere i andre fag.

I denne artikkelen undersøker vi bakgrunnen for den praktiserte differensieringen av lærernes arbeidstid og drøfter dette i et historisk lys. Den delen av lærernes arbeidstid som denne artikkelen fokuserer på, kalles leseplikt eller undervisningstid. Vi forstår leseplikt som et historisk begrep som fremdeles benyttes, selv om det nå er erstattet av begrepet undervisningstid. I denne artikkelen benytter vi derfor begge begrepene.

Leseplikt i perspektiv

Lærernes arbeidstid til undervisning er regulert i særavtale mellom arbeidstakerorganisasjon og arbeidsgiver, henholdsvis Utdanningsforbundet og Kommunenes Sentralforbund (KS) (SFS 2213, 2015). Det som tidligere ble kalt leseplikt, blir i gjeldende avtaleverk omtalt som undervisningstid, og blir angitt som årsramme for hvert enkelt fag. Som vist i Figur 1 må en lærer i Kunst og håndverk på ungdomstrinnet undervise 948 'timer' (angitt i 45 minutters enhet) i løpet av et arbeidsår i full stilling. Til sammenligning underviser en lærer i Norsk 808 'timer' (angitt i 45 minutters enhet). Det betyr at en lærer i Kunst og håndverk må undervise 140 'timer' mer i året enn lærere i Norsk. Som et eksempel på hvordan det gir utslag ukentlig kan vi dele årsrammene for 45 minutters enheter på 38 uker (et normalt arbeidsår i skolen), og vi får som

gjennomsnitt at lærere i Kunst og håndverk underviser 24,9 'timer' per uke. Til sammenligning underviser norsklærere 21,2 'timer' per uke.

2016	Kunst og håndverk og Kroppsøving	Øvrige fag	Mat og helse og Engelsk	Norsk
Ungdomstrinn (8. – 10. trinn)	Årsramme 711/948	Årsramme 664/885	Årsramme 635/847	Årsramme 606/808
Barnetrinn (1.-7. trinn)	Årsramme alle fag 741/988			

Figur 1: Fordeling av årsammer (målt i 60/45 minutters enheter) for fag i grunnskolen. Årsrammene er hentet fra Særavtalen (SFS 2213, 2015, s. 11). Redusert undervisningstid som følge av kontaktlærer-funksjon og andre bestemmelser for nedslag er ikke tatt med i denne sammenheng.

Innføringen av leseplikten går langt tilbake i tid, og den fordelingen mellom fag som er fremstilt i Figur 1, og som praktiseres i store deler av landet, kan spores tilbake til utredningen *Leseplikt for undervisningspersonalet i skolen* (NOU 1977:4, 1977). Utvalget som utarbeidet utredningen blir ofte omtalt som 'lesepliktutvalget'. Før 1977 var grunnskolens leseplikt fordelt etter et todelingsprinsipp mellom praktiske og teoretiske fag, som vist nedenfor i Figur 2. Et forsøk på å bygge ned skillet mellom praktiske og teoretiske fag sto på den politiske agendaen på 1970-tallet. Dette kom også til uttrykk gjennom en politisk ønsket nedbygging av skillet mellom det teoretiske gymnaset og den praktiske yrkesskolen med innføringen av videregående skole som samlebetegnelse. Loven om videregående opplæring ble vedtatt i 1974 (Lov om videregående opplæring, 1974) og iverksatt i 1976.

Før 1977	Praktiske fag	Teoretiske fag
Leseplikt ungdomstrinn	28 timer/uke	24 timer/uke
Leseplikt barnetrinnet	alle fag 30 timer / uke	

Figur 2. Tallene viser leseplikten slik den var før 1977. Det avspeiler en skole som var oppdelt i praktiske og teoretiske fag. Det var blant annet dette skillet som utredningen *Leseplikt for undervisningspersonalet i skolen* (NOU 1977:4, 1977, s.5) skulle redusere.

Lesepliktutvalget

Lesepliktutvalget, som ble oppnevnt i 1975, skulle ifølge mandatet blant annet «… foreta en vurdering av arbeidsbyrden for undervisningspersonalet i de ulike fag og på de ulike trinn i grunnskolen og i den videregående skolen …» og «… under sitt arbeid spesielt ta sikte på å redusere eventuelle ubegrunnede skiller mellom teoretiske og praktiske fag og mellom skoleslag i lesepliktsammenheng» (NOU 1977:4, 1977, s. 5). Utvalget skriver at de oppfatter det ovennevnte mandatet som «… at det er meningen å komme fram til leseplikter som i hvert enkelt tilfelle gir et riktig forhold mellom undervisningstid og tid til for- og etterarbeid. Ulike leseplikter må ikke gi ulike arbeidsbyrder» (NOU 1977:4, 1977, s. 6).

I tråd med samtidens politiske agenda og mandatet, gjør utvalget noen vurderinger rundt skillet mellom teoretiske og praktiske fag som antyder at utvalget vil foreslå en betydelig redusering av denne forskjellen. De skriver;

> Et annet spørsmål gjelder den tradisjonelle sondringen mellom «teoretiske» og «praktiske» fag. Etter utvalgets vurdering må det være prinsipielt uriktig å basere lesepliktrelasjonene på tradisjonelle fagbetegnelser som kan romme foreldede forestillinger om hva fagene egentlig krever av for- og etterarbeid. Det synes å være nokså klart at arbeidsbyrden blir bestemt av utslagsgivende faktorer som går på tvers av de tradisjonelle skillene mellom «teoretiske» og «praktiske» fag. Utvalget har derfor funnet det både riktig og nødvendig å vurdere de enkelte fag individuelt og ut fra en rekke forskjellige kriterier. (NOU 1977:4, 1977, s. 35)

Når utvalget her finner det nødvendig å vurdere de enkelte fagene individuelt, er det derfor rimelig å forvente at det i utredningen vises til redegjørelser som nettopp tar for seg hvert enkelt fag. I kapitlene 1–4 setter utvalget rammen for sine vurderinger. Det gjøres først rede for utvalgets mandat og arbeid før utvalget presenterer lesepliktsystemet, lesepliktens historie, funksjon og begrunnelser. I kapittel 3 omtales arbeidstid i arbeidslivet for øvrig, og i kapittel 4 presenterer utvalget en fyldig beskrivelse av lærerrollen generelt. Kapittel 5 er utredningens hovedkapittel og har tittelen *Lærernes arbeidsbyrde* (NOU 1977:4, 1977, s. 17). Her blir generelle trekk ved lærernes arbeidsbyrde omtalt, og det blir redegjort for mange forhold som er knyttet til lærernes arbeidstid, både forhold ved for- og etterarbeid som er knyttet til undervisningen og andre oppgaver som lærerne er pålagt. Herunder blir sosialpedagogiske,- administrative,- samarbeids- og utviklingsoppgaver, samt faglig-pedagogisk ajourføring omtalt spesielt. Det tas generelt høyde for at lærerens arbeidsbyrde og mengde er både omfattende, kompleks, sammensatt og individuell. Vi finner imidlertid ikke en redegjørelse der fagene blir behandlet hver for seg i utredningen, slik utvalget selv påpeker nødvendigheten av. Det er derfor grunn til å stille spørsmålstegn ved hva som egentlig ligger til grunn for utvalgets anbefalinger.

Utvalget starter i kapittel 5 med å skille mellom tre hovedområder som for- og etterarbeidet skal dekke; 1) klargjøring av forutsetningene for undervisningen, 2) planlegging av selve undervisningsprosessen og 3) vurdering (NOU 1977:4, 1977, s. 17). Hovedområdene beskrives hver for seg og består av flere underkomponenter. Som et eksempel er hovedområdet som handler om *forutsetningene*, satt sammen av komponentene målanalyse, elevkjennskap og rammeanalyse (NOU 1977:4, 1977, s. 17-19). Utvalget beskriver hva som inngår og kan inngå i disse komponentene og hvilken betydning de har for lærernes for- og etterarbeid. Det er disse underkomponentene utvalget tar utgangspunkt i når de lenger frem i utredningen foreslår en mulig metode for å sammenligne fag, trinn og skoler; «Det er antagelig mulig å finne fram til noenlunde konkrete forhold som er avgjørende for om f. eks komponenten målanalyse i et bestemt fag, trinn eller skole er mye, middels eller lite arbeidskrevende» (NOU 1977:4, 1977, s. 29). Forhold som blir ansett som relevante i en slik vurdering er for eksempel at «arbeidet med målene er mer krevende jo mer uavhengig læreren er av mål som er fastsatt i lærebøker og andre undervisningsmidler» og «usammensatte mål er enklere å analysere og formulere enn kombinerte mål» (NOU 1977:4, 1977, s. 29). Andre forhold som utvalget mener kan virke inn i en slik vurdering er;

- læreplanens rammekarakter: vide rammer overlater flere avgjørelser til læreren,
- fagets progresjon: jo strengere progresjon, desto større problemer for differensiering innenfor klassen,
- faglig nivå: lærerens faglige forberedelse er mer arbeidskrevende når det dreier seg om sammensatt og komplisert fagstoff enn når det gjelder enkelt og ferdigstrukturert kunnskapsstoff,
- omfanget av de skriftlige arbeider som elevene skaper, og som krever retting og vurdering,

- vurderingsmåte: enkel eller komplisert vurdering, vurdering under eller etter utførelsen av prestasjonene,
- formen for informasjon til foreldre og elever om vurderingsresultatene (NOU 1977:4, 1977, s. 29).

Utvalget presiserer imidlertid at dette bare er et «… forsøk på å antyde en mulig metode for å sammenligne fag/trinn og skoler» (NOU 1977:4, 1977, s. 29). De skriver at selv om de har prøvd, har de ikke klart å gjennomføre dette på en systematisk måte og kan derfor ikke presentere en fremstilling av den. De legger imidlertid til at metoden kan «… betraktes som en måte å tenke på når det foretas skjønnsmessige sammenligninger på en mer uformell måte» (NOU 1977:4, 1977, s. 29). Dette kan oppfattes som at de prinsippene som utvalget skisserer som en mulig metode, har blitt brukt av utvalget til å foreta en skjønnsmessig sammenligning av fagene, og dermed er den fremgangsmåten som ligger til grunn for forslaget de presenterer (Figur 3). Vurderingene som ligger bak utvalgets forslag er altså ikke basert på det de selv omtaler som «objektive målinger», noe som «… innebærer at utvalget avstår fra å forsøke å finne absolutte mål for hvor mye tid for- og etterarbeidet i et bestemt fag gjennomsnittlig krever» (NOU 1977:4, 1977, s. 28).

I utvalgets forslag til leseplikter i grunnskolen ser vi at utvalget har gått bort fra fagbetegnelsene «teoretiske» og «praktiske» fag. På barnetrinnet har alle fag fått leseplikt på 29 'timer' per uke. På ungdomstrinnet får Forming og Kroppsøving 26 'timer' per uke, øvrige fag 24 'timer', Praktisk heimkunnskap og Engelsk 23 'timer' og Norsk 22 'timer' per uke.

Tabell 1. *Grunnskolen — forslag til leseplikter.*

29	28	27	26	25	24	23	22
Barnetrinnet, alle fag			Forming og kroppsøving på ungdomstrinnet		Ungdomstrinnet, unntatt kroppsøving, forming, praktisk heimkunnskap, engelsk og norsk	Praktisk heimkunnskap på ungdomstrinnet Engelsk på ungdomstrinnet	Norsk på ungdomstrinnet

Figur 3: Tabellen er hentet fra utredningen *Leseplikt for undervisningspersonalet i skolen* (NOU 1977:4, 1977, s. 39). 'Timene' er basert på 45 minutters enheter. Dette er forslaget som utvalget bak utredningen fremmet. Det faget som i 1977 het Forming tilsvarer det som etter 1997 heter Kunst og håndverk.

Forslaget, innebærer en vesentlig endring fra den modellen lesepliktutvalget skulle harmonisere (Figur 2). Utover det som er redegjort for ovenfor, går utvalget i svært liten grad nærmere inn på hvordan de har gått frem for å bestemme fagenes plassering i modellen og vekting. Utvalget sier ingenting om *hvorfor* de har gruppert og fordelt fagene slik det fremkommer i Figur 3. Tabellen ligger som et vedlegg til utredningen, men det refereres ikke spesifikt til selve vedlegget. Utvalget gjør underveis i utredningen flere vurderinger som kan relateres indirekte til forslaget, men mangelen på direkte henvisninger til forslaget er påfallende. De enkelte fagene omtales sporadisk og blir mest brukt som eksempler i det som synes å være tilfeldige sammenhenger. Det eneste faget utvalget nevner spesifikt i en slik sammenheng er norskfaget. Norsk fremheves som et særs sentralt fag, som tar opp i seg alle de komponenter og faktorer utvalget baserer sine vurderinger på, med tanke på arbeidsbyrden i fagene. Det forklarer langt på vei hvorfor norskfaget får lavest leseplikt i forslaget. Utvalget kommer imidlertid ikke med noen forklaring på hvorfor Forming og Kroppsøving fortsatt er de «praktiske» fagene som kommer dårligst ut av lesepliktbestemmelsen mens for eksempel Praktisk heimkunnskap får tre timer lavere leseplikt. Dette til tross for at et sentralt punkt i deres mandat handlet om å redusere

skillene mellom «teoretiske» og «praktiske» fag. De påpeker selv at «Ferdighetsfagene i allmenndannende skoler er av og til blitt kalt trivselsfag. Det *kan* bringe med seg feilaktige assosiasjoner om en undervisning hvor avkobling, leik og uhøytidelig virksomhet er dominerende» (NOU 1977:4, 1977, s. 31). Det kan se ut som at utvalget forsøkte å bryte ned denne holdningen med å stille de praktiske fagene på linje med det de beskriver som «tradisjonelle kunnskapsfag». Det er ikke grunnlag for si at utvalget lykkes med dette, siden to av de mest praktiske fagene; Forming og Kroppsøving, fortsatt har høyest leseplikt.

Leseplikten i en faghistorisk kontekst

Utredningen *Leseplikt for undervisningspersonalet i skolen* (NOU 1977:4) er interessant av flere grunner, men først og fremst fordi fordelingen mellom fagene slik det praktiseres i avtaleverket i dag, er så å si sammenfallende med forslaget som utvalget presenterte i utredningen i 1977 (Figur 3). Som vi har sett, mangler utredningen vesentlige begrunnelser knyttet til hvert enkelt fag i det forslaget utvalget presenterer. Hva kan da ligge til grunn for lesepliktfordelingen fra 1977?

Torunn Lauvdal har undersøkt forhandlingssystemet for undervisningspersonalet i skolen og spesielt gått inn på forhandlingen om og iverksettingen av avtalen om arbeidstid for undervisningspersonalet. Her kan vi lese at; «Omfanget av leseplikten utviklet seg forskjellig i de ulike skoleslag. Og det synes som om fagenes (og lærergruppenes) status i høy grad ble bestemmende for antall undervisningstimer pr uke. Jo høyere status, jo lavere ukentlig timetall» (Lauvdal, 1996, s. 105). Lauvdals påstand er relevant for å komme nærmere en forklaring på hvorfor fordelingen av leseplikt ble slik som foreslått i NOU 1977. Det er derfor nødvendig med et lite tilbakeblikk på fagets status og læreplanenes innhold og utvikling.

På slutten av 1800-tallet ble fagene Tegning, Sløyd og Håndarbeid innført i det norske skolesystemet. Disse tre fagene ble i 1960 slått sammen til faget Forming med innføringen av Forsøksplanen (F60). I perioden 1960-1997 het faget Forming, en periode hvor individuelt skapende arbeid stod sentralt i faget. Lærestoff og læring i faget ble da nedtonet til fordel for personlige uttrykk. Flere forskere har skrevet om faget Forming, og om hvilke diskurser og praksis som har vært rådende i fagmiljøene (Borgen, 1995; Kjosavik, 1998; Nielsen, 2000; Brænne, 2009; Lutnæs, 2011). Dette skjedde på et tidspunkt da den rådende diskursen fremhevet individuelt skapende arbeid og nedprioriterte kunnskap og ferdighet. I en gjennomgang av faghistorien peker Karen Brænne på en fagdiskurs innen fagfeltet som «… avdekkjer ein særleg kontrovers mellom det kunstpedagogiske og handverksfaglege som synest å ha bremsa faglege dialogar om innhald og metodar» (Brænne, 2011, s. 96).

Eva Lutnæs skriver om vurdering og karakterer i faget (Lutnæs, 2011). Hun kommer inn på den motstanden mot karakterer som var rådende både i den generelle skoledebatten på 1970-tallet, men spesielt innen Forming, der boken *Kreativitet og vekst* av Lowenfeld og Brittain (1971) hadde stor innflytelse i Norge. Lutnæs viser til at «… det frie skapende fester rot i faget Forming på 1970-tallet» og at «målet med undervisningen var å dyrke frem elevenes iboende skapende potensial. Elevenes bilder ble regnet som et spontant uttrykk for barnets tanker og følelser. Dette synet på barns bilder har ført til motstand mot vurdering» (Lutnæs, 2011, s. 61). I faget Forming utviklet det seg derfor også en motstand mot undervisning, spesielt innen tegning (Nielsen, 2014). Begrunnelsen for en slik motstand lå i frykten for at undervisning kunne ødelegge elevenes spontane uttrykk og kreativitet. Denne motstanden mot undervisning er ikke dokumentert like tydelig i noen av skolens øvrige fag. Det er grunn til å tro at motstanden mot vurdering (Lutnæs, 2011) og motstand mot undervisning i Forming (Nielsen, 2000, 2014) har påvirket hvordan faget ble praktisert når leseplikten for de ulike fagene ble bestemt i 1977. Dersom faget ikke skulle læres og lærerne ikke drev med vurdering, hvorfor skulle da lærerne i Forming ha like mye tid til for- og etterarbeid som andre fag?

Lauvdal (1996) påpeker at Mønsterplanen av 1974 (M74), som kom ut et år før lesepliktutvalget ble satt sammen, «… innførte mange prinsipper i undervisningen som kanskje burde tilsi en mer fleksibel arbeidstidsordning. Men lesepliktutvalgets innstilling nevner overhodet ikke mønsterplanen» (Lauvdal, 1996, s. 108). Lauvdal peker med dette på enda en svakhet ved utredningen, som er interessant sett i lys av det som kom ti år senere; *Innstilling fra utvalget til å vurdere undervisningspersonalets fremtidige arbeidssituasjon* (heretter UFA-utvalget) fra 1987 (UFA-utvalget, 1987). I en situasjonsbeskrivelse av norsk skole skriver de at; «Leseplikten i det enkelte fag bygger på fagplanen for faget og på en vurdering av fagets tyngde (byrdefullhet) og på mengden av det for- og etterarbeid som knytter seg til undervisningen i faget» (UFA-utvalget, 1987, s. 23). Når leseplikten her knyttes opp til fagplanen i faget, innebærer det et nytt forhold ved lesepliktbestemmelsen som ikke ble vektlagt i leseplikt-utredningen fra 1977. UFA-utvalget konkluderer i sin innstilling med

> … at omfanget av nødvendig tid til for- og etterarbeid kan variere fra fag til fag. I nåværende lesepliktsystem er det beskrivelsen i de enkelte fagplaner som ligger til grunn for vurderingen. Utvalget vil hevde at også andre forhold har betydning for omfanget av for- og etterarbeidet, og mener følgende fire momenter bør vektlegges:
>
> a) Fagplanens krav
> b) Klassens/gruppens størrelse
> c) Klassetrinn
> d) Omfanget av særskilt tilpasset eller tilrettelagt opplæring (UFA-utvalget, 1987, s. 59).

UFA-utvalget konkluderer her med at fagplanenes krav også bør vektlegges. Det er påfallende hvordan UFA-utvalget kan legge fagplanene til grunn som styrende for leseplikten, når det ikke eksisterer en reell vurdering av fagplanene som knyttes til lærernes arbeidstid. Det er fremdeles prinsippene fra 1977 som er rådende for dagens fordeling av leseplikt. Fagplanene derimot, har gjennomgått flere reformer med ideologiske og innholdsmessige endringer i større eller mindre grad for alle fag , mens verken lesepliktfordelingen eller holdningen til den har endret seg.

Leseplikt i praksis

Det er ikke uventet at lærere i Kunst og håndverk har tatt til orde for å få endret den leseplikten som de opplever som urettferdig. Eivind Moe har argumentert med at innholdet i læreplanen burde vært tilstrekkelig som dokumentasjon av mengde for- og etterarbeid i faget. Han hevder at leseplikten burde ha blitt endret 1997 i samsvar med det nye og omfattende innholdet etter læreplanreformen L97 (Moe, 2006). Moe peker videre på at planlegging og etterarbeid i Kunst og håndverk krever minst like mye som de berømmelige rettebunkene i andre fag, og lister opp en rekke oppgaver som særpreger faget Kunst og håndverk, fra det «å ordne egnede materialer, verktøy og utstyr» til et vurderingsarbeid av «arbeidsprosesser og produkter» (Moe, 2006, s. 2).

Fravær av lærebøker i faget Kunst og håndverk øker også lærernes arbeidsbyrde ved at de i stor grad utvikler sine egne læremidler. Det finnes riktignok gamle lærebøker fra da fagene het Tegning, Sløyd og Håndarbeid, men etter at faget endret navn til Forming i 1960 avtok lærebokproduksjonen kraftig (Nielsen, 2009). I denne formingsperioden (1960-1997) sto det personlige uttrykket sentralt og behovet for læremidler var derfor ikke tilstede slik det hadde vært tidligere. Etter innføringen av L97, med økt presisering av faglig innhold, satset imidlertid flere forlag på å utvikle lærebøker for Kunst og håndverk. Men bøkene ble ikke innkjøpt i så store mengder som forlagene hadde forventet. På landsbasis var dekningsprosent på ca. 30% i faget Kunst og håndverk (Nielsen, 2009). Til sammenlikning hadde lærebøkene i Naturfag en dekning på over 100%. Lærere i Kunst og håndverk kan altså ikke basere seg på at elevene kan orientere seg om lærestoffet i lærebøker slik de gjør i mange andre fag. Lærerne er stadig på jakt etter gode undervisningsopplegg. Det vitner aktiviteten i de mange faggruppene på

Facebook om. Lærerne må både bruke tid på å lage tilpassede undervisningsopplegg, samtidig som de må bruke tid på anskaffelse av materialer og verktøy, samt alt det fører med seg av oppfølging med lagring og vedlikehold. Etter 1997, har læreplanene også satt fagets innhold og kreative potensiale tydeligere inn i en samfunnsetisk og skapende kontekst. Faget tar i dag blant annet opp materialforståelse i et bærekraftperspektiv og visuell kommunikasjon i et demokratisk perspektiv. Lærernes økte arbeidsbyrde og den høye leseplikten kan være en direkte årsak til at elevene ikke får den undervisningen som læreplanen forutsetter at de skal få. Lærerne har rett og slett ikke tid nok til å gjøre jobben når leseplikten er så høy.

UFA-utvalgets anbefalinger fra 1987, om å legge fagplanenes krav til grunn for leseplikten, ble ikke fulgt opp i L97. Reformen medførte dessverre ingen endringer i lærernes leseplikt, selv om de nye læreplanene førte med seg økte forventninger til lærerens innsats og et tydeligere faglig innhold. Årsakene til dette kan være sammensatte. Det kan ha en økonomisk forklaring og det kan henge sammen med at flere faggrupper ville kommet med tilsvarende krav om nedsatt leseplikt. Det er ingen hemmelighet at mange lærere ser at arbeidsoppgavene i skolen bare vokser og vokser uten at de får tilstrekkelig kompensasjon. Kampen om lærernes arbeidstid har i forhandlinger vært et gjentagende betent tema. Derfor blir det problematisk når utvalgenes anbefalinger fra 1977 og 1987 bygger på skjønnsmessige vurderinger. Det blir ytterligere problematisk at prinsippene for leseplikten fra 1977 fortsatt holdes i hevd.

Verdsetting i dag – farget av fortiden

I 2012 gjennomførte Catrine Lie intervjuer med fem skoleledere på grunnskoler i Oslo som del av sin masteroppgave. På spørsmål om synspunkter på lærernes arbeidstid argumenterte skolelederne på 8.- 10. trinn for at forskjellen i lærernes tid til for,- og etterarbeid var rettferdig. Dette ble blant annet begrunnet med at det i andre fag var en mye større forberedelses, - og rettebyrde enn i Kunst og håndverk(Lie, 2013, s. 72). Begge skolene praktiserte leseplikten slik det er angitt i avtaleverket (Lie, 2013, s. 74.) Skolelederne på ungdomsskolene var bevisste på at fagets egenart krevde fagkompetente lærere og færre elever i klassene. Det at deres skoler hadde lærere med mer enn 60 studiepoeng i faget, samt at de vernet om delingstimene i faget, bekrefter dette. Samtidig ga de uttrykk for utfordringer som lærerne hadde knyttet til vurdering i faget, både med tanke på et stort antall klager i faget og antall elever lærerne måtte vurdere, da lærerne gjerne hadde alle elevene på skolen. Kompetansemål i faget ble beskrevet som «heftig» og «store» (Lie, 2013, s. 56). Det er imidlertid ikke logisk samsvar med det skolelederne sa om lesepliktbestemmelsens rettferdighet og utfordringene de fortalte om som direkte eller indirekte var knyttet til at lærere i Kunst og håndverk hadde for lite tid til for -og etterarbeid (Lie, 2013, s. 73-74). Når skolelederne omtalte leseplikten som rettferdig, ga de heller ingen signaler om at denne praksisen kom til å bli endret. Selv om skolelederne i denne undersøkelsen ikke utgjorde et representativt utvalg, så bekrefter de allikevel langt på vei, det forskere har pekt på gjennom større kartlegginger og studier. Nemlig at fagets innhold, praksis og organisering henger igjen fra tidligere læreplaner (Kjosavik, 2004; Nielsen, 2009).

Representanter fra praksisfeltet ser skjevheten i leseplikten som et symptom på holdninger til «våre» fag (Moe, 2006). Opprettholdelsen av ulike leseplikter og skoleledernes utsagn om at leseplikten er rettferdig, bekrefter at slike holdninger finnes. Karen Brænne peker i tillegg på at en polarisering i fagfeltet mellom kunst på den ene siden og håndverk på den andre «… kan ha leidd til ei undergraving av faget si praktiske kunnskapskjerne, og mogleg også ført til ei svekking av faget sin status i skulekonteksten» (Brænne, 2011, s. 106). En ensidig karismatisk omtale av faget kan ha påvirket hva skoleaktører utenfor fagfeltet oppfatter som faglig innhold (Brænne, 2011). At den formingsfaglige og karismatiske diskursen fortsatt kan spores i skoleaktørers verdsetting av faget er problematisk. Skolelederne fremhever «det kreative», «opplevelsen», «det skapende», «å få tak i skapende evner», «bli inspirert» og «en god pustepause» når fagets viktighet blir begrunnet (Lie, 2013, s. 48-50).

Skolefagenes status gjenspeiles også i forskriften om kompetansekrav. Kunnskapsdepartementet fastsatte i 2015 nye retningslinjer for kompetansekrav i utvalgte fag (Opplæringslova, 2015). Ved å fremheve lærernes kompetansekrav i fagene Norsk, Matematikk og Engelsk med 30 studiepoeng på 1-7 trinn og 60 studiepoeng på 8-10 trinn, ble de andre fagene i praksis nedprioritert. Status blir også trukket fram når Torunn Lauvdal skriver om leseplikten; «Jo høyere status, jo lavere ukentlig timetall» (Lauvdal, 1996, s. 105).

Behov for endring

En kritisk gjennomgang av *Leseplikt for undervisningspersonalet i skolen* (NOU 1977:4) har identifisert hvor den praktiserte leseplikten kommer fra. Lesepliktutvalget skriver imidlertid at det må «… være prinsipielt uriktig å basere lesepliktrelasjonene på tradisjonelle fagbetegnelser som kan romme foreldede forestillinger om hva fagene egentlig krever av for- og etterarbeid» (NOU 1977:4, 1977, s. 35). Og her ligger problematikkens kjerne. Det er mye som har skjedd med faget Kunst og håndverk siden 1977, da det het Forming. Dagens prinsipper for fordeling av leseplikt har allikevel eksistert og blitt praktisert i snart 40 år. Dette uten betydelige endringer og uten noen reelle begrunnelser for hvorfor fagene fikk den plasseringen de fikk i forslaget fra 1977. Det faktum at prinsippene bak forslaget står uendret, tyder på at man ikke har tatt hensyn til hvordan læreplanene har endret og utviklet fagene, samt hvilken betydning disse endringene har hatt for lærernes arbeidsbyrde. På denne måten har leseplikten ukritisk blitt videreført, og etterhvert innarbeidet i skolesystemet og avtaleverket, slik at den nå oppfattes som en vedtatt sannhet. Skoleledernes utsagn om at leseplikten er rettferdig, med rettebyrden i andre fag som argumentasjon, vitner om fastlåste og gammeldagse holdninger som har fått stå uimotsagt altfor lenge.

Arven fra den karismatiske formingsperioden (1960-1997) ser fortsatt ut til å prege omtalen av og holdningene til faget, noe både studier av fagets praksis og skoleledernes utsagn vitner om. Dette kan ha bidratt til at fagets rammevilkår, i form av lærernes utilstrekkelige tid til for- og etterarbeid, ikke er blitt fulgt opp i forhold til fagplanenes økte innhold og krav. Skolen er avhengig av et avtaleverk som legger til rette for fagenes likeverd, slik at skolens samfunnsoppdrag blir ivaretatt. Skillet mellom praktiske og teoretiske fag skulle reduseres i 1977, men de intensjonene har enda ikke blitt fulgt opp. Det er på tide at gammeldags leseplikt for Kunst og håndverk justeres.

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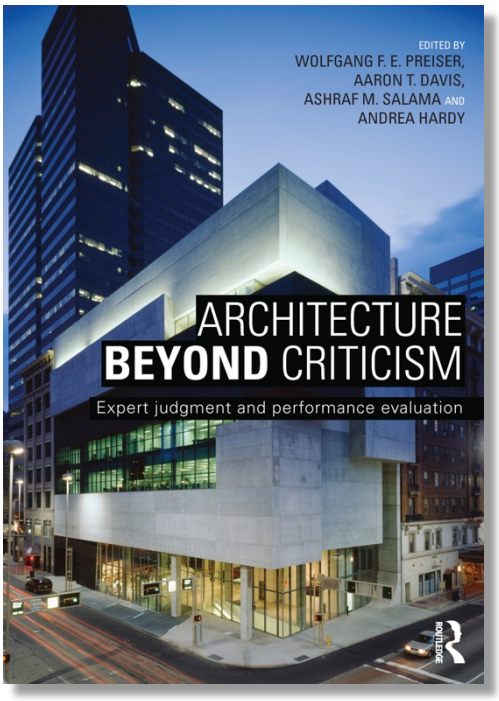
Beata Sirowy

Book review:

Architecture Beyond Criticism

Expert judgment and performance evaluation



Wolfgang F. E. Preiser, Aaron T. Davis, Ashraf M. Salama and Andrea Hardy, eds. (2015).
Architecture Beyond Criticism. Expert judgment and performance evaluation.
London: Routledge, 320 pages.

Both architectural criticism and building performance evaluation (BPE) aim to assess the quality of architectural works. Beyond this shared motivation, these domains seem to have little in common. The recent anthology *Architecture Beyond Criticism. Expert judgment and performance evaluation* puts this separation into question, arguing for the need to bridge the gap between architectural criticism and BPE. The major claim of this book is that that these two frameworks can not only co-exist but can also, to a great advantage, supplement each other, enabling comprehensive quality assessment in architecture and, in the long term, improving the quality of our everyday environments.

A terminological clarification must be made at this point. Architectural criticism, as addressed in the book, refers primarily to the judgment of expert critics focused on the aesthetic qualities of buildings—a highly idiosyncratic dialogue between the perceiver (in this case, an expert critic) and the object perceived (Preiser et al. 2015:5). BPE, in contrast, has a more intersubjective nature. It is conducted by building professionals by using metrics focused on health, safety, security, functionality, as well as psychological, social and cultural satisfaction of building occupants. Performance evaluation studies typically involve "systematic investigation of opinions, perceptions, and viewpoints about built environments in use, and from the perspective of those who use them" (ibid.). BPE has evolved from post-occupancy evaluation studies (POE), regarded as a branch of environment-behaviour studies.

The anthology is edited by four authors with architectural backgrounds, having expertise in evaluation and programming of building projects, engineering technology, architectural criticism, combined with wide experience from architectural practices in USA and Egypt.

The text is organized in four major parts elucidating the history and evolution of architectural criticism and BPE. More specifically, the various parts of the book address 'Evolution and role of architectural criticism', 'Plurality of perspectives on criticism in architecture', 'Historical review and types of building performance evaluation', and 'Architectural analysis within building performance evaluation', plus Introduction and Epilogue. Each part comprises 5–6 individual and co-authored contributions by international architects and critics from the UK, USA, Brazil, France, Qatar, Egypt, New Zeeland, China, Japan, and Germany.

The Introduction co-authored by the editorial team sets the stage for the book, arguing the need for integration of criticism and BPE in architecture and introducing a habitability framework against which such integration can be pursued. The editors argue that a combination of criticism and BPE would promote more humane and liveable environments, addressing a broad spectrum of human needs and values. In this context, they postulate that the understanding of these two frameworks should be reviewed to establish interconnections. On the BPE side, greater attention towards human needs and experiences is needed. With regard to criticism, there is a need to overcome the tendency to reduce it to an idiosyncratic perspective of a disengaged expert or the mere supply of marketing images and address the social and political dimensions of architectural artifacts. The new, more integrated framework for assessment of architectural works should be incorporated in architectural curricula to broaden the overlap of criticism and performance evaluation in architectural education. As for now, architectural academics and educators seldom manage to mediate between measured and perceived quality in architecture.

One reason for the separation of architectural criticism and BPE is the lack of common means of communication and conceptual background that would allow for integration of the two domains. To address this challenge, the editors propose the 'habitability framework' as a background for reconciling the aesthetic and the performative aspects of building evaluation. Habitability of a building is a term used in POE studies, and it refers to a building design that acknowledges human needs and, thus, provides a background for more meaningful and richer life experiences. In other words, habitability means that a building is designed with human habitation in mind. The essential questions here are "who is it designed for, how does it perform as an integrated system, and then how is it used?" (ibid.). The elements of the habitability framework to be considered in the assessment of architectural work include building/settings, occupants, and occupant needs (ibid., 8). For each building/setting, diverse groups of occupants are identified. Occupants are then differentiated according to their lifecycle phases, special requirements, cultural heritage, and other relevant factors. Furthermore, the needs of major groups of occupants are conceived on different habitability levels, roughly analogous to Maslow's (1948) human needs hierarchy. These levels include health and safety, functional and task performance level, and psychological comfort and satisfaction level (ibid., 9). In addition, habitability analyses should account for different scales: region (an assembly of communities), community (an assembly of neighbourhoods), facility (a complex of buildings), building (an assembly of spaces), room (an assembly of activity stations), and activity setting. The editors are aware that occupants' needs are not always easy to classify into neat categories. Yet, they argue that the development of concise and clear terminology and framework is crucial for future evolution of the design and behaviour field. In particular, there is a need to operationalize habitability-related categories for application in programming, design, and design evaluation.

The major strength of the habitability framework is its emphasis on a complex set of interrelationships between buildings and their users. The major challenge here, which somehow remains under-addressed in the book, is grasping the multidimensional experience of users in a non-reductionist manner. More generally, this is both an epistemological and a methodological issue, linked to the questions: 'What types of knowledge should be taken into account?', and 'How to obtain this knowledge?' In chapter 19, J. Nasar elaborates on how to assess aesthetic quality as

perceived by various users of a building by measuring responses to environmental stimuli, but this type of feedback may not fully account for the perceived quality of the built environment.
In regard to the Introduction (and to some of the chapters), my major objection is to the manner in which the authors use the term objective vs. subjective (or 'the real' vs. 'the perceived'), attributing the former to BPE and the latter to architectural criticism. Such a dichotomous positioning is misleading and unnecessarily widens the gap between BPE and criticism. Although claiming the objectivity of the metrics and measures in BPE is understandable with regard to energy performance or environmental impact calculations, it is far from evident in the case of psychological or social satisfaction of occupants. Evaluation of these aspects is largely based on a researcher's interpretation and is thus far from the impartiality and neutrality ideal typically associated with the term 'objectivity'. Yet, this interpretative effort from the researchers' side is a very valuable aspect of BPE and should not be considered limiting. Similarly, subjectivity does not seem to be the weakness of architectural criticism—even though the editors point out that "researchers and scholars do not seem to place enough value on criticism because of its lack of objectivity (…) and because of how it can easily be influenced by politics and culture" (ibid., 15). Criticism is essentially about value judgments, and here, objectivity is an inadequate ideal to strive for. By not aiming for objectivity, we can nevertheless specify some quality criteria for criticism. These can be parallel to the quality criteria for qualitative research and refer to intersubjective validity or truthfulness. Thus, on the one hand, we can distinguish highly idiosyncratic forms of criticism, focused primarily on a critic's aesthetic experiences. On the other hand, some forms of criticism stretch far to account for user perspectives, as well as the spatial and socio-political contexts in which a building is situated. This dichotomy inside criticism is overlooked in the Introduction. Yet, it is reflected-upon in the chapters that follow.

The following is an overview of the chapters and their major arguments.
Part II of the book 'Evolution and role of architectural criticism' begins with the contribution of A. T. Davis who addresses two major approaches within the field of criticism. On the one hand, there is a tradition of socially, politically, and culturally engaged critique, exemplified by texts of Ada Louise Huxtable or the more recent critiques of Paul Goldberger. These authors intended to educate the public and to evaluate not only architectural forms but also the wider consequences of architectural interventions for urban inhabitants. On the other hand, there are critics embodying "the blind optimism and self-congratulatory style-chasing of the huckster", such as Nicolai Ouroussoff (ibid., 28). The latter type of criticism, 'triumph of temporary style over critical substance', reflects the identity crisis in contemporary architecture that acclaims new signature works, while neglecting their effects on a larger urban milieu. In this context, Davis argues that it is high time to rethink the role of criticism and learn from the socially and politically engaged perspectives. The renewed criticism should address a built environment as a locus of interaction and human well-being rather than "a backdrop for marketing campaign" (ibid., 35).

In chapter 3, M. J. Crosbie sees the chance to change architectural criticism from autonomous to more socially engaged with the relatively recent emergence of 'citizen critics'. Owing to the development of ICT, a large group of non-professional critics has entered the field feeling empowered to reflect on built environments that affect their everyday lives. These criticisms focus less on the aesthetic qualities of buildings and more on the quality of life and urban sustainability.

Emerging forms of criticism are also addressed in chapter 4. Here, P. Gadanho argues that the activity of curating architecture (i.e. organizing exhibitions and creating cultural programs available for a wider public) can be understood as a continuation of criticism. This form of criticism goes beyond the evaluation of built works and often creates an impulse to 'reposition' architecture, and reframe its objectives and limits. Curating architecture, in distinction from the conventional written medium, makes criticism accessible to larger audiences and directly engages citizens in a debate. Yet, this form of criticism has constrains. Although the practice of writing

offers a great degree of autonomy, curation is more constrained by multiple dependencies, including economic systems and institutional agendas.

In Chapter 5, J. T. Lira discusses architectural criticism in Brazil of the 1950s–1970s against the backgrounds of social, cultural, and political transformations in Brazilian society. Two major proponents of a radical, revolutionary strand of architectural criticism—Mario Pedrosa and Sergio Ferro—are the focus of this contribution. Even though both of them were influenced by the modernist, functionalist approach to architecture, which was dominant in their time, their critiques were very innovative and refreshing in addressing such issues as the exhaustion of functionalism, appeal to new kinds of monumentality and publicness, and role of critical, reflexive, communitarian, or non-designed architecture. Thus, they seem to have extracted from their local experiences a few general criteria for evaluating architecture, modernity, and criticism.

In the following chapter, G. Solmonoff argues against the predominant focus on the visual dimension when communicating architecture. She points out that glossy magazines with their photographs and diagrams, the Internet, and client's rendered presentations have taken precedent over the first-hand experience of architectural space. This is also reflected in architectural criticism. Yet, when confronting actual works of architecture, we engage not only the vision but also all the other senses. Our impressions are determined, for example, by aspects related to the climatic, atmospheric, aural, and tactile qualities of building materials. Thus, critics should try to account for these dimensions to provide a possibly complete account of the discussed artifacts.

In chapter 7, T. Fisher considers architecture as a performing rather than a visual art, shifting attention away from aesthetic problems to the enquiry on how people interact with buildings and how buildings evolve over time. The field of 'performance studies' emerged in the 1970s, combining traditional performing arts with social and political science. From this perspective, performance denotes human activity in various contexts such as religious rituals, community celebrations, political protests, and workplace routines. Architecture provides an important background for different types of human performance, but its role is hardly mentioned in performance studies. By adopting the perspective of performing arts in architecture, one can see a building as a collective and collaborative effort rather than a work of an individual designer. This suggests a new role for the critic—going beyond the reflection on aesthetic merits and interpreting the larger meaning of architectural works against their social, cultural, and political contexts.

Part III of the book deals with 'Plurality of perspectives on criticism in architecture'. The chapters included in this part very much share the thematic focus of the preceding part, exploring different approaches to architectural criticism. Yet, the discussions here point more explicitly to BPA.

In chapter 8, A. Salama observes that projects celebrated in the public or specialized media do not necessarily satisfy users' expectations. Focusing on the aesthetic side, critics typically pay little attention to users' perspectives and activities. To scrutinize this tendency, the author juxtaposes media coverage and user feedback regarding Al Azhar Park, a large-scale project described as 'a new green lung' for Cairo. Based on an examination of 64 media reviews and 184 responses in a user survey, it appears that the media fell short in addressing symbolic, behavioural, and experiential aspects of the park, focusing instead on the design, environmental, and socio-economic aspects. Yet, the study indicates that users' responses to design features largely conform to critics' assessments. The major sources of dissatisfaction for users are issues related to maintenance and management: the lighting system and the navigation system. In conclusion, Salama argues for the need to supplement conventional criticism with appraisals of actual performance of architectural works, referring to the habitability framework presented in the Introduction.

In the following chapter, Y. Nussame addresses the influence of 'milieu' on architectural criticism. The concept of milieu is defined as "the relationship of a society to its environment" (Berque 1994, quoted on p. 104). The author emphasizes the need to take into account social,

cultural, and environmental contexts when assessing architectural artifacts and underlines the hermeneutic nature of architectural criticism. From this perspective, the role of critics is to interpret architectural artifacts in relation to their milieu. Thus, criticism cannot be limited to a journalistic opinion on the aesthetic merits of a building. BPE can provide a basis on which to make judgements, but criticism should go far beyond it, integrating vast cultural, historical, and technical understandings. In conclusion, Nussame points out that one of the challenges for criticism in our time is the lack of a unified conceptual background against which one can conduct critical activity to avoid particularism. He subsequently argues that the concept of sustainability could provide such a reference point for criticism and a platform for its integration with BPE.

In a similar vein, U. Baus and U. Schramm emphasize the importance of context in architecture. The authors refer to their experiences in Germany, where contemporary buildings usually have good technical performance and conform to numerous standards and certification systems but are seldom satisfactory from the design perspective. The most common problem is a lack of regard for a given setting—existing buildings and infrastructure, wider urban context, and social and political realities – and the subsequent lack of public acceptance of buildings. Not surprisingly, energy efficiency has been the critical factor in BPE over the past decades. To direct BPE's attention to buildings' contexts and functioning is, according to the authors, the major task for architectural criticism. Following this path, critics can be important allies of context-sensitive, participatory urban development in realities that are increasingly shaped by the interests of the real estate industry.

In the following contribution, R. Y. Gharib addresses urban conservation in Historic Cairo, reviewing critical assessments of the project published in popular press and architectural magazines over a 35-year time span. The review reveals different trends within local criticism. Specialized press included two types of contributions. First, practice-based critical commentaries focused on the details of preservation procedures and techniques. Second, theory-based contributions focused on specific problems such as the challenges of living cemeteries and the possibilities of resolving them via tourism. In popular press, the project was most often addressed via interviews with key actors in the restoration process, with an emphasis on two major objectives: safeguarding monuments and promoting beautification. No significant interests were displayed in the socio-economic aspects of the project, such as its impact on local communities. In conclusion, the author argues that conservation projects in Egypt should be assessed in a more rigorous and multi-faceted manner by integrating elements of post-occupancy evaluation. This applies also to criticism that should seek to extend its scope with aspects related to the performance of conservation projects and their impact on local communities.

In chapter 12, F. Duffy argues for a client-centric approach to architecture, postulating that architects should focus more on clients' needs and requirements early in the design process. In this context, he refers to RIBA's early ambition (1960s) to include user feedback/post-occupancy evaluation as the mandatory final stage of British architects' official Plan of Work ('Stage M'). Yet, the gathering of data on how a project responds to a client's original objectives was never made obligatory or even operational. It was most likely conceived by the profession as "too complex, too difficult and, above all, far too likely to lead to a trouble" (ibid.,130). Owing to this attitude, architects, compared to other professionals, have taken too little advantage of the opportunity to learn from the success and failure of projects.

In chapter 13, P. Knox reasons that contemporary architecture culture is too focused on the innovativeness of design and technological solutions, leaving out the actual performance of architectural works. Originality is defined in terms of aesthetic novelty. Paradoxically, such an attitude has led to the homogenization of contemporary architecture: "the more these ostensible innovations strive to be dissimilar, the more alike they seem" (ibid., 133). As the author argues, the most original projects today are the projects that are able to address the complexity of our needs through both architectural performance and architectural form.

The following part IV is aimed at 'Historical review and types of building performance evaluation'. Following this objective, in chapter 14, W. Preiser and A. Hardy provide a brief overview of the history and major milestones of development in the field of POE and its evolution into BPE in the late 1990s. Furthermore, they point out that comprehensive social, aesthetic, and building performance analyses are seldom conducted today. The prevailing approach to BPE involves a highly technical assessment. The authors argue for a more open, real-world-oriented approach that would guide and educate society by highlighting the social, political, and economic contexts of architecture, while simultaneously accounting for user experience. Within such a framework, BPE can be integrated smoothly with criticism.

In chapter 15, B. Bordass and A. Leaman investigate why it has been so problematic for the building industry and its clients to adopt routine BPE and ask what can be done about it. According to them, the major difficulty lies in the existing institutional and educational structures that conform to market realities and do not encourage a wider perspective on architecture. In this context, the authors advocate the practice of *new professionalism*—an approach where all building professions engage closely with the consequences of their actions, considering the social, ethical, and environmental dimensions. Such a transition demands new institutional and educational structures supported by governments and/or philanthropic institutions.

In the following contribution, C. Jacobson addresses the redevelopment of the site of Expo 2010 in Shanghai. Only 5 of 145 pavilions were designed to stand permanently, while the rest were to be demolished after the exhibition by their owners. A few of the pavilions were recycled and others rebuilt at different sites, but numerous structures continue to stand in the area—some are being reused, while others—abandoned and decorating. The author employs elements of BPE to identify the factors that determine the reuse of some buildings and the demolition and disuse of others. Some similarities to the preservation/redevelopment strategies employed in greater Shanghai were found.

Chapter 17 addresses the intersection of architectural criticism and building evaluation in Japan with a focus on hospital buildings. The authors discuss trends in hospital architecture in Japan, identifying two opposite traditions (e.g. abstraction vs. embodiment; tradition vs. fad; mega-structure vs. campus; privacy vs. supervision). This dichotomy of values in hospital architecture provides, according to the authors, guidance for BPE of hospitals and other types of buildings in Japan.

Chapter 18 offers a global perspective on post-occupancy evaluation. Based on 30 years of evaluating buildings in Australasia and Europe, C. Watson sees the fundamental purpose of POE as communicating stakeholders' experiences of buildings and—on this basis—generating recommendations for improvement. The perspective of stakeholders is seldom addressed in architectural criticism that frames architecture as an aesthetic pursuit. Critics' experience of buildings can be considered complementary to that of other stakeholders and provide input to building evaluation. Yet, architects should look beyond criticism if they intend to engage in a nuanced dialogue about architecture and contribute to the well-being and productivity of building inhabitants.

Summarizing the insights of this part of the book, D. S. Friedman argues that it is time to overcome the false dichotomy between design and performance. One of the barriers to fully integrated criticism is the public perception of an architect as an independent agent of building design. Another impediment is the autonomy of the architecture profession in defining the criteria of good design and good practice, as reflected highly in architectural curricula.

It is a viable postulate that architects should extend their focus beyond design and open their practices to inputs from other disciplines. Yet, in this context, the author makes a debatable assumption, pointing out that the humanities, in particular phenomenology and its' critique of scientific rationality (ibid.,201), have contributed to architecture's departure from real-world concerns and its orientation towards fine arts. A similar line of argumentation appears in the

Introduction, where the editors suggest that the failure of architectural criticism is related to insufficient attention to scientific perspectives. As I already noted, this framing of the challenges of architectural criticism in terms of the objectivist–subjectivist dichotomy is difficult to accept. Human sciences, in particular, phenomenology, have essentially contributed to recognition of the importance of context and users' experience in architecture after a long period of modernist functionalism inspired by a dualist and reductionist perspective of the natural sciences. Thus, I cannot agree with attributing the failure of architecture (and architectural criticism) in addressing stakeholders' perspectives to the influence of humanities as such. It can, however, be traced to strong influences of modern, Kantian aesthetics, focused on purely formal qualities of artifacts, promoting the view of artist as a genius creator, and giving priority to the judgment of an expert-connoisseur. The emphasis on science and technology is hardly a remedy to this problem and may actually contribute to an even wider gap between professionals and users. What is needed in this context is a humanities-grounded discussion of the status of different types of knowledge and their roles in architectural practice.

The final part of the book is devoted to '*Architectural analysis within building performance evaluation*'. In chapter 19, J. Nasar addresses the relevance of environmental psychology research methods in assessing the visual aesthetic quality of buildings as perceived by users. Research within this field addresses, among other things, how specific characteristics of an environment (such as variation, density, openness, naturalness, and order) affect evaluative appraisals—emotional responses and meanings. A study of users' perceptions of visual qualities, Nasar argues, can provide a relevant basis for the development of solid visual quality guidelines for specific projects and feed into a database to help to address future questions. These should be integrated in general design guidelines to address the connection between function and appearance. Ultimately, the author calls for a user-oriented approach that involves people in decisions that affect them and yields environments people enjoy.

In the following chapter, B.C. Scheer introduces form-based codes (FBC)—a regulatory system for land development that is often substituted for the existing zoning code in progressive milieus throughout the US. FBC focuses on creating a particular physical result (typically: ordered, high-density places) rather than regulating and separating land uses, which is the case in traditional zoning. This approach allows for more flexibility regarding land use and density, but it is more restrictive in terms of the physical forms of buildings, sites, and public spaces. Environments conforming to FBC are often successful and people-friendly places, yet they are strikingly similar. In this context, the author addresses the vital role of architectural criticism in promoting more unique and creative solutions by responding to a given set of spatial, social, and cultural realities. Good criticism goes far beyond the formal qualities, addressing the message and meaning of a building, and the social and cultural context in which it arose. Accordingly, it has multiple roles—promoting design excellence, situating architecture in a wider cultural perspective, encouraging a more innovative approach to buildings and places, and empowering people by giving them a language to talk about architecture. Subordinating building design to BPE criteria (even taking into account the needs of the users) often results in competent, popular, comfortable, yet often unremarkable or tame settings. The vantage point of comprehensive, culture- and context-aware criticism can substantially enrich a built environment.

In chapter 21, Y. Mahgoub argues that more focus is needed on the socio-cultural contexts in which architectural criticism and evaluation studies are conducted because the character of a given society substantially affects what type of research and argumentation is considered valid. While democratic societies value the first-person perspective of a critic and a user, authoritarian societies prioritize quantitative measures and tend to consider qualitative studies as weak and unreliable. To improve the impact of criticism and evaluation studies in authoritarian societies, we need to connect them more explicitly to the realities of the architectural profession by

operationalizing their outcomes, that is, providing concrete guidance and strategies that could be easily integrated in professional practice.

The following contribution focuses on quality assessment in healthcare environments. The authors (D. Battisto, D. Franqui and C. Boecke) observe that while the field is replete with evaluation studies, few of them have been replicated in contexts other than the original. Most typically, studies use different metrics, processes, and sets of tools, thus hampering the transferability of findings and compromising the development of standardized databases that would allow comparing different objects. Addressing this situation, the authors present a prototype of a new structured POE approach to quality assessment of medical facilities and discuss its guiding principles, methodology, metrics, and data collection tools. Eventually, experiences from two pilot studies testing the proposed methodology on military health facilities are presented.

In chapter 23, K. Smith addresses the relationship between building performance evaluation and universal design, arguing for greater attention towards the aesthetic dimension of universal design. It is argued that universal design concerns are most typically limited to ergonomic aspects. This results in an industrial, machine-like appearance of designed solutions and poor integration of said solutions into buildings' spatial and material forms. This contradicts the original motivation of universal design, namely, a desire to integrate rather than segregate and stigmatize different user groups. Moreover, the possibility that the aesthetic qualities of a universal design solution can significantly impact users' well-being and satisfaction with a building is overlooked. In conclusion, the author argues that the concept of universal design brings together, at its core, three types of concerns: political (social justice), functional (e.g. ergonomics), and aesthetic (sensory and cognitive perceptions; material/spatial qualities). These three dimensions constitute a powerful, wide-ranging, and non-reductionist framework for assessing not only universal design interventions but also any type of architectural works.

In the following chapter, E. Walsh and S. Moore argue that architectural judgment is best understood as a public conversation through which a society shapes its material, social, and ecological conditions. Yet, the qualitative and quantitative tools of architectural judgment have generally failed to stimulate such a conversation. Qualitative assessment is too often limited to a highly idiosyncratic expert critic judgment—the exercise of elitist taste. Quantitative evaluation, in contrast, tends to focus on economic efficiency. These two modes of judgment are hardly relevant for the general public. Furthermore, they have failed to stimulate socially and environmentally relevant design—'regenerative design' design that goes beyond reducing the negative social and environmental impacts of a building, towards creating material, social, and environmental conditions in which individual and social life can flourish. One step towards transforming the dominating building culture and our environments in the 'regenerative' direction is to revive public conversation on architecture by engaging diverse stakeholders and types of knowledge in the creation of places. Public conversation, in order to be successful, has to be place-based and multidimensional, building up capacity for systems thinking in user communities.

Reflecting on the discussions in part V of the book, D. Friedman argues that BPE—understood in a non-reductionist, integrative manner—constitutes an ideal framework for architectural criticism by underlining a vast array of essential dimensions of a successful design and its systemic nature. An architectural critic addressing these dimensions from his/her perspective can provide valuable insights relevant for a wider audience, avoiding the idiosyncrasy of expert-connoisseurs. Such an extension of the scope of concerns is crucial for the architectural profession, which is being marginalized steadily. This marginalization is based on the public perception of architects—their narrow focus on aesthetics and disregard for wider social and environmental contexts of architectural interventions.

In a similar tone, in the book's epilogue, I. Ijeh criticizes the unintelligibility of language and the pseudo-intellectualism of the architectural profession. "[F]lowery prose, pretentious musing, convoluted phraseology and intellectual narcissism" are to give an impression of the

special competences of architects, but in fact, they reflect the architectural profession's disinterest with the realities of the users of architecture (ibid., 272). Such detachment from the wider public not only induces a negative public perception of architects but, more importantly, also threatens the quality of our built environments, which are being developed without any substantial dialogue with their users. As the author rightly observes, the language we use in public debates can have liberalizing, democratic, and empowering influence, but it can be also turn out into an obscure semiotic code enjoyed by a chosen few keen to claim their power.

Conclusion

All in all, the book is a much needed voice in the debate on the role of architecture and the architectural profession in contemporary realities. The gaps between the intended, perceived, and measured qualities of architectural works are hardly addressed in architectural practice. Yet, such concerns are becoming increasingly central to the contemporary architectural discourse, which can be defined roughly in terms of the opposition between two types of perspectives: a view of architecture as a contingent practice and a view of architecture as an autonomous realm. The contributions in the anthology clearly support the former perspective, arguing for architecture's stronger engagement with the concerns of the users and given realities.

I recommend this book to academic and professional audiences interested in the history and development of architectural criticism or building evaluation studies. One of its strengths is the variety of perspectives in it—the book offers insights from around the globe, written by researchers, curators, critics, and professional architects at different stages in their professional and academic careers. Such diversity has implications for the final product—the book is to be read primarily as a document mapping the variety of perspectives within building evaluation studies and architectural criticism, rather than a systematic discussion of a framework for integrating the two domains. Yet, the idea of such a framework presented by the editors in the introduction is a worthwhile and promising attempt.

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