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## ARTICLES

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# Mapping the methodologies of the craft sciences in Finland, Sweden and Norway

## Abstract

*The craft sciences have emerged as a field of academic research in Finland, Sweden and Norway since the early 1990s. In Finland, craft research has examined various aspects of crafts using a multidisciplinary approach, adapting a range of methods from other academic disciplines according to the research topic. Another source has been the schools of domestic sciences in which craft research has been a recognized field. In Sweden and Norway, craft research has developed strongly in architectural conservation and cultural heritage with a focus on traditional craftsmanship and the performative elements of intangible cultural heritage. This article offers an overview of the developments and progress of the field of craft sciences in these countries, including its methodological approaches, with a focus on Ph.D. theses. Through mapping recurrent methodological approaches, the following categories were derived: craft reconstruction, craft interpretations, craft elicitation, craft amplification and craft socialization. The aim of the classification, and the model derived from it, is to help researchers and students understand better how different types of knowledge relate to different research methods and apply them within their own research. The purpose of the research is to create a common infrastructure for research and education in order to connect and strengthen the dispersed academic communities of craft research and to establish craft science as a formally recognized discipline within the academic system.*

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## Introduction

The Bologna process (Bologna Declaration 1999) was created to harmonize the European higher education sector, exhorting that ‘second cycle degrees should give access to doctoral studies’ (Berlin Communiqué 2003: 4). This initiated a process of creating doctoral education programmes at Nordic Art Schools. The widely known ‘Nordic model’ for artistic research employs a ‘sui generis perspective’ in which this research is defined as a class by itself (Borgdorff 2013: 148). Those in favour of this model argue that the inquiry and thinking in arts and crafts are amalgams embodied in the art or masterpiece and that traditional research methods and academic text-based mediations are not relevant (Wolgers 2015). Those refuting it refer to it as research with a lower case ‘r’, seeing it as a dilution of the concept of research (Frayling 1993; Solberg 2017). The dispute between the traditional sciences (e.g., humanities, technology, social and natural sciences) and artistic research is substantiated by regulations, separating the requirements of doctorates in arts from the research-based doctor of philosophy. Following her survey and analysis of doctorates in art, design and architecture in the

## Keywords

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Nordic countries, Anne Solberg (2017) proposes that research in these creative practices needs strategies for a 'position inside academia, building an epistemological platform inside the academy, and learning from existing academic disciplines when that proves to be fortunate' (2017: 246). However, this analysis does not recognize the long tradition of craft research existing within the academic system of Nordic universities and that sits outside the art schools.

The current worldwide interest in craft research has resulted in recognizing the need for an academic discipline dedicated to craft research, one example of this being the creation of a *Craft Research* journal to advance the knowledge on the research conducted in this field (Niedderer and Townsend 2010). Craft research has a stronghold in the United Kingdom, and the narrative of this academic field is commonly related to this national context (e.g., Frayling et al. 1997; Niedderer and Reilly 2010; Rust et al. 2007). The integration of the vocational colleges in the British universities in 1992 was a milestone, and the subsequent research and epistemological developments in arts, crafts and design have become standard works (Frayling 1993; Durling et al. 2002). In this article, we want to extend this perspective on craft research to the Nordic countries.

In the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden), sloyd has been a standard school subject in compulsory education since late 1800s. The school subject and pedagogical approach that Otto Salomon introduced in 1870s at the sloyd teacher seminar in Nääs in Sweden was soon widely adapted in the Nordic education systems (Alm 2012). The concept of 'sloyd' is generally used to denote crafts in schools in these Nordic countries. Its early introduction in compulsory education and as a subject in teacher education has been a driving force for the development of craft research. In all the Nordic countries, craft teacher education is university-level education, leading to BA and MA degrees with the option of continuing to the Ph.D. level (see Johansson 2018; Porko-Hudd et al. 2018). Johansson (2018) recognized that about 100 doctoral theses related to sloyd teaching and learning have been produced since 1980s.

More recently, practitioners of traditional craft vocations like chefs, gardeners, carpenters, masons and smiths also have entered the university, where they are often situated in faculties of technology, natural or social sciences, or the humanities (Almevik 2019). These emerging craft approaches require relevant research methodologies and methods to provide a systematic way to learn from and develop their professional practice; Ph.D. degrees in craft studies have been provided in Finland, Sweden and Norway since the early 1990s in faculties other than arts at universities.

Working within this broad academic field of crafts, we have reviewed and mapped the developments and methodologies of craft sciences in Finland, Sweden and Norway. First, we discuss the concept of 'craft sciences', followed by short introductions to the processes for establishing academic craft studies and research in the three countries. We then introduce the model based on mapping the recurrent methodological approaches before looking at the future perspectives of craft sciences.

## The concept of craft sciences

The term for academic craft studies and research is *käsityötiede* in Finnish and *hantverksvetenskap* in Swedish. Norway uses *handlingsbåren kunnskap* or craft knowledge and has not formalized craft sciences as an independent academic discipline. The perception of the words hantverk and käsityö is literally related to the hand: ‘hant’ and ‘käsi’ mean ‘hand’, while ‘verk’ and ‘työ’ mean ‘work’. Thus, the direct translation would be ‘handwork’ with a similar connotation to handicraft. Käsityö refers to work realized by hand or by the use of hand tools, a craft profession and a handmade product. The concept of craft(s) is used in the Finnish context to refer to crafts in a broad sense, not making a distinction between craft and artistic approaches.

The Finnish term *käsityötiede* has been translated into craft science, which has turned out to be problematic in international contexts. Often the concept ‘science’ is used to refer to the natural sciences and deductive hypothesis-driven research. In the Nordic languages, science is a wider concept (‘vetenskap’ in Swedish, ‘vitenskap’ in Norwegian and ‘tiede’ in Finnish) covering also humanities and social sciences. Higher education and research in the Nordic countries draw a formal line between arts and other sciences. The terms *käsityötiede* and *hantverksvetenskap* challenge traditional academic research and provide an authorized domain for craftspeople within academia.

Crafts have been studied from the viewpoint of various academic disciplines, such as psychology, ethnology, anthropology, history, education or technology-related sciences, where craft has mainly been an object of analysis. More recently, researchers have begun emphasizing sensory and embodied experiences and expertise of the practitioner researcher highlighting that craft activities involve flexible cognitive, material and embodied processing that are tightly interwoven (Groth 2017; Høgseth 2007; Seitamaa-Hakkarainen et al. 2016). In the early phase of this development, theories were borrowed from philosophy, building on pragmatism influenced by John Dewey and Donald Schön, and Nordic craft theorists such as Ingela Josefson (1991), Bertil Rolf (1991), Pirkko Anttila (1993), Bengt Molander (1996) and Kjell Johannessen (1999) were significant in the development of the discipline. Today, theories are developed within and through the craft sciences, and researchers are often also craft practitioners.

## Development of the craft science in the three Nordic countries

### Finland

The background of craft science in Finland lies in the well-established status of the crafts (former textile crafts and technical crafts) as a standard school subject in the compulsory basic education that has created the demand for craft teachers. Textile teachers were being educated from 1886 in the School of Crafts in Helsinki. However, it was the Finnish legislation about university-level teacher

education in 1971 that brought textile teacher education into the University of Helsinki in 1975 and soon into the University of Joensuu, Eastern Finland. The first professorship came in effect in 1982, in textile studies, with the focus on designing and making processes of handmade textile products. However, it was soon recognized that restricting the academic discipline to textiles was too narrow, since it was realized that materiality, designing and making processes as well as cognitive and social aspects related to textiles are common to all kinds of crafts. Following these discussions, the name of the discipline was changed from textile studies to craft science at the University of Helsinki in 1992 and later also at the University of Eastern Finland (Luutonen et al. 1999; Seitamaa-Hakkarainen et al. 2007). Although craft science remained in the faculty of education, it was important for the discipline to create its own approaches and stand out from the educational sciences.

In 2013, craft science was standardized as the main discipline of craft teacher education by the Ministry of Education and Culture (Porko-Hudd et al. 2018). It is taught at the University of Helsinki as well as the Universities of Turku, Vaasa and Eastern Finland where it is situated in the faculty or department of educational sciences as part of the craft teacher education programmes. Although Finnish craft science mainly concentrates on topics other than craft education, the research conducted in educational sciences has been important for the developments of the discipline. For example, Professor Pirkko Anttila, the founder of craft science as an academic discipline, defended her dissertation in education in 1983, and later her theorization on craft science was fundamental to the discipline.

In Finland, craft science research has a multidisciplinary approach, adapting a variety of methods from different academic disciplines. Often, it has meant researching crafts with methods that have been looking at crafts from outside, by reflecting on the processes and products. However, the craft researcher has usually been an insider in the crafting sphere, being a craft professional or a Ph.D. student in the field, thus having a broad understanding of both craft making and the theories developed in craft science.

The research objects under the umbrella of craft science cover all fields and forms of crafts: the research can focus on the craftsperson, the designing and construction processes of products or the products themselves from psychological, social, cultural, economic or technological points of view. The craft sciences in Finland have been developed in many directions according to individual researchers' interest. Roughly thirty people have completed a doctoral dissertation in craft science at the University of Helsinki and the University of Eastern Finland, and many more in related fields, especially in educational sciences. During the period from 2008 to 2018, there was a substantial increase in the number of craft science dissertations. There are grounds to say that craft science has a well-established disciplinary framework in the Finnish academic sphere.

## Sweden

Craft has been a frequent research object in the humanities, such as ethnology, art history and archaeology. This research, in which craft is an object of analysis, has a long tradition, from the empirical folklore studies in early 1900s to the current critical heritage studies grounded in culture or discourse analysis. The establishment of social work, and later nursing and physiotherapy, as academic disciplines led to an intense development of methods for practice-led research with a strong emphasis on grounded theory and action research (Josefsson 1991). The research area working life sciences played a main role, with influencers such as Ingela Josefson (1988), Bo Göranson (1990), Bertil Rolf (1991), Bengt Molander (1996) and Bernt Gustavsson (2004). The Centre for Working Life (Arbetslivscentrum) initiated new types of research collaboration, for instance, the affiliation of craftspeople to share experiences in skill acquisition and knowledge transfer (Tempte 1982). Today, the Centre for studies in practical knowledge at Södertörn University has a main role examining different forms of practical knowledge in working life with focus on professional knowledge and skills in interpersonal relationships (Gunnarsson 2019). Educational faculties also have incorporated craft research, foremost related to vocational education and sloyd teacher education. Almost twenty dissertations have been submitted, and a professorship in sloyd, Marlène Johansson, was installed at the University of Gothenburg in 2014.

Peter Sjömar's dissertation on historic corner-timber buildings at Chalmers University, Faculty of Architecture, impacted on the development of practice-led craft research and the establishment of crafts as an academic discipline (Sjömar 1988). Sjömar acknowledged the contribution of the craftspeople and how their experiences and practices opened up new interpretations of history (Sjömar 2017). Sjömar's approach was first adopted and developed by the Vocational College of Crafts in Mariestad and later by the Department of Conservation at the University of Gothenburg. In 2008, the doctoral programme was extended to crafts, leading to Ph.D. theses in carpentry (Hjort Lassen 2014), horticulture (Westerlund 2017) and masonry (Eriksson 2019). The ongoing research applies different methodologies where practice is used as an instrumental part of the inquiry. Similarly, the subject Culinary Arts & Meal Science at Örebro University has emphasized on the craft aspects, and Ph.D. students have been recruited with projects on the craftsmanship of cooking and serving.

Overall, craft research in Sweden is diverse and spread across several universities, faculties, disciplines and subjects, often based in the division of arts and sciences (Almevik 2019). There is as yet limited awareness, exchange of experiences and collaborations between programmes. To explore what unites them, and what topics, source materials, methods, perspectives and results reside in this field, The Craft Laboratory (CL), was established at the University of Gothenburg in 2010, in cooperation with universities, heritage organizations, craft enterprises and trade organizations. The agenda

was to bring research into practice and involve craftspeople in the processes of inquiry. Through projects and networks from CL, four new doctoral graduates have been recruited and employed in the workforce.

### **Norway**

As a field of academic research, craft science in Norway is young, and the basic concepts and descriptive characterizations are still under development. A characteristic of education and research in Norway is that there are formal research institutions within universities focusing on craft and that here are also initiatives situated outside the universities, for example, in museums, craft organizations, building and vessel protection centres, and cultural heritage authorities. At a general level, craft science in Norway has been concerned with craft and its connection between intangible and material heritage.

Since the 1860s, informal educational systems in craft traditions existed, such as Nidaros Cathedral Restoration Workshop (NDR) to restore the National Cathedral. The Norwegian craft institute, the Centre for Intangible Cultural Heritage (NHI), was formally founded in the mid-1980s (Falk et al. 2007). During the last 40 years, the purpose has been to train, document, preserve and promote traditional crafts as well as to increase society's knowledge and respect for craft traditions, in line with the UNESCO Convention for Safeguarding of the Intangible Cultural Heritage (ICH). Since 2007, NDR has offered bachelor's and master's level education in cooperation with the universities. The dissertation of archaeologist Øystein Ekroll (2015) is an example of research in which specialists in craft and archaeology worked together.

Both inside and outside the universities, experts have used methods such as practice-led research, action research or auto-ethnography. NHI and NDR both conduct practice-led research through which skilled researchers and craft experts work together (Storemyr 1999; Planke 2001; Ekroll 2015). Jon Bojer Godal's (2006a, 2006b) research on traditional craft knowledge, timber properties in traditional houses and boats, is an example where the craftspeople is also the researcher. He developed the Norwegian concept of 'handlingsboren kunnskap' similar to 'action-based knowledge'. The term has been adopted in various practice professions in handicrafts, building conservation and heritage management in Norway. Today, the expression has gained official status and can be characterized as a basic concept within the field of knowledge that thematizes the relationship between theory and practice. Another influential approach has evolved from architecture, which Professor Halina Dunin-Woyseth (Nilsson and Dunin-Woyseth 2013: 6) has conceptualized as 'the making disciplines'.

Education in conservation and restoration was established at the Norwegian University of Science and Technology (NTNU). Inspired by NDR and NHI, a bachelor's programme for skilled craftspeople in restoration of historical buildings and constructions was established and is now

being developed jointly with the Bologna system for master's and doctoral studies (Høgseth and Renmælmo 2011). The craft research approach at NTNU is oriented towards traditional craft, and the overall aim is research in and about craft (Høgseth 2007; Bohlmann 2014; Bye 2010; Godal et al. 2018). The research has been concerned with how traditional craft and procedural practice can expand and deepen the understanding of tacit knowledge and forgotten craft traditions and how this knowledge can be used in new ways.

The Embodied Making and Learning research group (EMAL) at the University of Southeast Norway has focused on these aspects in connection with research on craft practices and arts as well as craft teacher education. EMAL, led by Professor Marte Gulliksen (2017), encompasses 35 researchers, organized in clusters dealing with different aspects of practice-led research, under the Faculty of Humanities, Sports and Educational Science and the Department of Visual and Performing Arts Education. In this context, ethnologist and boat builder Terje Planke (2001) provided an example of a practice-led doctoral thesis.

In recent years, research activity in the field of design, arts and crafts has increased in the Faculty of Technology, Art and Design, at Oslo Metropolitan University and the Faculty of Aesthetics, Folk Culture and Teacher Education at the University of Southeast Norway. Several doctoral theses have been completed in the fields of design, arts and crafts. Gunvor Guttorm, Professor in Duodji (Sámi arts and crafts) at the Sámi University College in Kautokeino, has conducted research on how the traditional knowledge of Sámi art and craft is transformed into the modern lifestyle (Guttorm 2001).

## Mapping the methodologies of the craft sciences

This section outlines the craft research methods used in Finland, Sweden and Norway. When looking at the nature of the research used in these programmes, there is significant variation in the approaches and methods employed. A common classification by Herbert Read and Christopher Frayling distinguishes research *into*, *through* or *for* the crafts (Read 1955; Frayling 1993, Frayling et al. 1997). The taxonomy signifies the position of knowledge, being an *object* of the study, a *method* to perform research or an implicit entity of the *artefactual outcome*. Another common way to distinguish the research is either it being practice-led or not, based on the point of view from which the phenomena are studied: are they looked at from inside, such as in an embodied approach and auto-ethnography, or from outside when the phenomena are more like the objects than the subjects of the study.

At different stages of the development of craft sciences, models have been created to visualize the processes and relevant research methods (Anttila 1993; Seitamaa-Hakkarainen et al. 2007). However, with the advancement of the discipline, there is a need for updating the model with new perspectives. With this aim, we have mapped the empirical research approaches of craft research



undertaken in the three Nordic countries. To do so, the Ph.D. theses of these countries were listed and analysed in relation to the methods used. The emerging classification is based on the type of knowledge addressed in the thesis (see Appendix). Since numerous Ph.D. theses in craft science have already been defended in Finland, it was decided to concentrate on them and leave the Ph.D. theses in educational sciences and other disciplines out of the analysis. However, due to different developments in Sweden and Norway, Ph.D. theses on crafts in other disciplines in these countries were also included in the analysis, to give a picture of the evolving research. The following themes were formed as a basis for the model to be constructed: *reconstruction*, *elicitation*, *interpretation*, *amplification* and *socialisation*. For each theme, examples are given of the methodological aspects of the research.

Figure 1 presents a model for visualizing this classification. It illustrates that themes are not fixed but are constantly shifting and overlapping. The model shows various types of knowledge formation, research interests, methodologies, analytical approaches and methods for collecting and generating the data and their derivation and relationship with different subject domains. This classification and model are not comprehensive but rather suggestive, aiming to give insight into the situation. The purpose of the model is to identify and strengthen common methodologies within the craft sciences. The categories are described in the following.

*Craft reconstruction* refers to craft research employed in historical studies using craft experiments to uncover aspects of historical artefacts, procedures or contexts, for example, when a tradition is broken or extensively transformed. The approach is similar to experimental archaeology where craftspeople may participate to actualize, re-enact or re-construct hypothesis of phenomena from the past (Outram 2008; Schenck 2015). The archaeologist Marylin Kelly-Buccellati (2012) conceptualizes the challenge as a ‘time-gap apprenticeship’, which is useful for craft research in historical investigations, using the body to interpret history. The Swedish Craft Laboratory has developed a methodology for exploring and exposing this time gap. The methodology triangulates (1) craft interpretation of the historic artefacts, (2) reconstructive experiments based on a hypothesis from traces and leads and (3) craft elicitation by paying attention to the objects, affordances and constituents of the environment as they appear in the making (Almevik and Melin 2015). This approach has been used in historical studies in horticultural crafts (Seiler 2018), corner-timber building (Andersson 2016) and carpentry (Karlsson 2014; Jarefjäll et al. 2017).

Historical archives, craft making and artefact analysis provide both micro- and macro-perspectives to historical artefacts. Atelier archives, such as sample folders, sketches, scrap books, models and finished craft works together with diaries and other forms of written memories of the research persons have provided data for constructing a picture of a particular craftsman (Fernström 2012). The researcher’s participation in the making of the studied artefacts has been employed both to reach the tacit knowledge involved in the processes and to use it to complement propositional knowledge



(Koskennurmi-Sivonen 1998). When researching the developments of distinct craft trades, trade publications, order and sales ledgers, garments and interviews have provided sources of information for both qualitative and quantitative analysis (Kaipainen 2008).

*Craft elicitation* pertains to craft processes and education. It comprises methods for participant-observation and self-observation with the aim of eliciting detailed aspects of making and learning to make. Most of this kind of research is conducted in pedagogical faculties and based on the research traditions of ethnomethodology (Garfinkel 1967) or conversation analysis (Goodwin and Heritage 1990) to study interactions in learning processes (Ekström 2012; Johansson 2002). Aiming to elicit the underlying patterns through their actual appearance, various data collection methods have been used, investigated and developed, including traditional interviews and diaries or video record and contextual activity sampling systems (Hasselskog 2010; Johansson 2011; Kangas 2015; Laamanen 2016). When studying designers' thinking or ideation processes, craft research has applied theories and methods from psychology or cognitive science, such as the thinking aloud method and the analysis of gestures (Härkki 2018; Seitamaa-Hakkarainen 2000).

More recently, practitioner-researchers have also employed auto-ethnographic approaches to elicit details in working procedures, sensory judgements and embodied cognition of their own practice (Kouhia 2016). This research domain mainly draws from phenomenology and enactivism when studying the structures of experience and consciousness. Methods for capturing the experience are often accomplished in practice situations at the work sites, such as buildings or workshop where the analysis is undertaken (Høgseth 2007). Examples of methods are video recording in combination with thinking aloud accounts (Groth 2017), video recording and notation of craft and time geography (Almevik 2016; Jarefjäll 2016; Eriksson et al. 2019; Høgseth 2013). Time geography has been borrowed from human geography to depict and analyse constraints of people and things in their intertwined paths and 'side-by-side-ness' of time space (Hägerstrand 2009).

*Craft interpretations* unites in the systematic use of craft peoples' expertise and connoisseurship to interpret artefacts, craft procedures, construction, design or other units of analysis. The research may be characterized as research into craft scrutinizing the history, meanings, perceptions or functions of crafted objects, subjects and contexts. Commonly, the research sets out from an insider's perspective and systematic use of one's own practice experiences from craft. It tends to use a hermeneutic methodology, drawing on the iterations between holistic and analytical investigations, outsider and insider perspective and constructive and deconstructive operations.

An example of research within the hermeneutic tradition is research concerning the representations of aprons in Finland, leaning on the methods of cultural history and gender studies (Sipilä 2012). The study combined micro- and macro-level analysis focusing first on how the surrounding culture has determined the meanings associated with aprons, and second, how the aprons and their representations have affected the culture around them. A range of data was used, such as

women's magazines, craft books, novels, movies, articles, interviews, photos and research publications on the topic. Similar research focusing on gender, musealization and heritagization have also been conducted in Sweden (Palmsköld 2007; Rosenqvist 2007; Hyltén-Cavallius 2007; Palmsköld et al. 2016).

Craft research in the field of architecture and the built environment has a strong position in Norway and Sweden through a kind of pragmatic semiotic approach or 'traceology', focusing attention on seemingly insignificant traces and leads in the crafted artefacts (Almevik and Melin 2015). There are examples of various methods to document and augment these traces like casting, digital scanning, multispectral imaging reflective imaging and reflective transformation imaging (Høgseth 2012). Another direction of craft interpretation scrutinizes traditional taxonomies and typologies of methods and materials and elaborates on how they could better correspond to the logic of practice. The practitioner researcher Tina Westerlund (2017) developed a system to classify herbaceous perennials in a functional way in regard to the horticulturists work with plant propagation. The carpenter Ulrich Hjort Lassen's (2014) Ph.D. thesis mapped scribing methods in various timber framed building traditions and generalized the schemes over the methods, grouped from the carpenter's maker perspective.

Semiotics has also been an important framework in Finland, one example being an essence analysis of traditional Finnish sweaters (Luutonen 1997). Craft entrepreneurship, hobby crafts and cultural representations of crafts are research topics linked to the role of crafts in society and the media. These phenomena have been studied by using discursive analysis of articles in the media (Kärnä-Behm 2005) and narrative analysis of the interviews (Hyrsky 2012). The concept of craft is an important topic of research that has been studied with methods such as grounded theory (Ihatsu 2002).

*Craft amplification* comprises methods that focus on measuring, testing, quantifying and searching for the technological or material qualities of crafts. This approach relies heavily on methods from the natural sciences and technology and is interlinked with socio-economic fields of consumer sciences. These methods have been used to study the material and technological properties of craft products and their processes. The amplification, however, also goes in the other direction when experiences of making in practice are used for hypothetic-deductive testing. This research approach has focused more on the non-industrial level, such as research on locally produced lime mortar (Eriksson 2019), the yarn used in hand machine knitting (Turunen 2015) and the strength of the home sewers' serger stitches (Kaukinen 1995). Craft amplification borrows and adapts methods from the traditional sciences, for example when developing an olfactory vocabulary for painters to be able to articulate and judge traditional linseed oil using the standard repertory grid method from sensory studies (Källbom et al. 2019; Källbom 2019).

Methods of chemistry are applied in research on natural dyes (Räisänen 2002). Ongoing Ph.D. research (Suomela 2018) is trying to identify different bast fibres used in textile materials in Northern Europe since Neolithic times. The fibre samples from the collections of The National Museum of Finland were studied by observing the surface characteristics and cross-sections with transmitted light microscopy and by using a modified Herzog test with polarized light, in order to identify the distinguishable features in their morphological structures and to get new vistas for the interpretation of their cultural history.

*Craft socialization* concerns research on the meanings of crafts for the members of a community, culture and society. Research methods are developed to learn about various roles and identities connected to crafts in these communities of practice ranging from certain face-to-face or virtual communities, to broader groups of people (Zetterlund et al. 2015). For example, Vartiainen (2010) studied handicrafts as a sense of community in the context of the Finnish role players. The research material included text excerpts from discussion forums, interviews with amateurs, video and photographic materials, and questionnaires. A sense of community between knitting bloggers was researched through quantitative surveys of the bloggers and the thematic writings about their experiences of keeping knitting blogs (Vilhunen 2018).

Research focusing on the meanings the people attach to certain aspects of crafts often lean on the theories of social constructivism (Johansson and Illum 2009). Kouhia (2016) researched the meanings of modern-day textile hobby crafts for makers who engaged with crafts as a creative leisure outlet by using interviews, participatory observation and auto-ethnography as the methods. Various aspects of a craft person's professional identity, its formation and importance to devoting oneself to the field have been approached through thick narrative analysis (Hyrsky 2012). It has been used to determine the future orientations of the arts and crafts field, key informant interviews, future workshops, future storytelling and the Delphi Expert Panel (Soini-Salomaa 2013).

### **Future perspectives of the craft sciences**

The review of developments and methodologies of craft research in Finland, Sweden and Norway points to the early establishment of sloyd compulsory and teacher education as a driving force. Another driver have been the schools of domestic sciences where craft research as a distinguished field has been acknowledged in regard of local food production, culinary arts and meal preparation. Craft science was first established as an academic discipline in Finland in 1993, whereas sloyd science, textile science and craft science in conservation were acknowledged in Sweden, and Duodji in Norway only about two decades later.

From the survey of methodological approaches in craft research in the three Nordic countries, we identified five recurrent themes. *Craft reconstruction* draws together historical studies using craft

experiments to uncover aspects of historical artefacts, procedures or contexts. *Craft elicitation* pertains to craft processes and education. It uses self- and participant-observation methods to elicit detailed aspects of making and learning to make. *Craft interpretation* unites embodied experiences, inside perspective and connoisseurship to interpret artefacts, craft procedures, construction, design or other units of analysis in the systematic use of craft people. *Craft amplification* uses a hypothetic-deductive method to measure, testing, quantifying, improving and searching for evidence of causes, effects and relations. *Craft socialization* targets the realm of humanities and uses various methods such as conceptual reasoning, discourse or network analysis tools. This classification is not intended as a definite taxonomy but as a guide to help researchers and students relate to and develop their own scholarly work. The illustration of the model of this classification portrays the overlapping and shifting nature of the different themes.

Focusing on Ph.D. theses from the craft sciences, this classification has its limitations. Analysing craft research more broadly would have presumably resulted in a different picture. This choice was made to keep the analysis manageable and to reveal the tendencies of the craft sciences. A noticeable phenomenon related to the classification was the increasing number of article-based Ph.D. theses using a range of methods in their separate articles, which means one thesis may consist a multitude of approaches related to several of the themes.

Craft sciences in these Nordic countries are diverse and creative in exploring methodologies and societal applications, but still marginalized in the academy. Currently, the status of craft is blurred with disciplines such as arts, design, technology and the various academic disciplines conducting research on crafts. We believe it is time to recognize crafts as a field of its own both in terms of education and research. Since the methodological basis of craft research is so varied, we prefer to use the term *craft sciences* in plural as an umbrella for craft research. By this, we value all the research bringing up new knowledge on crafts and acknowledge that it is neither feasible nor necessary to restrict craft research to certain methodologies and methods. In a relatively new and small academic field that is still in the process of getting established in academia, it is important to be open to new research ideas and methodological inventions to get more information about the versatile phenomena of crafts, crafting and the material as well as psycho-socio-material-cultural aspects related to them.

To connect and reinforce the isolated academic communities of craft research in the Nordic countries, there is a need for a common infrastructure for research and education. Some research infrastructure is already provided at the Nordic level: *NordForsk*<sup>1</sup> provides some general research support and there are craft research publication outlets, such as the *Techne Series*<sup>2</sup> and the *FormAkademisk*<sup>3</sup> journal. However, there is a need for a new publishing platform using new media to develop appropriate formats for peer-review and publications, to bring out the results of multifaceted craft research in a more nuanced and lively manner. The search for methods to reveal different ways of

1. *NordForsk* is an organization under the Nordic Council of Ministers that provides funding for and facilitates Nordic cooperation on research and research infrastructure: <https://www.nordforsk.org/about>.
2. *Techne Series: Research in Craft Pedagogy and Craft Science* publishes peer-reviewed research in craft pedagogy and craft science in Nordic languages and English: <https://journals.hioa.no/index.php/techneA/index>.
3. *FormAkademisk* journal is aimed at those involved in design research as defined by the higher education system in Norway and internationally: <https://journals.hioa.no/index.php/formakademisk>.

4. *JoVE* is a peer-reviewed video journal in physical and life sciences. The journal publishes methods articles including text descriptions and video demonstration of experiments, aiming to increase the reproducibility and productivity of scientific research: <https://www.jove.com/journal>.

knowing about, by and with crafts, has brought up the need to develop different ways of telling, such as ‘filmed method articles’ like the video journal *JoVE*.<sup>4</sup> Another useful infrastructure would be a common Nordic or international master’s and Ph.D. education programme to offer students both content depth in crafts and transverse knowledge and skills anchored in the craft sciences. Uniting the scattered efforts of the Nordic countries would strengthen both the education and research on crafts in this region by facilitating a platform for forthcoming approaches.

## APPENDIX

### ***Ph.D. theses on craft sciences and craft research in Finland, Sweden and Norway***

This table presents the list of the Ph.D. theses that were used as the basis for the analysis of the methodologies used in Ph.D. theses on craft science and craft research in Finland, Sweden and Norway. All the listed universities offer craft studies up to MA level with the possibility to continue to Ph.D. studies. If not craft science, the academic discipline of the particular Ph.D. thesis on crafts is pointed out. The theses were published either as a monograph (M) or article-based (A) work, which is shown in the table. The main methods and the main data used in each of them were gathered into the table. These were analysed further to map them into the emerging tentative categories of the research methodologies of craft sciences. The categories attempt to summarize the nature of knowledge that was looked for.

Acronyms of the universities used in the table:

AHO: Oslo School of Architecture and Design

CTH: Chalmers School of Technology

NTNU: Norwegian University of Science and Technology

LiU: Linköping University

LTU: Luleå University of Technology

LU: Lund University

SU: Stockholms Universitet

UiO: Oslo University

UiT: University of Tromsø

UG: University of Gothenburg

UH: University of Helsinki

UEF: University of Eastern Finland

USN: University of South Eastern Norway

UU: Uppsala University

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Finland						
Uotila Minna, 'Pukeutumisen kuva: Fenomenologis-eksistentiaalinen lähestyminen pukeutumiskuvien tekemiseen ja tulkintaan' ('The picture of clothing')	1994	UH	M	Phenomenological-existential, constructing theory about clothing	Theoretical approach	Craft interpretations
Kaukinen Leena, 'Elongation behaviour of elastic stitch types in household sewing machines: Stretch-stitches versus serger overlock stitches'	1995	UH	M	Experimental design	Testing sewers' stitching samples	Craft amplification
Luutonen Marketta, 'Kansanomainen tuote merkityksenkantajana: Tutkimus suomalaisesta villapaidasta' ('Traditional artefact as a carrier of meaning: Research on the Finnish woollen jumper')	1997	UH	M	Semiotics, phenomenology, product essence analysis	Museum archives, concrete folk knit wear	Craft interpretations
Koskennurmi-Sivonen Ritva, 'Creating of unique dress: A study of Riitta Immonen's creations in the Finnish fashion house tradition'	1998	UH	M	Case study, biographical research, craft process analysis, artefact analysis	Sketches, scrap books, concrete craft artefacts, interviews, observation, participatory making	Craft reconstruction
Seitamaa-Hakkarainen Pirita, 'The weaving-design process as a dual-space search'	2000	UH	M	Thinking aloud method, qualitative content analysis	Thinking aloud protocols, video recordings, sketches	Craft elicitation
Ihatsu Anna-Marja, 'Making sense of contemporary American craft'	2002	UEF	M	Semiotics, hermeneutics, phenomenography, grounded theory	Journals, catalogues, magazines	Craft interpretations
Lindfors Eila, 'Tekstiilituotteen teknologiset ominaisuudet: Tekstiilituotteen käyttö- ja hoito-ominaisuuksien tarkastelu kuluttajan näkökulmasta' ('The technological properties of a textile product from the consumer perspective')	2002	UEF	M	Delphi method, survey, Bayesian finite modelling	Statistical survey data	Craft amplification

*(Continued)*



Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Räsänen Riikka, 'Anthraquinones from the fungus <i>Dermocybe Sanguinea</i> as textile dyes'	2002	UH	A	One- and two-dimensional thin layer chromatography, mordant dyeing experiments	Chemical analysis of the fungus for colour and fastness properties	Craft amplification
Kröger Tarja, 'Käsityön verkko-oppimateriaalien moninaisuus "Käspaikka"-verkkosivustossa' ('The diversity of Www learning and teaching materials at the website "virtual craft place"')	2003	UEF	M	Qualitative content analysis	Website learning and teaching materials	Craft socialization
Kärnä-Behm Jaana, 'Käsityön kulttuurisena kategoriana: Käsityön ja käsityöläisyyden representaatio suomalaisissa päivälehdissä' ('Craft as cultural category: The representation of craft and craftsmanship in Finnish daily newspapers')	2005	UH	M	Discursive content analysis	Finnish daily newspapers	Craft interpretations
Kaipainen Minna, '"Ken tilauspukua käyttää, hän herrasmieheltä näyttää": Eteläkarja-lainen maalaisvaatturi ja vaatturitoiminta Suomessa 1920-1960-luvuilla' ('"He who wears a bespoke suit, does look like a gentleman" – A South Carelian Country tailor and the tailoring practice in 1920–1960's Finland')	2008	UEF	M	Micro-historical analysis of the documents, artefact analysis, interviews	Achieves, professional magazines, concrete craft artefacts, memories	Craft reconstruction
Henna Lahti, 'Collaborative design in a virtual learning environment: Three design experiments in textile teacher education'	2008	UH	A	Qualitative content analysis of textual data	Textual interaction data from virtual learning environments, sketches	Craft elicitation
Suvi Kettula, 'Semanttisen webin ontologisen tekstiilikäsitteistön kehittäminen ja liittäminen museoiden luettelointitietoihin' ('Developing a textile ontology for the semantic web and connecting it to museum cataloging data')	2009	UH	M	Ontology of concepts of textiles, garments, accessories	Thesaruri, vocabulary, research reports, standards	Craft interpretation

(Continued)

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Leena Vartiainen, 'Yhteisöllinen käsityö: Verkostoja, taitoja ja yhteisiä elämyksiä' ('Handicrafts and a sense of community – Networks, skills and shared experiences')	2010	UEF	M	Qualitative content analysis, Goffman's frame analysis	Text excerpts from discussion forums, interviews with amateurs, video and photographic materials, and questionnaires	Craft socialization
Päivi Fernström, 'Damastin traditio ja innovaatio: Tekstiilitaiteilija Dora Jungin toiminta ja damastien erityisyys' ('The tradition and innovation of damask: The work of textile artist Dora Jung with a focus on her damask textiles')	2012	UH	M	Case study, historical documentation	Museum archives, documents, sketches, concrete textiles, memories of informants	Craft reconstruction
Kaisa Hyrsky, 'Kertomuksia kultaseppien yrittäjyydestä' ('Narratives of goldsmithing and entrepreneurship')	2012	UH	M	Narrative thick description analysis	Craftmen's interviews, lifespan drawings	Craft socialization
Outi Sipilä, 'Esiliina aikansa kehyksissä: moniaikaista tekstiilikulttuuria ja representaatioita kodista, perheestä, puhtaudesta ja käsityöstä 1900-luvun alkupuolen Suomessa' ('Apron in temporal frames – Multitemporal textile culture and representations of home, family, cleanliness and crafts in Finland in the first half of the 20th century')	2012	UEF	M	Cultural-historical analysis, hermeneutics	Women's magazines, craft books, aprons, photos, films, novels, memories	Craft interpretations
Kristiina Soini-Salomaa, 'Käsi- ja taideteollisuusalan ammatillisia tulevaisuudenkuvia' ('Future professional images in the field of craft and design')	2013	UH	M	Delphi method, content analysis, interviews	Surveys, interview data, narratives (future storytelling)	Craft socialization

*(Continued)*

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Jani Kaasinen, 'Perinnerakentaminen käsitteenä ja osana teknologiakasvatusta: opettajaopiskelijoiden käsitykset, käsitysten jäsentyneisyys ja muutos perinnerakentamisen opintojakson aikana' ('Heritage building as a concept and as a part of technology education – Conceptions of, structuredness of conceptions of, and conceptual change in students in teacher training during a study module on heritage building')	2014	UEF	M	Phenomenographical analysis	Student essays	Craft interpretation
Henriikka Vartiainen, 'Principles of design-oriented pedagogy for learning from and with museum objects'	2014	UEF	A	Design-based research	Video and audio recordings, interviews, questionnaire, photos	Craft socialization
Kangas Kaiju, 'The artifact project: Promoting design learning in the elementary classroom'	2015	UH	A	Video analysis, interaction analysis	Video data and database from virtual learning environment	Craft elicitation
Oksanen-Lyytikäinen Johanna, 'Puku taiteena ja työvälineenä: Näyttämöpuvun merkitys kolmessa oopperaproduktiossa' ('The meanings of theatre costumes in three opera productions')	2015	UH	M	Auto-ethnography, phenomenography, semiotics, interview	Video documents, sketches, interview data, photos	Craft elicitation
Virpi Turunen, 'Pellavalangan neulonta kotineulekoneella' ('Machine knitting with flax yarn')	2015	UEF	M	Quasi-experimental design, measuring the physical properties, interview	Interview data, measure of knitted samples and yarn	Craft amplification
Laamanen Tarja-Kaarina, 'Generating and transforming representations in design ideation'	2016	UH	A	Qualitative content analysis	Virtual e-learning database, sketches, interviews, CASS	Craft elicitation

(Continued)

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Kouhia Anna, 'Unraveling the meanings of textile hobby crafts'	2016	UH	A	Qualitative content analysis, auto-ethnography, participant-observation	Interview data, notes, auto-ethnographic cinema	Craft socialization
Minna Parkko, 'Stailaaminen: työtehtävät, osaaminen ja sijoittuminen' ('Styling: Tasks, skills and career placements')	2016	UEF	M	Thematic interview, qualitative content analysis, survey	Interview data, survey data	Craft socialization
Katja Vilhunen, 'Neuleblogi osana käsitöitä – neulebloggaajien kokemuksia blogin ja käsitöiden yhdistämisestä' ('Knitting blog as a part of craft making – Experiences of combining blogging and handicrafts by knitting bloggers')	2018	UEF	M	Survey, statistical analysis, qualitative content analysis	Survey, written narratives	Craft socialization
Tellervo Härkki, 'Handling knowledge – Three perspectives on embodied creation of knowledge in collaborative design'	2018	UH	A	Video analysis	Video data: interactional gestures	Craft elicitation
Tiina Ikonen, 'Suomalainen virolainen tarina Sofi Oksasen Puhdistuksen henkilöhaamojen rakentaminen, ilmentäminen ja tulkinta puvustuksen avulla suomalaisissa näyttämö- ja elokuvasuorituksissa' ('Finnish Estonian story construction, expression and interpretation of the characters of Sofi Oksanen's purge through costumes in Finnish stage and film adaptations')	2018	UH	M	Semiotic, phenomenological, intertextual and contextual analysis	Novel purge, opera and theatre plays based on the novel, interviews, audience inquiries	Craft interpretation
Sweden						
Kajsa Borg, 'Slöjdamnet, intryck – uttryck – avtryck' ('The sloid subject, impression – expression – imprint')	2001	LiU/ pedagogy	M	Hermeneutic analysis	Interviews	Craft interpretation
Annika Ekström, 'Instructional work in textile craft: Studies of interaction, embodiment and the making of objects'	2012	SU/ pedagogy	A	Ethnomethodology, conversation analysis	Interviews, written narratives, sketches	Craft elicitation
Jonny Eriksson, 'Kalkbruk – krympsprickor och historisk utveckling av material, metoder och förhållningssätt' ('Lime mortar – Materials, methods and approaches')	2019	UG/con- servation/ craft	A	Hypothetico-deductive, action research, case study, classification	Numerical data, observation protocol, diary notes	Craft amplification

*(Continued)*

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Peter Hasselskog, 'Slöjdlärares förhållningssätt i undervisningen' ('Strategies of teaching sloyd in the classroom')	2010	UG/pedagogy/sloid education	M	Interaction study, conversation analysis	Interviews, video record, diary notes	Craft elicitation
Ulrik Hjort Lassen, 'The invisible tools of a timber framer: A survey of principles, situations and procedures for marking'	2014	UG/conservation/craft	M	Action research, participatory observation, video analysis, case study, classification	Video record, diary notes, observation protocol, sketches	Craft interpretation
Annelie Holmberg, 'Hantverksskicklighet och kreativitet: Kontinuitet och förändring i en lokal textilläroarutbildning 1955–2001' ('Craft skills and creativity: Continuity and change in a local textile teacher education 1955–2001')	2009	UU/textile studies	M	Hermeneutic analysis	Archival record, interviews, artefacts	Craft interpretation
Siri Homlong, 'The language of textiles: Description and judgement on textile pattern composition'	2006	UU/domestic science	A	Interdisciplinary, phenomenological analysis, concept analysis, repertory grid method	Craft materials, observation protocols, interviews	Craft elicitation/craft interpretation
Charlotte Hyltén-Cavallius, 'Traditionens estetik: spelet mellan inhemsk och internationell hemslojd' ('Aesthetics of tradition: The interplay between domestic and international handicraft')	2007	SU/ethnology	M	Actor–network theory, discourse, hermeneutic analysis	Archival record, written narratives	Craft socialization
Patrik Jarefjäll, 'Navarsmide' ('Forging of the twisted auger')	2016	UG/conservation/craft	M (Lic)	Action research, time geography, video analysis	Video record, diary notes	Craft elicitation
Elisabeth Jernström, 'Lärande under samma hatt. En lärandeteori genererad ur multimetodiska studier av mästare, gesäller och lärlingar' ('Teaching-and-learning under the same hat: A theory of teaching-and-learning generated by multimethodological investigations of masters, journeymen and apprentices')	2000	LTU/pedagogy	M	Multi-methodological, grounded theory, interaction study, participant-observation	Interviews, video- and photo record, fieldnotes, diaries, documentary	Craft elicitation

(Continued)

Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Marléne Johansson, 'Slöjdpraktik i skolan – hand, tanke, kommunikation och andra medierande redskap' ('Craft and design in school – Hand, mind, communication and other mediating tools')	2002	UG/ pedagogy/ slöid education	M	Interaction study, conversation analysis, video analysis	Video record, diary notes	Craft elicitation
Tomas Karlsson, 'Ramverksdörr – en studie i bänksnickeri' ('Framed doors: A study in carpentry')	2014	UG/conservation/ craft	M (Lic)	Hypothetico-deductive, action research, case study, classification	Sketches, diary notes, observation protocol	Craft reconstruction
Mårten Medbo, 'Lerbaserad erfarenhet och språklighet' ('Clay based experience and language-ness')	2016	UG/arts and crafts	M (with exhibition)	Artistic research, concept analysis, auto-ethnography	Artefacts, video record, diary notes	Craft elicitation
Anneli Palmköld, 'Textila tolkningar: om hängkläden, drättar, lister och takdukar' ('Textile interpretations: On hammocks, kits, moldings and curtains')	2007	LU/ ethnology	M	Material study, hermeneutic analysis	Archival record, written narratives	Craft interpretation
Johanna Rosenqvist, 'Könsskillnadens estetik?: om konst och konstskapande i svensk hemslöjd på 1920 - och 1990-talen' ('An aesthetics for gender difference?: On art and art creation in Swedish handicraft from the 1920s to the 1990s')	2007	LU/cultural sciences/ art history	M	Discourse, hermeneutic analysis	Archival record, written narratives	Craft socialization
Peter Sjömar, 'Byggnadsteknik och timmermanskonst: en studie med exempel från några medeltida knuttimrade kyrkor och allmogehus' ('Building technology and carpentry: A study with examples from medieval corner-timber churches and vernacular buildings')	1988	CTH/ architecture	M	Material study, hermeneutic analysis, participant-observation	Sketches, archival record, observation protocol	Craft interpretation
Tina Westerlund, 'Trädgårdsmästarens förökningsmetoder: dokumentation av hantverkskunskap' ('The Gardener's propagation methods: Documentation of craft knowledge')	2017	UG/conservation/ craft	M	Participant-observation, concept analysis, classification, auto-ethnography	Sketches, diary notes, observation protocol	Craft interpretation
Norway						
Karen Brønne, 'Mellom ord og handling. Om verdsetjing i kunst og handverksfaget' ('Between words and action: Values in arts and crafts')	2009	AHO/architecture and design	M	Discourse analysis, text analysis	Archival record, written narratives, interviews	Craft interpretation

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Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Mette Bye, 'Treatment of Norwegian vernacular heritage buildings circa 1920–1980'	2010	NTNU/ architecture	M	Material study, hermeneutic historical analysis, case study	Archival record, observation protocol	Craft interpretation
Øysten Ekroll, 'The octagonal shrine chapel of St Olav at Nidaros Cathedral: An investigation of its fabric, architecture and international context'	2015	NTNU/ history	M	Material study, hermeneutic historical analysis	Archival record, observation protocol	Craft interpretation
Marte Gulliksen, 'Constructing a formbild – An inquiry into the dynamical and hierarchical aspects of the hermeneutical filters controlling the formbild construction in design education situations'	2006	AOH	M	Participatory observation, hermeneutic analysis	Sketches, observation protocols, written narratives, interviews	Craft interpretation
Harald Høgseth, 'Håndverkets redskapskasse' ('The craftsman's toolbox')	2007	NTNU/ archaeology	M	Methodological study, motion study, hermeneutic analysis, participant-observation	Observation protocol, sketches, video record	Craft elicitation
Gunvor Guttorm, 'Duoji bálgát - en studie i duodji: kunsthåndverk som visuell erfaring hos et urfolk' ('Duoji bálgát – A study in art and crafts as visual experiences with indigenous people')	2001	UiT	M	Material study, hermeneutic analysis	Craft materials, observation protocols, interviews	Craft interpretation
Arne Magnus Johnsrød, 'Microbial patination of copper and brass: A study of colour pattern effects of controlled microbial patination'	2009	AOH	M	Hypothetico-deductive, action research, case study, classification	Numerical data, observation protocol, diary notes	Craft amplification
Terje Planke, 'Tradisjonsanalyse: en studie av kunnskap og båter' ('Tradition analysis: A study of knowledge and boats')	2001	UiO/ ethnology	M	Cultural analysis, participant-observation compact narration analysis	Diary notes, observation protocol	Craft interpretation
Janne Beate Reitan, 'Improvisation in tradition a study of contemporary vernacular clothing design practiced by Iñupiaq women of Kaktovik, North Alaska'	2015	AHO	M	Participatory observation, research-by-design	Craft materials, observation protocols, written narratives, interviews	Craft interpretation

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Author and name of dissertation (English translation)	Year	University/ discipline	Mono M/article A	Methods used	Main data	Category
Kirstine Riis, 'Designkundskabens DNA. Udforskning af designkundskab gennem designprocessen Mit DNA'	2016	NTNU/ philosophy and religion studies	M	Research-by-design, auto-ethnography, hermeneutic analysis	Sketches, observation protocols, written narratives	Craft elicitation
Per Storemyr, 'The Stones of Nidaros: An applied weathering study of Europe's northernmost medieval cathedral'	1999	NTNU/ architecture	M	Material study, hermeneutic historical analysis	Archival record, observation protocol	Craft interpretation

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