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KEYWORDS: Boat building, craft tradition, documentation, interpretation, reconstruction.

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# Interpretation of Boats in a Craft Tradition: How the Craftsperson's Perspective Can Improve the Interpretations of Artefacts in Research

*By Fredrik Leijonhufvud*

## INTRODUCTION

In my work as a teacher of boat building, documentation and reconstructions of old boats have been a vital part of my work. Working within the tradition of boat building, the teaching is about safeguarding traditional boat-building skills as an intangible heritage, but also a focus on the tangible heritage of boats. In recent documentation projects I have tried to improve the documentation practice and I have come to the conclusion that a perspective from a boatbuilder, a person with hands-on skills and experience of building boats, will have valuable contributions to the technical and cultural interpretations in historical research of boats.

This chapter focuses on three concepts and the relation between these concepts. The first two concepts are *craft tradition* and the recording and interpretation of artefacts, here called *documentation*. The third concept is a combination of two concepts: *Craftsperson-Researcher*—that is, a craftsper-

son performing research. The concepts of tradition and documentation are both of importance in the field of craft sciences but they often represent different approaches. The ideal of the tradition concept in craft is an unbroken, local, master-apprentice situation in contrast to craft skills reconstructed from interpretation of artefacts (documentation). The concept of the *craftsperson-researcher* is, in itself, problematic, where most people would intuitively connect the concepts of craftsperson-tradition and researcher-documentation. There is still a need to analyse how contemporary craft traditions can be used in the interpretation of old artefacts and how old artefacts can have an impact on contemporary traditions or even in the reconstruction of lost craft skills. In the following text I will show that there are reasons to argue that the perspective, skills, and knowledge of the *craftsperson-researcher* can improve the quality of these interpretations and reconstructions.



**Figure 1:** A clinker-built boat, where the planks overlap and are riveted together with copper rivets. Local types of wood are used, and the boat builder will hand-pick grown bends and high-quality wood. Photograph by Rikard Plog.

## THE CONCEPT OF CRAFT TRADITION

The clinker boat tradition is a technique in which relatively thin planks are fastened to a backbone of keel and stems. The planks overlap and are fastened together, often with metal rivets or treenails. The eye of the boat builder is used to govern the shape of the boat. The ribs are inserted into the shell to stabilise it. I have been teaching the Nordic clinker boat tradition, especially the Swedish boat-building tradition. With a narrower, local perspective on craft tradition, one can question the very existence of a common Nordic clinker boat tradition. Still, it is well known that the boat-building traditions in

the Nordic countries show common features and a common origin from the boats of the Bronze and Viking ages (Eskeröd 1970; Hasslöf 1988; Dhoop and Olaberria 2015). This also includes Iceland, the Faroe Islands, and Shetland. The Nordic boat-building tradition encompasses a lot of different boat types, but it is still possible for someone within this tradition to define what falls within the Nordic tradition or not. The local boat-building traditions can be categorised as local variations of a common Nordic tradition descended from the Vikings. On 24 March 2020, Sweden, together with the other Nordic countries, nominated Nordic clinker boat

traditions to UNESCO's representative list of the intangible cultural heritage of humanity (Swedish National Commission for UNESCO, 2020).

Traditions have a limited geographic extension in contrast to the transboundary of modern society. The Nordic clinker boat tradition becomes transboundary and the geographical limits are stretched when a boat from another Nordic country is replicated in the boat yard of the school where I work. There are many local boat-building traditions in the Nordic area with specific knowledge that we cannot fully replicate in our school boat yard. A boat-building tradition can be narrowed down to one specific boat type in one specific place.

Planke (2001) provides an interesting analysis of the concept of craft tradition. He studies two local Norwegian boat-building traditions: the Sogne boat and the Oselvar boat. Planke's definition of tradition is a systematic knowledge transfer—a continuous social process for the transfer of certain knowledge (ibid., 313–27). Planke's theoretical framework of the tradition concept originates from Rolf (1991). In Rolf's definition of tradition there must be at least three generations, with the second generation transferring the knowledge from the older generation to the new generation. The generations do not have to be biological; in a learning situation for PhD students, a new generation can be added within five years (ibid., 148).

According to Planke, a tradition is a fairly linear system but there is also room for change. Knowledge can be refined and developed within the tradition. Planke states that: "As long as the new generation's knowledge development and interpretation activity take place within the tradition and with their masters as examples, it is only an adaptation and adjustment of the tradition" (1991, 333, my translation). I think that the problem is to

establish a consensus of what we mean by *within the tradition*. Planke claims that only the tradition bearers can define what is within the tradition; it cannot be defined from the outside (ibid., 337–38). With this definition of a tradition's boundary it is easy to examine whether something is within the tradition or not, but there are obvious logical problems with this definition as the tradition bearers then, in a circular manner, must define themselves as being a part of the tradition.

The nature of traditions is also discussed by Almevik (2014). He finds that tradition is rarely static as it is recreated and adapted by new generations. Almevik raises the question of the extent to which the inner logic of a tradition can change without causing a collapse or break of the tradition. Like Planke, Almevik claims that it is only the tradition bearers who can define how much change is possible within the tradition (ibid., 10). Almevik also addresses the fact that there are craft traditions that have been reconstructed to meet the demand of building conservation (ibid., 12–13).

It is tempting to romanticise and depict traditional boat building as an unbroken tradition of intangible heritage where knowledge and skills are handed over from master to apprentice. There is, of course, a theoretical possibility that a master will transfer all of his or her knowledge to the apprentice. In practice, however, the apprentice never becomes an exact copy of the master. The new craftsman develops his or her own skills and personal style.

Influences from other masters and from other geographic areas influence the apprentice, as well as impressions from existing artefacts and tools produced and used in the past. From this point of view a craft tradition must be defined as a process. The craftspeople are the actors that uphold this process. The boat-building tradition is a slow-

changing process, where tradition can develop, pick up elements from other craft traditions, and possibly even regain knowledge stored in material artefacts from the past.

Rolf (1991, 148–50) presents the idea that there is a distinction between strong and weak traditions, where the strong traditions have a social structure that controls the knowledge transfer from generation to generation, like a guild. Rolf's division into strong and weak traditions does not really focus on the tradition's strength when it comes to being resilient to changes in the *umwelt*, the surrounding society. These changes can occur due to technical development or a reduction in the demand of the produced products.

I would like to suggest a slightly different approach to the definition of craft traditions as strong or weak. I claim that a craft tradition is strong when it influences other craft traditions and is not in need of change; it is strong when it can be considered to have reached a (temporary) perfection and the demand of the produced artefact is high. In contrast to Rolf, I claim that the distinction between strong and weak craft traditions is not all about social structure of the knowledge transfer. An example of a strong boat-building tradition was the local tradition of building Oselvar boats in the late nineteenth and early twentieth centuries (Planke 2001, 143–54). In comparison to boat-building traditions of the Stockholm archipelago in the same era, the social structure of the craft tradition was similar, but the Oselvar tradition proved to be strong while the Stockholm archipelago tradition was weaker and less resilient to technical development. The Oselvar boats were built in the Norwegian parish Os but were also demanded by and sold to other areas including Sweden, thereby also influencing other boat-building traditions. The boat type was

very successful throughout this era and there was no need for major changes within this craft tradition. The changes that were made were minor and mainly aimed to make the production a little more efficient. In a strong tradition such as this, where there is no need for change, the knowledge transfer is consequently almost linear. This strong tradition does not need to experiment with changes in shape, and there is no need to imitate artefacts from the past or from other regions when the demand of the existing craft is quite sufficient. In the latter half of the twentieth century, the demand for Oselvar boats decreased and the boat builders became older and fewer in number. The tradition was no longer as strong as it used to be, and the situation of business rivalry changed. In the days when the tradition was strong, the exchange of knowledge between the different boat-building families was restricted to keep the advantages of traded skills within the family, but when the tradition became weaker the masters became less restrictive in sharing their knowledge with others. It is a reasonable claim that a tradition which is strong in terms of high demand and temporary perfection is a fairly linear system in comparison to a weak tradition. When a craft tradition is weakened, those who practise the craft need to adapt in order to meet new demands or develop their products. These adaptations can be influenced by other regional traditions or by studies of past traditions. While the study of artefacts from the past and from other regions does not influence strong traditions significantly, it is a possible way to revitalise or develop a weak craft tradition. Another logical consequence is that strong traditions, in this notion, influence weaker traditions.



**Figure 2:** Documentation of a boat using traditional methods which use a plumb line and a tape measure. Photograph by Fredrik Leijonhufvud.

## DOCUMENTATION OF BOATS

The boats that are subject to documentation are often kept in places where the long-term preservation of the boats is endangered. The purpose of the documentation work is to safeguard the information that the boat can reveal. This can include information about the boat's shape and technical properties, but also about the building process, the use of the boat, and its local and historical context. An artefact—in this case a boat—contains information about craft traditions and other aspects of past cultures. The documentation aims to preserve knowledge and skills that can be used in the future for reconstruction of building processes, and, of course, the physical reconstruction of the boat. There have been attempts to create manuals for documentation of boats (Anderson 1988; Kentley, Stephens and Heighton 2007) but they lack the modern digital methods to 3D-scan the boat, and these methods impact on the documentation process. The manuals also tend to focus on the technical properties of the boat and not on the experience and context. Some of the manuals focus on documentation

for reconstruction, and some focus on restoration. Creating fixed routines, guidelines, and pro forma documents can have an agency on the process of recording (Yarrow 2008). This should be taken into consideration in all routines of documentation. In Yarrow's example, he focuses on how archaeological context sheets influence the outcome of the documentation of sites (ibid., 130–32).

Traditional measuring methods without modern 3D technology are typically performed with pen, paper, plumb line, and tape measure (Figure 2). The sketches and measures taken in the fieldwork are used to produce the drawings. The technical drawing of the hull's shape is referred to as a lines plan. The traditional measuring methods also include photography and written notes on dimensions, fastenings, wood species, and other properties.

The concept of *forensic conservation* was introduced by Weaver (1995) and the *forensic perspective* on documentation has been used by Almevik in his analysis of buildings as a source of knowledge (2012). The forensic perspective is a way to acquire as much information as possible from an object,

using a palette of methods and perspectives in parallel. As the name implies, the perspective examines a place or an artefact, and attempts to find information about the artefact but also attempts to acquire a deeper understanding of why the object is in its present state. A forensic perspective can be used to trace changes and create a timeline of changes (Almevik 2012, 309). In my documentation of boats, I have tried to apply the forensic perspective, using different methods and perspectives. Some of the methods I have used will be presented in the following text.

In recent documentations, I have used digital photogrammetry as one of the methods within the forensic perspective. Digital photogrammetry, or structure-from-motion, is a method for recording the measurements and geometry of an object using a number of photographs of the object. The 2D images are processed by computers to generate a digital 3D model. The photogrammetry process starts with photographing the boat, before the photographs are exported to a photogrammetry software to create the 3D model (Leijonhufvud 2019).

In using photogrammetry in documentation projects, I have found that even if the recording of the boat's shape can be done in a very efficient manner using digital technology, it is still valuable to spend time with the artefact and gradually get to know it (Leijonhufvud 2019). The effects and consequences of how much time you spend and how you observe the artefact have been described by Bresler in relation to experiencing and studying art. She emphasises, above all, learning how to structure and organise her thinking and making sure it is concentrated over a long period of time (Bresler 2006). When you approach a boat you often have to tidy up and remove things that are obstacles to the documentation work. Some-

times you even have to reassemble a boat that has disintegrated, or straighten up a hull that has lost some of its shape. I have found that these processes, involving tactile contact with the boat, are very helpful for revealing specific details of the boat or making new interpretations.

Beyond all of the measured data, the character of the boat must also be studied. The character is a description of the entire artefact, an indication of the dominant properties as they are experienced by the researcher (Almevik 2012, 65). The character of the artefact must not be lost in the documentation process. Almevik suggests that parts of the documentation could have the format of a report which incorporates these impressions and expressions of the artefact's character (ibid., 75). In my own documentation practice, I have tested the creation and use of a digital questionnaire with a mix of multiple-choice answers and free-form text fields, to encourage the reportage format. An example of such a question is: *What is your first impression of the boat and the place where the documentation is performed?* Another method that proved to be good is the use of video to record short documentation stories (Figure 3). My experience is that the video recording helps me to achieve an awareness in the documentation. With awareness I mean that when I recount the documentation in words it becomes clearer and more obvious to me what I am doing and why I reach certain conclusions. The short video story works like a notebook of the documentation with focus on details of the artefact and explicit comments on the documentation process, experiences, and interpretations. Molander stresses the importance of awareness in a learning situation (1996 257). He claims that in the process of gaining *knowledge-in-action* you have to use *awareness-in-action* (1996, 237–43). When recording a short



**Figure 3:** Example of documentation video reportage. Click the image to see the video if reading a pdf version, scan the code to the right or go to: [https://youtu.be/ODTD\\_5p9HtY](https://youtu.be/ODTD_5p9HtY) to reach the video. The audio is in Swedish, but there is a written summary in English if you follow the video link. Video and photograph by Fredrik Leijonhufvud.



video story of the documentation, I have to focus my awareness on the things that I have found particularly interesting and new interpretations that I have made.

Performing a documentation is an act that interferes with the artefact. This interference can be physical, for example where a boat is so disintegrated that it needs to be reassembled to record the boat's shape. An alternative approach could be to leave the boat in its disintegrated state, but then the documentation does not say much about the boat's shape and information about the boat's prime function is consequently lost. Considerations about physical interventions of buildings, monuments, and art and historical artefacts have been central to the field of conservation since it was established

(Muñoz Viñas 2005; Jokilehto 2007; Richmond and Bracker 2009). The documentation of an artefact can be very gentle in a physical sense, and photogrammetry is an example of a method that can be very cautious. In many cases, photogrammetric measuring can be performed without touching or moving the artefact. But even if there is no physical interference, the artefact will be affected by the documentation. Gartski (2017) is aware of this effect and gives the example that 3D models generated from the original are not the same as the original artefact; they are additions to the narratives of the original artefact. According to Gartski, these narratives can affect the original aura of the artefact as they become additions to it.

## THE CRAFTSPERSON-RESEARCHER

In the following section I will share an example of how craftspeople interpret artefacts in contrast to people who are unfamiliar with the craft tradition in question. I was mentoring a group of boat-building students through the documentation of a boat from the nineteenth century. Bypassing visitors of the open-air museum where the boat was displayed showed little or no interest in this decayed wreck. We studied the boat thoroughly and I guided the students with my knowledge as a boat builder. By pointing out specific details, such as hewed planing, natural grown knees, and many other details, the students could gradually observe the boat from a new perspective and together we were impressed by the skills of the boat's builder. The students were surprised to find that they gradually perceived the boat in a totally different way than when they had first approached it. This particular boat had certain elements that are rare or even extinct in the local boat-building tradition. For a boat builder of a related tradition in which there are many similarities to the tradition in which the observed boat was built, it is still possible to interpret these elements, record them, and reproduce them. But for people that were unfamiliar with the boat building tradition, like the bypassing tourists, the boat was obviously quite mediocre. The boat-building students had some knowledge in similar craft traditions and could learn from the boat with some guidance. After our session, the bypassing tourists still interpreted the boat as a mediocre, decayed wreck, not impressing them in size or appearance. The boat building students, on the other hand, had changed their own interpretations of the boat with the help of their teacher's boat-building knowledge. When I asked the students which of the boats in the museum they liked the most, some of them had changed

opinions during the excursion; with gained knowledge, they became aware of certain qualities and were able to see and interpret relevant details.

Practical boat-building skills are not necessary in performing a basic recording of a boat's shape. A boat designer or, indeed, anyone could record the basic shape with good instructions and some practice. The part where a boat builder is really needed is in the interpretation of construction details and the interpretation of the shape. However, in the documentation of boats, it is desirable to use as many applicable skills as possible. Boat-building skills are vital to interpret the boat, but sailing skills are also necessary to understand how the boat's shape interacts with the surrounding water. Academic research skills may be needed too.

Documentation of boats and other artefacts produced by skilled craftspeople must not be performed without consideration of the skills used to produce these artefacts. When it comes to the study of skills, Ingold (2011) promotes that the research should be performed with a first-person perspective by a craftsperson. "The study of skill demands a perspective which situates the practitioner, right from the start, in a context of active engagement with the constituents of his or her surroundings. I call this the 'dwelling perspective'" (Ingold 2011, 5).

Norwegian craftspeople and scholar Godal has carried out comprehensive studies of traditional craft, including boat building and carpentry. When presenting results from a study of boats and boat builders in Nordmøre (Godal 1995), he advises the researcher to approach the field of study with an open mind, without preconceived notions or hypotheses, using an inductive research method. On the other hand, he also thinks that the researcher has to learn the craft to a fairly advanced level in order to be able to understand it. Combining these

two approaches in the research can be difficult as an understanding of the craft per se leads to preconceived notions (Durling and Niedderer 2007; Seiler in this anthology; Westerlund in this anthology). For Godal's method of research to be rigorous, the craftsperson/researcher has to be aware of, and stress, his/her subjectivity. At the same time, one of the advantages of being a craftsperson and carrying out research on one's own craft is that the researcher is in direct contact with the field of study.

All archaeological research shows that physical artefacts can be sources of knowledge, but to what extent can a boat be a source of past craft knowledge, and can this knowledge be situated within a tradition? In an article by Godal (1996), he focuses on how artefacts can be interpreted even if there are no tradition bearers still alive that have the answer to the interpretation. The case studies in Godal's (1996) article describe the interpretation of different types of oars. Godal claims that artefacts contain lots of information, but to be able to interpret this information well, one must be able to ask the right questions of the artefact. The ability to ask these questions requires the researcher to have two kinds of knowledge: theoretical insights and practical experience. The theoretical insights relate not only to academic knowledge but also to theory within the craft, including methods, material, and design. A person that has spent a lot of time rowing or making oars is better suited to interpreting and revealing the knowledge of an oar, for example (ibid., 55). Godal uses the concept *handlingsburen kunskap* (action-based knowledge), which requires live knowledge transfer and, therefore, tradition bearers. A person with theoretical insights does not necessarily know how to row a boat and a person with practical experience does not require the knowledge of wood cellular structure, mechanical principles,

or physiology (ibid., 56). Godal's conclusion is that an artefact like an oar can be best interpreted by a person with both theoretical insights and practical experience; an artefact created by a craftsperson bears the heritage of the craftsperson and the culture in which the person lived (ibid., 59).

My interpretation of Godal's ideas is that a person can be suited to interpret an artefact from a craft perspective if the person has relevant theoretical insights and practical experience from craft traditions that are closely related to the local tradition from which the artefact originates. The researcher does not have to be a tradition bearer of an identical tradition to be able to ask the right questions of the artefact.

In my work as a boat builder, recording and building replicas of boats, I often find boats from local variations of the Nordic boat-building tradition where there are no longer any boat builders alive who carry the practical experience and knowledge of how these particular boats were built. According to Godal's conclusions, we can still interpret knowledge from these boats if we have knowledge and experience of related traditional boat building and the handling of traditional boats. A good method is to gather a group of boat builders, all with knowledge of building similar boats, and discuss the interpretation of the boat collectively on site. Another option is to work from an interdisciplinary approach with a group of experts from different fields of expertise, such as archaeology, conservation, craft, art, design, and natural science. Good examples can be found in Botwid (this anthology) and Paasche (2010). Paasche performs an archaeological analysis of the Tune ship in cooperation with boat builders and other experts.

An example of a craftsperson's interpretation of an artefact is illustrated in Figure 4. The picture



**Figure 4:** This grown knee can reveal how another part of the boat has been repaired. Photograph by Fredrik Leijonhufvud.

shows details of a nineteenth-century boat. In the marked area there is a grown oak knee made from a natural bend in a tree.

To make an interpretation of this knee, as a part that has been attached to a thwart that is now missing, requires some basic understanding of traditional boat construction. A boat-building student, a marine archaeologist, or a person with experience of using similar boats would most probably comprehend the fact that a thwart is missing here. To understand why the grown knee is cut flat on the top is a bit more difficult; knowledge of similar boat-building and restoration processes is helpful for this interpretation. The grown knee on the other side of this boat is missing, so it is impossible to see whether it had the same flat top. In most cases, a flat surface would indicate that there has been another piece of wood fitted on top of the knee, but that is not the case here. From a boat builder's perspective, it is possible to reveal the fact that this has not originally been cut flat, but has been cut in a later restoration of the boat when a

piece of the outside gunwale (the upper edge of the boat, not visible in this picture) has been replaced. This replacement of the gunwale is also confirmed by the fact that there is a set of old nail holes near the existing nails, close to the top of the planking. One of these nail holes is situated directly above the grown knee. For the craftsman replacing this part of the gunwale, it was impossible to loosen this riveted nail that was hidden beneath the grown knee. An easy way to access the nail was to cut off the top of the knee leaving it with a flat top after the restoration work. A person without the necessary boat-building experience would probably not be able to make these conclusions alone—a craftsman is needed to reveal this. This detail of the boat also indicates that the boat has been chafed from use and was considered to be worth the effort of restoration, even though the chafed piece of wood no longer exists. Interpretation of several details in this manner adds information to the interpretation and understanding of the whole boat.

## DOCUMENTATION OF ARTEFACTS TO UNDERSTAND OR RECONSTRUCT TRADITION

When the tradition is broken, we can hardly define it as a tradition anymore. Regardless of whether we call it craft tradition or not, there are historical evidences proving that people in ancient cultures studied artefacts to gain knowledge from the past (Kelly-Buccellati 2012). The concept of the *time-gap apprenticeship* (ibid.) is a knowledge transfer without the assistance of living tradition bearers, where artefacts themselves have been used to revive an extinct craft. Kelly-Buccellati's examples are from Mesopotamian ceramics. She writes that: "Time gap apprenticeship is not a transfer of knowledge from one generation to the next but rather an acquisition of that knowledge by a later craftsman based on earlier examples" (ibid., 210). The artisans in Kelly-Buccellati's study have not just studied artefacts from past masters and copied them; they have shared the same basic skills and knowledge of craft with their ancestors. From these skills, they have been able to revitalise production of artefacts in the contemporary craft tradition that shares similarities with the skills of their ancestors. For a craft person to be able to interpret artefacts in this way, both the explicit and implicit information from the study of the artefact must be deciphered (ibid., 212). Kelly-Buccellati's conclusion is that even though we do not know how the apprenticeship system worked in ancient Mesopotamia, it is obvious that artefacts made by their ancestors served as sources of knowledge. The interest in the craft traditions of past times indicates an appreciation of values that were shared over a long time (ibid., 221).

According to Godal (1996), the person who performs the interpretation has to have both theo-

retical insights and practical experience. Trying to position myself in Godal's theory, my theoretical insights include historical knowledge about boat types and their geographical spread; knowledge of the physical properties of wood; and knowledge of hydrodynamics. My practical experience is my experience building and using boats. The theoretical insights and practical experience that I have achieved are not exactly the same as in the tradition in which the boat was built, but there are enough similarities to enhance the interpretation of the artefact.

A similar idea is presented by Rolf, that an artefact can itself work as a tradition bearer, but only if its cultural significance is preserved, meaning that there are still people in the society who have the knowledge needed to understand the artefacts (1991, 141–42). In my case, I think that much of the cultural significance of a boat is preserved, meaning that a boat builder is able to interpret and learn a lot from it, even though the master who built the boat is gone.

To be able to reach a good interpretation of a boat built in an older tradition and by a boat builder with a unique set of skills, experiences, and understanding, you have to be aware of your own tradition. Without the awareness of your own craft tradition and its impact on the interpretation of the artefact, there is a risk that the interpretation is incorrect. This awareness of today's traditional craft prejudice in reconstruction of craft is analysed by Seiler (2020) and Melin (2017). They both agree that craft skill of today is useful for interpreting the past, but stress the importance of the craftsman-researcher deconstructing their own contemporary prejudice of craft in order to understand historical craft (Melin 2017; Seiler 2020, and in this anthology).

In my career, I have also seen examples of misinterpretations when old boats have been do-



**Figure 5 A–F:** Two nineteenth-century boats from the Stockholm archipelago, interpreted in reconstructions, but lacking the characteristic shape of the stem. A–B show the original boats, C–D show the line plans from the documentations. E–F show the replicas. Images by Fredrik Leijonhufvud.

cumented and copied, but also slightly adapted to aesthetic values of contemporary boat-building traditions. Fairing the lines and curves of a boat is a central skill of boat building. Fairness in a boat means that the curves of the boat are smooth. When I documented nineteenth-century boats from the Stockholm archipelago using digital photogrammetry, the 3D model showed that the curve of the stem had an unfairness that earlier documentations and reconstructions had made fair and smooth (Figure 5). The computer and software that generated the model do not have any preconceived ideas of the aesthetics of contemporary boat traditions and so they are able to generate a true 3D model from the collected data without such interpretation. This can also be a problem as the computer lacks common sense and can thus allow, or even create, mistakes that are obvious to a human being.

Studying a similar boat from the same area and era showed that this boat also had the same detail in the stem curve that had been ignored in yet another documentation. Replicas have been built of these two boats—very beautiful replicas I would say—but they lack the characteristic shape of the stem that seems to be an intentional aspect of the boat's original craft tradition. It is difficult and maybe even impossible to imagine and understand the craftsman from the past, but that is still what we try to reach when we document artefacts in order to reconstruct knowledge and skills. A good practice for documentation is to trust the artefacts and reflect on how your personal tradition, experiences, and prior understanding all affect the interpretation. This is also the experience of Planke's reconstruction of a boat from archaeological fragments (2011). Planke explains how the interpretation and reconstruction can reach various results depending on perspectives and contemporary traditional ideas

on how a boat should look and what a traditional boat is if we do not strictly follow the artefacts and their narrative.

In some cases, the traditional craft can harmonise better with the modern digital documentation than with some of the manual measuring methods. The boat builder's abstraction of the boat, and the creative process in which the boat builder creates a boat, is one distinct dividing line between the traditional boat building of past times and the modern boat building in wood. Like a sculptor, the traditional boat builder creates the boat freehand from certain styles and according to the customer's demands. Tempte's description of a particular boat builder, who had an image of the whole of the boat in his mind during his building process, is a very accurate representation of what the traditional boat builders' abstraction is about (Tempte 1982, 87). In today's modern boat-building process there is a gap between the boat designer and the boat builder. In my role as a teacher, I have found that many boat-building students have problems reading the boat plans and visualising the shape of the boat as specified in the 2D plans. The use of digital 3D models could possibly bridge this gap between the designer's plans and the boat builder's abstraction (Figure 6). A digital 3D model could actually help the boat builder to regain the past master boat builder's sense of control and to gain a better overview of the boat's geometry. In that way, a digital 3D model could be better suited for knowledge transfer of traditional boat-building abstractions than a conventional lines plan. Based on these premises, a digital documentation could be well suited for reconstruction of boat-building traditions.

Documentation often has a tendency to academize the craft tradition and neglect the craft processes and skills. The process of documentation



**Figure 6:** A 3D model of a nineteenth-century boat from the Stockholm archipelago. Click the image to see the video if reading a pdf version, scan the code to the right or go to: <https://skfb.ly/6TLWV>. Model by Fredrik Leijonhufvud.



puts the artefact in a new context that is hardly the one it was originally intended for. From being products of a vital, locally based tradition without boat plans, they become part of an academic context of theoretical analysis and digital media. In the attempt to safeguard cultural heritage, it becomes a paradox that the documented boats risk losing some of their original authenticity when they are subject to 3D modelling, blueprints, and descriptive texts. An awareness of this risk is needed when the documentation is made to assist reconstruction. When building a replica of a boat, having this awareness can guide the builder in their material and procedural reconstruction, and can help them

to decide whether to build with the same technical properties and measures as used for the original boat, or whether to focus on building with the same methods as those used when the boat was originally built. This is sometimes taken into consideration, but my experience is that boat reconstructions often focus on the material. To perform a documentation of a boat that can be used for both material and procedural reconstruction, it is important to be aware of the fact that the narrative, authenticity, and original context is affected by the documentation process.

## THE LIMITATIONS OF ARTEFACTS AS SOURCES OF CRAFT KNOWLEDGE

There are, of course, limitations of artefacts' abilities to serve as craft tradition bearers. Sennett (2009) illustrates this problem with the example of Stradivarius violins. When Antonio Stradivari died, his family and colleagues, working in the same workshop, were not able to replicate the best violins. Since then, Stradivari's craft has never been successfully recreated, and present-day modern technology of analysing the technical properties of the violins has not been able to solve the mystery of his perfection (ibid., 74–77).

In experimental archaeology, artefacts from the past are being replicated and the making processes are tested in order to gain knowledge about historic cultures. Experimental archaeology is an established field of research concerned with material culture as sources of information from the past, and there are some good examples of studies that include the aspects of craft skill and knowledge in the reconstructions (Schenck 2015; Kuijpers 2019). People of past and present societies have studied and replicated old artefacts. The master-apprentice system should transfer knowledge from the master to the apprentice, but as stated earlier, in practice not all knowledge is transferred. Some aspects of the craft tradition, often minor aspects, will be lost in the transition process over time. These aspects may later be revitalised as the old artefacts are physical manifestations of these practices, and craftspeople have the general knowledge of the craft that is required to understand and replicate these aspects. The learning craftsperson develops his/her own skills, and a source of knowledge is the interpretation of artefacts from the past and from other geographical areas.

The skills and knowledge of the craftsperson provide good opportunities to interpret parallel

craft traditions in other regions and to interpret the knowledge and skills that can be discerned from old artefacts. Recreation of historical artefacts and skills are today well-established fields of study within experimental archaeology and the emerging field of craft science. However, there is no reason to believe that interpretation and recreation of old artefacts is a new phenomenon. Craftspeople throughout history must have observed and interpreted old artefacts created by bygone masters. These processes of reclaiming knowledge from artefacts can be labelled as experimental archaeology or time-gap apprenticeship, or they might just go on as an unlabelled part of a universal system of how people in societies learn things. Boats and tools are artefacts that, in the case of boat building, can be regarded as containers of forgotten knowledge. The knowledge of these artefacts can be deciphered by craftspeople and added to the craftsperson's knowledge. Integrating this into the concept of craft tradition is a long and ever-changing process where the craftsperson acquires skills from their teacher, revitalises forgotten skills, and adds new skills from parallel traditions. The label of 'documentation' of boats indicates that documentation is a formal process of collecting data for a museum collection, but if this process was instead referred to as 'learning from old boats,' this label would indicate that it is a part of the boat builder's traditional learning process.

## SUMMARY

*Craft tradition* is a process where knowledge is handed over from master to apprentice, but there is also room for change within this process. Knowledge and skills can be added to the craft tradition from parallel traditions and even from the study of artefacts from the past. *Documentation*, the recording and interpretation of artefacts, is a process where

knowledge and skills from past craft traditions can be derived. The artefacts can witness past cultures and traditions. The researchers who perform this kind of documentation need to have both theoretical insights and practical experience. A craftsperson can often provide the practical experience needed to better understand and interpret an artefact made within a craft tradition. That is why the *documentation* of artefacts ideally should be performed in cooperation with craftspeople or by a craftsperson. The craftsperson's role in the research is then to interpret the *craft traditions* of the past and how they relate to the *craft traditions* of the present. However, even if the *craftsperson-researcher* is highly skilled, artefacts have limitations as sources of craft knowledge, and awareness of this fact should be present in the documentation process.

When documentation from the perspective of the craftsperson is put into the field of craft sciences, the tangible heritage is a source of information that can be converted into new craft skills or revitalised craft traditions. In this chapter I have described how the craft perspective in the documentation process presents new opportunities to interpret historical artefacts and recover craft traditions from the past, and how it can enrich contemporary craft tradition.

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