Sanat&Tasarım Dergisi, 13 (2), 2023: 593-607
DOI: 10.20488/sanattasarim.1403889

TRANSFERRING EXAMPLES OF IRONWORK PRODUCTS IN SAFRANBOLU OLD BAZAAR REGION TO FUTURE GENERATIONS THROUGH A DIGITAL LIBRARY*

Asst. Prof. Dr. Ege KAYA KÖSE**
Res. Asst. Halime GÖZLÜKAYA***

ABSTRACT

This study presents an ongoing research project aimed at contributing to the sustainability of local crafts through design. By approaching the sustainability of craft production knowledge between the designer and the craftsman from a unique perspective, the study generates knowledge applicable in industrial production workshops, particularly in cases where implicit knowledge cannot be easily transferred. Also, the research seeks answers to questions regarding the transfer of the knowledge of ironworking, which is the last active guild in Safranbolu, to future generations through designs or areas where designs can contribute. The study was carried out as a scientific research project in cooperation with Karabuk University and Safranbolu ironmasters. The research process commenced with background research on Safranbolu ironworks and continued with the determination of the study area with examples of ironwork. In the application step, three ironwork samples determined after the craftsman interviews were modelled using a three-dimensional modelling program. These are examples of door knocker, door ring, door latch. The models were digitally archived.

Keywords: Craft, Cultural sustainability, Digital library, Safranbolu, Ironwork.

Received Date: 19.12.2022 Accepted Date: 30.05.2023 Article Types: Research Article

*This article has been prepared within the scope of the Scientific Research Project of Karabuk University/ Support Project KBÜBAP-22-DS-045/ "Transferring The Production Knowledge of Ironwork Products in Safranbolu Old Bazaar Region to Future Generations Through a Digital Library".
**Ankara Yıldırım Beyazıt University, Faculty of Architecture and Fine Arts, Department of Industrial Design, egekayakose@outlook.com, ORCID:0000-0002-7121-5602
***Istanbul Technical University, Graduate School, Urban and Regional Planning ABD, halimegozlukaya@gmail.com, ORCİD:0000-0002-2138-8628

Sanat&Tasarım Dergisi, 13 (2), 2023: 593-607
DOI: 10.20488/sanattasarim.1403889

SAFRANBOLU ESKİÇARŞI BÖLGESİNDE DEMİRCİLİK ZANAATI ÖRNEKLERİNİN DİJİTAL KÜTÜPHANE İLE GELECEK NESİLLERE AKTARILMASI*

Dr. Öğr. Üyesi Ege KAYA KÖSE**
Arş. Gör. Halime GÖZLÜKAYA***

ÖZET

Bu makale, tasarım aracılığıyla yerel zanaat bilgisinin sürdürülebilirliğine katkıda bulunmak amacıyla devam eden bir araştırma projesini sunmaktadır. Çalışma tasarımcı ve zanaatkar arasında zanaat üretim bilgisinin sürdürülebilmesini bir başka çerçeveden ele alarak, örtük bilginin aktarılamadığı durumlarda endüstriyel üretim atölyelerinde geliştirilebilecek bir bilgi yaratmayı ele almaktadır. Araştırma Safranbolu'da günümüzde aktif olarak devam eden son lonca olan demir işçiliği bilgisinin tasarım aracılığıyla/tasarımın katkıda bulunabileceği alanlarda gelecek nesillere nasıl aktarabileceği sorusuna yanıt aramaktadır. Çalışma bilimsel bir araştırma projesi olarak Karabük Üniversitesi ve Safranbolu demir ustaları iş birliğinde gerçekleştirilmiştir. Araştırma süreci öncelikle Safranbolu demir işçiliğine dair bir geçmiş bilgi araştırmasıyla başlamıştır. Demir işçiliği örnekleriyle çalışma sahasının belirlenmesiyle devam etmiştir. Uygulama adımında üç boyutlu modelleme programı kullanılarak zanaatkar görüşmeleri sonrasında belirlenmiş üç demir işçiliği örneği modellenmiştir. Bunlar kapı tokmağı, kapı halkası ve kapı mandalı örnekleridir. Modeller dijital olarak arşivlenmiştir.

Anahtar Kelimeler: Zanaat, Kültürel sürdürülebilirlik, Dijital kütüphane, Safranbolu, Demir işçiliği.

Geliş Tarihi: 19.12.2022 Kabul Tarihi: 30.05.2023 Makale Türü: Araştırma Makalesi

*Bu makale, Karabük Üniversitesi/ Destek Projesi KBÜBAP-22-DS-045/"Safranbolu Eskiçarşı Bölgesinde Demircilik Zanaatı Ürünü Nesnelerinin Üretim Bilgisinin Dijital Kütüphane ile Gelecek Nesillere Aktarılması" başlıklı Bilimsel Araştırma Projesi kapsamında hazırlanmıştır.
**Ankara Yıldırım Beyazıt Üniversitesi, Mimarlık ve Güzel Sanatlar Fakültesi, Endüstriyel Tasarım Bölümü, egekayakose@outlook.com, ORCID: 0000-0002-7121-5602
***İstanbul Teknik Üniversitesi Lisansüstü Eğitim Enstitüsü, Şehir ve Bölge Planlama ABD, Ayazaga/ISTANBUL halimegozlukaya@gmail.com, ORCID: 0000-0002-2138-8628

1. INTRODUCTION

Craft is a form of production dependent on handcraft, in which traditional knowledge and experience are transferred. Craftsmanship is based entirely on a highly developed skill and requires experience (Sennett, 2008: 33). Howard Becker (1978: 864) defines craft as a form of skilled activity that involves the creation or production of objects by individuals who possess specialized knowledge, expertise, and techniques within a particular domain. The craftsman possesses control or mastery over both the means of production (tools, materials, etc.) and the labor process (the methods and techniques employed in creating a product) (Baudrillard, 2011: 88). According to Risatti (2007: 14), the words "craft" and "craftsmanship" refer to the quality of making. Moreover, he assumes that the source of the making quality is the skilled hands of the craftsman. Knowledge and skills which are the source of the making quality are transferred from one generation to the next (from master to apprentice) through practice. Sennett has stated to describe the craftsman:

"The Craftsman summons an immediate image. Peering through a window into a carpenter's shop, you see inside an elderly man surrounded by his apprentices and his tools. Order reigns within, parts of chairs are clamped neatly together, the fresh smell of wood shavings fills the room, the carpenter bends over his bench to make a fine incision for marquetry. The shop is menaced by a furniture factory down the road" (Sennett, 2008: 19).

The existence of the craftsman — also defined by Sennett in his book "Craftsman"— is on the verge of extinction as the craft-based production-consumption systems started to decline after industrialisation and the industrial products produced on national and international scale affected a massive part of the market (Reubens, 2015). With industrialisation, the active role of machines in the production process renders the handicraft needed during the use of production tools unqualified, elevates mental labour and puts it ahead of manual labour (Çelikel, 2015: 17). Pre-industrial craftsmen were skilled people who used locally available materials to produce products and generate income. However, the demand for traditional craftsmanship decreased rapidly as similar products produced using new or alternative materials were introduced to the market (Tung, 2012: 71).

Communities with traditional crafts pass on their skills from generation to generation by constantly repeating practices (Sennett, 2008: 55-57). In the process of craftsmanship, which can be defined as a habit of action (Adamson, 2007: 4), practical knowledge such as craft knowledge puts "making" or "doing" as its central activity. This knowledge that can be achieved through the experience of senses cannot be described easily in language, but often can be demonstrated through example and comparison (Dormer, 1994: 40-42). Polanyi (1966: X) refers to this knowledge as "tacit knowledge". If this knowledge obtained through training and practice is repeated over and over, the rhythm of skill development becomes ritualized (Sennett, 2008: 73; Sennett, 2012: 247-249).

The presentation of the apprentice is mainly focused on imitation, and the skills are acquired by abiding by the instructions thus given by the master (Sennett, 2008: 82). Craftsmen who continue their production traditionally have a producing skill once passed down to them by their masters. According to Dormer (1994), there is a risk of loss of knowledge if practitioners or masters fail to convey their knowledge to the next generation. Reconstructing lost information can be difficult and time-consuming. This information may be irretrievably lost.

Brown (2014: 6), argued that craft, defined by Adamson (2007) as "an approach, an attitude

or an action... a way of doing things", is also a process and can be underpinned by particular ways of thinking which are constructed in response to an array of cultural, economic, political and societal frameworks as well as physical forces which form the context for craft. Chatterjee (2016: 5) also states that artisans "produce goods and services that have social and cultural meaning". Borges (2015) argues that craft not only powerfully represents materials and techniques but also transmits collective values between generations. However, in cases where collective values and craft as a way of thinking cannot be transmitted to future generations with the end of the master-apprentice relationship, objects produced by craftsmen in the past need to be preserved. If the craft object or the knowledge of craft production is not passed on to future generations, and also all these ways of thinking and object will disappear. In the case of Safranbolu, where collective values cannot be passed on due to the disappearance of the craft after the last craftsman retired, necessitating the lack of apprentices to train, it becomes crucial to ensure the preservation of the material or technique for the future

This study presents a case study on ironwork in the district of Safranbolu in order to help transfer local craft samples to future generations. The research seeks to answer the questions of future generations regarding the transfer of ironworking knowledge, the last active guild in Safranbolu, through design or areas where design can contribute. At the same time, based on the idea that the tacit knowledge of the craftsman is transferred to the generations through trained apprentices, the study searches for design opportunities for the cases where ironwork craftsmen cannot transfer their knowledge to future generations in Safranbolu.

In the study, the current situation of the last guild ironwork craft, which continues to be actively produced in Safranbolu, has been mentioned in detail. In line with the information obtained from the interviews with iron craftsmen, the influential role of design in the sustainability of producing knowledge has been emphasised. This study focuses on traditional handicrafts, which are based on local knowledge and include practices accumulated over time, as well as the knowledge that is a part of our cultural heritage and needs to be secured (Tung, 2012:71) through archival preservation, unlike the approaches in the literature (Nugraha, 2010:20) focused on transforming, developing, and thus making the tradition sustainable with new product development. This study presents a process that can be adapted to all ironwork samples found in Safranbolu traditional houses. Due to certain limitations, three different examples were focused on in the study. However, in future studies on the determined examples, the scope can be expanded by considering the ironwork samples found in all Safranbolu traditional houses. Furthermore, it can be considered an original study in terms of guiding other studies to be conducted on the traditional house ironwork samples, which vary according to the person using the house as they are produced mainly.

2. BACKGROUND: IRONWORKING IN SAFRANBOLU

Due to its geographical location, Safranbolu has Due to its geographical location, Safranbolu has been a trade route for decades and has played a vital role in the development of handicrafts. Above all, its economy has remained alive in every age (Dağı and Celik, 2020:29). In the past, production and trade in Safranbolu were carried out with the "guild" system. The system was based on the organisation of the production and trade branches separately, as well as the professional associations (Aksoy and Kus, 1999). Handicrafts have been produced from blacksmithing, coppersmithing-tinning, saddle making, shoemaking etc., for many years in Safranbolu with the guild tradition (Acar, 2006). Guild

organisations separated according to production types can be characterised as an essential element in the social structure (İnce, 1976: 26). In Safranbolu, the locations are separated according to the types of production. The guild tradition was preserved in Safranbolu until the late 1940s (Fersan, 1976: 24). Today, blacksmiths are the only handicraft masters producing crafts actively.

In a study conducted by Alpman and Sezgin (2009: 32), the date of commencement of blacksmithing in Safranbolu was reported to have no definite information, and according to them, the existence of the blacksmithing profession was mentioned in the documents of the 1560s. A local craftsman who started blacksmithing in 1978 stated that blacksmithing was established in the Old Bazaar region of Safranbolu in 1796 and that it is the only bazaar for blacksmithing alive today (Craftsman Interview, 2022a). Craft tradition in Safranbolu, with traditional production carried out for many years, is known to be adversely affected by the industrial developments that took place in the twentieth century.

The job opportunities created by the Iron and Steel Factories, established in 1937 with the industrialisation movement, triggered the problems related to local production in the Safranbolu district (İnce, 1976: 26). With the establishment of heavy industry, Safranbolu experienced a period when the migration to the city accelerated, and the town encountered a diverse, multicultural environment. After the houses evacuated by the Greeks in 1928 were transferred to the local people of Safranbolu, the town's identity began to change when the people who came to work in the heavy industry settled in the town. The town tried to preserve its customs, traditions, and cultural products (Barlas, 2004: 27).

With the increase in the production capacity of the Iron and Steel Factory in the 1950s, the local production tradition faced transformation pressure (İnce, 1976:26). As in all regions of Turkey, the blacksmithing sector in Safranbolu continued effectively until the early 1980s. After all those years, especially with the effect of technological developments, iron supply/demand balances have changed, and the sector is gradually shrinking. This has negatively affected the master-apprentice relationship in the blacksmithing sector, as in every other sector. The interest in the art of blacksmithing has thus decreased (Dağı and Celik, 2020:36). Today, agricultural tools, architectural building elements, decorative products and objects regarding food culture can be shown among the ironwork products in Safranbolu (Kaya Köse and Akbulut, 2018: 21) (Image 1).

Image 1. *Door locks, Rings, Knockers, Gardening tools and various other crafts are found in the blacksmiths' bazaar.*

3. METHODOLOGY

In this section, the methodology designed for conducting the study has been explained briefly. The study consists of two stages. Initially, the literature was reviewed, and the data was obtained accordingly. Then, a preliminary visit was made to the concerned locations. Semi-structured interviews were held with two craftsmen still working in the sector (only one craftsman continues to produce the iron elements on the doors of traditional Safranbolu houses). The interview was regarding traditional craft

practices, production methods, master-apprentice relationships and current working conditions. During these interviews, the ironwork samples of the craftsmen were photographed and recorded. After defining the past and current situations of traditional ironworking in Safranbolu with the data obtained from the literature and interviews with the craftsmen, the data required to determine the application step were evaluated.

In the second stage of the study, an answer was sought to the question regarding the contribution of design to transferring ironwork to future generations in Safranbolu. An application process that can be combined with digital technologies has been planned to sustain local product samples by ensuring the intergenerational transfer of the crafts. In this process, the three-dimensional (3D) samples were modelled using Rhino 7 program and transferred to the digital environment without any alterations and in line with the obtained theoretical information.

4. LITERATURE RESEARCH FINDINGS

4.1. Current Situation of Ironworking in Safranbolu

It is possible to witness the art of blacksmithing on the streets of Safranbolu, where blacksmiths have shown their handicrafts and mastery in many houses, mosques and inns within the historical texture and architecture of Safranbolu (Dağı and Çelik, 2020:31). Even though the content has changed, the continuity of people's needs for iron and iron-related tools has been one of the most important factors in preserving the existence of this craft (Acar, 2011: 35).

According to the interviews conducted by Canbulat (2022: 405) with the craftsmen in the Safranbolu Old Bazaar region, which hosted many crafts in the early 2000s, only the blacksmiths' bazaar was found to be active in those years. In the same research, agriculture,

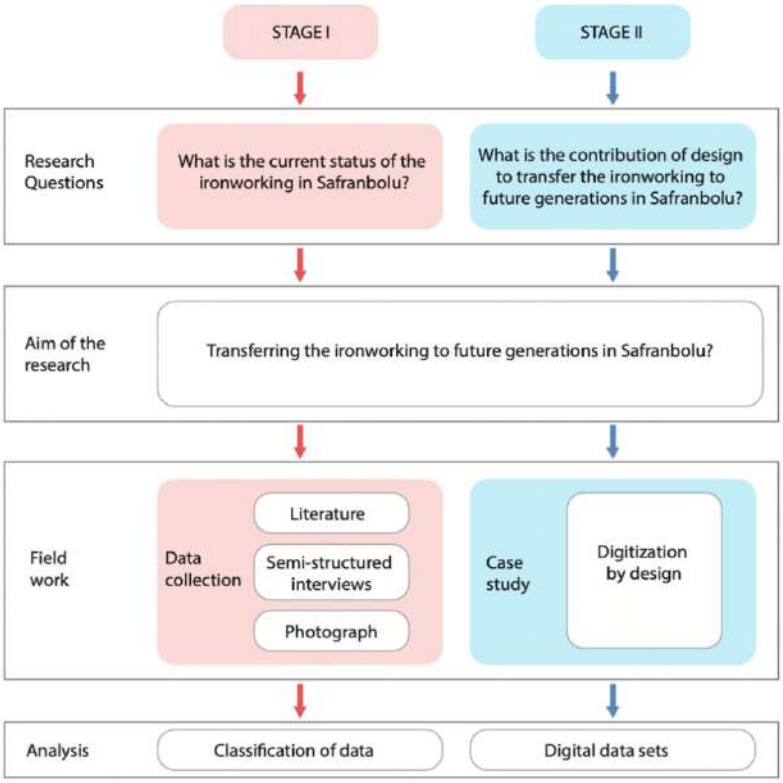


Figure 1. *Methodological plan to be applied in the study.*

restoration works that would never stop in Safranbolu and ironwork products known to be indispensable in the context of tourism were shown as reasons behind the continuity of this art. Based on this research, it can be stated that although the interest in the art of blacksmithing, which has great importance in Safranbolu's historical texture and manifests itself in almost every street and every building, has decreased nowadays, it will always remain as a sector needed for households (Dağı and Çelik, 2020: 37).

Hammer sounds can still be heard in the Blacksmiths' Bazaar today as vigorously as they used to be heard in the past. Blacksmiths are thought to be the luckiest among craftsmen working in the art branches that are about to disappear. Ironmasters have succeeded in providing the transfer of local knowledge until today (Barlas, 2004: 29).

Every apprentice stepping into the shop and resolved in a master-apprentice relationship; dreams of swinging a hammer on the iron heated in the quarry using small bellows like his master or being able to work freely with their pen to design the ornaments that they desire and are influenced by with patience and sensitivity. This profession has been transferred for centuries as a folk cultural heritage from father to son and from master to apprentice (Pamuk, 2010: 56).

The master was looked on as a father and was often even considered superior to the father. The entire responsibility of the young person given to apprenticeship belonged to the master. The transition from apprentice to master depended on the mastery of that art and the master's discretion. If the apprentice were deemed worthy of being a journeyperson, he would be tested by a committee of masters under the supervision of the guild. If he succeeded, he would be given a peshtemal or long, and he would be asked to give a feast to the elders of the journeypeople. For a journeyperson to become a master, a few years of experience were required, and the journeyperson needed to learn the process thoroughly. Then, the master would again appreciate his journeyperson and notify the guild if deemed worthy of mastery. The journeyperson would be tested by a committee of masters. Although the apprentice, journeyman and master relationship was abolished with the law enacted in the first quarter of the twentieth century, this tradition was preserved in Safranbolu until the 70s (Acar, 2011: 32)

Today, craftsmen are of the view that *the interest in handicrafts has decreased since the production is carried out with machines in the factories, professions with regular income are preferred and lack of apprentice to whom the production knowledge can be transferred as ironwork requires physical strength and is not in demand* (Craftsman Interview, 2022a). In addition, the fact that the craftsmen who are still actively working are starting to retire (there are craftsmen who sell ready-made objects without producing) or are too old to train apprentices means that the profession cannot be sustained any longer. Craftsmen, who are the last apprentices of ironwork and still involved in the production in Safranbolu, have the notion that *they will not be able to pass down their implicit knowledge to future generations* (Craftsman Interview, 2022b). Sennett states that,

"In a workshop where the master's individuality and distinctiveness dominate, tacit knowledge is also likely to dominate. Once the master dies, all the clues, moves, and insights he or she has gathered into the totality of the work cannot be reconstructed; there is no way to ask him or her to make the tacit explicit" (Sennett, 2008:78).

Under such conditions, the process becomes irreversible, and the master's knowledge is not transferred. Therefore, in Safranbolu, where the master-apprentice relationship based on learning-by-doing is about to end, it has become necessary to contribute to the sustainability of local craft

knowledge through design in order to transfer the iron craft to future generations. According to Pamuk's study (2010: 218), local governments should provide support for the decreasing number of blacksmiths. She mentioned the necessity of preventing this work from being forgotten by ensuring that the new generation learns the blacksmithing work. Dağı and Çelik (2020: 37) and Deniz and Çelik (2020: 132) stated in their research that apprentices could not be found due to the development of technology and the presence of an iron industry close to Safranbolu.

In line with the data obtained from the literature and interviews conducted with the masters involved in ironwork production in Safranbolu, metal accessories and products used in architectural building elements are found to be in demand due to mass production, cheap handicraft, and consequently cheaper products. However, these ordinary and similar products do not reflect Safranbolu architecture and the spirit of craftsmanship. As a result of the data obtained through interviews with craftsmen and literature reviews, it has been determined that the doors and entrances of Safranbolu houses remark with original craft objects. The ironwork samples used on the doors are produced in one piece unique to the owner of the house. This indicates that the examples are unique. In this context, it is clear that the need for ironwork used in architectural structures will never end as the restoration works continue. As a result of these evaluations, 3 sample products were discussed in the study. Each sample product selected was differentiated according to the characteristics of the housing and the user, its design (in terms of aesthetics) and the craftsman's practical and meticulous work. This ensured the adaptability of the modelling/digital archiving process constructed in the study to all other craft products.

4.1.1. Ironwork in Safranbolu Traditional House Doors

Safranbolu stands out primarily with its preserved architectural structures. In the

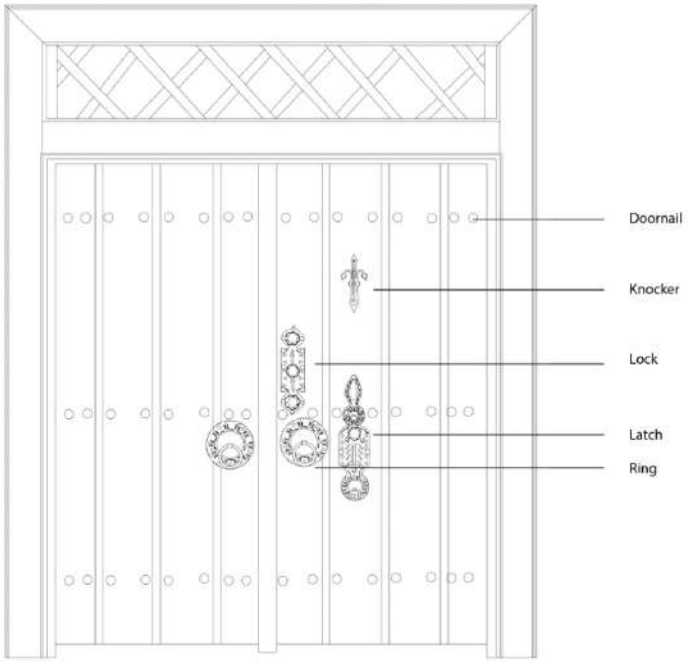


Figure 2. *Positioning of Doornail, Knocker, Lock, Latch and Ring on the traditional Safranbolu door (Adapted from Göktaş-Kaya, 2010).*

traditional houses of Safranbolu, the most exceptional examples of ironwork are the doors. The main reason behind the beauty of the gardens and house doors in Safranbolu can be explained as the spirit brought to this city by the profession of blacksmithing (Alpman and Sezgin, 2009: 32). Door knockers, rings, and key holders shown as architectural examples are determined to be a symbol of different meanings. They are considered one of the most important indicators of the unique skills of blacksmiths. In these examples, blacksmiths have reflected their grace and delicacies in their profession with great attention and meticulous skills (Dağı and Çelik, 2020: 31).The exterior decorations of the traditional houses begin from the entrance door to the street. Wooden two-wing doors are kept wide for entrances and exits. Two or four rows of thick nails are made with the forging technique for decoration. Metal decoration elements are generally seen as ironworks on doors (Pamuk, 2010: 217).

On a traditional Safranbolu door, there are rings and knockers, door handles, door latches, mirrors, locks and lock mirrors (Figure 2) (Göktaş-Kaya, 2010: 343). Doorknockers, as used today, were used in place of doorbells and doorknobs. The main functions of the knockers included notifying by knocking at the door and closing the door by pulling. On the other hand, door rings were used only for pulling and closing the door. Although knockers were a more advanced form of door rings, the rings and the knockers could be located on the same door due to the differences in functionality (Çal, 1999: 275).

On Safranbolu traditional doors, the rings are located on both wings and in the middle of the door, just like the door handles, and it can be indicated that they were intended to be used for pulling and closing the wings. The knockers are found at a higher position than the rings on only one side of the wings. This suggests that the knockers were used instead of doorbells. However, as time passed, the use of rings for knocking on the door has made it difficult to distinguish between a knocker and a ring, which is consequently confusing today (Göktaş-Kaya, 2010: 345).

5. CASE STUDY

Iron and ironwork have an important role in making doorknockers in Safranbolu houses (Barlas, 2004: 36). Therefore, from the ironworks applied on doors of traditional houses, thus standing out with the decorations showing the skills of craftsmen, latch, knocker and ring

Image 2. *Examples of ironwork on garden gates.*

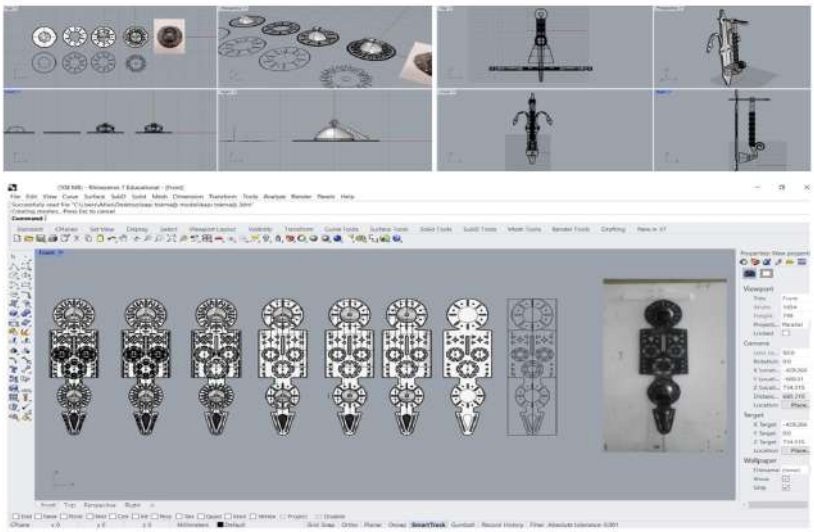


Figure 3. *Ironwork door ring modeling (Rhino 7 Programme), all views.*

were chosen as exemplary products with the knowledge and guidance of the craftsmen.

Three examples determined due to their different functions on the door were first recorded by photographs — one of the traditional archiving methods (Figure 3, Table 1). After taking photos from various angles, the technical drawings were created by measuring the object's dimensions over the photograph in the Rhino 7 program, a software used for designing and prototyping objects suitable for industrial production. After this step, the object's dimensions were measured on the authentic product, and the three-dimensional model was created accordingly.

6. TRANSFERRING SAMPLES OF IRONWORKING TO FUTURE GENERATIONS THROUGH DESIGN

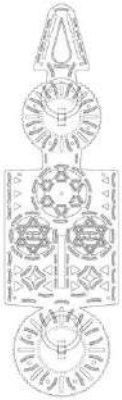
Tung (2012:71) stated that traditional crafts, which include practices based on local knowledge and accumulated over time, are a part of our cultural heritage and should be preserved and revived. Traditional crafts can maintain their existence by adapting to current needs. But when artisanal production could not be preserved, design can be instrumental in achieving this adaptation. Collaboration with craftsmen and designers for the preservation of craft samples may be to integrate the computer technologies used by the designer in the production process. One of these technologies is the use of three-dimensional modeling programs. Three-dimensional modeling programs are used in current studies which are the idea of transferring our cultural heritage to future generations carried out in different disciplines.

Pieraccini et al. (2001: 63) stated that the interest in three-dimensional digital imaging methods applied to cultural heritage in recent years is related to the special needs of conservation. One of the techniques in the digitization of cultural heritage is the creation of digital archives with three-dimensional models. Because digital archives are durable and immutable, they can therefore be used as references for deterioration monitoring and restoration of artifacts.

Traditional methods of preserving cultural heritage include drawing and photographing the works from different angles (hand drawing or computer-aided 2d drawing) to document the work. Although objects created with three-dimensional modelling programs and

made suitable for mass production methods pose an important challenge to the traditional production approach, they can be an essential tool in transferring craft knowledge to the future (Pieraccini et al., 2001: 64). Thus, It reveals that using new technologies through design can intervene in craft practices that are on the verge of disappearing. Unlike industrial products characterized by uniformity and standardization, craft products exhibit inherent variability and uniqueness. They possess the beauty of imperfection. They age with dignity, able to remain valuable to us for our whole lives. They tell us about a precise place where

Table 1. *Digital archiving of information regarding Safranbolu doorknocker, ring and door latch samples.*

Sample	Product Function	Photograph	2d drawing	Three-dimensional (3D) modelling
Model 1	Doorknocker			
Model 2	Door Ring			
Model 3	Door Latch			

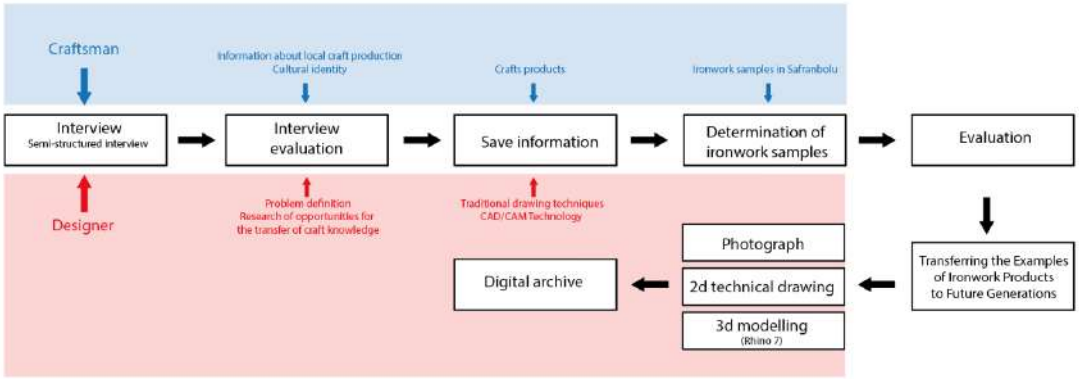


Figure 4. *The methodological plan applied in the transfer of craft products to future generations.*

they were made by concrete people. They are honest and dependable. They convey culture and memory (Borges, 2015). But, as in the case of Safranbolu, the craft knowledge passed down from generation to generation for decades is at risk of extinction shortly due to a lack of knowledge transfer through master-apprentice relationships. Furthermore, as the restoration works of the architectural structures under protection continue, there will be a constant need for ironwork in Safranbolu. Before the blacksmith craft disappears, the ironwork samples produced by the craftsmen for each house must be instantly recorded. Unlike traditional recording methods like hand-drawing, 2D drawing and photographing, three-dimensional storage of ironwork samples will enable the restoration of an object that may be damaged in the future. In this way, it will be possible to control the original object with three-dimensional models and transfer information to future generations by simply archiving it.

Moreover, one approach to revitalizing a craft that is on the verge of extinction is to visually demonstrate the sequential process of shaping, wherein the craftsman transitions a two-dimensional design into a three-dimensional object. By presenting these step-by-step instructions using a three-dimensional model, it becomes possible to preserve and transmit the craft's knowledge. In the future with this archiving method, it is anticipated that craftsmen proficient in working with iron, yet lacking experience in producing door elements, can gain insights into the various stages involved in shaping iron samples such as doorknocker, door ring and door latch used in Safranbolu's traditional residential doors.

CONCLUSION AND EVALUATION

This research reveals that designer-craftsman collaboration provides an opportunity to pass down craft knowledge that can be combined with the technology for sustainable practices, which are not participatory anymore, to future generations. Although attempts are made to establish systems through institutions in order to strengthen the craftsmen and sustain their crafts, ironwork in Safranbolu will soon be at risk of extinction due to the lack of apprentices to be trained so that the implicit knowledge and skills can be transferred through practices

A literature review was conducted on the cases where the implicit knowledge of the crafts on the verge of extinction cannot be transferred as well as the areas the design will contribute to making the transfer of the product examples possible to the next generations. Information was obtained regarding the current status of ironwork in

Safranbolu.

In light of the information obtained from the literature, the documentation of the craft products was found to be necessary in order to preserve the ironwork samples used in the restoration works that are constantly needed in Safranbolu. Thus, it will be possible to transfer the products that are examples of cultural heritage to the future. In addition to traditional archiving methods, the creation of a digital archive consisting of three-dimensional models will enable the restoration of objects in cases where the skills will not be able to be transferred and in cases where objects will be damaged. During the process of developing three-dimensional models, meticulous adherence to the craftsman's sequential steps in shaping the products, as depicted in Figure 4, was observed. This enabled a gradual transformation of the models into three-dimensional representations. And also, including the production stages within the modelling framework facilitates the opportunity for intervention at various stages and delineates the entire procedural continuum.

However, while these technological advancements facilitate the formal transmission of craft objects from the past to future generations, they carry the potential risk of diminishing the uniqueness of the craftsman's original creations. Using Safranbolu as an illustrative case, it is noteworthy that the irreplaceable iron workmanship involved in crafting traditional Safranbolu residential doors faces the imminent threat of extinction with the eventual retirement of the last master. Thus, the conducted research assumes paramount importance in terms of ensuring the preservation of these exemplar craft artifacts.

In addition, in the current state of the door samples of Safranbolu traditional houses, it has been observed that elements such as key-mirror-lock-knocker-ring have been removed in many doors and not replaced with new ones. The disappearance of even existing objects reveals that the most crucial task for designers in Safranbolu houses under protection is to preserve the formal characteristics of the objects produced.

With the development of digitalisation and technology, the importance of digital archiving has increased tremendously recently. In this context, evaluating this study as an exemplary model, the model may guide future studies in archiving other local cultural products using the same methods.

ACKNOWLEDGMENTS

This study was conducted within the scope of project numbered KBUBAP-22-DS-045 of Karabuk University. I would like to thank the craftsman Hüseyin Özdemir for his help and support in maintaining the tradition of blacksmithing in the Safranbolu Old Bazaar region, reaching the tradition and transferring the current production knowledge.

REFERENCES

Acar, M. (2006). Geçmişten Günümüze Ekonomik ve Ticari Hayata Bakış Safranbolu El Sanatları, Kent Araştırmaları:Safranbolu.

Adamson, G. (2007). Thinking through craft. Oxford: Berg.

Aksoy, M. and Kuş, A. (1999). Müze Kent Safranbolu, Safranbolu Hizmet Birliği Kültür Yayını no:1, 4. Baskı.

Alpman, N. and Sezgin, T. (2009). Ustadan Çırağa Dededen Toruna Anadolu'nun Elleri (1.Basım), İstanbul: Halk Bankası Yayıncılık.

Barlas, U. (2004). Safranbolu Kültür Tarihi Araştırmaları, İstanbul:Senfoni Matbaa.

Baudrillard, J. (2011). Üretimin Aynası ya da Tarihi Materyalist Eleştiri Yanılsaması, İstanbul: Boğaziçi Üniversitesi Yayınevi, 88-97.

Becker H. S. (1978), Arts and Crafts, American Journal of Sociology, 83 (January), 862–89.

Borges, A. (2015). Craft revitalisation as a change agent in Latin America, Making Futures Journal Vol 3 ISSN 2042-1664.

Brown, J. (2014). Making it local: What does this mean in the context of contemporary craft? London: Crafts Council, 2-12.

Canbulat, İ. (2022). Safranbolu'nun Son Ustalarından Cumhuriyet'in İlk 80 yılında Çarşı, Safranbolu Çarşı'sı Bir Küçük Anadolu Şehrinin Sosyoekonomisi, 380-417.

Chatterjee, A. (2016). Can Our Future be Handmade!, Journal of Heritage Management 1(1) 1–11

Craftsman Interview (2022a). Craftsmen (Kazım Madenoğlu) Interview Notes in Safranbolu, Author's personal archive.

Craftsman Interview (2022b). Craftsmen (Hüseyin Özdemir) Interview Notes in Safranbolu, Author's personal archive.

Çal, H. (1999). Osmanlı Kapı Halkaları ve Kapı Tokmakları, in Osmanlı Kültür ve Sanat. Ankara: Yeni Türkiye Yayınları, 275-284.

Çelikel, S. B. (2015). Endüstriyel Tasarımda Paradigma Kaymaları: Bruno Latour'a Özel Bir İygiyle, Ankara: Nobel Akademik Yayıncılık Eğitim Danışmanlık.

Dağı, F. and Çelik, Ö. (2020). Safranbolu'da Meslek Folkloru Bağlamında Demircilik. Safran Kültür ve Turizm Araştırmaları Dergisi, 3(1): 26-38.

Deniz, T. and Çelik, Ö. (2020), Somut Olmayan Kültürel Miras Taşıyıcıları:Safranbolu El Sanatları Ustaları Üzerine Bir İnceleme. Doğu Coğrafya Dergisi, 25(43), 123-138.

Dormer, P. (1994). The Art of the Maker: Skill and Its Meaning in Art, Craft, and Design, Thames and Hudson Ltd.

Fersan, N. (1976). Safranbolu Mimari Değerleri ve Folkloru Haftası'nın Getirdikleri, Türkiye

Turing ve Otomobil Kurumu Belleteni, Sayı 54/333 Temmuz-Ağustos 1976.

Göktaş-Kaya, L. (2010). Geleneksel Kapı Halka ve Tokmakları: Safranbolu, ZKÜ Sosyal Bilimler Dergisi, Cilt 6, Sayı 12, 2010, ss. 341–369 (ZKU Journal of Social Sciences, Volume 6, Number 12, 2010, pp. 341-369).

İnce, Y. (1976). Safranbolu Tarihsel Kent Dokusunun Korunması, Türkiye Turing ve Otomobil Kurumu Belleteni, Sayı 54/333 Temmuz-Ağustos 1976.

Kaya Köse, E. and Akbulut, D. (2018). The Engagement of Tradition, Industry, and Tourism: The Case of Safranbolu Ironworking. The International Journal of Design in Society Volume 12, Issue 4, 2018, http://doi.org/10.18848/2325-1328/CGP/v12i04/13-27

Nugraha, A. (2010). Transforming Tradition for Sustainability Through 'TCUSM' Tool. SYNNYT/ORIGINS, 3, 20-36.

Pamuk, F. (2010). Safranbolu Evlerinde Metal ve Ahşap Süslemeler. Yayımlanmamış Yüksek Lisans Tezi. Ankara: Üniversitesi Eğitim Bilimleri Enstitüsü.

Pieraccini, M., Guidi, G. and Atzeni, C. (2001). 3D digitizing of cultural heritage. Journal of Cultural Heritage, 2 (2001) 63–70.

Polanyi, M. (1966). The Tacit Dimension, The University of Chicago Press, Chicago, 1-6.

Reubens, R. (2015). To Craft, By Design, For Sustainability: Deconstructing craft as an input into constructing sustainability design. In: Making Futures, 2015; Vol. 4.

Risatti, H. (2007). Theory of Craft: Function and Aesthetic Expression. Chapel Hill: University of North Carolina Press.

Sennett, R. (2012). Beraber (Second Ed.). İstanbul: Ayrıntı Yayınları.

Sennett, R. (2008). The Craftsman, Yale University Press.

Tung, F.-W. (2012). Weaving with Rush: Exploring Craft-Design Collaborations in Revitalizing a Local Craft. International Journal of Design, 6(3), 71-84.

Internet Resources

Acar, M. (2011). Karabük Safranbolu El Sanatları (Karabük Valiliği) Ankara: Anıt Matbaa http://www.karabuk.gov.tr/ortak_icerik/karabuk/Menü/Karabuk-Safranbolu_el_sanatlari2.pdf (Date of Access: 17.08.2022).

Visual Resources

Image 1, 2: Author's personal archive, 2022