

Co-developing Knowledge Documentation for the Intangible Heritage of Egyptian Woodwork Craft

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Abstract

This research contributes towards the need to decolonise material culture knowledge by reaching out to communities across the world who still practice the intangible heritage of craft and linking their knowledge with the historical collections curated and exhibited in western heritage institutions. Craft know-how has been transmitted from past generations and in many instances still plays a key role in the economic development and social welfare within communities. Such development includes creative and handicraft industries which are under threat by mass production and the loss of traditional know-how. For western museums, the documentation of knowledge around craft can enhance our understanding and interpretation of collections. For communities, there is a potential to support preserving their endangered knowledge while offering opportunities to seek innovation through the digital transformation of their practices to benefit at a financial and socioeconomic level. This paper describes an ongoing research project which deploys visual methods and linked data to document and provide access to the intangible knowledge of the craft, which is practised by Egyptian woodwork crafters in the historic centre of Cairo.

Categories and Subject Descriptors (according to ACM CCS): J.5 [Arts and Humanities]: - [-]: —Information System Applications H.4.1 Workflow management H.2.8 [Database Management]: Database Applications—

1. Introduction

This research focuses on the societal needs of worldwide artisan communities who practice traditional crafts, such as pottery, woodwork, embroidery and metalwork, and whose know-how is under threat from globalisation, mass production and socioeconomic challenges. Crafting practices, as a type of intangible heritage, shift the focus from the material culture stored within museum institutions to existing traditional knowledge of communities around the world, many of which still depend on these practices for their economic survival. Such knowledge is often lost or forgotten, even though it constitutes a powerful means to drive the craft creation itself while promoting and disseminating it for the benefit of the communities financially and beyond.

This paper presents ongoing efforts to engage with heritage practitioners and international communities to develop novel technology-mediated methods to contextualise crafted heritage collections. By doing this, we aim to *transform* and *reinforce* the links between tangible artefacts in memory institutions of the western world and the intangible living heritage practice in communities around the world.

The contribution of this paper is two-fold: i) a participa-

tory methodology that involves local communities in the co-development of the documentation including the ontologies and audiovisual material, and ii) the resulting data model for documenting the heritage of craft in detail which can be linked to a variety of audiovisual documentation through the IIIF framework. These contributions have been deployed with crafting communities in Cairo to document under-explored intangible heritage knowledge such as the Egyptian woodwork craft.

The paper is organised as follows. Section 2 presents the rationale and related work, while Section 3 shortly describes an ontology for the documentation of the intangible heritage of woodwork craft. Visual methods used for the documentation are described in Section 4 with a prototype system which provides access to the documentation produced. Conclusions are presented in Section 5.

2. Related work

The knowledge of “making” and the intangible aspects around craft are considered valuable witnesses of artefacts which are regularly found in museums. The production and deployment of handicrafts is often linked to everyday practices and social manifestations, like ceremonies and celebrations. The knowledge around these objects, though, is often lost, forgotten or endangered by many threats, although it is essential to understand the material culture. Threats to craft include mass production, climate change, pandemics, the

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ageing population of the crafters' communities who have not transferred their skills and more. Digitising, documenting and disseminating the intangible knowledge of craft has the potential not only to better contextualise artefacts in heritage collections but also to preserve such knowledge and support under-represented communities by sustaining and driving craftsmanship while promoting it through cultural and financial "valorization".

Several efforts, such as the EU project Mingei [CMTK*22] and the "Endangered Material Knowledge Programme by the British Museum" [The22]; UNESCO's "Living heritage experiences and the Covid-19 pandemic" [Une22], and Wikimedia's "Wiki Loves Folklore" [Wik] witness a vivid research domain and evidence the urgency to safeguard and decolonise knowledge around the "art of making". While these efforts exist, the deployment of accessible digital methods to document and disseminate intangible processes is often overlooked or not sufficiently exploited.

The deployment of visual methods for documenting and safeguarding intangible heritage is strongly rooted in the discipline of visual ethnography. This includes the application of audiovisual recordings (people performing rituals or activities, interviews), visual means (photos, maps, sketches, illustrations and more) and text [Soc] deployed by researchers on the subjects of investigation. Lately, more methodologies deploying visual methods have emerged under the term of *indigenous media*, where the subjects take full control of the production process [Fur15]. This form of media expression is defined, produced, and shared by indigenous communities around the world constituting novel means for communication, often aiming at cultural preservation, artistic expression or even political self-determination [WHCT14]. These efforts enable meaning-making processes to become accessible and open to multiple interpretations as they include and communicate information which is often overlooked by external recording crews.

More recently, 3D approaches for the documentation of craft have been adopted, including the use of 3D animation and motion capture for the repetitive movements of crafters with the deployment of tools or equipment, interactive visualisations of handicrafts, digital fabrication workflows, as well as immersive experiences to teach the craft [ZMD*21, CLD*16, PPCSG21].

Our research advances the state of the art by proposing a holistic documentation process, which includes the creation of a database and audiovisual/360 videos through a co-development "indigenous media" approach. The use of this type of innovative and accessible digital method aims to contextualise handcrafted artefacts while connecting them to the intangible knowledge around them and their communities of making. The following sections will describe our initial approach to using visual digital methods, IIIF technologies and semantic technologies for recording and disseminating the intangible processes while advocating for decolonising knowledge and building sustainable futures around the craft.

3. Holistic Documentation of Intangible Craft

Early in the research, we identified a set of priorities for stakeholders around the world to benefit from the documentation using digital methods. These include:

- Capturing the relationships between tangible objects, including

those in heritage institutions, and the intangible practices related to their production.

- Preserving the intangible knowledge which is related to crafts for future generations.
- Enabling knowledge "transmission" within the communities to enhance craft practices and train members of the crafting communities as well.
- Promoting craft practices and their products to bring socio-economic benefits to the communities.

These priorities require a documentation approach which is holistic by addressing multiple aspects of the material culture, including practices of handicrafts' production, while also involving the participation of the practitioners' communities. In this research, we consider four different documentation/knowledge strands for the contextualisation both of the tangible and intangible heritage of craft: 1) historical documentation in heritage institutions' archives and collections; 2) information on crafters and artisans, including the designs, tools and processes of the craft; 3) information on workshops and markets; 4) information on the communities which produce the environment in which the crafting practices are conducted along with further related narratives.

In particular, the research applies this approach to document Islamic woodwork craft with a focus on the Mamluk period architecture, in collaboration with our co-researchers at the Egyptian Heritage Rescue Foundation in Cairo, Egypt. From the beginning of Islamic art and architecture to the generation of the Mamluks, centuries of history of craft development by different dynasties of the Islamic Empire were witnessed in the Islamic built environment. When the Mamluks took power after the death of al-Salih in 1249, they excelled in the arts including architectural decoration which is distinguished not merely by its strong sense of colour but also by its pervasive sculptural quality.

During the Mamluk period, crafters produced architectural elements in Cairo that are almost indistinguishable from the architecture itself. Such forms of crafted decoration not only witness the excellence of the craft itself but also enable us to understand the development of craftsmanship throughout the centuries, as reflected in changes in the practice and its outputs. Taking the documentation one step forward to record not only the outputs of craft but also the practice and knowledge around it becomes critical for its safeguarding. Importantly, though, recording and transmitting craft knowledge is also critical for the restoration and preservation of many buildings of Islamic architecture which were damaged in recent years.

Collaborating with the local team originating from the younger generation as well as traditional crafters in Cairo, we documented the steps, materials, tools/instruments and supplies involved in woodwork inlay craft both for the traditional and the modern production techniques. Initially, this information was captured through natural language in collaboration with the crafters' research team, by structuring all stages of the processes into sequential steps, even though, it was acknowledged that a concrete sequence of events is not always followed in the craft. At the same time, research on woodwork craft and intangible knowledge representation [HLZ14, BCH*15, IZR*20] supported our effort to define concepts and relations within this specific craft domain.

The co-development process and iterative consultation with the local team enabled us to form an accurate knowledge structure and gain further insights into the younger generation’s and traditional crafters’ practices, as well to gather audiovisual material. Such processes of co-designing research with local communities sit at the heart of efforts to decolonise heritage knowledge and ensure favourable outcomes for projects which build a relationship of trust and engagement with the community itself; stem out of the real needs of the communities and work towards their benefit [GLP19].

For the project, craft information was further co-developed and structured into a map of concepts which can be described in a data model to create a database of the knowledge of making. The database was created in a MySQL database and made available via a server. The current project focuses mostly on the practice of craft. Other documentation was also produced as part of this work, but not yet included in the database. Instead, it is available for later enrichment of the data model.



Figure 1: The data model for documenting the processes involved in Islamic woodwork craft.

Figure 1 presents the data model, which captures the processes and stages, as well as the supplies, tools and materials which are used as part of the stages of craft. Our approach allows for hierarchically organising stages within larger processes of the inlay craft, such as i) *Designing*; ii) *Pre-processing materials*; iii) *Elaborating of the inlaid product*, and iv) *Finishing the inlaid product* with their subclassifications. As such, it is possible to include as much or as little information available for each of the stages, and later allow to expand and explore further the existing or other processes.

The following section will further explain how the visual documentation was produced as well as made accessible.

4. Visual Methods for Documentation

Our approach, which was deployed during the COVID pandemic in 2020/2021, involved the co-design and co-production of photographic and film material. During this period, researchers were unable to travel to Cairo to acquire data. Hence, in collaboration with local crafters, the best approach for filming and digital photography was decided. Crafters who had been involved in developing the knowledge structure collaborated with a local filmmaker to produce

extensive material for each of the processes and stages of inlay craft based on a clear and comprehensive co-designed structure. Figure 2 presents two photographs acquired during digital documentation, for the stages of *Cutting and shaping the inlay material* illustrated in the top part, and for *Joining and fixing the inlaid product* illustrated in the bottom part. Two films were produced documenting both the traditional and modern techniques of the inlay process execution.



Figure 2: Visual material documenting processes of inlay woodwork craft.

Once the content was available, an (International Image Interoperability Framework) IIIF server was created to host the images for easy distribution and licensed using the Creative Commons Share-Alike license to allow for the wide dissemination of this community knowledge. We aimed to enable the easy discovery, linkage and annotation of the data as well as its interoperability in a wide range of online resources. The videos were also made available via Wikimedia and linked to other available concepts in Wikidata [Uni22].

Furthermore, to enrich the database of knowledge, images were included for each stage using their IIIF link within the database. This allows to experiment with providing two different types of access to the information and visual content: 1) a website driven via a REST API which queries information on the processes and their related imagery, and 2) a WordPress website which embeds content from the IIIF server with summaries of the processes. These two approaches were tested to allow for various types of users to easily create resources in the future.

A website prototype, shown in Figure 3, was constructed using

the REACT framework to query the database using a REST API. The website queries information from processes and once receiving the information in JSON format, it presents it to users. We are currently in the process of deploying this prototype in a more stable version to improve the interface design and enable testing.

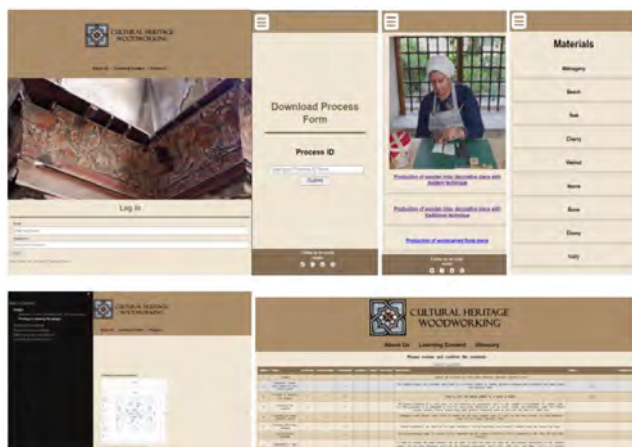


Figure 3: Website interfaces for accessing the community knowledge of craft.

5. Conclusions

This paper presented ongoing developments for the documentation and visualisation of the intangible heritage of craft. The motivation for these developments as well as the approach and methods for creating such documentation during the COVID pandemic have been described. It is important to highlight that travel restriction and emerging participatory research examples enabled us to rethink and deploy more accessible means for documenting intangible heritage by engaging the communities themselves and by co-developing research with their participation. We are currently improving the access and visualisation of this information. Hence, future work includes improved visualisation interfaces, further means to add, edit and delete the knowledge via easy means within the database, as well as evaluation of the project's outcomes with the members of the communities and beyond.

6. Acknowledgements

We acknowledge our co-researchers, including Nesreen Sharara, Noha Ali, Abdelrahman Aboufadel, AbdelHamid Salah and Omniya Abdel Barr at the Egyptian Heritage Rescue Foundation (EHRF). We also thank Tim Amis for building a prototype, and Tim Weyrich for his input. This research has received funding from the GCRF International Fellow Scheme 2019-2021, the Santander Fund at the University of Brighton, and by a Research Environment Links grant from the British Council's Going Global Partnerships programme with Grant Agreement No. 871072737.

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