



Resisting the Disappearance: Documentation of the Endangered Boatbuilding Tradition in Indonesia

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Abstract. This article discusses the importance of documentation on endangered boatbuilding traditions in different areas of Indonesia through motion picture and other forms. The boatbuilding tradition has become part of daily life for people in many places, such as South Sulawesi and the North Coast of Java. However, while the demands for boats are as high as ever, industrialization has pushed traditional boatbuilding to the brink of disappearance. The article described the work approach and benefit of documentation in different cases of endangered boatbuilding traditions from 2019-2023 in South Sulawesi and the North Coast of Java. The results showed that documenting the boatbuilding tradition in different forms, especially still and motion picture, contributes significantly to Indonesia's public outreach program and preservation effort for its maritime heritage.

Keywords: Boatbuilding Tradition, Documentation, Endangered, Preservation.

1 Introduction

Boatbuilding has been a long tradition of coastal communities in Indonesia, with the presence of boats arguably as old as human existence in the archipelago [1]. The pre-history evidence of boat existence was recorded on the rock art inside caves in different parts of Indonesia, especially Borneo, Sulawesi and Papua. While the younger evidence was engraved on the relief of the Borobudur temple, showing us different types of boats. Our understanding of boats in Indonesia is also greatly supported by foreign reports from China and Western sources [2]. In recent context, traditional boats still exist in different areas of Indonesia to support local fishing and inter-island transportation. Hotspot such as Sunda Kelapa (Jakarta) provide the scenery of a busy port with motorized traditional boats transporting goods from Jakarta to different parts of Indonesia. Fishermen's boats also still crowded the local ports in other places, such as coastal areas on the North Coast of Java and most parts of East and South Bali.

However, in the recent years, the number of traditional boatbuilding practices has decreased in many areas in Indonesia [3], [4] due to urbanization, where the younger generation choose to work in different field in the big city, especially from our study in Tanaberu (Bira). The lack of younger boatbuilders also influenced the transfer of

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knowledge, where many boatbuilders usually choose to teach the technique to their sons or son in laws or patrilineal kinship line [4], [5]. Another factor that threatened the existence of traditional boatbuilding practices was the emergence of fibre boats [3], [5] which are faster, easier to assemble, and cheaper. Due to practical choices, many fishermen choose the fibre boats for their needs, slowly impacting the boatbuilders and the boatbuilding practices in many areas.

Considering the rarity of historical evidence and depiction of boats in Indonesia's history [6] the possibility of the disappearance of boatbuilding traditions in Indonesia is a huge loss. The loss of knowledge and traditions will put the industry to extinction, and eventually, the boats will disappear. In the 1980s, Horridge also mentioned another notable urgency to make a catalogue of traditional boats in Indonesia, which continuously changed over decades due to the nonexistence of drawings, models or written records [6]. The possibility of the disappearance of this maritime heritage pushed the urgency of the documentation effort of the boatbuilding practices. Archaeology has been involved in discussing ancient boat technology since the 1980s [7] and tracing the technique to the contemporary boatbuilding traditions in Indonesia. However, anthropological approaches are yet to be applied to document the boatbuilding processes systematically. This article highlighted a few boatbuilding documentation efforts and the dissemination program by the authors from 2019 to 2023. The first was the documentation of padewakang, a type of ship that has been extinct since the 20th century [8]. The padewakang was the predecessor of the famous pinisi, which was inscribed in the list of UNESCO Intangible Cultural Heritage of Humanity in 2017. The boat was commissioned by Abu Hanifa Institute, Sidney, for their documentary film of the Muslim trepang fishermen from South Sulawesi on the northern Australian coast, Zazzaro et al., 2022 [8]. This project was the collaboration between the University of Naples "L'Orientale", Universitas Indonesia, and the National Research and Innovation Agency (BRIN).

Other projects were taken place on the North Coast of Java. The Prau Maritime Project was the documentation project of Rembang (Central Java) maritime heritage; the focus was the Punjulharjo shipwreck and traditional boatbuilding practices by local boatbuilders. The Ministry of Education and Culture sponsored the project via Fasilitas Bidang Kebudayaan [9]. The last project was the documentation of Pasuruan (East Java) traditional boatbuilding by the DIY Archeology Office (now part of BRIN) as part of Dynamics of The Maritime Culture Landscape in The Downstream of The Brantas River in the XIX Centuries AD [4]. This article discussed the documentation methods and results of the abovementioned projects. The discussion is mostly on visual documentation and its dissemination, the public acceptance of the end product, and their contribution to traditional boatbuilding preservation efforts.

2 Methodology

This article uses a qualitative descriptive approach. This approach is directed at carefully observing and documenting the phenomenon interest [10]. The goal of descriptive research is to describe a phenomenon and its characteristics. This approach has been a

standard procedure for conducting research in many disciplines, including social sciences [11]. In this research, the phenomenon in question was the documentation of boatbuilding traditions within three different projects from 2019 to 2021 in different regions in Indonesia. The observation was done by authors in Bira, South Sulawesi, Zazzaro et al. [8], Rembang by Purnawibawa [2] and Pasuruan by Mochtar et al. [4]. The documentation and dissemination processes were then observed and compared to the literature review and similar research projects.

3 Result

3.1 Documentation processes

All projects were done in different time lengths, however, with similarities, to document detailed information about boatbuilding and recording existing traditional or historical boats nearby. Aside from handwritten notes, almost all visual documentation was recorded using the camera. For example, the Padewakang documentation was recorded using mirrorless Sony Cybershot RX100 II and Canon EOS M100, whereas projects in Rembang and Pasuruan were documented using both Canon EOS M100 and EOS M50. The mirrorless cameras mentioned are lightweight and easy to be operated by beginners and experts alike. The sound was recorded using shotgun microphone Boya BY-MM1 directly to the camera or, in addition, using microphone Boya BY-M1 connected to the Zoom H1N recorder. The lightweight setting and gears were proven helpful in supporting team mobility without being hindered by gears and rotational roles of personnel in documenting the subjects.

For all projects, the informants consisted of the leader of the boatbuilder or the elders that understand the boatbuilding tradition. The informants were selected due to their expertise in the subjects and their willingness to share information about the processes and the philosophy behind the boatbuilding processes. As mentioned before, most of the boat builders were in their late aged or middle-aged men. The boat builders in both Bira and Rembang were mainly older men, with few youngsters still learning from them. They also usually work for one boatyard belonging to the expert without having their own boatyard. The Pasuruan case is different, with a smaller boatyard that was self-owned by the boatbuilders. They also worked with close relatives, such as sons or in-laws [4]; in some cases, even the wives also helped with work in boatyards.

The informants for the Padewakang documentation project were Haji Jafar, the pan-rita lopi or the principal supervisor of the construction, and the acting leader of the boatyard, Haji Usman as written by Zazzaro et al., [8]. Both were considered the most capable informants, while other younger builders provided supporting information. In The Prau Project, Haji Sodiqin was the primary informant as one of the most renowned boatbuilders in Rembang. In the last project, Salman was the primary informant on the boatbuilding traditions in Pasuruan, together with his son-in-laws. Several other builders in different areas also provided additional information and documented by the team.

3.2 Still images

Still images could be defined as two-dimensional pictures in the form of drawings, paintings or photographs. Still images, in this case, photos, provide vast information, for example, an event, pose, expression, shape, colour and texture [12]. All mentioned information is all-important for archaeology research. In order to support more functionality of the photographs, archaeologists use a scale to provide proper measurement. The measurement allows archaeologists to use the data for further research, and should they miss measurements from fieldwork, the images will cover that mistake. Still images are also used to generate three-dimensional objects using a particular technique known as photogrammetry, which helps tremendously in off-field research, future studies, preservation and dissemination. In these projects, photographs are mainly used as the main technique to boat documentation, boatbuilding processes, and artistic photographs for dissemination.

Boat documentation is one of the most important aspects of these projects. The still images were used to document the shape of the boat, the particular parts of the boats, the boatyard, and all used tools by boatbuilders. In the Padewakang project, especially, the team was able to document the construction process of the boat. This opportunity provided the team with detailed documentation of contemporary hull and upperworks construction methods, which is usually inaccessible for documentation [8]. The still images are also beneficial to recording particular processes, given their nature to freeze events or moments captured—for example, Figure 1 shows the process of wood bending for making planks in the Pasuruan boatyard. The image complements the verbal and text description of the process to provide a better understanding of the entire boat-building process.



Fig. 1. Still image of plank bending (Source: Mochtar et al., 2021)

The still images are also necessary for the photogrammetry or three-dimensional reconstruction of the boat. The photographs were processed using the software Agisoft Metashape to generate 3D point clouds. The 3D point cloud was then scaled, and mesh and texture were generated. The model was beneficial for generating orthorectified photographs, construction drawings and a line plan extrapolating from the model [8]. Aside from research purposes, the three-dimensional model from these projects served as a database of traditional boats in Indonesia and helped disseminate the knowledge more effectively.

3.3 Motion picture

Another form of documentation on these projects was film. Film, also called motion picture or movie, is a series of still photographs projected in rapid succession due to the optical phenomenon of persistence of vision; this gives the illusion of actual, smooth, and continuous movement [13]. One of the main advantages of motion pictures for documentary projects is the ability to record movements and other information that is impossible to record using still images. Boat building processes, for example, involved many motions of shaping, cutting, measuring, and rituals that could not be documented only using still photographs.

In this documentary project, motion picture provides a way to document the boat-building processes as a whole. The documentation of boatbuilding processes started from the keel laying and the related rituals, woodbending, planking, framing, and other important processes. Documentation of these steps is important as a preservation of techniques used by contemporary boat builders and as data for anthropological comparison of what has possibly been done by ancient boat builders in Indonesia.

The interview was another important event documented using motion pictures. In interview documentation, the informant is recorded while explaining the sequences of boatbuilding processes, including the rituals, material sourcing, various steps of the construction, roles of each builder, common mistakes and the repairs, not to mention the descriptions and names of different parts of the boats. In addition, the Pasuruan project also focuses on the transfer of knowledge processes and kinship inside the boatyard [4]. Other information gathered from the informant was the local language for boatbuilding processes. The language used by boatbuilders became one of the most important aspects of the padewakang project. The language documentation focuses on the names of specific boat parts, names of boat building processes, names of tools used by boat builders, mantras recited in rituals and more.

3.4 Dissemination Channels

Since the goal of the projects was to preserve and disseminate the knowledge of traditional boat building to a broader audience, the final project outputs were taking shape in different alternative media. One of the outputs was a three-dimensional model of boats. These models were generated from photogrammetry and reconstructed for reverse engineering and preservation purposes. However, in the age of technological development and the popularity of virtual museums due to COVID- 19, digital heritage has become more important for education and entertainment purposes, including these three-dimensional models. The boat models were uploaded and exhibited digitally in Sketchfab, a website with a function similar to a digital library for digital models.

The website is a free-access platform, hence enhancing the accessibility of the models by everyone. The website also provides tools to manipulate the models and provide additional text or sound information. Figure 2 shows the model of the Punjulharjo ancient boat in Rembang. This model is also accompanied by five annotations that provide additional information. All these functions and information goals were to enhance the experience for the user. For further use, the user can even use a Virtual Reality headset,

such as Google Glasses or Oculus, or a similar device to digitally see the models in actual size.



Fig. 2. Final version of 3D model constructed using photogrammetry (Source: Purnawibawa, 2020a)

The short films were also produced from all projects. The documentary-style films were distributed via two channels: the YouTube platform and on-site in the exhibition. As one of the most popular video hosting websites, YouTube was selected to grant more access to the film. Figure 3 shows the interview scene of one of the films published on YouTube. The films were positively received, with a combined viewers of more than 70,000 viewers by the writing of this article. The films from the padewakang documentation project were also screened at the exhibition in different locations.



Fig. 3. The disseminated video of The Prau Maritime Project on Youtube (Source: Purnawibawa, 2020a)

The exhibition is one of the dissemination channels of the documentation of padewakang. The exhibition titled *The Boat Legacy in Indonesia* also exhibits other projects in Lembata (East Nusa Tenggara) and Jambi (Sumatra). The exhibition shows posters, graphics, and three-dimensional model prints of experimental boat reconstructions, tools and other objects related to boatbuilding practices in Indonesia. The exhibition itself was planned as a moving exhibition. To this date, it has moved from three different locations, namely, Faculty of Humanities Universitas Indonesia, Asosiasi Tradisi Lisan Conference, and Museum Bahari (Maritime Museum) Jakarta (shown in Figure 4).



Fig. 4. Prof. Chiara Zazzaro, one of the authors, explained the content of the exhibition to the visitors (Source: Museum Bahari, 2023)

4 Discussion

Anthropologists have been using motion pictures ever since the 19th century. An anthropologist uses the camera to take both moving and still pictures as part of their fieldwork and use the films in their teaching. Therefore, visual anthropology is more developed than similar movements in other social sciences [14]. The multidiscipline nature of projects mentioned in this article has brought the team to employ a visual anthropology approach to understand the boatbuilding traditions in Indonesia to complement the archaeological approaches that have taken place before.

What do we learn from these approaches? The records of boatbuilding practices in different locations help us understand the subject behaviour's microanalytic, with aid from some form of visual evidence. This analysis helps us understand subject interpersonal behaviours, the dynamic between builders, and the existence of different social standings in the system and kinship or collegial systems. Archaeologists, who usually focus on tangible artefacts or physical evidence, often leave out such information.

Motion pictures also help us to study the macro unit of human behaviour, especially how the subject interacts and influences one another in the large scale phenomenon. For example, our documentation focused on the records of keel laying rituals, boat launching ceremonies and other ceremonies that influenced the boatbuilding processes. These rituals usually will not be recorded and never discovered by archaeologists, considering the entire boatbuilding practice was without written documents and transmitted by oral traditions. Also, audio recording from motion pictures tremendously helps in language documentation to understand the pronunciation and accent of the native speakers, which is impossible to record by text notes.

Another notable finding is the reception from the public to the dissemination effort. Researchers often settle for a more traditional way of disseminating the research results through journal articles, books, final reports and presentations [15]. Consequently, this disseminating method often restricts the results to only reaching fellow researchers and the academic community. The mentioned projects choose different methods for the aim of the projects and choose alternative media to disseminate and raise public awareness of the issue discussed. The exhibition and the films are notably well received by the

public. The exhibition in different locations showed adequate amounts of visitors, thanks to support from many partners and media promotions.

The films especially brought new different audiences for these projects. While anthropologists are familiar with visual approaches, the archaeologists are different. Since the 70s, archaeology films started to be incorporated into archaeology research in the US. However, things are different in Indonesia. However, we all agree that archaeologists need to take more initiative in incorporating films into their research design [16]. The film is a potential medium for bringing life to seem dry and tedious science. This is especially advantageous for Indonesian audiences, where younger generations absorb information from audiovisual media more efficiently. Several types of research on younger audiences [17] also showed improvements in student's capacity to understand history and cultural subjects from film media compared to text media. Students learning motivation and information retention ability from learning media, such as film, also show improvement compared to more traditional media [18], [19].

5 Conclusion

Based on the observation and analysis done in this article, the authors highlight the contribution of documentation in the form of still and motion pictures on three different boatbuilding documentation projects in Indonesia. The motion pictures, in particular, aid authors in recording unseen details such as interpersonal relations, dynamics in the boatyard, and other intangible aspects that are often missed. The motion pictures also deepen our understanding of the events that took place in the boatbuilding practices, such as rituals and languages, which always remain present in society without historical records. These alternative media also provide benefits for preservation and public awareness campaigns as they are more popular and more accessible to a broader audience compared to traditional means such as journals, books and presentations.

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