

RECONSTRUCTION OF CREATIVE PRODUCTS BASED USING DESIGN THINKING APPROACH: THE “SPIRIT OF MAJAPAHIT” CASE STUDY

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Abstract: Indonesia is a country rich in culture and heritage. This richness of culture can be seen from artifacts and historical sites found throughout Indonesia. However, Indonesia’s younger generations are less familiar with their own culture. This is caused by various things, one of which is the rarity of historical heritage products reconstructed to be introduced to Indonesia’s younger generation. This research was conducted to analyze the process of reconstructing Indonesian historical heritage, the Spirit of Majapahit using a Design Thinking approach. The research and analysis of the process of re-creating the Spirit of Majapahit can form the basis of a design mindset that can be used as a guide in recreating local Indonesian historical products. This research uses a qualitative data collection method which is carried out by structured interviews with personnel who are actively involved in the process of reinventing the Spirit of Majapahit and experts on Indonesian culture. In addition to qualitative methods, literature studies are conducted to find data regarding the process of creating creative products, previous research on the adaptation of Indonesian local historical products, and audience responses to the reconstruction of past cultural products. The results of the study are used as the basis for creating a product design mindset module based on Indonesian local history which is linked to a systematic and replicable Design Thinking approach.

Keywords: design thinking; spirit of majapahit; history; cultural revitalization.

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Introduction

Indonesia is a country rich in priceless history and cultural heritage. However, today's Indonesian youth are less familiar with Indonesian history and local culture when compared to popular foreign cultural products. This is because many historical products of Indonesia are not displayed and presented properly.

Currently, popular foreign cultural products that enter through mass media and modern communication technology are better known than cultural products resulting from local history. So it is necessary to make active efforts to revitalize and reconstruct the products of Indonesian history from the past so that they can be reintroduced to the younger generation of Indonesia.

The flow of change and the influx of popular cultural products caused by globalization and technological advances cannot be resisted. Therefore, efforts to reintroduce Indonesian history and culture need to be carried out through the creation of creative works in the form of popular cultural products that can be enjoyed by the younger generation in Indonesia.

To reconstruct products from local Indonesian history, a design mindset is required that is replicable and can be used as a guide when designing. This design mindset is needed so that the reconstruction of creative products based on history and culture is carried out based on research so that the results are not fictitious and far-fetched.

Based on the results of an interview with Ms. Rizky Sumartini, Young Expert Cultural Officer, East Java Cultural Heritage Preservation Center (BPCB), many local creators do not master the design mindset, so the design results are not in accordance with Indonesia's local history and culture. So even though many local creators use local cultures

as a source of inspiration when working, because they do not yet have an in-depth research-based design pattern, the content displayed is still not accurate.

From the explanation above, it is known that there is no research-based creative product design mindset module for local Indonesian creators that is systematic and replicable. To discover this design mindset, researchers will analyze the design thinking approach used in the reconstruction of the Spirit of Majapahit ship.

Based on this explanation, the formulation of the research problem is: How is the Design Thinking approach used in the reconstruction of Indonesian local history and culture-based products, such as the Spirit of Majapahit ship?

Methodology

Research will be conducted using qualitative data collection methods. Qualitative data is data that emphasizes the quality rather than the amount of data. The first phase of the research conducted will focus on data generated through literature studies and interviews with Mr. Sumarwoto, Chair of the Majapahit Lovers Community, who is directly involved in the re-construction project of the Spirit of Majapahit Ship, and Mrs. East Java Cultural Heritage (BPCB). The interviews focused on the design thinking process approach in the reconstruction and re-creation of the Spirit of Majapahit ship.

The conclusion drawn in the qualitative study process is carried out by building knowledge from understanding the individual's unique point of view and the meaning attached to that point of view (Creswell & Poth, 2018).

Result

Based on data from BEKRAF, creators and creators of creative works in Indonesia are creative industry players who are dominated by Millennials and Generation Z. Millennials and Generation Z have similar characteristics; both of them consider pseudo and virtual reality to be more real than the reality around them and are familiar with global popular culture rather than local culture.

When designing creative works based on local history and culture, these creative industry players experience difficulties because they are not too familiar with local culture. So they can't accurately render it into popular works. This was verified by the researcher during the initial research data collection in an interview with Mrs. Rizky Sumartini, who stated that most of the popular works based on Indonesian culture were not designed through a research and consultation process. So that the resulting works tend not to present history and culture accurately but only as visual aesthetics. In fact, there have been attempts to accurately adapt local culture into pop culture products to be introduced to the younger generation. One of them is a creative work in the form of a comic entitled *Garudayana* and the *Grand Legend Ramayana*, created by Is Yuniarto.

Garudayana and *Grand Legend Ramayana* are manga-style comics (Japanese comic style) that are favored by the younger generation in Indonesia. Uniquely, these two comics were created based on the adaptation of local Indonesian culture, especially Javanese wayang. From interviews conducted by researchers with Mr. Is Yuniarto, it is known that when designing characters, world settings, and equipment, such as accessories, costumes, and weapons, into his comics, Mr. Is first conducts a research process on local culture that will be adapted to the comic to ensure accuracy.

During the early stages of design, Mr. Is Yuniarto did research first by looking at references from existing Javanese wayang. The characteristics of the characters to be redesigned are then recorded and modified to maintain the characteristics of the characters displayed. An example is the Gatotkaca character, typical of the Javanese wayang, that appears in the *Garudayana* comic. Mr. Is describes the characteristics of the mustache, star on the chest, wings, and bun (hair hat model) according to the puppets of the Gatotkaca people as can be seen in Figure 1.



Figure 1. . Gatotkaca - Wayang Orang, *Garudayana*.
(Source: Rias The Glory of Bhatarayuda (Arfiani, 2013), *Garudayana* (Yuniarto, 2010))

Apart from Is Yuniarto, researchers also interviewed other local creators who also made works based on local Indonesian culture, namely “Gromore Studio”. Gromore Studio created the animated story of the Archipelago, inspired by Indonesian fairy tales and legends.

In making the animation work, Gromore Studio first conducted research on the settings, clothes, stories, characters, costumes, and accessories that would be displayed in the animations being made. The results of this research can be seen in

the visualization of the animated content, which can show the uniqueness of Indonesian culture. Gromore Studio researches stories from existing fairy tales, then creates an animation based on a version of the existing folklore.

For the design of the visual appearance of the characters, Gromore Studio takes inspiration from Indonesian traditional clothing. As an application in design, Gromore Studio creates assets that are adapted to the local culture of the regional stories that are raised. For example, in one of the animated works, *The Legend of the Straits of Bali*, made by Gromore Studio, the dragon character is shown, which is taken from the Javanese dragon design. The characteristics of this Javanese-style dragon can be seen from the shape of the crown worn on the dragon's head, as can be seen in Figure 2.



Figure 2. Gromore studio animation.
(Source: Channel YouTube Gromore Studio)

The results of the researcher's interviews with Mr. Is Yuniarto and Gromore Studio show that the first step to re-creating Indonesian culture and history into

creative works is in-depth research to gain a thorough understanding of the objects to be adapted into popular works. The design process carried out by these local creators has similarities with the design stages using the Design Thinking method.

According to the Hasso Plattner Institute of Design at Stanford, "design thinking" is an iterative, non-linear process used to understand users, challenge assumptions, redefine problems, and create innovative solutions for prototyping and testing. This process is commonly used by designers to find solutions to complex problems and create new products (Black, Gardner, Pierce, & Steers, 2019).

Design thinking is a framework or method of solving problems. Design thinking has been around for decades but only started to become widely recognized in the last five or ten years. The first stage of design thinking is researching the problem; the next is narrowing the research area using educated guesswork, intuitive judgment, or simple common sense. And the third stage is to design a solution that can solve the problem (Martins 2009).

The five main phases of design thinking are empathy, definition, ideation, prototyping, and testing. Through these five phases, the designer will make observations, formulate problems, seek alternative solutions, create visual representations, and seek feedback to be able to find unique design solutions and solve problems. These five phases are not always sequential and can be executed in parallel, non-sequentially, or repeatedly. This mindset is designed to support a broadly shared view of the design thinking process (albeit using different terminology), suggesting exploratory data collection first, followed by idea generation, followed by a third phase of prototyping, and then testing. This process emphasizes iterative exploratory cycles using in-depth research to develop insights, followed by a process

of brainstorming to develop new ideas and then creating prototypes and experiments to test them (Liedtka, 2018).

Discussion

Ships are a means of transportation that were widely used in Indonesia in ancient times. Shipbuilding technology was well mastered by the Indonesian people at that time (Lelono, 2009). Indonesian ancestors with strong maritime souls have sailed to neighboring countries and sailed the oceans. This is also enshrined in various reliefs and inscriptions found in Java and Sumatra (Setianingsih, 1993). One of them is the ship relief enshrined at Borobudur Temple. The relief depicted on the Borobudur Temple further reinforces the glory of Indonesian maritime history in the past (Nastiti, 2021).

Sailing ships are thought to have appeared in Java at least around the 9th century AD. This ship was used by the ancient Javanese and other ethnic groups in the archipelago to cross the oceans. Wijaya, D.A. (2022). Maritime activity in East Java at that time was only recorded during the Singasari Kingdom era, around the end of the 13th century. The Majapahit Kingdom, as the successor of Singasari, expanded maritime activities with the concept of the archipelago it proclaimed. (Munandar A.A., 2013) To support its maritime activities that spread throughout the archipelago, the Majapahit Kingdom had many large and small boats, sailing ships, and other junks. Jung is a giant ship used by the Majapahit Kingdom as a military transport ship. Jung used to conduct trade from Southeast Asia to the Middle East.

The Majapahit Kingdom is one of the kingdoms in Indonesia with historical values that need to be preserved. This can be seen from the cultural heritage site of the Majapahit kingdom in Trowulan, Mojokerto, which is the location of the Majapahit

Kingdom. This kingdom left behind many historical and magnificent cultural products, one of which is the Jung Ship. Unfortunately, this is not known in today's society. Many of the younger generations have never heard of, understood history, or recognized the form of Jung from the Majapahit era. Moreover, until now, the shape of the Jung, or sailing ship, of the Majapahit era was also not known with certainty. This lack of knowledge also encourages the younger generation to not understand Indonesia's maritime power and to not be proud of it.

Based on these problems, the Jung reconstruction project from the Majapahit era in the form of a replica was born. The construction of the replica was initiated by the Majapahit Lovers Community, which started in January 2009 and aims to introduce Majapahit culture and maritime excellence to the younger generation of Indonesia. This plan has the support of various government agencies, such as the Ministry of Culture and Tourism, the Ministry of Transportation, the Ministry of Foreign Affairs, the Coordinating Ministry for Maritime Affairs, the Director General of Immigration, and the Ministry of Law and Human Rights. The ministry showed support by providing assistance by facilitating licensing and so on until the replica ship was finally successfully built and sailed until it arrived in Hokkaido, Japan.

This research wants to analyze the thought process behind the creation and expedition of the Spirit of Majapahit Ship using the Design Thinking method to find a design mindset that is replicable and can be reapplied to other creative projects.

Stage I. Empathize

Design thinking requires the designer to understand the target audience or users at a very deep level by observing and

knowing them (the empathy phase).

The reconstruction of the Majapahit ship is planned as a monument to introduce cultural heritage to the younger generation in Indonesia and get them to know Indonesian local culture. (Sumarwoto, personal communication) December 15, 2022) Because it is aimed at introducing cultural heritage to Indonesia's younger generation, an appropriate strategy is needed so that the Jung reproductions created are not only accurate and historical but also able to attract the attention of and be accepted by the younger generation.

Therefore, in addition to building a replica of Jung from the Majapahit era, the Majapahit Lovers Community organized the Spirit of Majapahit expedition. The expedition was an activity initiated by the Majapahit Lovers Community with the aim of promoting and preserving maritime historical and cultural values. It received support from Jero Wacik, the Minister of Culture and Tourism at the time, and was supported by other government agencies. This 13th-century Majapahit ship replica voyage has the aim of proving that maritime relations existed between Majapahit and the Ryukyu Kingdom in Okinawa, Japan. In addition to proving this, it is hoped that the traces of this voyage will arouse the interest of the younger generation in Indonesia's maritime glory in the past.

The replica of the Majapahit ship will sail from Indonesia with an initial destination of Okinawa, Japan, before heading to a final destination in Tokyo via the Kagoshima region. The choice of this destination is not without reason because it is in this region of Okinawa that traces of the past were found by sailors from the Majapahit Kingdom who had anchored there. One of these traces is the discovery of an ancient dagger 22.1 cm long at Enkuji Temple, Okinawa, Japan. Historian Kurayoshi Takara from Ryukyu Univer-

sity estimates that the keris came from the Majapahit Kingdom. These traces were also strengthened by the discovery of 13th-century Japanese Imperial Imori ceramics in Trowulan, East Java.

Stage II. Define

To maintain the educational value of the Spirit of Majapahit replica, the ship replica production process must be carried out based on data and scientific studies so that the resulting replica is not fictitious and far-fetched. In the Define phase, creators conduct research to collect data to provide an overview of creation and broaden insights to deepen the exploration process in creation. Data collection can be done through literature studies, interviews (with cultural leaders, traditional leaders, etc.), and observing archaeologists' remains both in visual form (reliefs and statues) and non-visual form (inscriptions, oral culture, etc.).

To create a ship design that is in accordance with history, archaeological facts, and culture, accurate data is needed. The data includes the shape, equipment, and ornaments installed on the ship. Until now, the form of a boat or sailing ship from the Majapahit kingdom era is unknown. This is due to the limited data available. The data available so far is only sourced from:

a. Relief from the temple was found. The reliefs at Penataran Temple depicting large ships from the Majapahit era are not clear. Indeed, there is a boat in the relief of the temple, but the boat only depicts a small boat or canoe with a small capacity (2 people are shown in the relief).

b. Literary sources (literary works and inscriptions) made during the Majapahit kingdom mostly cover land, forests, mountains, palaces, and hermitages. Sea travel and stories that discuss sea voyages have not yet been found.

c. Archaeological remains in the form of the remains of large boats or sailing ships from the time of the Majapahit kingdom are still very few (Munandar, 2011).

Due to the lack of data and information regarding ships from the Majapahit Kingdom era, the Majapahit Spirit Ship reconstruction team conducted research on the ship reliefs at Penataran Temple, Blitar, and the ship reliefs at Borobudur Temple as can be seen in Figure 3, as well as the shape of the “Borobudur Ship,” which was used to sail from Indonesia to South Africa (Sumarwoto, personal communication, December 15, 2022).



Figure 3. Borobudur Ship Relief.
(Source: kebudayaan.kemendikbud.go.id)

Apart from examining the reliefs on the temple, the reconstruction team also examined the wreck of a wooden ship buried on Rembang Beach, which is thought to have originated from the late Majapahit dynasty or at least the Demak era (Nugroho, W. D., 2009).

Another source used by the reconstruction team as a reference was the letter of Fernando Peres de Andrade, who was Commander of the Portuguese Fleet in Malacca. The letter was written in 1513 to Alfonso de Albuquerque (Halimi, 2006). The contents of Fernando Peres de Andrade’s letter described the Majapahit

Ship as being very large, so that the Anunciada Ship next to it felt very small. Alfonso also reported that the Portuguese fleet had attacked the Majapahit ship with large cannons, but the shots could not make a hole in the ship. The data obtained from this research is not enough to determine how the Majapahit Ship actually looked. Because of that, the reconstruction team asked for help from the Director General of Culture who was serving at the time, namely Mr. Hari Untoro Dradjat, to hold a seminar to gain an understanding of the true shape of the Majapahit Ship.

The seminar was held by inviting various expert speakers, including shipping experts from France and Germany, shipping expert academics from the University of Indonesia, the Surabaya Institute of Technology, Diponegoro University, Gajah Mada University, Sriwijaya University, Hasanudin University, and Persada University, shipping experts including Mr. Djauhari from Mojokerto, and also a psychic from Kendal.

Stage III. Idea

The ideation stage supports divergent thinking, so the construction team can come up with multiple solution concepts. In the Ideate phase, the reconstruction team used the data obtained during the Empathize and Define phases to design ships, ornaments, and other complementary objects to match the archaeological facts while still being attractive to the target audience.

Through the results of the seminar and based on the historical records found, the reconstruction team found that the Majapahit era ship could carry as many as 1,000 people, horses, war equipment, and food. Southeast Asian maritime archaeologist P. Y. Manguin argues that the Majapahit ship has a shape like a typical Indonesian ship that has a double rudder.

Maritime expert Horst Leibner argues that the Majapahit ships had double rudders as well as more than two triangular masts, using rectangular sails (Burningham & Mellefont, 1997).

In order for the visualization of the ship to still has the cultural characteristics of the Majapahit Kingdom era, the reconstruction team also conducted further research on the ornaments that will be used on the Spirit of Majapahit Ship. After the shape and design of the Spirit of Majapahit ship had been agreed upon, the results of the design were returned to seminars in front of experts and the public for validation.

Even though there are still pros and cons, especially from archaeologists regarding the legitimacy of the formation of the Spirit of Majapahit Ship, the results of the design from the reconstruction team are considered to be able to describe and have characteristics that show the Majapahit Kingdom. The positive response from experts and the public about the design of the Jung Spirit of Majapahit then became the basis for building the prototype of the Spirit of Majapahit ship.

Stage IV. Prototype

The prototype stage supports convergent thinking to create ship prototypes that are in accordance with the concepts obtained during the ideation phase. From the data obtained during the Ideate process, the reconstruction team agreed that the Majapahit Ship was approximately 150 meters long. In addition, the Majapahit Ship is also known to have two masts, with a main mast as high as 10 meters and a rear mast of 7 meters, using candik, and having a symmetrical shape of the bow and stern. Even though the ship is equipped with sails, at the stern of the ship there are oars. The reconstruction team then made a ship blueprint based on these findings.

After the blueprints were completed, the reconstruction team made a visual appearance so that the ships made were expected to be 'similar' to ships from the Majapahit kingdom era.

The actual size of the Majapahit Ship was estimated at 150 meters, but due to cost considerations, the reconstruction team could not build a replica of the Majapahit Ship like the original. Therefore, it was decided to build the Spirit of Majapahit ship at a scale of 1:6, which is 21 meters long and 5 meters wide as can be seen in Figure 4.

For authenticity, the shipbuilding will be done with teak wood and the traditional peg technique, which, according to Professor P.Y. Manguin, was used in the era of the Majapahit Kingdom in the 13th century (Manguin, 1993). The shipbuilding was carried out in Sumenep, East Java. The ship will mainly be propelled using sails, but for security and safety reasons, the reconstruction team added engines and modern navigation technology such as GPS, marine radar, Navtex, and radio communication via satellite.



Figure 4. Spirit of Majapahit ship.
(Source: gapuranews.com)

Stage V. Test

The final stage of the whole process is testing. The trial will be carried out by sailing a prototype ship on a goodwill mission from Jakarta to Japan on the Spirit of Majapahit expedition. This aims to prove that with the maritime technology

possessed by the ancestors of the Indonesian people in the 14th and 15th centuries, Majapahit was able to sail the oceans to anchor in Hokkaido, Japan.

The Spirit of Majapahit ship finally departed for Japan. The ship was released by the Coordinating Ministry for Maritime Affairs and Resources on May 11, 2016 from the Marina Jakarta pier. With the theme of the traces of the glory of Majapahit, the ship sailed on the route Jakarta-Pontianak-Brunei-Manila-Kyusung-Okinawa-Kagoshima-Nagoya-Tokyo with 10 crew members as can be seen in the expedition route in Figure 5.



Figure 5. Spirit of Majapahit Expedition Route.
(Source: maritim.go.id)

On July 17, 2010, the Spirit of Majapahit arrived in Manila and was sent back to Indonesia due to the Domeng storm in the South China Sea. The Manila Port Office and Weather Information Center did not allow the Spirit Majapahit Ship to sail to Okinawa for safety reasons. The voyage was delayed again due to the 9.0 on the Richter scale earthquake in Japan in 2011. The Japan Nuclear Safety Agency reported that the nuclear reactor situation was in an emergency condition. So that the mission of the Goodwill Ship of the Spirit of Majapahit was again delayed and had to stay for some time at Benoa Harbor, Bali. It was only on June 24, 2016 that the Spirit of Majapahit expedition arrived at Kagoshima Harbor, Japan, which was the last stop before the Spirit of Majapahit was displayed at a museum in Tokyo.

Conclusion

Learning from the reconstruction process of “Jung Spirit of Majapahit”, it can be concluded that the reconstruction and expedition of the Spirit of Majapahit were carried out based on the mindset of design thinking. Ship reconstruction was carried out with the aim of reintroducing Indonesia’s maritime glory in the era of the Majapahit Kingdom, so the reconstruction team had to conduct in-depth research to rediscover the shape of ships from that era before carrying out the process of building and sailing the ship.

The stages taken by the reconstruction team can be described through the mindset of design thinking and can be used as a reference in creating creative products based on history and local culture as follows:

1. Empathize: Understand the target audience at a deep level. To introduce local history and culture to the wider community, especially the younger generation, creators need in-depth knowledge of how to communicate using media and vehicles that attract the attention of their target audience.

2. Define: In creating creative products related to local history and culture, research is needed in advance so that the products produced are not fictitious and far-fetched. The lack of historical records and data can make it difficult for creators to carry out the research stage, so creators can discuss with cultural experts, for example, a community of culture lovers or state agencies such as the BPCB. In this case, government support and infrastructure for providing access and data are needed by creators.

3. Ideate: At this stage, the creator has obtained good data about the target audience or about the cultural and historical objects that they want to communicate. The data is then analyzed to produce vari-

ous solution concepts. This stage supports divergent thought processes that explore different ideas.

4. Prototype: At this stage, the creator returns to the concept of convergent thinking, namely focusing on one solution and creating a concrete prototype to solve the problem. At this stage, if needed, the creator can conduct research again to determine the best solution by involving expert sources and potential users of the creative products to be produced. Responses from informants will be used in the process of perfecting the prototype.

5. Test: In the final stage of the design-thinking-based creation process, the creator conducts a real trial to find out whether the resulting creative product can solve the problems formulated at the beginning of the design process. The wider community's response at this stage can be used as input and material for improvement in future creation processes.

Communicating history and culture that have been "lost" through creative products cannot be done with 100% accuracy. Changes and adjustments are needed so that the product is accepted by the target audience and in accordance with the context of the time. These adjustments are still acceptable as long as the creative products produced have gone through a process of creation based on design thinking supported by research that is developed into a creation concept based on divergent and convergent thinking and has gone through a research and verification process supported by experts in their fields (historians, cultural experts, as well as the experts involved).

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