



An Effort of Archaeological Research to Support Sustainable Development Programs on the Sunan Pandanaran Sites, Klaten District, Central Java Province, Indonesia

Gunadi Kasnowihardjo^{1*}, Taufik Murtono², Ani Rostiyanti³, Masyhudi Masyhudi¹, Sukari Sukari³

¹Prehistoric and Historic Archaeological Research Center, National Research and Innovation Agency, Indonesia

²Faculty of Art and Design, Indonesia Institute of the Arts Surakarta, Indonesia

³Research Center for Environment and Maritime Archaeology, and Cultural Sustainability, National Research, and Innovation Agency, Indonesia

*Corresponding author. Email: gunadibalar@gmail.com

ABSTRACT

The United Nations adopted 17 Sustainable Development Goals (SDGs) Programs as global actions for all nations. Under SDG 11, Sustainable Cities and Communities, one target is to protect the world's cultural and natural heritage (11-4). In Klaten, Central Java, the Sunan Pandanaran Tomb Site area is one of the potential cultural resources that should be maintained. This research aims to raise the values of the Cultural Heritage, both tangible and intangible, found in the Sunan Pandanaran Tomb Site Area and developed to support sustainable development programs—especially the potential for intangible cultural heritage, such as knowledge of the Batik-making technology and food and beverages (F&B) industry. This research is using a phenomenological approach. Hence, it can produce outcomes that benefit society continuously.

Keywords: *Applied Research, Batik, Phenomenological approach, SDGs, Sunan Pandanaran Sites*

1. INTRODUCTION

17 Sustainable Development Goals (SDGs), or Global Goals, are the plan of action for all nations to transform the world for sustainable development by 2030. This plan is the 2030 agenda by the United Nations. This agenda aspires to ensure prosperity and well-being for all humanity. Sustainable Development is universal, ambitious, and comprehensive, involving everyone in all nations. The importance of this universal mandate is to contribute to building peace, eradicating poverty, development, and intercultural dialogue through education, science, culture, communication, and information. Accelerating the momentum towards Sustainable Development is a human right, a development imperative, and peace. Our collective promise as the United Nations, governments, and societies is to build a better future for all.

From 17 SDGs, one of the targets under SDG 11 is to protect the world's cultural and natural heritage (11-4). It can be done using historical-archaeological

research. (Meissner, 2021) [1] also supported it, stating that findings in intangible cultural heritage can effectively contribute to Sustainable Development through three dimensions: economic, social, and environmental. Therefore, the researchers wrote this article titled "An Effort of Archaeological Research To Support Sustainable Development Programs On The Sunan Pandanaran Sites, Klaten District, Central Java Province, Indonesia". This research also aligns with the Ministerial Regulation, Ministry of Research, Technology and Higher Education Republic of Indonesia, No. 42 of 2016 concerning Applied Technology Readiness. Based on the regulation, there are three research stages: Basic Research, Applied Research, and Developmental Research. Each stage consists of 3 levels, as shown in the **Figure 1**.

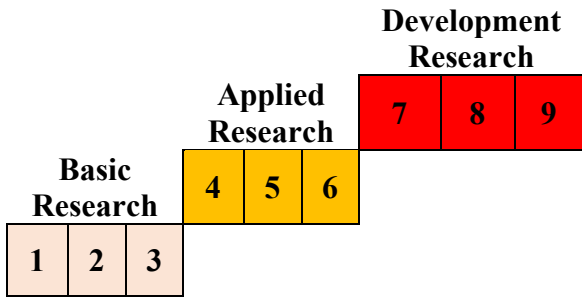


Figure 1. Stage of Research
(Source: Ministerial Regulation, 2016)

In the United States, basic and applied research to develop the nation's economic growth began after World War II. The program, sponsored by the National Science Foundation, focuses on research and development in the industrial sector. Several other government agencies, universities, colleges, and other non-profit organizations also support this program (Foundation, 1967) [2]. Therefore, researchers in Social Sciences and Humanities can also support the sustainable development program agreed upon by 194 countries (including Indonesia) based on the Ministerial Regulation.

Related to the history of research, this research can reach the level of development research. Hence, the outputs from applied research can be tested in competent institutions and evaluated until the outputs can be beneficial. Based on the observations of several scientific papers on the Sunan Pandanaran Site in research reports, articles, and theses (Suprpto, 1974 [3]; Nawawi, 2004 [4]; Suwarno, 2005 [5]; Hastuti, 2010 [6]; Fatimah, 2018 [7]; Aziz, 2021 [8]; Kasnowihardjo et al., 2022 [10]; Kasnowihardjo, 2021 [9]), can be concluded that these studies are still limited to basic research and have yet to reach the applied or development research level.



Fig. 2. Dadap Tulis Tomb & **Fig. 3.** Cakra Kembang Tomb Complex
(Source: Gunadi Collection, 2022)



Figure 2. *Genthong Si Naga* (left) and pilgrims' consumed the water (right)
(Source: Gunadi Collection, 2023)

The crucial problem found is the decline of the Batik Bayat handicraft industry since 1975. Until now, it has yet to find the root of the problem and how to solve it. So, this research aims to know whether phenomenological studies can observe the root causes and how to solve the problem related to industry in the Sunan Pandanaran Tomb Site Area.

2. METHOD

Basic research focuses on advancing knowledge rather than solving problems. Applied research, on the other hand, directs its efforts toward finding solutions to specific problems. In applied research, researchers often work to help clients and are driven by the client's wishes. This applied research uses a phenomenological approach, which looks at phenomena that are found and have yet to be discussed in the previous research. Based on the literature review, such as reports, articles, and theses about the Sunan Pandanaran Tomb Site Area, several phenomena were found, both tangible and intangible, which need to be studied and clarified. The phenomena found will be used as a data set and studied at the applied research level. One by one, the phenomenon or reality at hand will be studied comprehensively by involving various experts so that a conclusion will be found that is close to the truth. This research is qualitative, and the reasoning used is inductive thinking. However, the implementation in the field is far from the possibility of using deductive and quantitative thinking and mixed methodology (Tashakkori and Teddlle, 2010) [11].

An exploratory survey collects artefactual, historical, and ethnographical data in the Sunan Pandanaran Site Area. Referring to the Regulation of the Minister of Research, Technology, and Higher Education and the SDGs Program Convention, this method begins with applied research. It continues with the next stage, development research.

3. DATA AND DISCUSSION

The results of the survey in the Sunan Pandanaran Tomb Site Area data in the form of phenomena found from the observations of researchers include:

3.1. The phenomenon of *Dadap Tulis* and *Cakra Kembang* are place names (toponymy) of the burial location of Sunan Pandanaran and his family (Figure 2 and Figure 3). The tomb was originally on *Dadap Tulis* Hill. Then, on the orders of Sultan Agung, the tomb was moved to a higher hill at *Cakra Kembang*. Both tomb complexes are now the object of pilgrims visiting the “bandit saints”, known as *Walisongo*, pilgrimage package.

3.1.1 *Genthong Si Naga* and *Sumur Wali's* phenomena are related to water. *Genthong Si Naga*, previously used as a water container for wudhu, is now still functioning as a water container and is placed on the side of the stairs leading up to the Tomb of Sunan Pandanaran. By pilgrims, the water from *Genthong Si Naga* is believed to have supernatural powers. There are 7 (Seven) Wells of *Wali* (bandit saints), in the Sunan Pandanaran Tomb Site Area, which is said to have materialized along with the arrival of Sunan Pandanaran, whom Sunan Kalijaga accompanied in this area. Therefore, until now, Sunan Pandanaran's Tomb pilgrims often ask to be delivered to one of the seven wells, which they call *Sumur Bandung*. The 7 Wells of *Wali* are: *Belik* Well, *Gondang* Well, *Bandung* Well, *Blumbang* Well, *Panguripan* Well, *Pasucen* Well, and *Palereman* Well.

3.1.2 The phenomenon of Pilgrims and Host Communities, between the need and supply of goods and services.

3.1.3 The phenomenon of Batik Bayat and pottery artisans, and other entrepreneurs who need to be raised.

The toponymic phenomena of *Dadap Tulis* and *Cakra Kembang* are locations the community and pilgrims believe to be the most sacred places. Both places are the graves of Sunan Pandanaran and his family. Sunan Pandanaran, one of the Guardians who spread Islam in Java, was the closest to Sunan Kalijaga, the central figure in the *Walisongo* group (Riyadi & Suwaji, 1981) [12].

The prominence of Sunan Pandanaran can be seen from the attention of Sultan Agung, King of Mataram, who took the time to make a pilgrimage to the *Dadap Tulis* Tomb (Figure 2). In addition, he also built a tomb complex on *Cakra Kembang* Hill (See Figure 3) and

moved the tomb of Sunan Pandanaran and his family from *Dadap Tulis* to the top of *Cakra Kembang* Hill (Suradi, 1992) [13].

Thanks to Sunan Pandanaran's sanctity, those two places, *Dadap Tulis* and *Cakra Kembang*, have become significant pilgrimage attractions for the Klaten Regency area. The latest data on the number of pilgrims from August 1 to 31, 2022, was 30,772, an average of 1,000 people daily (Kasnowihardjo et al., 2022) [9].

In the phenomenon of *Genthong Si Naga* and 7 Wells of *Wali*, water is a source of life. Before the earth was inhabited by living things, such as humans, animals, and plants, water was already available in the seas, lakes, and rivers, and even prepared reserves in the form of water sources in the earth's bowels. When and wherever humans will look for and approach water or water sources. Human dependence on water has led to the belief in certain supernatural powers that "dissolve in water". *Genthong Si Naga* was initially used as a *padasan* (washing several parts of the body or wudhu) and converted into a *genthong* to store water for various purposes. The results of the research team's observations from August 1 - 5, 2022, as well as the results of interviews with Mr. Yunus, the caretaker of Sunan Pandanaran's tomb, told that pilgrims who entered "Gedong Inten", the family's tomb of Sunan Pandanaran, most of the visitors consumed water from *Genthong Si Naga* (See Figure 4, left). Mr. Ebru Saptono, the other caretaker, interviewed several groups of pilgrims. From the interview, he concluded that 80% of each group consumed water from *Genthong Si Naga* (See Figure 4, right).

The phenomenon of 7 Wells of *Wali* was found in the Sunan Pandanaran Tomb Area, which the community believed to be contemporaneous with the arrival of Sunan Pandanaran and Sunan Kalijaga in the Bayat area. The 7 Wells of *Wali* are consecutive from the beginning of Sunan Pandanaran's arrival and stay in Bayat, Melikan Village, Wedi, Klaten Regency. Two ancient wells were found at that location, namely *Belik* and *Gondang*. Approximately 1 kilometer east of the two wells, the community found two other ancient wells called *Bandung* and *Blumbang*. These two wells are located in Sumber, Melikan Village, Wedi District, Klaten Regency. Three other ancient wells were found in Dolon, Warung Kemis, and Slametan in Paseban Village, Bayat, Klaten Regency. The three wells are *Panguripan*, *Pasucen*, and *Palereman* Well.

The 7 Wells of *Wali* all have historical connections with the activities of Sunan Pandanaran and Sunan Kalijaga in spreading Islam in Java. Among the seven wells, the *Bandung* Well is the most famous by the public, especially pilgrims, among the others. It

is because there was a time when Sunan Pandanaran wanted to perform wudhu and could not find a source of water. He suddenly stuck his stick, and when he pulled it out, the stick emitted clean water.

The incident is similar to the story of Prophet Musa Allaihi salam in the Qur'an Surah Al-Baqarah: 60: "And remember when Moses prayed for water for his people, We said, "Strike the rock with your staff." Then twelve springs gushed out, and each tribe knew its drinking place. We then said, "Eat and drink of Allah's provisions, and do not go about spreading corruption in the land." Also in Surah Al-A'raf: 160: "We divided them into twelve tribes—each as a community. And We revealed to Moses, when his people asked for water, "Strike the rock with your staff." Then twelve springs gushed out. Each tribe knew its drinking place. We shaded them with clouds and sent down to them manna and quails, saying, "Eat from the good things We have provided for you." They certainly did not wrong Us, but wronged themselves." (Muhammad, 2015: 9 and 171) [14].

The phenomenon of *Genthong Si Naga* and the 7 Wells of Wali implies the realization of emotional ties with pilgrims. This emotional cord will maintain the continuity of connectivity between one another. The physical and spiritual comfort of the pilgrims after a tiring journey will gradually disappear, especially after they have finished praying and dhikr at the Tomb of Sunan Pandanaran and ended by drinking water from *Genthong Si Naga*. Most pilgrims not only drink but also wash their hands and feet. Not even a few bring home for family members who want and consume the water. Such conditions cause pilgrims to increase day by day. Regardless of the quality of the hardness of *Genthong Si Naga* water when consumed, this research question can be studied separately. In contrast to zam-zam water, apart from being spiritually *sunnatulloh*, scientifically, it has been tested that there is no other mineral water whose hardness value can match or even surpass it. Moreover, the mineral content of zam-zam water is complete, all of which are useful for the health of living things.

The increasing number of pilgrims has not been responded to strategically by the Paseban Village Community, Bayat Subdistrict, as the host. Instead, as the host, the community should prepare new facilities to entertain pilgrims so that they are more impressed and interested in spiritual pilgrimage to the Tomb of Sunan Pandanaran. As a pilgrimage attraction included in the Walisongo Pilgrimage Package, from the point of view of Economics, the Sunan Pandanaran Tomb Site Area is a market where sellers and buyers meet. The results of the researchers' observations suggest that the merchandise presented in this souvenir shop is no different from that in Beringharjo Market in

Yogyakarta and Klewer Market in Surakarta (Figure 5). It is mostly sell Batik Bayat in the form of clothes.



Figure 3. Souvenir shop in the Sunan Pandanaran Tomb Site Area
(Source: Gunadi's Collection. 2022)

This phenomenon is exciting, and the results of the research team's evaluation of these conditions are a poor impression and are less attractive to pilgrims. Whereas, ethnographic phenomena are a potential intangible cultural heritage found in the Sunan Pandanaran Tomb Site Area that can be packaged and presented to pilgrims as a Bayat specialty. This contains values of emotional ties with the figure of Sunan Pandanaran.

There are several Sunan Pandanaran's favorites, such as "Serabi Kuntulan", "Jenang Kapuronto", and "Paket Caos Dhahar" (See Figure 6). The same applies to Bayat batik cloth artisans after Sunan Pandanaran's presence in the Bayat region. Batik Bayat once flourished in the early XVII century AD. Since the 1970s, several Batik Bayat entrepreneurs began to collapse due to the establishment of the Batik Keris Company with printing technology. One of the reasons for the collapse of Batik Bayat entrepreneurs is that Batik Bayat has no identity or unique characteristics, so it is not recognized and has no appeal.

The results of historical-archaeological research with a phenomenological approach in the Sunan Pandanaran Tomb Site Area (Kasnowihardjo et al, 2022) [9], among others, the output and outcome are all potential intangible cultural heritage which is a strength in supporting the Sustainable Development Goals program, especially indicator 11-4. Figure 7 shows the final result of the *Genthong Si Naga's* pattern that transformed into Batik Cloth.



Uduk- rice, Ketupat, rice ball, side dishes, whole Chicken, Jenang Kapuranta, and Banana a package of Sunan’s favorite food

Figure 4. The tradition of alms sharing food “Caos Dhahar” (Source: Gunadi’s Collection, 2023)



Figure7, The transformation process of the Genthong Si Naga artifact into GSN batik cloth motif (Source: Gunadi’s Collection, 2023)

4. RESULTS

Three results can be concluded based on data and discussion using a phenomenological approach in the Sunan Pandanaran Tomb Site Area.

4.1. Academic Results (Output)

Output of basic research focuses on advancing knowledge rather than solving problems. However, from the other side, output is in more than just the form of reports and scientific papers published research results. The output of applied research results in the form of Intellectual Property Rights certificates (See Figure 8) is an effort to improve research results from output to outcome, which is the Batik motifs (See Figure 9). Similarly, output articles that can lead to the outcome will help the problem-solving process.



Figure 5. Intellectual Property Rights Certificates



Figure 9. Batik Motifs IPR Sertificate (Source: Gunadi’s Collection, 2023)

4.2. Practical Results (Outcome)

The outcome of this research is the socialization and workshop of the research results attended by the artisans and entrepreneurs of Batik Bayat, especially those listed as members of the Koperasi Batik "PBT", Bayat, Klaten Regency. Some artisans (as shown in Figures 10 & 11) could understand and adopt the innovative ideas presented. Although there are still areas for improvement in motifs and coloring (for the sake of industrial Intellectual Property Rights proposals). Therefore, they still need guidance and assistance. Practically, this research can help Batik Bayat artisans and entrepreneurs rise and move forward to a promising future. Besides, there are three types of Sunan Pandanaran's favorite foods: "Serabi Kuntulan", "Jenang Kapuronto", and "Paket Caos

Dhahar" which are only available in the Sunan Pandanaran Tomb Site Area. Therefore, these three menus can be used as Pandanaran's signature dishes and can be sold as a Bayat specialty to the pilgrims.



Figure 10. Batik Motif Innovation from Insyani
(Source: Gunadi's Collection, 2023)



Fig. 11. Batik Motif Innovation from Utami
(Source: Gunadi's Collection, 2023)



Fig. 12. Batik Pandanaran's Merchandises (Source: Gunadi's Collection, 2023)

4.3. Development Results (Benefit)

In the primary Social Science Humanities Research (historical-archaeological), reaching benefits takes much effort. It takes a long time, and other auxiliary sciences include packaging, marketing, correspondence, and lobbying. It is because, at this level, it inevitably needs investors and a more comprehensive network. At this level, the responsibility of the researchers is substantively complete. The emergence of outlet souvenirs of Pandanaran batik cloth products and food stalls that provide Pandanaran specialties is the realization of development research. Figure 12 shows the finished products of Pandanaran Batik merchandise, including the packaging. To reach the benefit stage the requirements include building partnerships, preparing an online shop, and opening a Batik outlet and food stall specializing in "Paket Caos Dhahar" menu at the Sunan Pandanaran Tomb Site Area.

5. CONCLUSION

Applied research directs its efforts toward finding solutions to specific problems. In applied research, researchers often work to help clients and are driven by clients' wishes. Concerning the research title, the object of this research is the Sunan Pandanaran site located in Paseban Village, Bayat District, Klaten Regency, Central Java Province, Indonesia. The historical-archaeological potential of the Sunan Pandanaran Tomb Site above makes the Sunan Pandanaran Tomb Site rank parallel to the other Sunan Tomb Sites in the Walisongo group.

Academically, the Sunan Pandanaran Tomb Site has phenomenological potential that is very complex and allows for research related to sustainable cultural development on a national scale and the Sustainable Development Goals Program on a global scale. The phenomena found in the Sunan Pandanaran Tomb Site Area are local data that play a role in global issues. Cultural intangible heritage, such as Pandanaran signature dishes and Bayat batik handicrafts with Pandanaran motifs, can be published in national and international forums. Practically, this research can solve problems and provide outputs, outcomes, and

expectations of sustainable benefits. Thus, this implementation research model is one of the strategic aspects of realizing sustainable development in archaeology. Furthermore, the results of this research will benefit the Indonesian people, especially Bayat, Klaten District batik artisans and also F&B entrepreneurs, morally and materially.

This research has limitations which is solving Batik Bayat artisans' problem. Besides, this study also

highlights the food specialty of Bayat. Both limitations are possible to implement due to the time and process and are in line with SDGs 11-4. This limitation is expected to be improved in future research. Therefore, for further research, Genthong Si Naga and the seven wells of Wali can be observed further and researched separately due to the long process of research from the laboratory through the implementation of the outcome.

REFERENCES

- Methodology*. Yogyakarta: Pustaka Pelajar
- [1] Meissner, M. (2021). *Intangible Cultural Heritage and Sustainable Development*. <https://doi.org/https://doi.org/10.1007/978-3-030-79938-0>
- [2] Foundation, N. S. (1967). *BASIC RESEARCH, APPLIED RESEARCH, AND DEVELOPMENT IN Industry, 1965*. Washington D. C.: U.S. Government Printing Office.
- [3] Suprpto, D. (1974). *Laporan Penelitian Kekunoan di Bayat-Klaten*. Yogyakarta: Fakultas Sastra dan Kebudayaan, Universitas Gadjah Mada.
- [4] Nawawi, R. (2004). *Masjid Gala Peninggalan Sunan Bayat, Keadaan dan Peranannya (1980-2002)*. Yogyakarta: Masyarakat Sejarawan Indonesia.
- [5] Suwarno, S. (2005). Tradisi Pembuatan Gerabah Bayat: Salah Saty Unsur Kebudayaan Prasejarah yang Masih Tetap Berlangsung sampai Saat Ini. *Patra Widya*, 6(2).
- [6] Hastuti, I. P. (2010). *Peranan Sunan Pandhanarang Dalam Penyebaran Agama Islam di Daerah Klaten*. Universitas Sebelas Maret.
- [7] Fatimah, A. N. M. (2018). *Pengelolaan Obyek Wisata Makam Ki Ageng Pandanaran Klaten Perspektif Dakwah*. Universitas Islam Negeri Walisongo.
- [8] Aziz, B. A. (2021). *Ziarah dan Spirit Ekonomi Masyarakat di Makam Sunan Pandanaran Bayat, Klaten, Jawa Tengah*. Universitas Islam Negeri Sunan Kalijaga.
- [9] Kasnowihardjo, G. (2021). Batik Bayat, Sejarah, Dinamika dan Upaya Pengembangannya. *Seminar Nasional Industri Kerajinan Dan Batik*, 3(1), 1–12.
- [10] Kasnowihardjo, G., Rostiyati, A., Masyhudi, M., & Sukari, S. (2022). Mencari Jati Diri Batik dan Gerabah Bayat: Upaya Menuju Pengembangan Budaya Berkelanjutan. *Prosiding Seminar Nasional Industri Kerajinan Dan Batik 2022*, 1–9.
- [11] Tashakkori, A., & Teddlle, C. (2010). *Mixed*
- [12] Riyadi, S., & Suwaji. (1981). *BABAD DEMAK I*. Perpustakaan Nasional, Republik Indonesia dan Balai Pustaka.
- [13] Suradi. (1992). *BABAD NITIK*. Proyek Penelitian dan Pengkajian Kebudayaan Nusantara, Departemen Pendidikan dan Kebudayaan.
- [14] Muhammad, A. S. (2015). *Mushaf Grand Maqamat*. Diterbitkan oleh Institut Ilmu Al Qur'an (IIAQ) Jakarta.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

