

## Javanese Indigenous Knowledge in The Collections of Suaka Budaya Keraton Kasunanan Surakarta Museum

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### Abstrak

Kasunanan Surakarta merupakan salah satu kerajaan di Jawa yang mewariskan berbagai produk budaya. Buktinya adalah koleksi yang tersimpan di Suaka Budaya Keraton Kasunanan Surakarta Museum. Benda produk budaya ini menjadi bukti adanya pengetahuan pribumi leluhur Jawa. Oleh sebab itu penelitian ini bertujuan untuk mengidentifikasi pengetahuan lokal tersebut berdasarkan koleksi di museum. Hasil penelitian ini menunjukkan bahwa masyarakat Jawa memiliki pengetahuan untuk menganyam bambu menjadi wadah berbentuk geometri dan manfaat kesehatan dari alat masak tradisional. Mereka juga bisa membuat mesin tradisional (*lesung*, *lumpang*, dan *alu*) untuk membuat tepung, pemecah cangkang biji, dan menghaluskan rempah. Keahlian lain adalah membuat alat komunikasi tradisional (*lumpang*, *gamelan*, dan *lonceng*), permainan tradisional (untuk melatih anak-anak dalam belajar menguasai kecerdasan emosi, berstrategi mendapatkan sesuatu, dan investasi), olahraga tradisional (berfungsi sebagai sarana belajar perang dan memilih prajurit), dan pandai besi (*keris* dan tombak). Merekapun ahli membuat makanan fermentasi, ramuan kecantikan kulit dan rambut (*ratus*), dan kesehatan gigi dan mulut (*kinang*). Bidang seni pertunjukkan juga mereka kuasai dengan adanya alat musik rebab, seni tari, dan wayang (*suket* dan *klithik*). Kesimpulannya adalah masyarakat Jawa memiliki pengetahuan lokal dalam bidang kerajinan tangan, peralatan pertanian pasca-panen, alat komunikasi, permainan, olahraga, pandai besi, makan fermentasi, kecantikan, kesehatan gigi dan mulut, dan seni pertunjukkan.

**Kata kunci:** pengetahuan lokal; jawa; suaka budaya keraton kasunanan surakarta museum

### Abstract

Kasunanan Surakarta is one of the kingdoms in Java that has inherited various cultural products. The proof is the collection stored in the Suaka Budaya Keraton Kasunanan Surakarta Museum. These cultural product objects are proof of the existence of indigenous Javanese ancestral knowledge. Therefore, this research aims to identify local knowledge based on museum collections. The results of this research show that Javanese people have the knowledge to weave bamboo into geometrically shaped containers and the health benefits of traditional cooking utensils. They can also make traditional machines (*lesung*, *lumpang*, and *alu*) for making flour, breaking seed shells, and grinding spices. Other skills include making traditional communication tools (*lumpang*, *gamelan*, and bells), traditional games (to train children in learning to master emotional intelligence, strategies for getting things and investing), traditional sports (for learning about war and choosing soldiers), and blacksmith (*keris* and spear). They are also experts in making fermented foods, potions for skin and hair beauty (*ratus*), and oral health (*kinang*). They also master the field of performing arts with the musical instruments rebab, dance and wayang (*suket* and *klithik*). The conclusion is that the Javanese people have local knowledge in the fields of handicrafts, post-harvest agricultural equipment, communication tools, games, sports, blacksmithing, fermented foods, beauty, dental and oral health, and performing arts.

**Keywords:** indigenous knowledge; java, suaka budaya keraton kasunanan surakarta museum

## 1. Introduction

Kasunanan Surakarta Hadiningrat is one of the kingdoms that still exists in Indonesia today. This kingdom has existed for hundreds of years and is proof of Javanese civilization. This kingdom's territory currently includes Solo. Solo and Surakarta are actually in the same area. The king's family lived in the Keraton Kasunanan Surakarta. The local community calls the Keraton Surakarta by the Keraton Solo. Keraton Kasunanan Surakarta, Kasultanan Yogyakarta, and Kadipaten Mangkunegaran were one. All three were formerly in the Islamic Mataram Kingdom. Keraton Kasunanan Surakarta was built in 1744 as a replacement for Keraton Kartasura which was damaged in 1743.

In the research of Qodariah et al. (2022) was explained that the Islamic Mataram Kingdom was founded by Panembahan Senapati Ing Ngalogo. He became the first Sultan in 1575 AD and lived in the Keraton Kartasura. The name of Keraton Kartasura was later changed by his descendant, Paku Buwana II, to Keraton Surakarta. The royal family began to occupy the palace on February 17, 1745 AD. The name Surakarta itself consists of two words, namely Karta which means prosperous and Sura which means brave. If is combined, they have a deep meaning; "Brave because of Truth and Glory". Built hundreds of years ago, this palace still stands today. Not only for the royal family and their employees, several parts of the palace are open to the general public. Anyone can tour in this one of the palaces which are the pride of the Javanese.

The result of research by Haryoko et al. (2020) explained that the Keraton Kasunanan Surakarta has great potential as a tourist attraction because this palace is now an icon of the city of Surakarta. Visitors will also be given various options for cultural tourism. One of them is a visit to the museum which stores historical relics from the kingdom. Ekowati et al. (2015) acknowledged that the Suaka Budaya Keraton Kasunanan Surakarta Museum is an example of a means for studying Javanese culture. The objects stored in the museum are objects used by the King's family in the past. This museum was founded to protect the heirlooms inherited from the Kasunanan Surakarta Hadiningrat. Heirlooms such as keris, swords, royal umbrellas (*Songsong Raja*), and ceremonial tools are stored in this museum.

According to Tanaamah & Wenas (2014), the management of the Keraton Surakarta Kasunanan has developed Knowledge Management to maintain the existence of knowledge possessed by the Javanese tribe. One of them is creating a website to inform everything about palace life, cultural objects, art, ceremonies, *primbon* (Javanese's horoscope), Javanese philosophy, and royal events. Museum is one place for managing this knowledge because some of Java's knowledge is stored in museum. We can see cultural objects inherited from the palace, learn about the history of the Kasunanan Surakarta, and imagine the life of the royal family through the museum collections.

Based on this statement, it can be understood that this museum collection is clear evidence of the Javanese people's skill in making objects. This also proves that they have the knowledge and ability to make cultural products. This knowledge represents indigenous Javanese knowledge. Suaka Budaya Keraton Kasunanan Surakarta Museum then functions as a place to store local knowledge. This is reinforced by Kim's (2012) statement that museums are cultural heritage institutions and knowledge centers for the

community. Museum collections represent certain cultures and become a medium of knowledge for the public to understand that culture.

Therefore, we intend to examine the types of indigenous Javanese knowledge represented in the collections of the Suaka Budaya Keraton Kasunanan Surakarta Museum. The previous research we conducted was Javanese Local Knowledge in the Mangkunegaran Museum Collections (Sukaesih, et al., 2022). What this research has in common with this research is the analysis of indigenous Javanese knowledge, while the difference lies in its heirs, namely the Kadipaten Mangkunegaran and the Kasunanan Surakarta. The result of research by Sukaesih et al. (2022) shows that the local knowledge of the Mangkunegaran people implicit in the Mangkunegaran Museum collection is handicrafts (processing metal, wood, and bamboo), making sugar cane, and preserving animals.

Therefore, we argue that the Suaka Budaya Keraton Kasunanan Surakarta Museum also stores indigenous knowledge of Javanese. So this research aims to obtain the types of indigenous Javanese knowledge that are represented in the museum collections.

## **2. Research Method**

This research aims to explore the indigenous knowledge of Javanese behind the collections of the Suaka Budaya Keraton Kasunanan Surakarta Museum. Therefore, we use a qualitative design with a museum study approach. Leavy (2014) argues that qualitative research is used for the purpose of exploring social phenomena, and describing or explaining activities, realities, and situations based on events, documents, and artifacts. According to Tucker (2014), museum studies are research based on collections. The main data collection in this study is observation and analysis of content in the collection. Additional data was obtained from text containing brief explanations displayed near each collection. The data analysis process was carried out by mapping themes according to collection groups. The results of the analysis are reinforced with a brief explanation so that readers understand the essence of the collection.

We collected data by observing the collections one by one at the Suaka Budaya Keraton Kasunanan Surakarta Museum, recording texts (which were next to the collections), photographing the collections, and interviewing tour guides. We chose a collection that was originally made by Javanese people according to the explanation from the tour guide. Data analysis was carried out by mapping local knowledge according to the collections so that themes were formed. The explanation of the results of the data analysis is strengthened by quotations from other research results that have previously been published. The results of collection and text analysis, interview results, and quotations from journals become triangulation that supports the validity of the research data.

## **3. Results and Discussion**

Museums are known as places to store artifacts or historical evidence. There are also those who consider museums as educational tourist attractions. If we break it down again, the word education will be

closely related to knowledge because the purpose of education is to gain knowledge. Some museums hold collections that reflect the culture of the society in which the museum was built. Museums like this are characterized by names that contain ethnic elements and their collections come from the heritage of the people of that ethnicity.

The example is Suaka Budaya Keraton Kasunanan Surakarta Museum. Automatically, the collections have local Javanese characteristics and have evidence of the Javanese cultural heritage of Kasunanan Surakarta Hadiningrat. This is as explained in research by Warren & Matthews (2018) that museums act as institutions for storing cultural and intellectual evidence of society in ancient times. Existing collections contain memories of individuals, communities, or institutions that existed in past civilizations. All of this is a cultural heritage as well as a legacy of intelligence from our ancestors.

Based on this explanation, it can be understood that museums actually function as information storage institutions that can be a source of knowledge about certain cultures for visitors. This can also be interpreted that the museum is an institution that stores local knowledge. According to Soh & Omar (2012), local knowledge refers to the abilities of a group of individuals, containing wisdom, beliefs, and teachings that apply in a particular community. In general, local knowledge is passed down from generation to generation through oral tradition. Local knowledge usually takes the form of folklore, legends, rituals, traditional songs, and customary laws. Local knowledge is a combination of expertise, skills, and abilities sourced from parents, traditional leaders, and elders from local communities in certain areas in a sustainable manner but generally has not been documented.

The museum tour guide, Miss A, explained that Kasunanan Surakarta Hadiningrat was one of the oldest kingdoms in Java because it was previously part of the Islamic Mataram Kingdom. Therefore, this kingdom inherited so many cultural products, both tangible and intangible. Material cultural products are stored in two museums; Radya Pustaka Museum and Suaka Budaya Keraton Kasunanan Surakarta Museum. The Radya Pustaka Museum is devoted to storing ancient manuscripts and traditional weapons, although there are other collections such as *wayang* and inscriptions.

The collections stored in the Suaka Budaya Keraton Kasunanan Surakarta Museum represent life during the royal era; such as cooking equipment, agricultural tools, dance, traditional games, handicrafts, and so on. Miss A added, that by looking at the collections, visitors can imagine the lives of ancient Javanese people. Apart from that, currently, the museum management continues to make improvements so that tour guides can explain information and knowledge from each collection so that it is easy for visitors to understand. The following are themes of indigenous knowledge that are represented in the collections at the Suaka Budaya Keraton Kasunanan Surakarta Museum.

### **3.1. Bamboo Cooking Utensils**

Traditional cooking utensils in the museum collection are *kukusan* and *ceting*. Both are the result of woven bamboo. *Kukusan* is a traditional cone-shaped steaming tool. *Ceting* is a round rice container (a

dish on the dining table). According to Miss A, *kukusan* is believed to absorb sugar elements from rice when cooked. *Ceting* is considered a plastic-free rice container. Plastic containers are considered unhealthy for storing rice, especially when the rice is hot. In this way, *kukusan* and *ceting* are proof that Javanese have knowledge about healthy cooking utensils and preventing diabetes.

In Putri & Indah (2019) research, it was explained that the glucose levels in rice cooked using the bamboo steamer method will be lower because bamboo absorbs sugar substances from the rice. Apart from that, bamboo also contains antioxidants which can eliminate toxins because it contains natural silica. Chemical toxins due to pesticides and urea fertilizer in rice will disappear when cooking rice using a bamboo steamer (*kukusan*).

If we look closely, another Indigenous knowledge that we learn from *kukusan* and *ceting* is in the manufacturing process. We will discover the art of making woven geometric shapes such as cones, ellipses, and circles. This skill is part of ethnomathematics, conical *kukusan*, and circular *ceting*. Apiati et al. (2019) acknowledged the existence of woven art which is part of ethnomathematics. Some of the mathematical elements contained in woven bamboo patterns are geometric shapes.

Based on this collection of cooking utensils, we can understand that Javanese natives have the skill of weaving bamboo into geometrically shaped containers. Apart from that, they also understand the health benefits of these cooking utensils, namely preventing diabetes and being free from plastic contamination.

### 3.2. Agricultural Post-Harvest Tools

The agricultural tools displayed in the museum are *lesung*, *lumpang*, and *alu*. All three are tools for pounding rice or sticky rice. *Lesung* is made from a wooden stick cut in half, shaped like a rectangular bowl. *Lumpang* are made of stone, some are made of wood, and the shape is similar to a rectangular bowl. *Alu* is a pounding tool, made of long wood that is easy to hold. We can separate the rice husk from the grain using *lesung* and *alu*. If we want to make rice flour or sticky rice flour, we use *lumpang* and *alu*.

According to Suranny (2017), ancient people used *lesung*, *lumpang*, *alu* and *tampah* to process harvests from paddy fields and gardens. The grain (rice with the husk still on) is pounded in a *lesung* using *alu* so that the husk is removed. *Lesung* or *lumpang* is used to pound rice to make flour. If you want to make a lot of flour then use *lesung*. On the other hand, if you want to make a little flour, then use *lumpang*. *Lesung* and *lumpang* are also often used to break spice skins and grind spices. *Tampah* is a flat container made of woven bamboo, round in shape, used to separate pounded rice from the husk.

Suranny (2017) assesses that, behind its function as an agricultural tool, there is a musical art that we can enjoy when pounding rice with wooden tools. When *alu* is pounded into *lesung* and *lumpang*, it will produce a loud sound. The intense clashing of wood (*alu*) with wood (*lesung*) will form beautiful music to listen to. In the past, many people considered these three musical instruments, which gave rise to inspiration for artists to create the song "*Lesung Jumengglung*".

These explanations indicate that Javanese ancestors were able to create traditional milling machines for making flour and tools for breaking spice shells. This traditional tool is also used as a traditional musical instrument. *Lesung*, *lumpang*, and *alu* not only make it easier for people to process rice or sticky rice but also provide entertainment benefits (the art of music).

### 3.3. Traditional Communication Tools

The sound made when people pound *lesung* is also often used by residents as a mass gathering tool. Miss A explained that in ancient times, *lesung* was pounded by several people at the same time to gather people. They created special sounds to have special meanings. Each sound meant a warning alarm, some also act as a communication tool to gather people in the field. We can also see the function of the *lesung* as a means of communication in Putranto's (2014) research results which show that the function of the traditional art of *gejog lesung* is as a means of communication (between music players and between the community), entertainment, preserving culture, and ritual ceremonies (expressing gratitude for abundant harvests).

Another collection that also functions as a communication tool is *gamelan*. According to Miss A, the main function of the *gamelan* is as a musical instrument. However, the music produced by the *gamelan* can also be used as a communication tool, such as to notify the king of his arrival at certain events. Radiansyah (2015) explains, *Gamelan* is a collection of various musical instruments consisting of *Gendang/Kendhang*, *Peking*, *Saron*, *Demung*, *Gong*, *Kempul*, *Bonang*, *Kethuk*, *Kenong*, *Gender*, *Xylophone*, *Rebab*, *Siter*, and *Flute*. Different musical instruments will have different ways of playing them. For example, the drum/*kendhang* is beaten directly with the hands without using tools. *Gender*, *peking*, *saron*, and *demung* are played using instruments. Each instrument produces different music.

In the museum there is also a collection of bells that also function as communication tools, for example alarms, activity reminders, seeking people's attention, and so on. According to Sasioba et al. (2018), previously bells were used to convey news to the public and as markers of time. Bells are used in various religions in the world to mark times of worship or as part of ritual equipment. Bells are used by Christians to indicate times of worship.

Yasin & Irfana (2017) argue that in ancient times, bells were still in the form of *kentongan* (wood or bamboo hit with a stick) and bells, but with the development of science, many automatic bells appeared. The sound of the bell can also reach a wider location so that people in distant locations can still hear it. For example at school. The bell is used to mark the start and end of the teaching and learning process or other activities carried out together and at almost the same time. Bells are very useful as a means of notifying all students and teachers about break, gathering time, or time for other activities. Bells will be heard in all classes.

### 3.4. Tradisional Game

One of the traditional playing tools kept in the museum is the *dakon/congklak* which is generally played by children, girls, or young women. According to Miss A, this game is useful for women to practice patience, be strategic in getting something, and learn to invest. Patience is at the stage of waiting for your turn to play and giving your opponent time to complete their round (placing their seeds). The strategy method is obtained by trying to take the opponent's seeds. Learning to invest is done when we try to secure our seeds so that our opponents don't take them. The more seeds our opponent takes, the closer we are to defeat. On the other hand, if we can take a lot of our opponent's seeds, then we are the winners.

According to Hestyarningsih & Pratisti (2021), the result of test analysis shows that the traditional *dakon* game is effective in improving numeracy skills in mentally retarded children. Lacksana (2017) believes that the way to play *congklak* is almost the same in various regions. Players consist of 2 people and the tools used are a *congklak* board and 98 seeds/shells. The traditional *congklak* game has local wisdom that pays great attention to building and strengthening children's character.

The influence of the *dakon* or *congklak* game on children's psychology was also tested in research by Dewi et al. (2020). The results show that this game can train the social emotions of children aged between 5-6 years at Alamanda Kindergarten. Their teachers said that the children were easier to direct and could follow the rules of the game. Children were more patient in waiting for everything, such as in a queue to do something.

### 3.5. Tradisional Sport

On the walls of the museum, scenes of young men's dexterity games are engraved. They ride horses carrying spears. This agility game is called *Sodoran*. They play sports while also practicing their dexterity in mastering weapons of war. They also have a strategy to defeat their opponents. According to Miss A, in the past, the game of *sodoran* was also used for the soldier selection process. Young men who were agile, able to control a horse, strong in holding weapons, deft in defeating opponents, and quick to avoid attacks were usually selected to become soldiers.

Not only as a game, sport, or a way to recruit soldiers, *sodoran* was also used to train for war. Muslikah (2019) believes that soldiers used to have a game called *sodoran* as training for fighting skills. *Sodor* is a spear about 2 meters long, without a sharp spearhead at the tip. However, the direction of the horse, the way the spear is held, and other movements are still directed in the same way as in the atmosphere of war. It's just that in this training, no one gets hurt because in training, their opponents are their friends.

### 3.6. Keris

On the information board attached to the museum wall, you can see the background of the keris-making workspace. We know him by the name *Besalen*. *Besalen* is also used to refer to people who are experts in making traditional Javanese weapons such as *keris* or swords. Another term we use to refer to a

*keris* expert is master. Indonesia calls people who are experts in making *keris* as *empu*. There is also an information paper that says the materials for making *keris* are iron, meteorite, nickel, etc. On the walls of the museum are also painted illustrations of *Besalen's* activities when making weapons. An illustration of *Besalen* can be seen in Picture 1.



**Picture 1.** Besalen

Source: Researcher's Documentation (2022)

Tim Redaksi (2022) explained that *keris* has two meanings, tangible and intangible. Tangible meaning is a typical Indonesian weapon. For Javanese, *keris* means heirloom object. Heirloom weapons can be interpreted as weapons inherited from ancestors, have spiritual powers, and are sacred. The meaning of intangible comes from the indigenous knowledge of the maker. This knowledge consists of the types of materials and how to process the materials until become *keris*.

There are two main ingredients for making *keris*. First, natural materials that can be handled. In ancient times, the main materials for making *keris* were meteorite and iron. The ability of masters (*keris* making experts) in the science of metals and metal existed long before Indonesia was influenced by Indian culture. Thus, the knowledge is Indigenous-Indonesian knowledge. The *keris* is also a native Indonesian heritage because there is no historical evidence that the *keris* is related to other countries (Tim Redaksi, 2022).

The second ingredient is the spiritual element; the expectations of the creator. Before starting to forge tangible materials, the master will perform a ritual to pray to God so that the *keris* can become a protective weapon for its owner. Therefore, the *Keris* is considered a weapon with supernatural powers. The *keris* is positioned as a sacred object (Tim Redaksi, 2022).

Tim Redaksi (2023) stated, if viewed from a spiritual-religious perspective, the *keris* is a means of offering. The *keris* is a symbol and has religious contents because its main material comes from heaven and earth; meteorite (from the sky) and metal (from the earth). This is a symbol of the servant's union with God. Belief in divine philosophy is very basic in the large Karaton families in Java, such as the Kasunan



Surakarta and the Kasultanan Yogyakarta. We can still see rituals of this belief today, such as heritage carnivals which display weapons (*keris*, heirloom spears, large knives) to the public.

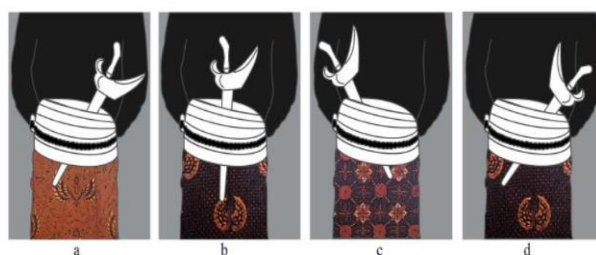
Purwanto & Nurhamidah (2021) explained that the complexity of making a *keris* proves the skill and knowledge of *empu* (the master). A *keris* consists of a blade, a handle, and a sheath. The blade of *Keris* has five parts: (1) *Pesi*, (2) *Ganja*, (3) *Bongkot*, (4) *Wadhuk*, and (5) *Pucuk*. This blade is the essence of the *keris* which can be used as a weapon. To make it easier to grip, the base of the blade is inserted into a piece of wood (handle). The handle is shaped and carved. Apart from making it not slippery when held, the carving will make the handle beautiful. There are also handles decorated with gold and gemstones. Just like the *keris* handle, the *keris* sheath is also an art object. Scabbards are made from carved wood and covered with metal such as brass, iron, silver, or gold.

The materials for making *keris* are classified as materials that are difficult to obtain. Apart from needing quality iron and nickel, meteorite is also needed. The processing process is also complicated. The master must be able to melt iron, nickel, and meteorite using a special method because all three have different boiling points. However, the master must be able to combine these three elements so that it can be formed into a *keris*. Religiously, the union of these three ingredients symbolizes the unity of God's Power; Brahma, Vishnu, and Shiva (Purwanto & Nurhamidah, 2021). The material of *keris* can be seen in research by Meranggi (2019) which explains that the *keris* collection at the Tosan Aji Purworejo Museum is made from various metal materials such as Fe (iron), Ni (nickel), Re (Rhenium), Cu (copper), Sn (Tin), Cr (chromium), Au (Gold), Mn (manganese), Zn (zinc), and Nb (niobium).

According to Hardoyo (2019), the Kingdom, Kasunanan, and the Sultanate in Java have an important role in maintaining the continuity of traditions related to *Keris* culture. One of the keepers of traditions related to the preservation of *Keris* is Kasunanan Surakarta in Central Java. One of the characteristics of the Surakarta Kasunanan *Keris* can be seen from its blue sheath. Blue in Javanese culture is a noble color. Wood brown and white colors are usually used for *keris* sheaths of royal family. Another characteristic is the way the *keris* is tucked. Different cultures will have different ways of tucking the *keris* at the back of the waist. The characteristics of Kasunanan Surakarta *Keris* can be seen in picture 2.



Fig 2. Kasunanan Surakarta Logo on Gayaman *Keris warangka*



ig 5. The position of *Keris* in the Javanese culture of Surakarta.

**Picture 2.** The Characteristics of Kasunanan Surakarta *Keris*  
Source: Hardoyo (2019)

Based on the definition of a keris, the ingredients, and the manufacturing of its process, making a keris is something complex. This complexity is proof that Javanese ancestors had indigenous knowledge in turning iron, nickel, meteorites, and other minerals into weapons. Another knowledge is how to make wooden carvings for keris handles and sheaths so that they are not slippery, easy to grip, and comfortable to use.

### 3.7. Spear

Another traditional weapon displayed in the museum is the spear. Tim Redaksi (2023) explained that in the archipelago the word *tombak* comes from Malay, in Riau it is called *todak*, in Javanese it is called *tumbak*, in Madurese it is called *tombeg*, in Balinese it is called *tumbak*. A spear is a long-range stabbing weapon that consists of two parts, namely the spearhead and the shaft.

According to Asih et al. (2023), apart from the *keris*, there is also a traditional weapon that is sacred to the Javanese, namely the spear. Both are part of *Tosan Aji*. *Tosan* is another word for iron, while *Aji* is spells, powerful, holy, and auspicious. *Tosan Aji* means iron which has supernatural or magical powers. Tim Redaksi (2023) explains that the Javanese speech tradition states that the spear is considered to have a primary position. It is believed that if the keris is a personal heirloom, then the spear is a more collective institutional heirloom. *Catur Sagotra Mataram* places the spear as the main heirloom, giving it the title *Kanjeng Kyai Ageng*.

### 3.8. Food Fermentation

In the Suaka Budaya Keraton Kasunanan Surakarta Museum, there are bowls and barrels for making fermented food. This collection indicates that Javanese people have consumed fermented foods since the royal era. According to Miss A, Javanese people have known about tempeh for a long time. This also means they have knowledge the food fermentation process. Romulu & Surya (2021) argue that the word *tempe* is thought to originate from the Javanese Proto-Malay language, namely *tumpi*. The word *tempe* is written in classical Javanese literature (1815) called *Serat Centhini*.

The history of *tempeh* in Java can be seen in Asmalia (2018) that *tempeh* is a native Indonesian food obtained from fermented soybeans. It is said that the word "*tempe*" comes from the Old Javanese word "*tumpi*". During the Mataram kingdom, around the 16th century, there was a food called *tumpi*. Food made from sago looks similar to the tempeh we now know. There are also those who say that tempeh was discovered during the Forced Cultivation era during Dutch colonialism in Java. Javanese at that time used garden products such as cassava, sweet potatoes, and soybeans as a food source. They then prepare various foods from existing ingredients. One of them is soybeans, which are then processed into tempeh.

Making tempeh generally starts with boiling the soybeans, peeling, soaking, acidifying, washing, fermenting, wrapping, and fermenting. The soybeans are washed and then boiled for approximately 12 hours. After that, the soybean seeds are peeled and soaked. Soaking is a natural way to produce lactic acid

fermentation. Lactic acid is the result of carbohydrate metabolism in conditions without oxygen. Lactic acid fermentation is useful for adding nutritional value and eliminating bad bacteria. Steam the soybeans, then spread them out on a baking sheet until cool, and sprinkle with yeast. Soybeans are wrapped in banana leaves or plastic bags. Leave it at a temperature of 20°Celsius - 37°Celsius for 18-36 hours. After solidifying, tempeh can be consumed (Asmalia, 2018).

Similar to these findings, research results from Romulu & Surya (2021) also revealed that the standard process for making tempeh includes washing soybeans, soaking, peeling, boiling, inoculation with starter, packaging, and incubation. This process causes chemical and biochemical changes in soybeans. The soaking process allows the soybeans to be fully hydrated, resulting in lactic acid fermentation. Next, the soybeans are boiled, drained, cooled, and inoculated (tempeh starter containing *R. oligosporus*, *R. oryzae*, *R. chinensis*, and *R. arrhizus*). During incubation, fermentation causes lipid hydrolysis, producing protein, increasing the content of good fatty acids, and reducing carbohydrates.

Tempeh is a fermented soybean food from Java, Indonesia. Tempeh has many nutritional contents such as essential amino acids, vitamin B12, antioxidants, antimicrobials, and isoflavones (genistein, daidzein, and glycitein). Tempeh is also an alternative protein to meat. These nutrients make tempeh beneficial for health because it prevents degenerative diseases, namely diabetes, cardiovascular disease, cancer, high cholesterol, and osteoporosis, and relieves menopausal symptoms.

Apart from being made from soybeans, in Java, there is also a fermented food such as soybean tempeh. For example, *mlanding* tempeh, *benguk* tempeh, *bungkil* tempeh, *gembus* tempeh, and *bongkretek* tempeh. Romulu & Surya (2021) explained that *mlanding* tempeh is fermented from the seeds of lamtoro or Chinese petai (*Leucaena leucocephala* (Lam.) de Wit). *Benguk* tempeh is made from koro *benguk* seeds (*Mucuna pruriens* (L.) DC.). Tempeh *bungkil* from peanut dregs (*Arachis hypogaea* L.). Tempe *gembus* from tofu dregs. The main ingredient in *bongkretek* tempeh is coconut dregs. Picture 3 is a list of the nutritional values of each of these fermented foods.

Nutritional content of different types of Indonesia tempe per 100 g.

Nutrient Content	Unit	Soybean Tempe	Tempe Mlanding	Tempe Benguk	Tempe Bungkil*	Tempe Gembus	Tempe Bongkretek
Moisture	g	55.3	66.8	64	32.15	81.9	72.5
Ash	g	1.6	0.7	1.3	–	0.8	146.3
Fat	g	8.8	0.5	1.3	–	5.7	3.5
Protein	g	20.8	10.7	10.2	36.27	1.3	4.4
Carbohydrate	g	13.5	21.3	23.2	–	10.3	18.3
Dietary Fiber	g	1.4	7.1	–	6.73	4.2	–
Calcium (Ca)	mg	13	203	42	–	204	27
Phospor (P)	mg	15	108	15	–	80	100
Zinc (Zn)	mg	1.7	–	–	–	1.5	–
Iron (Fe)	mg	4.0	0.6	2.6	–	–	2.6
Sodium (Na)	mg	9	–	–	–	–	–
Potassium (K)	mg	234	–	–	–	–	–
Magnesium (Mg)	mg	–	–	–	–	–	–
Thiamin (Vitamin B1)	mg	0.19	0.17	0.09	–	0.09	0.08
Riboflavin (Vitamin B2)	mg	0.59	–	–	–	0.1	–
Niacin (Vitamin B3)	mg	4.9	–	–	–	0.9	–
Vitamin B12	µg	–	–	–	–	–	–
Vitamin C	mg	–	2	–	–	–	–

**Picture 3.** A List of The Nutritional Tempeh  
Source: Romulu & Surya (2021)

Another food in Java made from fermented products is *gatot* (a typical food from the Gunung Kidul-Yogyakarta area). This food was created as an alternative to rice. This food is made from *gaplek* (dried cassava). Cut the cassava into pieces, soak in *kapur sirih* (calcium hydroxide) water (12 hours), wash, then thinly slice approximately 2 x 5 cm. The cassava drying process is very dependent on the weather. To be edible, *gaplek* must still be steamed for 1-2 hours (Asmalia, 2018).

In Central Java there is snack made from fermentation. We named it *brem*. The snack is rectangular in shape, tastes sweet, and has a mint sensation (even though it is not made from mint leaves). This mint flavor is obtained from the fermentation process of sticky rice. The process of making *brem* starts from cooking the sticky rice until cooked, cooling it, and sprinkling it with yeast. Let the sticky rice ferment for 3-4 days until it becomes sticky rice *tapai*. After that, the *tapai* sticky rice is squeezed with a special tool to obtain the juice. This water is then cooked with food flavorings (usually fruit flavors). When it is cooked, pour it into a mold and let it cool (Asmalia, 2018).

### 3.9. Herb Potions for Health and Beauty

Health and beauty support equipment is also displayed in the museum, such as *ratus* of hair and *ratus* of feminine areas. *Ratus* is an activity that refreshes and perfumes the body, hair, feminine area, and even clothes with herb smoke. The method is to burn spices and flowers over coals until smoke is emitted. The smoke of herbs and flowers will be fragrant. If we stand or sit near smoke, our bodies will smell good. Our minds and bodies will also feel fresh.

Ningsih & Lutfiati (2020) explain that *ratus* uses flowers or herbs sprinkled on charcoal embers. Hundreds are also usually done for prospective brides to make their bodies smell good. The concoctions used in body care for prospective brides and grooms are made from spices, turmeric, jasmine, cinnamon, kaffir lime, and cloves. *Ratus* uses ylang-ylang flowers, aloes leaves, kaffir lime, cinnamon, and nutmeg.

Hair *ratus* is a traditional hair treatment that has been done since royal times. Hair *ratus* is a hair treatment that uses fragrant spices such as; incense, honey, palm sugar, sandalwood, and roots. It aims to scent hair, strengthen hair roots, and make hair look more radiant. *Ratus* can also be used for traditional V (vaginal) care to make it healthier. *Ratus* ingredients are generally dried fruit, plants, leaves, roots, flowers, and spice tubers (Jubaedah, 2016).

Aini & Mardiyansih (2018) explain the benefits of *ratus* of vaginas, are to reduce mucus and prevent fungal infections (*Candida albicans*). Spice plants as antifungals are essential oils from galangal (*Alpinia purpurata* K. Schum), cinnamon (*Cinnamomum burmanii* Blume dn), and green betel leaves (*Piper bettle* L). *Ratus* vagina with this combination of ingredients have a very strong inhibitory power against the growth of *Candida albican* fungus.

Another collection that indicates knowledge about health is the *kinang* tool. *Kinang* is a number of herbs used to maintain the healthy of teeth and mouth. The main ingredients of *kinang* are *pinang* (areca

nut) and betel leaves. Javanese commonly refer to this activity as *nginang*. People who often *nginang* are usually mothers or grandmothers who have been used to doing it since they were adults. Young people rarely want to do it (*nginang*).

The ingredients for *nginang* consist of betel leaves, areca nut, whiting, gambier and tobacco. The *nginang* process is carried out by placing *kapur sirih* (*Calcium Hydroxide*) and small pieces of areca nut (*Areca Catechu*) on sheets of betel leaves (*Piper Betle Leaves*), sometimes adding other ingredients such as gambier (*Uncaria Gambier*) and tobacco (*Nicotiana tabacum L.*). Betel leaves are folded together with other ingredients, then chewed (Sutana et al., 2021).

Several studies that have been conducted suggest that most people who *nginang* have healthy mouths, strong teeth, rarely have cavities, and are rarely toothless. *Kinang* has a correlation with dental and oral health, because gambier and betel leaves are known as antiseptics. The phytochemical compounds contained in it can prevent the growth of germs that cause toothache and bad breath. Apart from that, *nginang* also uses *kapur sirih* (*Calcium Hydroxide*) deposits as a mixture. The sediment that forms this paste contains calcium which is believed to have benefits for healthy teeth and bones. Tobacco can be used as a wound medicine (Sutana et al., 2021).

### 3.10. Musical Instrument

The handicraft product displayed in the museum is *rebab* musical instrument. The shape is similar to a mini violin. That's why the *rebab* is often also called the Javanese violin. *Rebab* is made from wood, animal skin, and horsetail (for strings). Based on these materials, it can be understood that Javanese were able to transform wood, animal skins, and horsetails into traditional musical instrument. According to Miss A, the *rebab* is still often used at several typical Javanese events. According to Akbar (2020), the *rebab* is a symbol of *karawitan* (one of the Javanese musical arts). *Rebab* is also often used in *wayang* performances. This musical instrument is played by stroking like a violin. The sound harmonizes the rhythm of *Gamelan*, *Sinden* songs, and *Wiraswara*.

### 3.11. Dance Arts

On the walls of the museum is engraved the background of one of the typical Javanese dance arts; *Tayub*. According to Miss A, for Javanese people, *Tayub* is not only the art of dance and music but also the art of conveying teachings about the meaning of life through songs. According to Suryanto et al. (2019), *tayub* art first appeared in the Singosari kingdom (one of the kingdoms in Java). *Tayuban* then became part of East Java, Central Java, and Yogyakarta. In Mangkunegaran's notes there is a statement that *tayub* consists of two words; *mataya* (means dancing) and *guyub* (means together). This meaning can also be seen in the *tayub* dance performed by several people together.

Langen Tayub performances are usually held at traditional ceremonies (weddings, thanksgiving, etc.), as well as to welcome big guests to the palace. This dance represents the joy of welcoming guests and being part of the people's party. Therefore, in the dance, there is a movement to invite other people to join in the dance. *Ledhek* (female dancer) with male dancers as *penayub* (people who are invited to dance). Behind the beauty of its movements, this dance forms character, attitudes, and behavior that stimulates emotional intelligence, especially happiness, which has an impact on mental health (Setiawan et al., 2019).

Juwariyah et al. (2023) also assessed the existence of elements of emotional intelligence in *Langen Tayub*. This dance teaches togetherness, mutual harmony, mutual respect, mutual help, and self-control. Noordiana et al. (2016) argue Tayub is a performing art that has elements of expressing gratitude to God who has given fertile land and abundant harvests. Therefore *tayub* is a symbolic dance and expression of happiness.

### 3.12. Wayang

Examples of *wayang* on display in museums are the *suket* and *klithik*. According to Andaningrum (2017), *wayang suket* is also closely related to Central Javanese culture, especially Surakarta. As the name suggests, *wayang suket* (grass), the main ingredient is *suket* (grass). The type of grass used is "*kasuran*" grass which grows a lot in the Banyumas area and only during the month of Shura. Ancient people often played *wayang suket* simply, without a fancy stage. The process of making this doll is even easier. We just have to prepare the grass and weave it to form a human figure. The upper structure of the *wayang suket* consists of a curved head and neck. The middle part is the body and hands complete with accessories (accessories are useful for distinguishing between figures). The bottom is decorated with *dodot* (traditional clothing) up to the ankles.

The process of making *wayang suket* generally has six stages, (1) Preparing the materials, namely the *kasuran* grass and tools (scissors, ribs, pipes, hammers, machetes, glue, and sharpening stones). (2) Weaving the grass to form the body of the puppet (head, body feet). (3) Flattening the puppet so that the puppet's body becomes solid and sturdy. (4) Installation of hand parts. (5) Making clamps (claws). (6) Attach the hook to the puppet. An example of a woven name is *gedheg* woven to form a puppet so that it is sturdy. *Kelabangan* webbing is suitable for curvy body shapes because this webbing is flexible. *Tikaran* woven to make the head and body of the puppet. *Sarang lebah* (honeycomb) woven is suitable for beautifying wayang clothes (Andaningrum, 2017).

*Klithik wayang* is often called *wayang krucil* (tiny puppet). It was first created in 1648. Its body is made of flat wood, but its hands are made of animal skin. *Wayang klithik* is a kind of combination of *wayang golek* (wooden puppet) and *wayang kulit* (animal skin puppet). This puppet is called *klithik*, not only because of its small size, but this is possible because of the '*klithik*' sound that occurs when each character

in this puppet collides with each other. This sound can be heard as the basic material of the puppet which is wood (Hapsari, 2016).

#### 4. Conclusion

Kasunanan Surakarta bequeathed various cultural products in the form of collections stored in the Suaka Budaya Keraton Kasunanan Surakarta Museum. These cultural products are evidence of indigenous Javanese knowledge. Based on the collection of cooking utensils, we can understand that they have the skills to weave bamboo into geometrically shaped containers. They also understand the health benefits of these cooking utensils, namely preventing diabetes and being free from plastic contamination. *Lesung*, *lumpang*, and *alu* agricultural tools are traditional machines for making flour, breaking seed shells, and grinding spices. They also have skills in making traditional communication tools (*lumpang*, *gamelan*, and bells). The community also has expertise in making the traditional game (*dakon/congklak*) which is useful for training children in learning to master emotional intelligence, strategies for getting things, and investing. They also master traditional sports as well as games, for recruiting soldiers, and war training. The blacksmith skills they mastered were making *keris* and spears. They are also experts in culinary arts (fermented food and snack), herb potions (*ratus* and *kinang*). They also master the field of performing arts with the musical instruments (*rebab*), dance, and *wayang* (*suket* and *klithik*).

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