

Ethnochemistry and Cultural Harmony: Exploring Traditional Tools Mandau and Garantung in the Ritual of Mampakanan Sahur and Mamapas Lewu

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Keywords

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Abstrak

Praktik Mampakanan Sahur suku Dayak di Kalimantan Tengah mencerminkan harmoni budaya dengan penggunaan alat tradisional Mandau dan Garantung. Penggunaan logam dalam pembuatan Mandau dan Garantung terkait dengan aspek kimia, seperti proses pembuatan besi dan karakteristik resonansi bunyi kuning. Penelitian etnokimia ini bertujuan untuk menggali pengetahuan dan kearifan lokal, serta mempromosikan pelestarian budaya dan potensi sumber daya alam. Metodologi penelitian dilakukan dengan pendekatan etnografi, melibatkan observasi partisipatif, wawancara, dan pengumpulan data kualitatif. Analisis data kualitatif digunakan untuk mengidentifikasi produk budaya dan nilai-nilai kearifan lokal yang terkait dengan penggunaan logam dalam Mandau dan Garantung. Hasil penelitian ini memberikan wawasan yang berharga tentang hubungan antara budaya, logam, dan kearifan lokal pada suku Dayak di Kalimantan Tengah.

Abstract

The practice of Mampakanan Sahur among the Dayak tribe in Central Kalimantan reflects cultural harmony through the use of traditional tools, namely Mandau and Garantung. The use of metals in crafting Mandau and Garantung is associated with chemical aspects, such as iron-making processes and the resonant properties of brass. This ethnochemical study aims to explore local knowledge and wisdom while promoting cultural preservation and the potential of natural resources. The research methodology employs an ethnographic approach involving participant observation, interviews, and qualitative data collection. Qualitative data analysis is utilized to identify cultural products and the values of local wisdom associated with the use of metals in Mandau and Garantung. The findings of this research provide valuable insights into the relationship between culture, metals, and local wisdom among the Dayak tribe in Central Kalimantan.

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Introduction

In the rich cultural diversity of Indonesia, there are various traditions and practices that reflect the beauty of harmony among ethnicities, religions, tribes, races, and the surrounding environment. In Central Kalimantan, particularly among the Dayak people who practice Kaharingan religion, there is a practice called *Mampakanan Sahur*, where the Dayak community expresses gratitude by offering food and drinks to Ranying Hatalla Langit (the Supreme God).

Mampakanan Sahur holds the meaning of providing nourishment to a group of supernatural spirits with supernatural powers. This group consists of various entities [1]. On the other hand, *Mamapas Lewu* represents the life of the Dayak community in their interactions with other communities, reflecting the philosophy of Huma Betang (Long House) [2].

The purpose of this ceremony is to cleanse the environment and eliminate disputes, dangers, and illnesses. This ritual is not only open to the Dayak Ngaju tribe but also to people from various ethnicities and religions. Participants form a circle and perform the Manganjan Dance around the structure where the sacred spirits are offered. They wear traditional attire called "sangkarut" and "selendang" while being presented with "tampung tawar" (a traditional offering) and Dayak's distinctive alcoholic beverage. In the tradition of *Mampakanan Sahur*, there is a cultural harmony evident through the use of traditional tools such as Mandau and Garantung. These traditional tools are not only used as weapons and musical

instruments but also carry deep cultural meanings and social symbolism.

First and foremost, Mandau is a type of traditional weapon originated from the Dayak tribe, the indigenous people of Kalimantan, Indonesia. Mandau typically takes the form of a straight and long-bladed axe [3]. This weapon holds strong symbolic significance in Dayak culture and is frequently used in traditional ceremonies, warfare, and as a means of defense. The physical form of Mandau can vary depending on the region or Dayak sub-tribe using it. However, the common characteristics of Mandau are its straight, long, and sharp-edged blade on one side. The handle of Mandau is usually made of wood adorned with carvings or rattan weavings [4]

Mandau also holds deep cultural significance for the Dayak tribe. This weapon is often regarded as a symbol of bravery, strength, and honor in Dayak tradition. Mandau can also be used as a hunting tool, gardening implement, and in traditional ceremonies such as weddings, welcoming important guests, or religious rituals.

In some cases, Mandau can be adorned with distinctive carvings or decorations made from animal tusks, such as wild boar tusks. These embellishments add artistic and cultural value to Mandau while showcasing the owner's status and bravery.

Then there's Gong, Agung, or Garantung, a traditional musical instrument commonly used in various Dayak customs and rituals, including the practice of *Mampakanan Sahur*. Garantung has a flat shape and is made of metal, usually copper or brass. The sound produced by the gong carries a

mystical power and is believed to awaken the spiritual essence within humans [5].

Generally, Garantung in Central Kalimantan is not polished like those in Java or other regions. Instead, they are left black and rough on the surface. Garantung can be played by people of all ages and genders, as long as they are capable and understand the music being played.

In the Dayak community, Garantung is also used as a means to inform the community about events or celebrations organized by families or from one village to another. In almost every ritual ceremony, Garantung serves as the dominant musical instrument, used to accompany the Balian (traditional healer/ceremonial leader) in their dance and chanting of mantras, as well as to gather the community with its far-reaching sound.

Within the Dayak community, Garantung is also considered one of the ceremonial objects descended from Lewu Tatau (heaven or celestial realm), used as a means of communication with ancestral spirits. This belief is still held by Dayak people who practice the Kaharingan religion, the ancestral religion of the Dayak tribe. However, for those who have adopted a new religion, the belief that Garantung is a sacred object is no longer upheld.

Besides being a traditional musical instrument, Garantung holds valuable significance as a cultural artifact in the indigenous Dayak society and is used as a means of exchange in the evaluation of certain goods or services [7][8].

Traditional tools like Mandau and Garantung are made of metal and metal alloys, and these cultural practices and chemical applications are known as

Ethnochemistry. Ethnochemistry is the science that studies cultural practices related to chemistry in society. This field explains the chemical practices carried out by identifiable cultural groups and also serves as a study of chemical concepts found in various cultures [9][10]. In other words, the term "ethno" refers to community members in various cultural environments that can be identified through traditions, codes, symbols, myths, and specific methods used for consideration and decision-making.

Through the approach of Ethnochemistry, researchers can explore the local knowledge and wisdom possessed by traditional communities in utilizing natural resources. This research can also help preserve traditional knowledge and culture and identify valuable natural resource potentials in terms of economy, conservation, and sustainable development.

Research Methodology

The method used in this research is a naturalistic/qualitative approach with ethnographic research as the specific type [11]. The stages of ethnographic research consist of the description stage, analysis stage, and interpretation stage. Data collection techniques used include observation, interviews, and documentation, selected based on the type of data required. In data analysis, the researcher employs qualitative data analysis techniques combined with the Miles & Huberman and Spradley models. These techniques are tailored to the type of data collected through observation, interviews, and documentation. Ethnographic research involves four types of analysis: domain analysis, taxonomic analysis, componential analysis, and

cultural theme analysis. After data collection, the researcher performs data reduction by selecting, simplifying, and categorizing the raw data that has been gathered. The data is then systematically organized and analyzed, referencing relevant theories and previous research findings.

Results and Discussion

Based on the research findings, the Mampakanan Sahur and Mamapas Lewu events involve cultural products and local wisdom values that have a strong connection to the use of metal materials such as Mandau and Garantung, which can be further explored. These chemical concepts can be integrated with cultural aspects seen from the perspectives of representation, visualization, and interpretation [9].



Figure 1. Mampakanan Sahur

The use of metal in the production of Mandau and Garantung (Dayak Gong) by the Dayak community is closely related to the chemical aspect. In this case, Mandau is made of Batu Sanaman Mantikei, which contains a high iron content, while Garantung is made of a brass alloy. Overall, the production of these items still maintains traditional values. In the case of Mandau, rich cultural values and symbolism are preserved. Its presence goes beyond being a weapon and serves

as a symbol of identity and cultural heritage of the Dayak tribe.



Figure 2. Mandau Usage

The material used, Batu Sanaman Mantikei, is the local term for a stone with a high iron content used as the main material in the production of Mandau by the Dayak community. It is named "mantikei" because it originates from the Mantikei River [12].

The process of extracting iron from Batu Mantikei is carried out by the Dayak community. It involves crushing the stone, separating the iron from other rock materials, and further processing to obtain usable metal.

The production of iron is the initial step in making the Mandau weapon. The raw material used for iron can come from Batu Mantikei. The process of iron production involves heating the raw material using traditional furnaces. During the heating process, carbon dioxide (CO₂) is removed from the raw material [13], resulting in purer iron similar to the production of other traditional weapons.

After the iron production process is complete, the next step is to heat the formed iron. The iron is heated to a high temperature using a traditional furnace with a traditional heating pump. Once it reaches the appropriate temperature, the iron is heated and forged. This process

allows for the creation of the desired shape and size of the Mandau.

The next stage involves attaching the handle using damar. In this process, damar is used as a traditional adhesive material. Damar is chosen because it has strong properties, durability, and is easily found in the natural environment. In this process, the base of the Mandau is heated, and then the handle, made of woven wood filled with damar, is inserted into the base and left to dry [12].



Picture 3. Mandau (left)& Lunju (right)

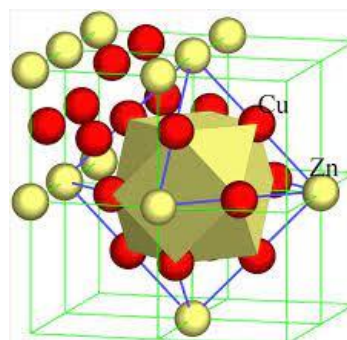
The properties of iron support the strength of the Mandau in terms of strength, durability, and ductility (elongation ability). The strength of iron allows the weapon to withstand pressure and resist deformation or breakage when used. Its resistance to wear, corrosion, and mechanical damage makes iron-made weapons durable. The ductility of iron enables the creation of weapons with various shapes and sizes that are suitable for traditional and functional needs. The magnetic properties of iron can also be utilized in the production of certain weapons. In the making of traditional weapons, these properties of iron are applied to create strong, durable, and effective weapons [16][17][18].

Next, we have the Garantung, which is a traditional Dayak gong. Garantung is classified as one of the musical instruments in the idiophone group (instruments that produce sound when the instrument itself vibrates, without requiring vibration from an external sound source) made from a mixture of metals (iron, brass, and bronze) [19].



Picture 4. Garantung

One of the commonly encountered materials used in the making of gongs, such as Garantung, is brass. Brass is a metal alloy composed of copper (Cu) and tin (Sn) with a small amount of zinc (Zn). Brass possesses several characteristics that make it suitable as the primary material in the production of traditional gongs. It exhibits good strength, corrosion resistance, as well as high heat and electrical conductivity [20].



Picture 5. Brass Structure

The advantages of using brass in the production of Garantung are influenced by the properties of its constituent elements. One notable advantage is the excellent sound resonance characteristic of brass. It is well-suited for traditional gong-making as it produces a clear, distinctive, and enduring sound when struck. Additionally, brass exhibits good dimensional stability, which is crucial in gong manufacturing to maintain consistent shape and size over time, ensuring the quality of the sound it produces. Brass also possesses corrosion resistance, making it durable and capable of withstanding environments associated with moisture or water exposure [21].

CONSLUSION

The practices of Mampakanan sahur and Mamapas Lewu among the Dayak community in Central Kalimantan involve the use of Mandau and Garantung. Ethnochemistry in the utilization of these two tools demonstrates the practical value of metals as well as the symbolism and cultural heritage of the Dayak tribe.

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