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Gandang Tambua Pariaman From Triplek Material an Organological Study Based on Coding

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The process of making the Gandang Tamba traditional musical instrument in Padang Pariaman Regency. This study aims to describe the process of making the Gandang Tamba musical instrument. The approach used is a qualitative approach with a descriptive research type. This research was conducted with data collection techniques using observation, interview, and documentation techniques. Data analysis techniques are carried out by reducing, presenting data and verifying data. The aim is to find out the structure, process, manufacturing techniques, and playing techniques, of Gandang Tamba. This musical instrument is made of plywood and has a hole (resonator), and uses goat skin. The results of this study indicate that the parts and stages of the process of making traditional Gandang Tambua musical instruments include: cutting plywood for the body of Gandang Tambua, processing goat skin (membrane), cleaning rattan, making iron battens, and how to produce sound, tuning system on traditional Gandang musical instruments Tambua. The tools used in the process of making traditional Gandang Tambua musical instruments include: Cater knives (plywood cutters), Cutting Saws, Hammers (Penokok), Measuring tools (meters), Pencils, Sandpaper, Screwdriver, Scissors, Bamboo type gutters, and Tongs. The ingredients are; Wooden battens (circle 40), plywood, goat skin, iron lath, rope, nails, and wood glue. The process of making the Gandang Tambua musical instrument includes several stages, namely: 1) The process of making the body (plywood), to the finishing of fine and coarse sanding, 2) The processing of the skin, including the shearing of the skin using dry fuel ash and measuring the width of the diameter, 3) The installation process, includes the skin to the body of the Tambua drum, attaching iron battens and attaching strings as for tuning. The frequency and tension of each instrument membrane on the Gandang Tambua musical instrument, the membrane tension of 141090.66 N on the Gandang Tambua musical instrument produces good tension (tuning), because the vibrations of the membrane will fill the resonance space in the drum tube. While the membrane tension of 131841.38 N produces poor tuning, the vibration of the membrane does not meet the resonance chamber. attach the iron battens and attach the rope for tuning. The frequency and tension of each instrument membrane on the Gandang Tambua musical instrument, the membrane tension of 141090.66 N on the Gandang Tambua musical instrument produces good tension (tuning), because the vibrations of the membrane will fill the resonance space in the drum tube. While the membrane tension of 131841.38 N produces poor tuning, the vibration of the membrane does not meet the resonance chamber. attach the iron battens and attach the rope for tuning. The frequency and tension of each instrument membrane on the Gandang Tambua musical instrument, the membrane tension of 141090.66 N on the Gandang Tambua musical instrument produces good tension (tuning), because the vibrations of the membrane will fill the resonance space in the drum tube. While the membrane tension of 131841.38 N produces poor tuning, the vibration of the membrane does not meet the resonance chamber.

Keywords. Organology, gandang, manufacturing, coding.

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INTRODUCTION

Art that lives or develops in an area belongs to that community. This art can be hereditary art from ancestors or created by the community by looking at the situation and conditions of their life. If you pay close attention, to works of art, especially musical instruments in this modern era, music continues to develop and new genres are created along with technological developments. Music is part of human culture that cannot be separated from everyday life. In other words, music becomes a necessity in itself.

Lately, it has been very difficult for Gandang Tambua to get raw materials, namely, wood, if there are no initiatives and innovations for the makers of Gandang Tambua, it is certain that Gandang Tambua will no longer be produced by the makers of Gandang Tamba. For this reason, Baapak Azwar, as one of the craftsmen or makers of Gandang Tambua, has been innovative in making Gandang Tambua, by replacing the wood raw material with raw material from plywood, from an economic standpoint for the maker of Gandang Tambua plywood raw material, this is more economical than raw materials. which is made of wood. This is related to the demand for Gandang Tambua musical instruments, from outside West Sumatra, such as Jambi, Bengkulu, Palembang, and also from Malaysia. Gandang Tambua craftsmen who produce this traditional musical instrument, there is only one person, namely Mr. Azwar Kota Pariaman. So that researchers are worried that the existence of this traditional musical instrument will disappear in the future if it is not continued by the younger generation in Minangkabau.

The existence of the Gandang Tambua musical instrument is very concerning because it is very difficult to get the raw material, namely wood. So the Gandang Tambua musical instrument should receive great attention from the community, cultural figures, and related parties. Besides that, in terms of business opportunities that are quite large and the important role of craftsmen as preservers of traditional musical instruments.

From the manufacture of Gandang Tambua by the craftsmen, it is necessary to measure the sound (sound) produced by Gandang Tambua made of plywood, so that the sound produced fulfills the criteria of a Gandang Tambua musical instruments which has its character compared to other drum instruments.

RESEARCH METHODOLOGY

To achieve the research objectives, this research used a qualitative type with a case study approach and statistics, as stated by Moleong (2008: 12) states that qualitative research is research that produces descriptive data, namely in the form of words and actions of people and observed behavior as the main data, the second data is in the form of additional data derived from literature studies. Furthermore, Moleong (2008: 2) says: that the results of the phenomena observed are not in the form of numbers but the coefficient of the relationship between data variables in the form of words or images. Descriptive analytical methods are used to examine the status of human groups or an object, a condition, or a system. thoughts and events in the present. The purpose of descriptive research is to accurately describe the factors and characteristics and the relationship between the phenomena investigated. Thus qualitative research needs to see, review, and collect information and then reveal and describe exactly what is being studied.

RESULT AND DISCUSSION

The city of Pariaman in general has many makers of Gandang Tambua made of wood, but now this has begun to decrease because wood is very difficult to obtain. Mr. Azwar is a maker of Gandang Tambua who can be said to be innovative because of the difficulty in getting wood raw materials, so Mr. Azwar offers the raw material to replace wood, namely plywood for the manufacture of Gandang Tambua. Mr. Azwar is a craftsman or maker of Gandang Tambua, one of the Ganang Tambua craftsmen who still survive today.

Making the Gandang Tambua musical instrument requires several materials including leather, plywood, wooden battens, and iron battens. The craftsman of Gandang Tambua in Pariaman City, namely Mr. Azwar. He gained experience making Gandang Tambua by experimenting with materials other than wood. Then it was found that the most economical material was plywood raw materials.

Mr. Azwar explained that in general, before doing or making something, you have to prepare everything you need. Likewise, in the process of making the Gandang Tambua musical instrument, you have to prepare what is needed, such as tools and materials before starting the manufacturing process. The process of making Gandang Tambua takes 6 hours

for one piece of Gandang Tambua made of plywood. The process of working on making this musical instrument requires tools and materials, such as; Cater's Knife, Cutting Saws, Pencils, Plywood Nails, Sandpaper, Scissors, Screwdrivers, Hammers, Measuring Tools/Meters, Bamboo Type Gutters, Ropes, Tongs, Wood Glue, Iron Lath.

Figure 1. Gandang Tambua made of plywood

(Source: Wim and BP 2021)

Manufacturing Steps

In general, there are 3 stages in the process of making the Gandang Tambua musical instrument from plywood, namely, the process of cleaning the skin, the process of working on the plywood and attaching the skin to the body of the drum.

Skin Cleansing

The skin to be cleaned is stretched over a board, sprinkled with ashes, and left for about 5 minutes. After that, the hair is scraped using a round bamboo stick, which is about 20 cm long.

Figure 2. Goat skin that has been cleaned

(Source: Wim and BP 2021)

Cutting Plywood and Measuring

Before the plywood is cut according to the needs of the body of Gandang Tambua, the plywood is measured and the top and bottom are cut. After it is ready, then measure the thickness of the material used. The thickness will be measured with the palm or 11 to 14 cm. The next step is to measure the diameter using a compass.

Figure 3. The process of making a drum body from plywood

(Source: Wim and BP 2021)

Attaching the Skin to the Drum Body

At this stage is the final part, namely attaching the skin to the drum body. Attaching the skin to the body of the drum after preparing an iron batten for stretching the skin, then tying it with a rope so that the tension of the two drum skins can be according to size.

Figure 4. Installation of the skin

(Source: Wim and BP 2021)

Gandang Tambua Acoustic/Coding

Talking about the Gandang Tambua musical instrument in the Maninjau area, in addition to examining the matters above, the author also discusses the acoustics of the Gandang Tambua musical instrument. in a space". Furthermore, Backus (1977:2) states that:

In acoustics there are three basic steps related to the auditory process:

1. The basic principles of audible sources. These things can be measured by several regular physical methods, and there are

even some special principles (reflection in a cylindrical medium) which is also only a basic model; reality in general is always more complex. Several of these models can explain reality as well as possible.

2. The basics of transportation include changes (disturbances) in one medium.

3. The situation of perception or the process of human perception.

As support for his statement, Backus (1977:2) explains in more detail the criteria for determining what can be heard, including:

1. High-Low one tone (wave-vibration structure)

2. Dynamics (intensity or pressure)

3. Tone Color (structure of all relevant partials)

These three basic elements can be measured (more or less) regularly before being accepted by humans.

In discussing acoustics, the membrane tension produced by the musical instrument Gandang Tambua is discussed. According to Banoe (2003: 292), tuning is "a sound with a certain frequency that is depicted with a certain symbol". Whereas Jamalus in Usrianto (1998:12) states tone is "the sound produced by a sound source that vibrates with a regular vibration speed, this speed is called frequency.

To find out the membrane tension on musical instruments where the membrane is a sound-producing source, according to Soedojo (1986:157). These equations are:

$$f = \frac{1}{2 \times L} \times \sqrt{\frac{F}{Bj \times A}}$$

Formula Description:

F =Frequency

A =Cross-sectional Area

L =Length Width

F =Tension

Bj =Density of wood

Based on the theories that have been put forward above, the authors make this theory a reference in the study of organological aspects.

Good Quality of Gandang Tambua Based on Acoustics

To see how good or good the Tambua Gandang is in terms of quality, you can see how the tension of the membrane for a Tambua drum made of barley will be used. In discussing the quality of Gandang Tambua, the formula for frequency, wood mass, cross-sectional area, and tension is used.

To discuss acoustics, we will measure the frequency of each vibration produced by the Gandang Tambua musical instrument using a Chromatic Tuner measuring instrument. In measuring the frequency, the writer brought the chromatic tuner closer to the membrane being hit.

In the measurement technique used to obtain an accurate average frequency of each membrane vibration, the authors use several repetitions of the membrane. Measurements were made at a single resonance (tube) Gandang Tambua because this Gandang Tambua is often used in the Gandang Tambua art made of plywood in the Pariaman area.

The resulting membrane frequency is influenced by several things, including the membrane tension in the Gandang Tambua musical instrument. To find the membrane tension according to Peter Soedodjo (1986:157) is to use the formula:

$$f = \frac{1}{2.L} \sqrt{\frac{f}{BJ.A}}$$

Formula description:

F = Voltage force (frequency)

L = Width of the membrane

F = Description

Bj = Density of wood

A =The cross-sectional area of the membrane

To eliminate roots in the formula above, the formula is simplified as follows:

$$f2 = \left\{\frac{1}{2.L}\right\}^2 . \left\{\frac{1}{BJ.A}\right\}$$

$$f^2 = \frac{1}{4.L} \cdot \frac{F}{BJ.A}$$

Because what you are looking for is tension, F is moved to the left, then the formula for the equation used to find tension is as follows:

F = f 2 . 4L 2 . B.J. A

Because the density of plywood can change, according to Frank, to find the density of plywood on the Gandang Tambua musical instrument. M. White (1998:23) uses the following formula:

$$BJ = \frac{M}{V}$$

Formula description:

Bj = Density of wood/plywood

M = Weight of wood/plywood

V = Volumes

To find the volume of a hollow cylinder, the formula used is as follows:

$$\sum V = \pi \, r2 \, L$$

There are two volumes of wood, so to find the volume of wood on the Gandang Tambua musical instrument use the formula:

$$\sum V = V1 - V2$$

V1 = πrl 2 . L

V2 = π r2 2.L

r = ½ . d

Formula description:

V1 = Volume of the outer circle

V2 = Volume of the inner circle

L = length of wood

r1 = radius of the outer circle

r2 = radius of the inner circle

= Constant = 3.14

d = Diameter of wood

Is known:

M = 3 kg

rl = 12 cm, the units are converted into meters = 0.12 m

r2 = 10 cm, the unit is meter = 0.10 m

L = 150 cm, the unit is meter = 1.50 m

Then enter it into the formula to find the volume.

V1 $= \pi rl^2 . L$

$= 3.14 \, (0.12 \text{ m})^2 (1.50\text{m}) \, 2$

$= 0.101 \text{ m}^3$

V2 $= \pi r2^2 . l$

$= 3.14 \, (0.10 \text{ m})^2 (1.50\text{m}) \, 2$

= 0.070 m3

After V1 and V2 are obtained, they are then entered into the search formula∑V.

∑V = V1 – V2

$= 0.101 \text{ m}^3 - 0.070\text{m3}$

=0.031m3

After the cylinder volume is obtained, it is then entered into the formula to find the density. The formula is as follows:

$$BJ = \frac{M}{V}$$

$$= \frac{3kg}{0{,}031} = 96.77 \text{ kg/m3}$$

The next step is to find the tension of each membrane on the Gandang Tambua musical instrument.

membrane tension

ticket:

f = frequency

BJ = 96.77 kg/m^3

L =1.50m

A = 0.04m x 0.02m = 8.10^{-4}m2

Entered into the formula as follows:

$$F = f\ 2\ .\ 4L\ 2\ .\ B.J.\ A$$

F = $(4(1.50)^2$m . 96.77 kg/m3 . 8.10-4 m2 = 141090.66 N

By the description above, the tension of each membrane found in the Gandang Tambua musical instrument is obtained. The membrane tension is 141090.66 N. It can be concluded that this membrane tension is said to be good enough for the sound produced by Gandang Tambua.

After analyzing the membranes, frequency, and tension of each instrument membrane in Gandang Tambua music, it can be concluded that the string tension of 141090.66 N in the Gandang Tambua musical instrument produces tension (tuning) that is good enough to produce sound vibrations.

The frequency and tension of each instrument membrane on the Gandang Tambua musical instrument, the membrane tension of 141090.66 N the Gandang Tambua musical instrument produces good tension (tuning), because the vibrations of the membrane will fill the resonant space in the drum tube which will produce a very good sound. While the membrane tension of 131841.38 N produces poor tuning (tuning), the vibration of the membrane does not meet the resonance chamber resulting in a less good sound. For the string tension of 134889.63 N and 139839.30 N, it will produce an imperfect membrane in the sense that the membrane is less tense, resulting in membrane vibrations not filling the resonator space, only producing vibrations on the membrane, as a result, the resulting sound is not good.

CONCLUSION

Based on the research obtained regarding the Study of Organology as An Economical Alternative in the Process of Making the Gandang Tambua Musical Instrument, several conclusions can be drawn, the process of making the Gandang Tambua musical instrument includes several stages, namely: (1) The process of making the drum body from plywood, measuring, and finishing fine and rough sanding, (2) The skin processing process includes, before scraping using a knife, the goat skin is sprinkled with rubbing ash and left for about 3 minutes and then starting to scrape using a bamboo knife, (3) The installation process includes stretching the skin on the surface of the drum which already formed from plywood, after that, it was just stretched (tuning) using a rope.

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