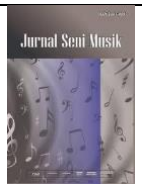
JSM (12) (1)

JURNAL SENI MUSIK

https://journal.unnes.ac.id/sju/index.php/jsm/index



Bamboo Violin Innovation in Japan Village Kudus Regency

Silvana Nada Widyaswara✉[1]
Faculty of Languages and Art, Universitas Negeri Semarang, Indonesia
Slamet Haryono
Faculty of Languages and Art, Universitas Negeri Semarang, Indonesia

Received : April, 2023

Approved : May, 2023

Published : June, 2023

Keywords:

Innovation, Violin, Bamboo, Kudus

Abstract

The violin is a common musical instrument constructed of wood, specifically a variety of maple wood. A bamboo violin musical instrument has been created by a woodworker from Kudus Regency's Japan Village. The aim of this study was to discover and describe the innovations used by woodworkers in the production of violins in Japan Village, Kudus Regency, as well as the discovery and description of the production method for bamboo-based violins in Japan Village, Kudus Regency. The research was conducted using a case study research design and a qualitative research methodology. Following are the study's findings: 1) Local wood and bamboo, such as petung bamboo, rosewood wood, Dutch teak wood, and wood mahogany, are used as the basic building blocks for violins. Wood craftsmen also incorporate Indonesian wayang carvings and a scroll design with an eagle head and a puppet head that both have symbolic meaning when creating violin designs for their musical instruments.

✉ Corresponding Author:
Email : silvananada2@students.unnes.ac.id

[P ISSN 2301-4091 | E ISSN 2503-2860]

INTRODUCTION

The string instrument family includes a variety of instruments, with the violin having the loudest sound. The term "string section" refers to the group of stringed instruments, which also includes contrabass, viola, cello, and violin. The violin was a musical instrument that was historically brought by western culture and afterwards evolved in Indonesia. The violin's contemporary form and style were influenced by two Italian violin makers from Cremona: Andrea Amati created the instrument, which Antonio Stradivari later modified (Tai, Shen, Lin, & Chung, 2018). As a result, the basic form of the violin used by Western musicians is also used in Indonesia.

Numerous factors must be taken into account when creating this violin musical instrument, beginning with the choice of wood type and the caliber of the wood that is prepared to move into the process stages. Sycamore or maple wood, which can also be used for the belly, bass bar, and soundpost of the violin, is a common form of wood used for violin construction (Stroeker, 2015). Pine wood is another type of wood that can be used for violin construction. Following the completion of the wood selection, the procedure will begin right away with the bending of the violin's shape, which also needs a specific temperature and drying, and drying the varnish, which is the process of drying it.

Today's violins use many alternative materials besides wood, including carbon fiber, acrylic glass, and bamboo. The innovation of using the basic material for making violins from carbon fiber was first discovered by Duerinck. The use of carbon fiber as a base material is necessary because wood is a material that will become thinner, rarer and more expensive, so there is a need for innovation or renewal in materials for making musical instruments including violins. Duerinck (2021) researched carbon fiber, glass fiber, and hemp fiber reinforced polyester composites, the result that based on their material properties such as low damping and high stiffness, CFRP (Carbon Fiber Reinforced Polymer) can be an alternative to wood materials. Furthermore, as expected, the water absorption studies revealed that the composite materials were less affected by moisture compared to the wood materials. In theory, composite materials thus result in a more stable and reliable instrument.

In addition to carbon fiber-based violins, in Indonesia there are also basic materials that can be used as alternative materials for making violins, namely bamboo. Bamboo has become a material for making many musical instruments in Indonesia, including wind instruments such as the bamboo flute, percussion instruments such as calung, and stringed instruments such as the sasando. Apart from sasando, bamboo has also become an alternative in making violin instruments. Bamboo violins have been developed by several people and wood craftsmen, including Andar Bagus Swiwarno, as an ITB lecturer who developed the bamboo violin from the results of a joint research conducted by the ITB FSRD Product Design Study Program and the Indonesian Bamboo Community. Then, a wood craftsman from Kudus who also developed bamboo innovations as a basic material for making violin musical instruments.

Bamboo is a plant commonly used as a raw material for making musical instruments in Indonesia. Musical instruments made of bamboo include Angklung, Saluang, and

Sasando. Angklung is a musical instrument made of bamboo and is widely known by the Javanese people, especially the Sundanese people, starting from the use of the angklung musical instrument as a tribute to the rice goddess which can now develop into a modern musical instrument and is able to collaborate with today's music (Rosyadi, 2012). In Indonesia, most of the musical instruments made of bamboo are idiophones which are played by hitting and chordophones which are played by picking. The ideals and benefits underlying the development of music in Indonesia have undergone numerous transformations. In addition to being a material for traditional musical instruments, bamboo can now be a unique and alternative choice in the creation of contemporary musical instruments like the violin.

Arts innovation is formed in the order of normative values, expanding curiosity, creativity, and flexibility (Sugita, Setini, & Anshori, 2021). In Kudus Regency, in Japan Village to be precise, there is a new invention, namely a violin musical instrument made from bamboo. Bamboo is grass, and bamboo is a plant that is very strong and also has a wide distribution. Bamboo grows abundantly in Malaysia and Indonesia. This bamboo plant cannot be found in Europe and West Asia. Then in China, bamboo has interests related to many aspects of culture, especially music (Mayasari & Suryawan, 2012). This wood craftsman from Kudus Regency does not only use bamboo for household utensils, but also develops bamboo as a basic material for violin instruments.

Innovations made by Mr. Ngatmin as a wood craftsman from Kudus Regency, have not been found in Indonesia. In general, people know the violin as a musical instrument with the characteristics of the wood used, namely maple wood, but in Indonesia there is no maple wood, so alternative materials are needed to replace wood. There are many types of wood substitute materials, including mild steel, vinyl, wood-plastic composite, and bamboo. However, so far the most effective material for making musical instruments is bamboo. Apart from being easy to obtain and cheaper, bamboo is also supple so it is easy to shape. Pak Ngatmin, a bamboo craftsman from Kudus succeeded in developing a violin instrument made from local bamboo.

The urgency of this research was due to the unavailability of maple and spruce wood as the basic materials for making violins, so a luthier in Indonesia had to innovate in making violins. This wood craftsman from a Japanese village, Kudus Regency uses local wood and wood alternative materials such as bamboo as the basic material for making violins.

METHOD

The research method used in this study is a qualitative research method, with a case study research design. The approach used in this study is an organological approach. Data collection techniques in this study used observation, interview, and documentation techniques. The data validity technique used in this study is the data source triangulation technique. Data analysis techniques in this study are data collection, data reduction, data presentation, and drawing conclusions.

RESULT AND DISCUSSION

Profile of Mr. Ngatmin

Mr. Ngatmin, sometimes referred to as Mbah Min, is a skilled woodworker from Kudus Regency. Currently, Mr. Ngatmin resides in Dawe District, Kudus Regency, Japan Village, RT. 4 RW. 3. He works as a carpenter in a Jepara furniture factory. Currently, has also established his company as a luthier, or maker of violin musical instruments.

Originally a carpenter, Mr. Ngatmin was a "luthier" or bamboo violin maker from Kudus. Eventually, Mr. Ngatmin's aptitude for handling and carving wood led him to resolve to launch a small company nearby. The initial encounter he had while at the Bogor Agricultural Institute (IPB) in 2009 gave rise to his inspiration to create a violin. Mr. Ngatmin was seeking to assist his brother in the city of Bogor after he had failed to build a violin due to a lack of fundamental carpentry abilities.

He asserts that in order to make a violin, a person must possess three skills: fundamental carpentry knowledge; carving and sculpting experience; and, most importantly, sound resonance knowledge. Until now he is still collaborating with IPB students to understand wood processing, from there he began to be challenged to make violins and started learning to make violins on his own.

In 2012 Mr. Ngatmin returned to his original place in Kudus Regency, then in 2013 he became interested in making violin instruments, so he started a business to make violin instruments with bamboo as the basis. According to Mr. Ngatmin, violins using wood are common and can be found in many areas, so he thought of making a violin instrument which has not been widely found using easily available basic materials. Starting from seeing several musical instruments made of bamboo, such as the flute, angklung, calung, and many others, Mr. Ngatmin started trying to make a violin made of bamboo. He is of the opinion that bamboo also has good sound resonance and also strong stems like wood so that bamboo is effective enough to be used as a base material for violin instruments.

Bamboo has quite a lot of availability in Dawe District and has not been utilized properly. Seeing this, Mr. Ngatmin was interested in using bamboo to make crafts. The abundant bamboo around the slopes of Mount Muria made it easier for Mr. Ngatmin to get bamboo materials. In addition to the advantages of bamboo which is easy to get, bamboo is also relatively cheap and strong. Bamboo also has advantages when used as a basic material for violins, namely bamboo violins have a louder sound than wooden violins.

Innovation of Wood Craftmen Making Violin Bamboo

Material Selection

Violins are generally made of wood, with the types of wood that are widely used as materials for making violins are maple and pine wood.

Currently, wood base materials are starting to be expensive and difficult to obtain, especially maple wood which is not widely available in Indonesia, so wood substitute materials are needed. Alternative wood that can be used to make violin musical instruments can also use wood from the resin tree which is better known as agathis wood, but even in Indonesia agathis wood is only found in two places, namely the Bogor Botanical Gardens and Sukabumi. Due to the rare agathis wood, Mr. Ngatmin as a wood craftsman from the village of Japan,

Kudus made something new by innovating to make a violin instrument made of bamboo.

Good bamboo for use as a material for making violins is having healthy stems, meaning that there are no diseases on the stems caused by insects or other things that cause the bamboo stems to become deformed and not solid. The lack of bamboo that has holes or defects in the stems will affect the quality of the bamboo stems (Liese, 2015). A good bamboo rod for violin making must also have a complete stem from base to tip. Bamboo sticks that have the above criteria can produce a clean and loud sound. The types of bamboo used in making violin musical instruments are petung bamboo and wulung bamboo. The two types of bamboo chosen were based on the needs designed by the team in making a variety of musical instruments.

Figure 1. Bamboo Petung
(Source: Silvana Documentation, 2023)

Figure 1 shows the petung bamboo that was employed. In addition to petung bamboo, Mr. Ngatmin also used wulung bamboo as the basis for his violin musical instrument. Because petung bamboo has thick, strong, hard, and straight stems, it is very useful for building materials, craft raw materials, as well as material for musical instruments. Dendrocalamus Asper, also known as petung bamboo, is thought to be an alternative material to replace wood for making violin musical instruments. (Marina Silalahi, 2015).

Petung bamboo and wulung bamboo certainly have different characters, wulung bamboo has stems that are not too hard, but has denser fibers so that it can produce a more treble sound or is called a tenor sound, then for petung bamboo because the texture is too hard so the resulting sound will be loud or soprano. Bamboo that is good for use as a basic material for making musical instruments is bamboo that is between 4 and 6 years old. Apart from age conditions with a specific time period, the characteristics of bamboo that has good quality is the area of the bamboo culms which are overgrown by fungi, and is marked by the peeling of dry bamboo skin from the culms.

Violin Design

The violin generally has several parts consisting of the head of the violin, the neck of the violin, the body of the violin and the tail of the violin. The head of the violin (scroll) consists of a peg box and a peg (Su et al., 2021). Then on the neck of the violin (neck) consists of the top nut and finger board. Then on the body of the violin consists of ribs, f-hole, bridge, bass bar, soundpost, tailpiece and shoulder rest (Christinus, 2021). Then lastly on the tail of the violin is the endpin which is directly related to the tailpiece. All of the components of the violin that have been mentioned are made of maple, ebony, ans spruce wood which is not found in Indonesia. Therefore, because there are no maple trees in Indonesia, local violin makers must innovate in making violin instruments from non-maple wood.

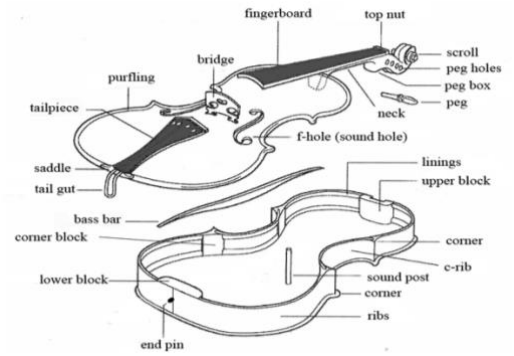


Figure 2. Body Diagram and Violin Components
(Source: www.centrum.is)

A violin maker from Kudus Regency has created a new type of violin instrument. He employs bamboo as the main component of his violin. This violin is made from a combination of native woods, including mahogany, Dutch teak, and sonokeling wood, in addition to bamboo. The woodworkers from Kudus Regency's innovations can be seen in the violins they produce:

Scroll

Scroll is the top part of the violin head. "Scroll" design found on the violin generally has a four-dimensional spiral carving (Bucur, 2016). Scroll is also a part of the violin which is a component with the peg and peg box.

Scroll serves as an ornament on violin music that adorns violin musical instruments. The benefits associated with the scroll are balancing the violin and helping in the process of tuning the instrument (Marchese, 2007). The scroll adds aesthetic flair to the violin and is a fascinating object. The scrolls became an invaluable source of information when attempting to identify the creator of instruments that were not labeled and may have undergone some alteration because each scroll maker had their own unique style.

The scroll portion contains one of the inventions created by Kudus Regency woodworkers. A woodworker from Kudus is attempting to create a scroll pattern that will distinguish his violin. He created a violin scroll with a variety of forms, including:

Scroll design in the form of a puppet head

This violin scroll design in the form of wayang carving has a philosophical meaning about wayang wong, the function of the scroll in the form of wayang is to introduce wayang wong culture which is one of Indonesian cultures, so that it is more widely known and the younger generation also does not forget its culture.

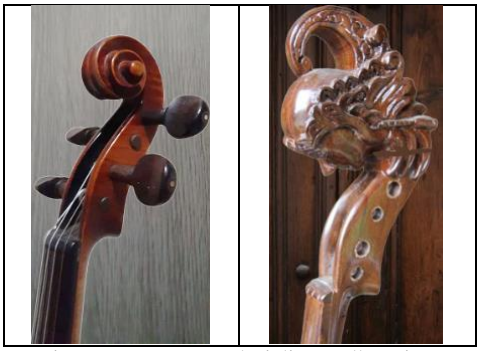


Figure 3. Puppet Head Violin Scroll Designs
(Source: Silvana Documentation, 2023)

Figure 5 shows an image of a violin scroll that has a puppet-shaped design. The scroll design is made of wood, with the type of wood used is mahogany, the manufacture of this scroll immediately blends in with the neck or neck of the violin. This puppet-shaped scroll has a size of 7 cm.

Scroll Design in the form of Garuda Head

This Garuda-shaped scroll has a size of 4 cm. This violin scroll design

in the form of an eagle carving is the symbol of the Unitary State of the Republic of Indonesia which has a meaning symbolizing knowledge, courage, strength and discipline.

Figure 4. Garuda Head Violin Scroll Designs
(Source: Silvana Documentation, 2023)

Figure 4 shows an image of a violin scroll that has an eagle-shaped design. The scroll design is made of wood, with the type of wood used is mahogany, the manufacture of this scroll immediately blends with the neck or neck of the violin

Scroll design in the form of a horse's head

This horse head-shaped scroll has a size of 4 cm. This violin scroll design in the shape of a carved horse head has the meaning of hard work and passion.

Figure 5. Horse Head Violin Scroll Designs
(Silvana Documentation, 2023)

Figure shows an image of a violin scroll that has a horse head-shaped design. The scroll design is made of wood, with the type of wood used is mahogany, the manufacture of this scroll immediately blends with the neck or neck of the violin.

Back Plate (Back)

The back or back of a violin instrument is generally made of hardwood with maple wood. The designs on European and Chinese violins have two types of designs on the back of the violin, known as one piece and two pieces. most often two pieces of wood are glued together to form two pieces back. when the two pieces have been joined together, they are then treated like a single piece of wood as they are shaped into the back (Gliga, Stanciu, Nastac, & Campean, 2020). Sometimes the back is made of a single piece of wood.

Figure 6. One Piece Violin Design with Puppet Carving (Right)
(Silvana Documentation, 2023)

Figure 6 shows an image of the back of the violin or back plate. This image is by design of the back of the violin made by Mr. Ngatmin who has

a wayang carving design with the meaning of introducing Indonesian culture more through the violin musical instrument which is known as a musical instrument from the west.

Bridge

The bridge on the violin is generally made of maple which is cut according to the body of the violin. The legs on the bridge are carved to match the top of the violin belly. The upper bridge is cut to adjust for the curvature of the fingerboard and to position the strings at the required height of the violinist above the fingerboard.

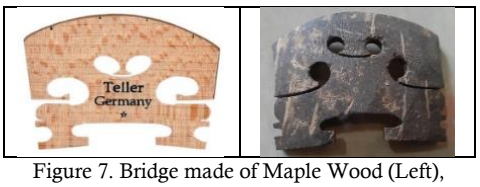


Figure 7. Bridge made of Maple Wood (Left), Bridge made of Coconut Shell (Right)
(Silvana Documentation, 2023)

The strings are set at the desired distance using nicks at the top of the bridge. The vibrations of the strings are transmitted through the bridge to the instrument itself, where tone creation and resonance take place, making the bridge a crucial component of the violin (Bissinger, 2006). The quality of the sound produced on a violin that uses a bridge made from coconut shells produces an unbalanced and too loud sound.

Bow

Bow is a tool used to swipe the violin. The bows used on the first violins had an outer curvature that was different from that of today's bows. The first bow was more like the shape of a bow to be used in archery. The curvature of the bow stick when it is not straight is because the hair bow is not too tight or the screw has not been rotated, when the screw is turned, the hairbow which was originally slack becomes tight so that the bow stick can be used (Gough, 2011). A tight bow of hair can be used to string the violin once it's been treated with rosin.

Figure 8. Bow Designs made from Carbon Fiber (Above), Bow Designs made from Sonokeling Wood (Bottom)
(Silvana Documentation, 2023)

Figure 8 shows an image of the bow design for common violins and bamboo violins. In the picture above is a violin bow made from the basic material of carbon fiber which is considered not to bend easily when it is often tightened and loosened. Then for the bottom picture is the bow design on a bamboo violin which is made from rosewood wood, and the bow hair is made from nylon or soft fishing line.

Rosin

The purpose of rosin is to give grip to the hair bow so that the hair bow is sticky enough to make the strings vibrate (Matsutani, 2002). The way to use rosin is rosin is rubbed into the hair bow until the hair bow is sticky enough to grip the strings and make the strings vibrate.

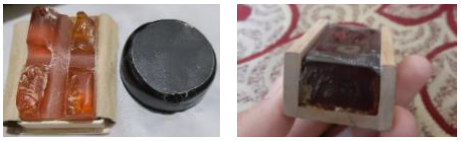


Figure 9. Rosin made from resin mixed with beeswax (Left), Rosin made from resin tree sap (Right)

(Silvana Documentation, 2023)

Figure 9 shows a rosin drawing for a violin. Rosin is an object made of pine or resin trees which is then processed and printed in two round and oval shapes. Hair bows that have not been smeared with rosin will produce an unstable tone because the hair bow does not grip the strings enough so that the vibrations generated when the bow is rubbed against the violin are less than optimal. So that the hair bow can grip the strings properly, before the bow is used to swipe the violin, it is necessary to apply rosin to the hair bow first to produce a stable vibration and tone.

Shoulder Pads

Shoulder Pads, commonly known as shoulder rests, are accessories for violins and bamboo violins that function to fill the space between the top of the left shoulder and the back of the violin or as a wedge.

Figure 10. ShouderPad design in general (Top), Shoulder Pad Design with wood material (Right)
(Silvana Documentation, January 2023)

Figure 10 shows an image of the shoulder pads. Its useful purpose is to reduce or eliminate the need to elevate the left shoulder and provide a non-slip surface so that the shoulder can apply pressure to the violin in the process of holding (upper shoulder pressure and downward chin pressure that holds the instrument, with the help of the left hand).

Violin Case

The violin case or box has two types of shapes, namely the shape that follows the body of the violin or triangular case and the oblong rectangular case which has more space for storing violin accessories such as shoulder pads, spare strings and rosin.

Figure 11. Oval Case Design (Top), Violin Body Shape Case Design with Batik Cloth Decoration (Bottom)
(Silvana Documentation, January 2023)

Figure 11 shows a picture of a violin case. Pictured above is an oblong case or box case which includes room for the violin, then there is room for storage of spare strings, shoulder pads and room for storage of rosin. The bottom picture is a case with the original shape of the instrument, leaving only room for the violin and small space for rosin storage. The violin case made by Mr. Ngatmin has a batik cloth design that covers the wooden case. Mr. Ngatmin wants to further introduce Indonesian identity through the batik cloth used to cover the violin case.

Currently, the violin case is composed of wood and coated in cloth, leather, or plastic. Carbon fiber, which is likewise durable enough to be

used as a material for building a violin case, is also utilized to make violin cases in addition to those made of wood. The violin case's construction material must be robust and durable, especially where the hinges are concerned. For the violin case to survive a long time, it is essential to use metal that is both rust-resistant and hefty enough to prevent the hinges from wearing out. On the inside of the casing must be covered with a material that is soft, soft, not hard, and fits the instrument, its function is to protect the violin from shocks.

Numerous violin accessories can still be stored inside the oval violin case, which must, of course, be big enough to include the rosin, strings, and shoulder rest. There is also a spot where the bow can be clamped. The bow clamp needs to be made of high-quality spring steel to avoid losing its shape and functionality, and the bow holder at the housing's narrow end needs to be nailed and taped to keep it from moving.

CONCLUSIONS

According to the study's findings, the violin musical instrument has been improved by woodworkers from Japan Village in Kudus Regency. Mr. Ngatmin's ingenuity may be seen in the materials he used and the violin's construction. Local timber and bamboo from the Mount Muria slopes, including Petung Bamboo, Sonokeling timber, Dutch Teak Wood, and Mahogany Wood, were chosen for the construction. Back Plate, Scroll, Tuning Peg, Tailpiece, Chin Rest, End Pin, Bow, Rosin, Shoulder Pads, and Case are a some of the innovations made to the violin's design. Innovative wayang carving patterns are first seen on the back plate, followed by horse, Garuda, and puppet head carvings on the scroll.

The violin is a musical instrument whose tone is created by the strings scraping against the bow to produce a tone and cause vibrations in the violin's body, also known as resonance. The material used to make violin musical instruments has an impact on the resonance of the sound that it produces.

The manufacturing material that is utilized for a violin must be taken into account because the thickness and shape of the violin instrument itself might have an impact on the final sound. On bamboo violins, the scroll and back plate have different shapes that are created using wayang carvings. Of course, the carvings on the scroll and back of the violin might impact the sound and acoustics of the instrument. As a result, a bamboo violin that has been carved is less likely to be used regularly as a musical instrument.

REFERENCES

Bissinger, G. (2006). The Violin Bridge as Filter. *The Journal of the Acoustical Society of America*, *120*(1), 482–491. https://doi.org/10.1121/1.2207576

Bucur, V. (2016). *Handbook of Materials for String Musical Instruments*. *Handbook of Materials for String Musical Instruments*. Melbourne: Springer. https://doi.org/10.1007/978-3-319-32080-9

Christinus, D. K. (2021). *Adjustment Instrumen Biola: Menjaga Kualitas Suara dan Keindahannya*.

Yogyakarta: Frame Publishing.

Duerinck, T. K. (2021). *Violin Making with Fiber-Reinforced Composites*. Ghent University.

Gliga, V. G., Stanciu, M. D., Nastac, S. M., & Campean, M. (2020). Modal Analysis of Violin Bodies with Back Plates Made of Different Wood Species. *Bio Resources*, *15*(4), 7687–7713.

Gough, C. (2011). The Violin Bow: Taper, Camber and Flexibility. *The Journal of the Acoustical Society of America*, *130*(6), 4105–4116. https://doi.org/10.1121/1.3652862

Liese, W. (2015). *Bamboo : The Plant and its Uses*. (M. Kohl, Ed.). Hamburg: Springer.

Marchese, J. (2007). *The Violin Maker*. New York: HarperCollins Publishers Inc.

Marina Silalahi. (2015). Pemanfaatan Bambu Oleh Masyarakat Lokal Di Indonesia Dan Usaha Konservasinya. *Jurnal Pro Life*, *2*(3), 57–58.

Matsutani, A. (2002). Study of Rosin Particles on Bow Hair in Violin Performance. *Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers*, *41*(3 A), 1618–1619. https://doi.org/10.1143/jjap.41.1618

Mayasari, A., & Suryawan, A. (2012). Keragaman Jenis Bambu dan Pemanfaatannya di Taman Nasional Alas Purwo. *Info BPK Manado*, *2*(2), 139–154.

Rosyadi. (2012). Angklung: Dari Angklung Tradisional Ke Angklung Modern. *E JURNAL PATANJALA*, *4*(1), 26–40.

Stroeker, R. J. (2015). On The Shape of A Violin. *Mathematics Magazine*, *88*(4), 247–259. https://doi.org/10.4169/math.mag.88.4.247

Su, C., Chen, S., Chung, J., Li, G., Brandmair, B., Huthwelker, T., … Tai, H. (2021). Materials Engineering of Violin Soundboards by Stradivari and Guarneri. *Angewandte Chemie*, *133*(35), 19293–19303. https://doi.org/10.1002/ange.202105252

Sugita, I. W., Setini, M., & Anshori, Y. (2021). Counter Hegemony of Cultural Art Innovation Against Art in Digital Media. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(147), 1–13. https://doi.org/10.3390/joitmc7020147

Tai, H. C., Shen, Y. P., Lin, J. H., & Chung, D. T. (2018). Acoustic Evolution of Old Italian Violins from Amati to Stradivari. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(23), 5926–5931. https://doi.org/10.1073/pnas.1800666115