

# **New Perspectives on Lan Na<sup>1</sup> Lacquering: The Reflection of Traditional forms in Contemporary Lacquer Objects**

Sumanatsya Voharn

*Design Arts Department, Faculty of Decorative Arts,  
Silpakorn University, Thaphra Palace, Bangkok, Thailand  
Corresponding author: j.voharn@gmail.com*

## **Abstract**

Lacquering is a distinctive Lan Na handicraft, which has existed for more than twelve centuries in northern Thailand. Traditional lacquer objects in the North of Thailand, called “Kreung Kheun” have two principal functions. First, the lacquer is used for coating bamboo houseware in order to make them water resistant. These products are light in weight and practical for daily use. Second, lacquer used to decorate objects with expressions of traditional beliefs.

However, a changing way of life, influence from other cultures and globalization are gradually affecting Lan Na lacquer production. The traditional knowledge of lacquer techniques has been disappearing because of decreasing numbers of lacquer artisans and raw materials.

This practice-based research can be divided into two parts. First, it analyses the relevance of the field of study in order to understand the Lan Na people’s traditional perspectives and beliefs towards lacquer objects, as well as the problems of Lan Na lacquer development. Second, it explores new perspectives that have been used for creating new lacquer objects. This

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<sup>1</sup>Lan Na region, was founded by Mangrai (r. c. 1259-1317) in the northern region of present-day Thailand; its capital was the city of Chiang Mai.

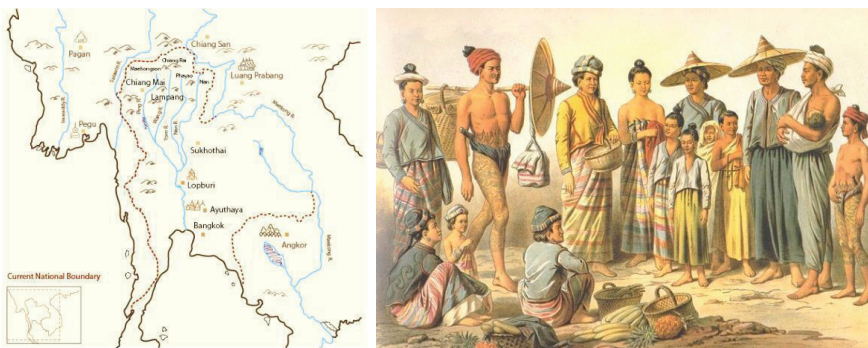
research attempts to analyse the acoustic properties of lacquer and materials, and utilizes traditional design forms when studying the creation of new objects

The research outcome presents a new perspective by developing a line of contemporary lacquer objects “Acoustic Lacquer Accessories” (an adaptation from the traditional wooden pulpit to lacquer acoustic accessories). This presents a new perspective in Lan Na lacquer objects as a way to describe, conceptualize, and analyse Lan Na cultural characteristics through new “Traditional” form.

**Key Words:** Chiang Mai; Lacquerware; Lan Na; Product design; Acoustic

## Introduction

One of the distinctive Lan Na handicraft techniques that continues to be used to this day is lacquering or “Kreung Kheun”. This specialized skill has been passed on from generation to generation, and represent an aspect of the Lan Na people. Lacquer sap coated on household items has been used for a long time but the lacquer object which called “Kreung Kheun” was introduced by the Tai Kheun ethnic group which came from Chiang Tung in Myanmar to Chiang Mai in 1804. The old Lan Na region, which encompasses the eight northern provinces of Thailand, was formed by several ethnic groups including the Tai Yuan, the Tai Lue, the Tai Khuen, and various hilltribes. The immigrant communities, which are settled in this area, are known as the Khon Mueang (Figure 1).



**Figure 1** Lan Na map and Tai ethnic groups

The people of the Lan Na Kingdom area used the abundant natural resources in all aspects of their lives. The local people were good craftsmen who made handicrafts from these local resources. The various local handicraft skills in this region became livelihood opportunities. Chiang Mai and the surrounding areas are well known for their long tradition of lacquerware production, which has been commercialized for both the domestic and the international markets. The practice of Lan Na lacquer techniques was introduced by the *Tai Kheun* ethnic group who came from Chiang Tung in Burma in 1804. Chiang Tung was founded in the early 13<sup>th</sup> century by the Lan Na King Meng Rai. Founded even before King Mengrai established

Chiang Rai and Chiang Mai, Chiang Tung was the original Tai settlement in this part of Southeast Asia. The Tai Kheun lacquer artisans migrated and brought this process of lacquering named “Kreung Kheun” to Chiang Mai during King Kawila’s reign. The relationship between the Lan Na and the Tai people in the Shan state in Myanmar had generally been positive. There were shared religious beliefs and similar traditions of art and culture (Figure 2).



**Figure 2** Lacquerware in Lan Na house

### **Current Problems in Lan Na Lacquer Development.**

- The fall in the number of lacquer artisans. The skills of the existing artisans are not being passed down to the next generations.
- The length of time that the lacquer process takes and the low remuneration.
- The lack of support in terms of new design development and the limited experience of the artisans.
- The scarcity of raw material's available in Thailand and the high cost of imported lacquer sap.

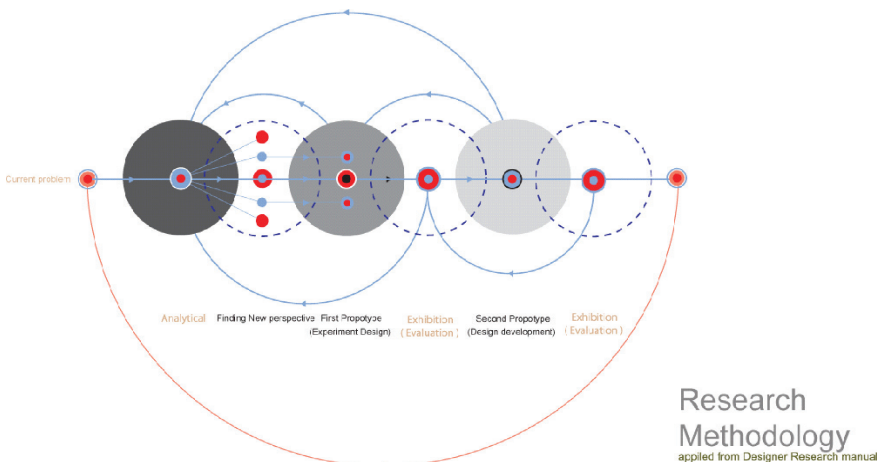
## Research Methodology

The research methodology was to collect of data, related documents and to do in depth interviews with local craftsmen, historians, exporters, designers, and tourists. Focus group discussions (which) included:

- Personal perspective of the interviewees.
- Number of artisans in the Lan Na lacquering community.
- Level of sophistication of lacquer techniques.
- Problems of raw materials for lacquerware production and local resources.

This practice-based research can be divided into two parts.

First, analyze the relevance of the field of study to understand the traditional views of Lan Na people on lacquer objects and the problems of Lan Na lacquer crafts development. Second, use new perspectives to create new lacquer objects by applying the concept of Neo Lan Na to traditional techniques, local identities, and the properties of lacquer. The prototypes of new objects were created and exhibited for evaluation (Figure 3).



**Figure 3** Research Methodology

## Overview of Lan Na Lacquer

The main raw material used in the lacquer process is the lacquer itself. It is made from sap from several species of trees in the Anacardiaceous family. One species, which is found in Northern Thailand

and Myanmar, is *Melanorrhoea Usitata* (Figure 4). The traditional lacquer coating process is using pure lacquer sap. Oil is sometimes added to increase the vibrancy of reds and the shininess of the final coats. Lacquer hardens by a process of oxidation and laccase-catalyzed polymerization. High humidity facilitates the process.



**Figure 4** Lacquer sap

The decorative techniques used with lacquer are as many and varied as the number of artists practicing the craft, but the five most common traditional techniques found throughout Lan Na are:

1. Painting with cinnabar; red colour painted on black lacquer objects
2. Inlay; glass inlay decoration of lacquer surfaces.
3. Incising; engraving lacquer surfaces and filling with colour pigment.
4. Surface relief; relief - molded lacquer decoration.
5. Gilding; gold leaf applied to lacquer surfaces.

#### **The meaning of motifs and structures on traditional Lan Na lacquerware**

The design motifs and forms of Lan Na lacquerware are in general connected to Buddhist beliefs. For instance, the lacquerware can be adorned with decorative designs symbolic of specific stories, namely the story of the Lord Buddha, the figures of “*Devas*” or Demi- gods, or the presentation of flora and fauna, all of which indicate the hope to attain auspiciousness and a fulfilled livelihood. In the following section some of the most common design motifs found throughout Lan Na will be discussed.



**Figure 5** Lan Na lacquer techniques

### **The Episodes of the Life Story of the Lord Buddha**

The use of episodes of the life story of the Lord Buddha as a decorative theme of Buddhist places was done in Lan Na as early as in the King Mangrai dynasty, particularly during 16<sup>th</sup> century when the beliefs in 28 Buddhas were transcribed in “*Lai Kam*” (gold gilded technique) ornamentation in temples. The motifs symbolic of the folk beliefs in episodes of the Lord Buddha’s life are also present in the ornamentation of Buddhist religious utensils like the “*Dhamma seat*” (for monks to give sermons), manuscript chests and flower vessels.

### **Devas or Demi-Gods**

The illustration of the Demi-gods in Lan Na region on traditional lacquerware and other Lan Na arts can be treated as an expression of the belief in the frightening domain derived from the mythological belief in the existence of deities who serve to protect the religion. The painted details reflect the influence of traditional costumes. We can see this in the painting of “*Devas*” who are wearing traditional Lan Na tube skirts, a common style during the 16<sup>th</sup> century, and those wearing Royal Siam Court outfits with shoes on, distinctive of the 18<sup>th</sup> century. The *Lai kam* lacquerware technique with the portrayal of guardian angels giving flower offerings can be seen in some manuscript chests and other utensils.

### **Buddhist Cosmology and Himaphan Creatures**

Elements of the universe and Himaphan animals are present in the decorative designs of lacquerware for ritual performances, following the beliefs in the story of Traiphum or the Three Worlds with Mount Meru being the center of Universe. It is reflected in various kinds of Lan Na arts, whether in fine arts, architecture or lacquer works. The belief in “*Ketkeaw Chulamanee*” chedi, situated on the top of Mount Meru, encompasses the Three Worlds according to Buddhist cosmology. It does this through the presentation of a circle ground with seven planes stacked one upon the next in layers as mimicked in lacquer containers used during worshipping ceremonies. In gilded lacquer decorative designs, Buddhist cosmology also is illustrated in the painting of Himaphan animals. The composition with such creatures as rabbits and peafowl are symbols for the Sun and the Moon that are in orbit around Mount Meru. Certain lacquerware have also been designed to have form similar to the Three Worlds.

### **The 12 Year Cycle**

Animals that are the sign of different years in the 12-year astrological cycle are also a popular base of decorative design on lacquerware as they are to lead to propitiousness. According to legend, this adoption is related to the life story of Lord Buddha concerning the time of his reaching Nirvana. It is also related to the belief in the influence of the 12 clusters of fixed stars with the planets in orbit nearby. Different astrological conditions are believed to cause the changes in both good and bad and generate the birth-aging-ailment-death cycle or even incarnation.

### **Flora and Vine Motifs**

Forms of flowers and various creeping or climbing plants are popularly imitated in the design of lacquerware decoration and other Lan Na arts. The flower and vine plants can be those existing naturally or created from imagination. They can be associated with symbolic belief, religion, and philosophy concerning their auspicious properties. The lacquerware found in Chiang Mai province, regardless of whether they are used in daily life or for ritual performing purposes, have been popularly decorated with flower and vine plants since the ancient times. These designs can be used to fill the

empty space on the lacquer surfaces in the fashion compatible with various structures of lacquer utensils intended for different functions.

### **The Lotus Flower**

The Lotus flower is a symbol of birth in both the Buddhist and Hindu beliefs. Consequently, the lotus decorative designs have become a part of the lacquerware form with particular details varying according to the skills and aesthetic perception of the craftsmen in each locality. Also consequential to the above beliefs, the use of lotus flowers as offerings has become symbolic.

### **Designs Symbolic of Auspiciousness**

The “*Purnaghata*” are the figures of vase containing lotus and other flower bunches following the belief that they represent abundance and success. The “*Purnaghata*” symbol was of Indian origin, which was later transmitted to Lan Na through Lankan. This symbolical belief still remains, as witnessed by the practice of placing flower vases as offerings to Buddha. The two dimensional “*Purnaghata*” designs can be seen in Lan Na art through the gilded technique on the interior decorations of Buddha image halls in Lan Na area as well as on the surface decorations of manuscript chests as expressions of tribute.



**Figure 6** Motifs and structures on Lan Na lacquer objects

### **Lan Na Traditional Lacquer Objects**

The survey and study on the structure of Lan Na lacquerware in the form of manuscript chests reveals the creation of a new art form and techniques such as the glass inlay, gilding, painting and lacquer relief

decoration. These techniques are used to illustrate Demi-Gods, “*Purnaghata*”, the mythological Himapan creatures and the episodes life of the Lord Buddha. The whole composition of the manuscript chests is related to its functional purpose, to keep the scripture. The distinctive shape of the manuscript chests and wooden pulpits found in this area is the trapezoid form called “*Pakaban*” (Figure 7)



**Figure 7** Lan Na traditional form “*Pakaban*”

The belief that utensils to serve food to Buddhist monks and to Buddha’s image have to be neat, led to the attentive creation and selection of fine and elegant lacquer containers for either rice or *Khan Tok* (raised tray on pedestal). Their fineness and elegance can be seen in both their form and decorative designs. Such lacquer containers contain the elements of symbolic beliefs in Buddhist cosmology like Mount Meru, which comprises the Three Worlds. The study of Lan Na lacquerware used for placing offerings found that the offering sets could either be “*Khan Tok*” or “*Khan Dok*”. They are both made of gilded wooden forms and have glass inlaid decorations of the lotus, symbolic of Buddhist faith. However, the Burmese counterpart of offering sets, have the structure of the topped Jedi form and is hypothesized to originate from the belief in “*Ketkeaw Chulamanee*”. Meanwhile, certain offering utensils are structured in seven layers of circles, probably originating from the belief of Sataboripan surrounding Mount Meru. Other details involving background color and decorative designs for each item in the offering utensil set may vary according to the beliefs and technical background of the craftsmen.

### **Lan Na Lacquer Objects in Everyday Life (in the past)**

These include items such as cloth trunks and betel nut boxes both of which demonstrate the traditions, culture, and way of life of Lan Na people. The structure and decorative designs of the objects often reflect the status of their users. For instance, plain lacquerware without decoration is generally the daily use utensils, meeting basic needs. These are constructed locally with simplicity for domestic use, for example “*Khan Tok*” food serving containers, and “*Khan O*” lacquer bowls. Items with traditional uses, such as cloth trunks, were used in the past as containers for personal belongings and were the expression of cultural glory of Lan Na people. This was so because traditionally the groom was married into the bride’s household and his finely decorated cloth trunk carrying his necessary personal belongings on his wedding day would indicate his wealth and status. Other types of lacquerware that express hospitality in Lan Na’s past include, betel nut and snack boxes. During conversations with visitors, the host would invite guests to chew betel, which was kept in low-rise cylinder lacquer boxes with lids decorated with beautiful art work. The tradition of welcoming visitors in this fashion implied not only hospitality and socio-economic status, but also the aesthetic taste of the host. The shapes and decorative designs of betel boxes often differ according to geographic areas (Figure 8).



**Figure 8** Lacquer objects in everyday life (in the past)

### **The Lan Na Culture from the Expert Point of View**

The views of the expert Vithi Panichapan (Figure 9), a dedicated historian and highly respected authority on northern Thai culture, and on Lan Na tradition and culture are as controversial as he is respected, and as cynical as he is idealistic.

Vithi argue that “1996 was the year of the Lan Na revival. Lan Na is made up. The word was pretty much unheard of before 1996. We do not understand the real value of our own culture. They might own it, but don’t know how to handle it. We have twisted it to the benefit of ourselves and some things have been twisted too far. We should go into reverse, and look at what we are doing, take a closer look at what we had, before we jump forward. We have to understand our valuable heritage.”

Vithi gives an example of how Lan Na has been successfully marketed to foreigners: “I helped start *Khan Toke* in 1972. This was after the first *Khan Toke* took place in 1953, when Krai Sri Nimmanhaeminda held a party at his house to show traditional northern culture to foreign and Thai dignitaries. Khun Oun, his younger sister, later went to Hawaii and brought back Hawaiian traditional dance [a luau] and mixed this with Tai Lue traditions to make the *Khan Toke* we see today. It is not Lan Na, but Hawaiian and *Tai Lue*.”

“Businesses today don’t know what they are doing, they mix everything up. They don’t have proper information. They confuse traditional local art and crafts with Burmese or Siamese or even Hindu.” (Citylife Magazine, 18(12) November 2009)

Additionally, Mr. Vithi claims he loves lacquer objects because it inspired the concept of plastic ware. But today, the lacquerware in the northern Thai markets no longer impresses customers. The lacquer artisan produces low quality products using the traditional technique and is not concerned with the aesthetic values.

Stein N Wongrak, (Figure 9) a local artist and a lacquer conservator, suggests that the art of lacquer in Lan Na comes from a long tradition. The work of his ancestors, who came from the Shan state of Burma, taught him about the aesthetics of traditional art and motifs. Every piece of his work shows his concern with traditional values as shown in original objects. When he restores lacquer objects, he always uses raw materials from natural resources, and makes use of traditional techniques.



**Figure 9** left : Vithi Panichapan right: Satien N Wongrak

### **Analysis of the Current Situation of Lan Na Lacquer**

Lan Na lacquering has presented its own characteristics throughout the northern Thai region as one of the distinctive traditional crafts of the Lan Na people for many decades. The Lan Na art involves gilding techniques on a red background. This is known as Lai Kam, and can be found in many temples in the northern Thai area. In the past, lacquerware was used for Lan Na worship, in ceremonies and in daily use when lacquer craftsmen were also lacquer users. In Lan Na culture, lacquer items are employed in daily life and local activities. Since 1960, the Department of Industrial Promotion of the Ministry of Industry launched a lacquer product development project by bringing the lacquer techniques from Japan and Vietnam to improve local techniques, leading to the decline of traditional lacquerware production. This, in turn, had a large impact on Lan Na lacquer production, instigating the development of Lan Na lacquer products aimed at the tourist industry. The traditional identity and use of Lan Na lacquer has been eclipsed by the mass production targeting the tourist market (Figure 10).

The objective of this study is not to select new products to develop, but to find a new perspective by studying the history of Lan Na lacquering, identifying truly traditional objects and their function, analyzing traditional techniques, considering the current situation in terms of production processes, undertaking a market survey and analyzing the properties of lacquer before creating new products. A case study also demonstrates the inspiration that



**Figure 10** Current lacquer products

can be garnered from the original La Na laquer objects, as well as an interpretation of these contemporary objects as applicable to contemporary living.

The topic of local wisdom with regard to Lan Na lacquerware is one of the main subjects for many researchers of northern Thailand. Lan Na lacquerware research and lacquer developing projects can be reviewed and divided into 3 sections. The first section focuses on Lan Na lacquering history and traditional techniques. The second section focuses on the lacquerware business and lacquer cluster. The third section focuses on lacquer product development, especially with regards to lacquer technique surfaces.

A survey of lacquer products in the northern Thai region found that lacquer products mostly consist of gifts, souvenirs and small decorative items. As far as medium and small enterprises are concerned, lacquerware production in Nantharam (in Chiang Mai city) produces small lacquer items and acts as the supplier and wholesaler for many souvenir shops in tourist destinations such as Phuket, Samui, Pattaya and Bangkok. The study found that lacquer products in today's market can be divided into three types. Firstly, there are low quality products that use acrylic paint on a wood base by applying two layers of acrylic paint followed by one coat of real natural lacquer, then painting flower motifs using acrylic colour and lacquer incised with acrylic filling. Secondly, they copy forms of antique products with a new function. The production of this type of product involves finding traditional lacquerware objects and reproducing them using new materials. Thirdly, traditional techniques are use in making new products, for example

gilt lacquer on small utensils, jewelry boxes and office accessories such as pencil boxes and card holders. An analysis of lacquer products in today's market indicates that almost all products are similar all making cheap souvenirs for the tourist market and that this has created a glut which unsustainable and detrimental to the lacquer industry's future.

Base on this situation product designers who do not understand the traditional lacquer techniques try to develop lacquer products without the necessary expertise. Some designers even feign their expertise, using gold stickers for lacquer decoration and claiming that it is a newly developed lacquer product.

Clearly, there is a need for more in-depth knowledge to inform such innovation. Further research and analysis from international perspectives with regards to design development in lacquer arts and crafts could deeply enrich new products in northern Thailand. Furthermore, These new perspectives can be applied while also expressing concern for the customs and nature of local craftsmen, while still adapting the traditional Lan Na images and identities to neo-Lan Na products for the 21<sup>st</sup> century.

### **New Perspectives with Regard to Lan Na Lacquering**

The development of Lan Na lacquer faces a significant challenge in terms of skill. Lan Na artisan lack necessary skills when compared to other lacquerware production such as the fine and smooth surfaces found in Vietnam Myanmar and Japan. These other nations generate lacquer surfaces that are remarkable smooth, whereas Lan Na lacquerware suffers from insufficient smoothing technique. This problem inspired the search for new perspectives of Lan Na lacquering, borrowing traditional forms from the Lan Na environment and of traditional objects in art and crafts in the northern Thai region. This search aims to create original and contemporary prototypes enriched by this new perspective to meet the demands of new lacquer target markets, who seek 21<sup>st</sup> Century craft and design. All new lacquer objects will be created within this Neo-Lan Na concept, looking to traditional objects to inform design that will also meet the needs and aesthetics of contemporary living.

## Results

The first case study concerns the traditional use of lacquer on a lacquerware structure. The study found that local craftsmen shape their lacquerware from solid wood (turning wood and wood plate) and bamboo (coil and wickerwork). However, a constant challenge in this method of production is the lack of lacquer material such as lacquer sap. In order to adapt to the scarcity of materials, this basic prototype offers a combination of two materials. The surface of this speaker prototype has two different sections: one coated in cement, the other in lacquer. The affect is a contrast of both physical and visual texture: the rough, matte section of cement versus the smooth, shiny lacquer section (Figure 11).



**Figure 11** Case study 1

The second case study involves the analysis of gilding techniques on lacquer surfaces. Temple decorations show the beauty of gold leaf through gilding. The candlelight reflected in the temples' gold leaf directly inspired the second prototype, a hanging lampshade. This design makes use of sharp contrast while also simplifying traditional forms, thereby generating a new kind of lacquer object. (see Figure 12)

As far as materials and method, the structure of the product is made from local mango wood, shaped by turning. The lacquer technique that is used in this case study is gilding. Three prototype lampshades present an outside surface which is black and shiny using a lacquer coat, while on the inside surface there is gold, silver and copper which presents a similar

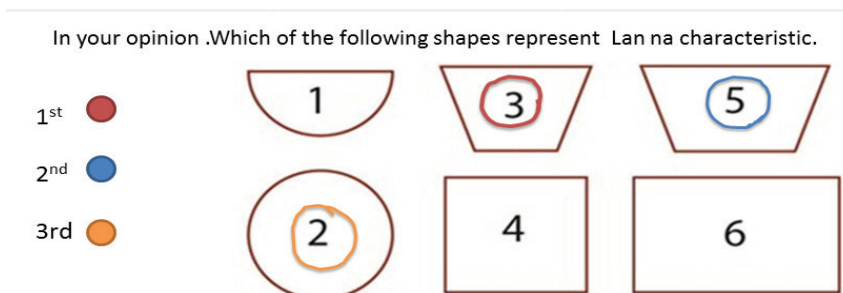


**Figure 12** Case study 2

lighting effect to the traditional gilding technique that provided the initial inspiration (Figure 2).

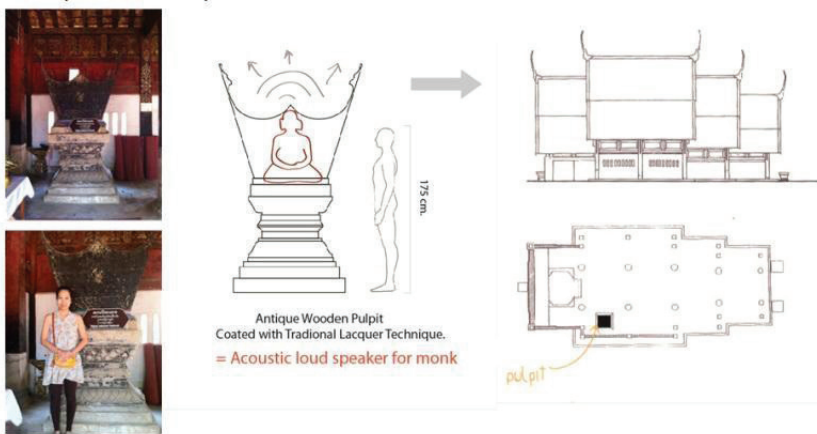
In the third case study, In order to test the hypothesis of this form's importance in Lan Na traditional design, a questionnaire about Lan Na traditional shapes and forms was distributed to 100 students and lectures who study and work in the field of Lan Na architecture in Chiang Mai University's Faculty of Fine Arts and Faculty of Architecture. 66 percent of the responses indicated that the trapezoid form is one of the most common shapes in the Lan Na area and represents Lan Na identity (Figure13)

We look back to traditional uses of lacquer objects whose traditional shapes and forms are directly related to their practical functions. The survey of Lan Na lacquer objects found one special form in common with the northern region that is not limited to lacquer objects. It is a trapezoid form with an open mouth top known as a "Pakaban". a typical form seen in the architecture of temple objects.



**Figure 13** Lan Na most common shape by survey

The antique wooden trapezoidal pulpit in the “Pongyangkrok” temple in Amphoe Hangchat, Lampang Province was the main inspiration for creating this particular new lacquer object design. The attractively combined form and function of the pulpit provided the idea of a contemporary lacquer loudspeaker. In the past, a monk would sit on the pulpit delivering a sermon to people who visited the temple on Buddhist holidays. Without the option of electronic microphones, the pulpit had the function of a loudspeaker (Figure 14).



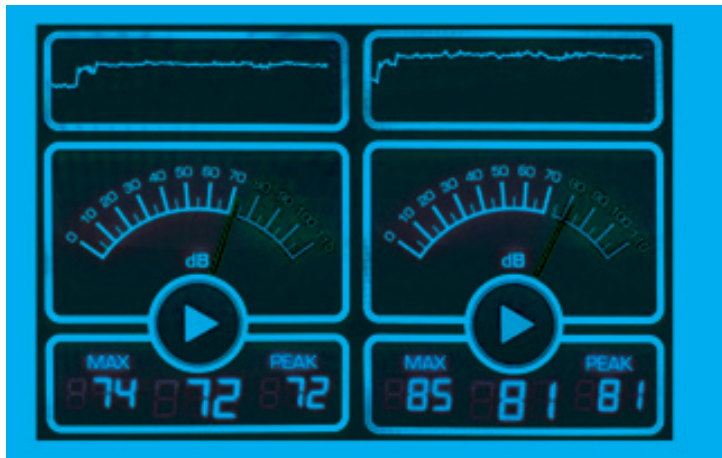
**Figure 14** Wooden pulpit at Pongyangkok Temple

In the present day, however, nearly every temple has a microphone and electric loudspeakers to amplify such sermons. Other technological objects have further altered these traditions. Nowadays, people can stay at home and listen to recorded sermons as often and long as they want. They can listen to recorded sounds as a contemporary meditation practice. As for personal use, the eco speaker (rather than using electricity to amplify the sound, these speakers maximize the physics property of natural resonance) is a new object in terms of product development. Even if the plastic eco speaker for an iPhone can be used to increase volume, it still does not address the quality of the sound. The quality-of-sound properties of coating wood with lacquer, traditional to the fine acoustic sounds of Asian instruments, poses a unique opportunity when considering speaker design. The new

perspective which interprets the function and form of the antique wooden pulpit in today's new culture creates a lacquer object under the series "sonority trapezoid" by coating only one side with lacquer and presenting the nature of the wood in terms of its acoustic properties on the other.

The concept of this series refers to the Buddhist concept of simplification. The development of the design started with the repetition of the trapezoid form, each trapezoid arranged to function together as a lacquer speaker. The result resembled a sculpture making use of both the natural resonance of the material and the modified horn-shaped, this angular sculpture speaker significantly amplified the sound.

The prototype proved to be 15 decibels louder than the highest volume of an iPhone, and with good acoustic properties (Figure 15). The second prototype, a simplified form from the original pulpit, focused on the acoustic sound of the wood. Results showed that different types of woods affected the acoustic property of the sound, even when the wood measurements and design stayed the same (Figure 16)



**Figure 15** Decibel Test Result



**Figure 16** Pongyangkok-inspired Speaker Prototypes

## Discussion

After analyzing product development problems in lacquerware, this research has developed new products using traditional form to create design concepts, studies of material properties, and studies of cultural formats that comply with functional design to serve as case studies and to set examples for local lacquering development. The conclusions are as followed.

**1. Lacquer coating maintain the acoustic properties of wood.** The coating in lacquer of wooden instrument has been a sound-amplifying technique in the past. By coating various kinds of tone woods in the amplifying material properties that lacquer offers, the different properties were tested in case product prototypes “Acoustic Lacquer accessories” In local lacquering production, the lacquer craftsmen apply lacquer coating of only 5-6 layers. It is relevant to the study of product design that requires acoustic properties.

**2. Concept is Necessary to the Development of Forms.** Literature reviews, field surveys and object structures involving lacquer coating in Lan Na culture were analyzed as to their relation of function and structure in traditional culture. The information directly informed the prototype designs. The case study cited “Pak Kaban” form for the design. The particular form has trapezoid-shaped sides with the upper sides that spread out. The form appears in Lan Na architecture, manuscript cases, and the wooden pulpits for Dhamma sermons. The survey found this “Pak Kraban” form conformed to Lan Na aesthetic identity and it enriched users’ use and perspective. The case study has used wooden pulpit from Pongyangkok Temple, Lampang Province as the main inspiration for designing loudspeakers.

**3. Because raw materials are costly, the reduction of lacquer sap and lacquer processing must be a priority.** The coating process was reduced by considering sap’s physical properties and making it suitable for the designed product by coating the lacquer for 5-6 layers on only one side. It will still retain the acoustic properties and the visual aesthetics of the wood. As seen in tourist-market aimed lacquerware, the basic concern in upgrading local lacquerware products is fine surface preparation before decorating. Furthermore, the reduction of lacquering area or decoration techniques helps minimize manufacturing time improving lacquer techniques and skills to create a better and finer lacquered surface on which to apply decorative techniques would add value to the local lacquerware products.

**4. There is a clear need for lacquering technique conservation and lacquerware production development.** As the field surveys demonstrate, a problem that persists in lacquer production is that the skills of the existing artisans are not being passed on to the next generation. The number of lacquer artisans is falling, from this case, the gap between the experts and the development of lacquering seems to be an obstacle in product quality development. From the case study, adjusting lacquering product forms to make them look simple and contemporary is another way to reduce the gap between traditional style items and the new generation so they can be more interested in the cultural wisdom. Therefore, the benefits of lacquer sap can be applied in more various forms. This idea will also have an effect

on conservation and development in the future. The case study begins from coating only 5-6 layers of lacquer, but done so delicately as to display the clear outshine black surface. This new aesthetic objective will provide opportunities to improve lacquer coating techniques and skills as a basis in creating good quality products to add value to the future, less minimalist products.

**5. Applying lacquer's coating properties when designing structures with other materials will increase the variety of product development.**

In the past, the research and development of lacquerware products only focused on the surface decoration techniques, while the structures remained more or less the same. Implementing the study of material properties to inform design innovation, the use and function of lacquerware can be made relevant to the main structure of the product from the very beginning of design, starting from materials selection. In this study, the researcher mentioned acoustic properties of the wood and the lacquer coating in designing loudspeakers. In future research, the researcher will study other possibilities when considering materials by looking at hemp fabric properties paired with lacquer coating to develop other products. This designing path serves as an opportunity for those who are interested in lacquer coating to use the materials to develop various designs both in structures and coating techniques.

**Conclusion**

This practice-based research can be divided into two parts. The first part is data collection and analysis, while the second part relates to design development. Lacquerware in the past was created using local wisdom. This has been considered in terms of its distinctive identity and functionality. The current situation of Lan Na lacquer is that it faces the problems of new product development, the limited experience of the craftsmen and overuse of raw materials. These are problems for the future in terms of both Lan Na lacquer conservation and its development. It is necessary to solve this problem by improving traditional techniques as well as being in line with contemporary style. An in-depth study of Lan Na lacquering should be

undertaken and should be used to assist in combining traditional lacquering techniques (with the reflection of customs, beliefs and culture from traditional Lacquer ware) with lacquer conservation. It should be applied in combination with contemporary market needs which, in turn, will also positively affect the lives of artisans. As for the future challenges, “New perspective of Lan Na lacquering” demonstrates an alternative idea of local craft development under the neo-Lan Na movement and design methodology. The study of the Lan Na lacquer evolution highlighted the identities of Lan Na lacquer and its initial inspirations. Experimental design is the one of methodologies needed to create new lacquer products step-by-step from the lacquer production process, and to expand new ideas for local product development. The survey of traditional lacquers opens up new ideas with regard to Lan Na traditional forms in order to create new products. The consideration of material properties inspires new ideas for product development. Moreover, in order to preserve the cultural identity in terms of local crafts, and to sustain the livelihood of traditional artisans, it is necessary to consider the situation in two ways: firstly, to continue with traditional technique conservation; secondly, to combine the traditional identities and techniques with contemporary use as the way to stimulate and sustain development.

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