Traditional Vietnamese lacquering processes and their applications to contemporary jewellery and small scale body related objects

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Abstract 350 words maximum:

The luster and luminous qualities inherent in lacquer objects speak of a revered historic technology chronicled by remarkable achievements. Sophisticated lacquer objects from the East Asia and Vietnam are products of the integrated histories, technologies, and cultural expressions of these territories. The application of lacquer as a decorative medium originally developed in China. Through exchange and trade, the material was transmitted to neighbouring countries where each region explored the material and developed distinctive styles and techniques. Although lacquer from East Asia and Vietnam share similar material natures, the cultural attributes of lacquer, its aesthetics, design, form, and symbolism provide for marked distinctions across the zone. Vietnamese lacquer contributes surface techniques and motifs to the lacquer repertoire. The aim of this research is to investigate the materiality and processes of Vietnamese lacquer as a surface ornamentation integral to the design and making of objects.

The published material is dominated by descriptions of the aesthetic achievements of lacquer objects with little coverage of the technology, techniques, and practices employed. There is a scarcity of contemporary research on Vietnamese lacquering processes written in the English language. This research was fuelled by a research field trip to Vietnam during 2004 working with Vietnamese lacquer artists on traditional lacquering techniques. During a residency at Hue the lacquer working processes were observed, documented and techniques sampled. This traineeship incorporated the preparation of traditional tools, of the substrate, and the application of lacquer painting techniques. Preparatory samples and templates were made in Australia for later experimentation in Vietnam. These samples were treated with lacquer and illustrate the possible exploration of Vietnamese lacquering techniques in a contemporary context.

The research is a material investigation of traditional Vietnamese lacquering processes applied to jewellery and object making. The studio practice aims to reinterpret the traditional material language of lacquer by allying it with contemporary methods and techniques. This synthesis combining traditional art methods and digital technology is expressed as a series of objects inspired by floral motifs. The seasonal floral images are significant, evoking concepts of creation and renewal. The interpretation of these graphic florals provides a contemporary representation, aesthetic, and cultural reading for the material, maker, and motif.


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Traditional Vietnamese Lacquering Processes and their Applications to Contemporary Jewellery and Small Scale Body Related Objects

Bic Tieu

A thesis submitted in fulfilment of the requirements for the degree of Master of Design Research (Honours)

2007

School of Design Studies  College of Fine Arts  University of New South Wales
For a flower to blossom it needs the air, water and sunlight. Similarly this document is
the result of many great efforts contributing to the development and final growth of the
manuscript and studio body of work. Whether great or small, every person who has
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mature lacquer artist.
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Finally, a special thanks to all those people who should be mentioned above but I have regretfully neglected to include!
The lustre and luminous qualities inherent in lacquer objects speak of a revered historic technology chronicled by remarkable achievements. Sophisticated lacquer objects from East Asia and Vietnam are products of the integrated histories, technologies, and cultural expressions of these territories. The application of lacquer as a decorative medium originally developed in China. Through exchange and trade, the material was transmitted to neighbouring countries where each region explored the material and developed distinctive styles and techniques. Although lacquer from East Asia and Vietnam share similar material natures, the cultural attributes of lacquer, its aesthetics, design, form, and symbolism provide for marked distinctions across the zone. Vietnamese lacquer contributes surface techniques and motifs to the lacquer repertoire. The aim of this research is to investigate the materiality and processes of Vietnamese lacquer as a surface ornamentation integral to the design and making of objects.

The published material is dominated by descriptions of the aesthetic achievements of lacquer objects with little coverage of the technology, techniques, and practices employed. There is a scarcity of contemporary research on Vietnamese lacquering processes written in the English language. This research was fuelled by a research field trip to Vietnam during 2004 working with Vietnamese lacquer artists on traditional lacquering techniques. During a residency at Hue the lacquer working processes were observed, documented and techniques sampled. This traineeship incorporated the preparation of traditional tools, of the substrate, and the application of lacquer painting techniques. Preparatory samples and templates were made in Australia for later experimentation in Vietnam. These samples were treated with lacquer and illustrate the possible exploration of Vietnamese lacquering techniques in a contemporary context.

The research is a material investigation of traditional Vietnamese lacquering processes applied to jewellery and object making. The studio practice aims to reinterpret the traditional material language of lacquer by allying it with contemporary methods and techniques. This synthesis combining traditional art methods and digital technology is expressed as a series of objects inspired by floral motifs. The seasonal floral images are significant, evoking concepts of creation and renewal. The interpretation of these
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<tr>
<td>bay sung</td>
<td>The Vietnamese terminology for buffalo spatula.</td>
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<tr>
<td>bay xuong</td>
<td>The Vietnamese terminology for bone spatula.</td>
</tr>
<tr>
<td>cái mồ</td>
<td>A wooden device made to hold and keep a buffalo spatula in form.</td>
</tr>
<tr>
<td>doi mới</td>
<td>Also known in English as Vietnam’s “open door” policy. The title given to Vietnam’s reform in the 1980s, when Vietnam opened up its door to private investment and ownership.</td>
</tr>
<tr>
<td>hom</td>
<td>The Vietnamese word to describe a base material used in the lacquering process in preparation of the substrate. The ground is a mixture of coarse lacquer, kaolin and water.</td>
</tr>
<tr>
<td>ground</td>
<td>A technical jargon used to describe a lacquering process. The term generally refers to the initial stages of smoothing out a surface.</td>
</tr>
<tr>
<td>ground mixtures</td>
<td>A technical jargon to describe a variety of lacquer pastes in preparation of the substrate.</td>
</tr>
<tr>
<td>sơn then</td>
<td>Vietnamese terminology for black lacquer</td>
</tr>
<tr>
<td>sơn mái</td>
<td>Vietnamese lacquer terminology to describe Vietnamese lacquer working. The word strongly affiliates with contemporary Vietnamese lacquer painting.</td>
</tr>
<tr>
<td>substrate</td>
<td>The core of a lacquer object or sometimes refer to as support.</td>
</tr>
<tr>
<td>thẹp son</td>
<td>Vietnamese lacquer terminology for a traditional brush.</td>
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urushi  A Japanese terminology to describe the resin found in the Rhus Verniciflua

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“Along the side of the river, a strip of land still lay in darkness. From afar, it looked like the back of a crocodile floating in the water. A few hundred feet away, a sampan moved slowly upstream. Both sides of the boat were painted with red resin from the lacquer tree and highlighted with gold trim in large rectangular patterns – the design reserved for weddings” (Nguyen 2002: 3).

Fig 1


1. A  The Journey from Vietnamese Lacquer to the Jewellery Studio

The painted boat of literature is evocative and illustrative of the lacquer tradition of Vietnam. The colours red, black, earth brown, yellow, metallic gold and silver leaf, combined with inlays of mother of pearl, oyster shells, and egg shells are characteristic of this lacquer art. These pigments when mixed with the resin from the lacquer tree form a paint to create a lustrous coat. The shiny surface, combined with cultural imagery and the material inlays, is emblematic of the traditional lacquer crafts and lacquer painting in Vietnam. Vietnamese lacquer is a strong tradition with many approaches. It is the practices of lacquer art and their applications that form the basis of this enquiry. These are presented through this document and through the exhibition of work “Lacquer, Lustre and Laser- Contemplative Objects and Contemporary
Jewellery”. This project was fuelled by a desire to acknowledge these ancient traditions and reinterpret the processes through contemporary jewellery practice.

An interest in colour, lustre and elaborate finishes sparked this enquiry. However the origins of lacquer were of a pragmatic nature. One of the first uses of lacquer in Vietnam and other countries of Asia was as a protective seal, providing durability for boats (Nguyet 1971: 5). Raw lacquer was used as a protective paint before its development as a decorative medium. Though China pioneered the development of lacquer, Vietnam also has a long and rich lacquerware tradition. In an essay by Nhat (2002: 159), there are descriptions of lacquered items and lacquer tools discovered in Vietnamese tombs dated c. 400 BCE. From the beginning of the Common Era and tenth century, lacquer was used for coffin and funeral decorations (Nhat 2002: 159). In Vietnam, the development of lacquer as a medium for surface ornamentation and embellishment in the decorative arts has only occurred within the last five hundred years (Nguyet 1971: 5). Lacquer is present through objects with religious or royal associations. Some of these applications include architectural structures, statues, shrines, pagodas, and ancestral tablets. The columns (Figure 2) located in the main Palace of the Purple Forbidden City\(^1\) in Hue displays the use of red lacquer with gold dragon and cloud motifs. Produced in 1804 C.E. and revered and restored in perpetuity. In addition to these imperial applications lacquer has a utilitarian tradition, it is a material applied to objects for use in the home, examples include furniture (Figure 3), boxes, trays (Figure 4), bowls and screens. All these examples exhibit an exuberant surface treatment. It is the fundamentals behind this exterior brilliance and range of surface finishes in lacquer treatments, whether for royalty or for the general population, that located the field-work phase for the enquiry of this research.

This examination of traditional Vietnamese surface ornamentation and lacquerware details was undertaken during a residency in Hue Vietnam and focuses specifically on the processes and techniques associated with Vietnamese lacquer working. The research concentrates on the associated materials and techniques and documents the application of this process and its translation into contemporary practice. The making of objects and wearables is undertaken as part of the studio research. The

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studio component illustrates the technical integration of a traditional craft into a contemporary context.

**Figure 2**

**Figure 3**

Lacquer is a lustrous material significant to regions of East and South-East Asia. The various cultural groups share this material, and vary its application through specific local traditions. The raw material is collected from the sap of a species of tree, family name *Anarcardiaceae* and genus *Rhus* native to East and South-East Asia. These ‘lacquer trees’ are restricted to subtropical zones. The procedure involved for harvesting the lacquer sap and the refining process is similar throughout the region (Kopplin 2002: 19). Hutt (1987: 159) argues that the craft is closely associated with this region because lacquer is cultivated from trees specific to East Asia and South-East Asia.
The chemical composition of Lacquer is distinctive and its properties have allowed for the development of a language of form, colour and surface that differentiates lacquer products from other expressions such as those in ceramics, bronze, and textiles. The surface qualities are the results of the polymerisation of the sap utilised in lacquer. Lacquer is a natural resin that undergoes a transition, the liquid hardening into a solid state. This quality of lacquer allows for the complexities expressed through various surface techniques and is the key to the versatility of this medium. Lacquerware is made up of an internal structure, termed substrate and several outer layers which allow for the application of the surface variation including lacquer carving, painting, inlaying, silver and gold leafing, and polishing.

Historical evidence points to China as the first area to develop lacquer as a medium for the decorative arts (Kopplin 2002: 19). The development of lacquer arts in Vietnam is similar to that of China. In China, it is established that lacquer was practiced before the Shang dynasty (1751-1112 BCE). An example is a lacquered cup, which dates approximately 5000-3000 BCE (Knight 1992: 6). One of the earliest lacquerware objects in China, the cup is made from a wooden core that is coated with red lacquer. Knight (1992: 6) argues that the use of lacquer represented through this object demonstrates an advanced stage of development. In Lee’s book Oriental Lacquer Art (1971: 20), Lee describes this technique of paint over a surface as ”direct lacquering” interpreted as a functional process demonstrating lacquer’s original role as a preservative or protective coating.
Lacquer eventually evolved into a medium for ornamental surface design, and advanced to great levels of technical and artistic achievement. Over time the art was dispersed to other countries via trade and exchange. Examples of this spread of lacquer are represented through a series of extant examples. Lacquer appears in Korea about the first century of the Common Era (Watt 1991: 303), with subsequent examples from Japan from about the fifth century (Capey 1928: 3). Korea and Japan adopted models from China, eventually developing distinctive approaches. This ancient tradition travelled from the East to South-East Asia, India and countries outside of the Asian continent. Each region where lacquerwork has been practiced has developed its own processes and style. Neighbouring countries demonstrate individual approaches enriched through centuries of contact and trade.

Figure 5
Red lacquer and gold gild in the interior of the Temple of Literature, 11th century.

Source: http://www.antiquetools.com/viet/viettemplit.html

Knight states that in China lacquer’s “sumptuous surfaces and broad range of applications have made it a favourite of members of the court, the aristocracy, religious groups and wealthy merchants” (1998: 89). The significance and value placed on lacquerware increased in the Zhou dynasty (1111-256 BCE). Because of limited production each lacquer piece became valuable (Lee 1971: 21). It was during this period that the art was reserved for the higher levels of society, the royalty and the nobility. In
China, lacquerware was originally fashioned in official workshops. Subsequently to support the demands of production, commercial workshops were set up in affluent parts of China as indicated by the establishment of workshops during the late Song (960-1271 C.E.), Yuan (1271-1368 C.E.), and late Ming (1368-1644 C.E.) periods (Watt 1991: 8). The patrons of this production of lacquerware were from the imperial courts, the aristocracy, religious groups, and elite members of society (Knight 1992: 5). The Warring states period (475-221 BCE.) saw the lacquer tree, *rhus verniciflua* as one of “China’s most economically important crops” (Watt 1991: 15). Lacquer tree plantations were seen as a major source of income for members of the courts and landowners (Watt 1991: 15). Lacquer was considered a luxurious material and was monopolised by the higher levels of society. Similarly, in Japan lacquer production was also held under state control (Capey 1928: 3). Traditional uses of lacquer in Vietnam are found in the Imperial courts in architecture and ritual sculpture. An example is the red lacquer and gilt work applied to the pillars in the Temple of Literature\(^2\) in Hanoi (Figure 5). Another example employing the use of red lacquer and gold leaf is the altar at Emperor Tu Duc’s Tomb\(^3\) (Figure 6) built in Hue in the Nguyen Dynasty (1802-1945 C.E.). The third example is a bronze Buddhist guard, lacquered in gold and white\(^4\) (Figure 7). These regal applications demonstrate lacquer’s affiliation with power and prestige within the Vietnamese tradition.

This ancient tradition has been represented by objects both majestic and mundane, from imperial and ceremonial examples of lacquerware through to the everyday utilitarian objects both past and present. Lacquer practice today continues to thrive across the Asian continent and beyond, appearing in traditional and contemporary forms. Due to industrialisation and changes in technology there have been new developments of forms and surfaces that have been integrated into traditional lacquer practices. This will be further discussed in Chapter Two.

### 1.8 Lacquer’s Relationship to Contemporary Jewellery

Lacquer is a medium that requires a combination of knowledge, patience, and skill. Expertise is required in all phases of lacquer working, from the initial stages of

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\(^2\) The Temple of Literature, Hanoi, 11 century.

\(^3\) Tieu, B., 2004, Studio Lacquer Vietnam Research Field Trip. Visit to Emperor Tu Duc’s Tomb, located in a Pine Forest, 8km from Hue. The construction of this tomb site began in 1864.

\(^4\) The Bronze lacquered Buddhist sculpture is about 42cm in height dating from the 17th century.
harvesting, through to the core preparation and application of lacquer embellishment. Starting initially with a substrate, the framework undergoes a process of material selection where hours are invested into the preparation of the form. Individual coats of lacquer are painted on allowing drying and polishing in between stages. This process ensures a totally smooth finish in preparation for the next layer. The final step involves the process of fine hand polishing. It is the patience and dexterity required by this traditional handcraft that has associations with the methodology and technologies of

**Figure 6**
Detail; alter in one of the palaces at Tu Duc’s Tomb, showing the application of red lacquer and gold gild work on carved surfaces. Photography Bic Tieu, 2004.

**Figure 7**
jewellery making. The thoughts and skills behind the craft require problem solving and highly skilled hand processes. Lacquer in its labour-intensity, precision and creative opportunities, echoes the making of contemporary jewellery and objects. From the practitioner’s perspective, lacquer and jewellery are strongly connected in this way.

Contemporary jewellery practice represents a significant aspect of this research and is the vehicle for the lacquer studio experiments. The project draws upon ideas developed as a result of the lacquer investigation and interprets these in finished forms. The studio output comprises of a collection of works tracing the study’s development in two sections. The first group of works shows experimentation with lacquering techniques applied to the surface of two- and three-dimensional objects. The later works demonstrate lacquer’s application to contemporary jewellery making. These works exhibit a combination of the two integrated crafts. Surface ornamentation is explored in a group of wearables and objects using inspiration from the traditional Asian flowers of the four seasons for example Summer’s lotus, Autumn’s chrysanthemum, Spring’s peony and Winter’s prunus. The four floral motifs are conveyed progressively in the studio making. The visual qualities of these symbolic flowers are significant to the studio research as it determines and defines surface aesthetic and form. The studio project reflects on contemporary jewellery and object-making as described by Osborne in her catalogue essay the language of objects. She states:

The artist as maker has a rare power to provoke wonder in the viewer through using the skill of the hand as a conduit for the imagination, to conjure into existence something never seen before. Mere skill can achieve prosaic well-made objects which reveal technical virtuosity, while adhering to conventions within a particular discipline. The poetic object is a material embodiment of the artist’s imagination. It has an inchoate allure that eludes rational explanation through language; a resonance that reaches out to engage the senses, and hence the mind. (Osborne 2005)

The objects and wearables in this study serve as vehicles for the underlying notion of creation and renewal. The studio practice is presented as continuous dialogue between history, cultural artefacts, available materials and technologies.

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5 The implication of ‘later’ refers to the groups of works made after the research field trip in 2004.
Vietnam (Figure 8) is geographically located on the South-East Asian mainland and borders China, Cambodia and Laos. To the south of the country are sea borders with the Gulf of Thailand, the Gulf of Tonkin and the South China Sea. Situated amongst a host of other lacquering nations, Vietnamese lacquer is comparable to that of China, Korea, Japan, and other East and South-East Asian countries.

Historical influences of both Chinese domination and French colonial rule have contributed to the changing role of lacquer and its applications in Vietnam. Unlike other lacquering countries, lacquer in Vietnam is highly recognised today as a medium for two-dimensional painting. Lacquer working in Vietnam is called sơn mài which translates as painting and grinding. This term is significant to the lacquer history of Vietnam, as the name was introduced at the School of Fine Arts, Hanoi in the 1930’s (Nhat 2002: 159). This period is considered a renaissance for Vietnamese Lacquer,
fostered by the French École des Beaux Art d’Indochine\textsuperscript{6} atelier approach to learning and teaching contemporary lacquer art painting in Vietnam emerged (Tuan 2003). Hence the traditional palette of black, yellow, cinnabar red, gold and silver was regenerated with the development of two-dimensional lacquer painting as it’s significant expression.

The preliminary research into lacquer with an emphasis on the specific techniques related to Vietnamese lacquer was undertaken in 2003. Initially, literature on historical Vietnamese lacquer and East Asian lacquer were examined. Reviewing the published material located little published in the English language. These early enquiries led to the establishment of important networks with academics and collectors in the field. This initial correspondence opened opportunities for further research during a field trip in 2004, with a residency in Hue, Vietnam\textsuperscript{7}. A studio was provided at Hue University College of Arts, under the guidance of Mr Huy Do-Ky, Head of the Lacquer Department. Huy Do-Ky’s involvement with lacquer practice is extensive. He was involved through the Hue monuments and conservation centre with the restoration of decayed lacquer pillars in the Royal Enclosures of the Purple Forbidden City, at Hue. Huy Do-Ky has authored a dissertation on the use of alternate materials in contemporary lacquer. Huy Do-Ky is from the second generation of new lacquer painters, he is the son to prominent lacquer artist Mr Huong Do-Ky.

The residency included access to the Lacquer department at the College of Arts and to individual lacquer artists’ studios. During this period, projects were designed to both learn and investigate the traditional and contemporary techniques of Vietnamese lacquer. Detailed documentation, photographic, written and sampled and practical exercises, recorded these approaches. Other fieldwork studies were undertaken to inform the research. These included the documentation of visits to lacquer galleries and artists’ studios, lacquer manufacturing centres, museums and historical sites.

The interest in lacquer was triggered by a previous research project, which examined the language of surface ornamentation in East Asian costume traditions, with particular focus on dress-fastening systems. The body of work developed from this research utilised the technology of computer engraving to create images based on the

\textsuperscript{6} The establishment of the Fine Arts University, École des Beaux Art d’Indochine, in Hanoi in 1925 developed the traditional technique of Vietnamese lacquer to two-dimensional paintings.

\textsuperscript{7} Most of the applicable research was gathered during the field-trip, sourced from informants, cultural site visits, and excursions to lacquer facilities including, universities, galleries, and factories.
traditional Chinese motifs of the dragon, phoenix and floral emblems. The engraved areas were filled with acrylic paint as a substitute for the lacquer paint. At this point the acquisition of lacquer proved difficult. A number of sources including lacquerware importers, furniture restorers and conservators from the Art Gallery of New South Wales were contacted for advise on obtaining the material. The responses indicated that lacquer was not a material imported into Australia and hence the journey to find lacquer was begun for this research project.

1.D Research Approach to Traditional Vietnamese Lacquer Working

My Chinese-Vietnamese heritage provided a personal motivation to search for the specifics of Vietnamese lacquer. As a contemporary jewellery and object designer I sought to investigate the materiality of lacquer. The preliminary survey on lacquer provided insight and informed the direction of the study. Furthermore the initial search provided an indication that there was possibility of employing the lacquer material in contemporary jewellery and object making. Contemporary jewellery practitioners employing lacquer in their designs reinforce lacquer’s potential and diversity as a medium. A more comprehensive analysis of contemporary uses of lacquer is described in Chapter Two.

The procedures employed during the research commenced with the gathering of information from published resources for background information on the subject. The background research provided a foundation for the technical studies into the lacquer working process. These studies were applied during the residency in Hue Vietnam carried out under the mentorship of Huy Do-Ky. Additional guidance on traditional aspects on tool making processes were supported by Mr Houng Do-Ky.

During the residency in Hue, a number of projects were established to record this traditional practice. The objective was to observe and document the Vietnamese lacquering processes and its application to two-dimensional surfaces and three-dimensional forms. This was done with a particular focus on Vietnam’s tradition of painting, sơn mài. The initial research in 2003 enabled preparatory work to be carried out in Australia prior to the field trip. Samples and templates were prepared for further experimentations with lacquer. The samples were designed to illustrate the possibility

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for varying uses of Vietnamese lacquer within a contemporary context. Some of these later experiments included carving, painting techniques, gold silver leafing, and eggshell inlay. Photo documentation allowed for a historical and visual analysis of the iconography and symbolism associated with Vietnamese cultural objects. The cultural sources formed part of the research enquiry, illustrating technical refinement and context.

1.E The Significance of Vietnamese Lacquer

There are several factors leading to the justification for this study. Very little attention has been devoted to lacquer of South-East Asia, in particular to that of Vietnam. These observations extend the field of knowledge, particularly in the studio-based research, and contribute to an understanding of Vietnamese lacquering technology. The research into materiality and technical processes associated with both traditional and contemporary practice of lacquer contribute to the field of South-East Asian studies in arts and design. This documentation of Vietnamese lacquer tradition marks it as distinct from that of neighbouring countries.

There already exists extensive literature on the history and techniques of Chinese and Japanese lacquer, which is counterbalanced by a scarcity of contemporary research on Vietnamese lacquer in the English language (Garner 1979; Herberts 1962). Although the lacquer from East Asia, China, Japan, Korea and Vietnam share similarities due to the nature of the material and its primary function as a sealant and preservative, the cultural attributes of lacquer, it’s aesthetic traditions, design, form and symbolism provide contrasts and differences across the region, from China to Japan, through Thailand to Vietnam (Lee 1972 1990). A recent observation made by Koichiro Matsuura (Kopplin 2002), Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasised that there are many publications on the description and aesthetic beauty of lacquer, which contrasts with the lack of publications on the technology and conservation of lacquer. As a result of economic growth, industrialisation, and changes in society the ongoing traditions of lacquer workshops throughout Asian regions are at risk (Kopplin 2002). A 1997 UNESCO-organised workshop, set out to document the current situation within each

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region with a declared intention of proposing solutions for the prevention of a further decline of lacquer practice. The conference resulted in a publication on lacquer technology. The book\textsuperscript{10} covers the different styles, methods, and materials used in lacquering across regions in Cambodia, China, India, Korea, Japan, Myanmar, Thailand, and Vietnam. This is a rare contribution to publications on the current state of lacquer in Asia.

While many areas in the decorative arts have been documented, lacquer remains a field that has received less attention (Watt 1992; Ford 1992). It has not attracted the same scholarly focus as bronze, jade, and ceramics by Chinese antiquarians (Knight; 1998: 91). It is only recently that archaeologists have discovered burial hoards that include surviving lacquer objects in China\textsuperscript{11}, enabling researchers to advance the historic knowledge of the medium. However Vietnamese lacquer remains in scholarly neglect. Those few publications on Vietnamese lacquering techniques largely remain in the Vietnamese language, and as such are accessible only to the Vietnamese speaking readership.

This body of research is of significance in that it sheds light on the lacquer traditions in Vietnam, and locates lacquer as a legitimate process for contemporary jewellery and object design. Lacquer in East Asia, originating in China, has been practised for 6000 years. This research adds value to the field of Asian studies, uncovers unique technical processes and establishes an expanded material vocabulary in jewellery and object design.

1.F Vietnamese Lacquer Research and Limitations

Traditional Vietnamese lacquer crafts and lacquer painting are practiced all over the country. There are over 1500 members in the Vietnam Fine Arts Association (Bernier 2000), within this number Vietnamese lacquer painting is prominent. The research residency took place in Hue, Vietnam where two lacquer artists imparted technical knowledge. There is the potential for regional differences in processes and techniques with Vietnam and outside Hue, however this is outside the scope of this study. An analysis of the published material indicated that the processes were very much the same


throughout the country. Some differences regarding the individual recipes that an artist would use for building the substrate and the lacquer palette exist. The study program was limited to ten-weeks, a timeframe that imposed some limitations and restricted the number of objectives achievable. Within a strict timeline, the studio research allowed for explorations into the major techniques of Vietnamese lacquer working.

1.G Outline of the Chapters

The following four chapters represent the combined material of the study gathered into document form, is supported by the corresponding exhibition in 2006 at Kudos Gallery Sydney under the title “Lacquer, Lustre and Laser- Contemplative Objects and Contemporary Jewellery”. The purpose of this study is to uncover the Vietnamese lacquer tradition and translate these findings through their application to contemporary jewellery.

Chapter two embarks on a discussion of the literature. The review begins with the definition of lacquer to establish the originality of the term and its associations in contemporary times and also surveys the origins of lacquer and the development of lacquer techniques. Followed by historical and contemporary perspectives on Vietnamese lacquer. This section looks closely with the development of contemporary two-dimensional lacquer painting from the Vietnamese lacquering tradition and its subsequent relationship to the studio research. Vietnamese lacquer techniques, are discussed with reference to Chinese lacquer techniques. Included in this discourse are contemporary references, which focus on contemporary lacquer practitioners.

The third chapter details the method utilised in the production of Vietnamese lacquer. Descriptions of the traditional approach to the processes and techniques as documented during the 2004 residency in Hue, Vietnam, are outlined. The chapter covers a detailed description of the tools and the tool-making processes. The traditional techniques of Vietnamese lacquer are explained at length. Images are included to illustrate the technical processes and to clarify some difficult terminology.

Chapter four focuses on surface ornamentation in relationship to the studio research. Several key issues are raised in this section clarifying the origins and development of the studio research. These factors include: the role of technology in contemporary jewellery design; the use of the laser computer aided tool for cutting and engraving; the visual language of the flowers of the four seasons; and the use of floral
imagery in contemporary jewellery design. This analysis is essential to contextualise the creative process behind the studio project.

Finally, chapter five presents the results and outcome of this research as illustrated through a body of studio work. There are two components in the studio project. The first concentrates on the preliminary research as summarised by the results obtained from the sampling of traditional Vietnamese lacquer working processes. The second component applies this knowledge to contemporary jewellery objects. Each body of work is discussed in detail, expanding on the application of the Vietnamese lacquer to the worked surface.
CHAPTER TWO
Lacquer Literature Review

"The principal material for pumice [sic] lacquer painting is Vietnamese lacquer, used to lacquer cultural objects and current usage articles. After his arrival in Hanoi, one day Inguimberty accompanied Nam Son in a visit to the Temple of Literature. He was amazed at a layer of lacquer covering the ancient cultural objects, the parallel sentences [sic] and the columns of the sanctuary. Time – several centuries – had changed this layer of lacquer into extraordinarily beautiful colour scales. Inguimberty was gained [sic] over the “Annamite lacquer” and later on engaged in trying lacquer in painting” (Phong 1996; Tuy 1996: 248).

Figure 9
Charles Fouqueray, The Lacquered Studio, watercolour on paper, Hanoi 1921.

2.A Lacquer
The word “lacquer” has many associations. The painting by Fouqueray (Figure 9) depicts lacquer artisans working on both sculpture and painting. The work captures the craft’s divergence into two areas, that is, the traditional three-dimensional lacquer handicrafts of Vietnam and two-dimensional lacquer painting. Lacquer is the result of a creative vision combined with arduous, complex sets of skills. Working with lacquer requires specialised knowledge and is perpetuated as a hand-skill for this reason, this research identifies the custom as a craft. However, for the development of two-dimensional painting in Vietnam, the term used is lacquer art.
The terminology is multi layered and a clear definition is necessary to reduce ambiguity. The word lacquer is used to refer to, and describe historical artefacts, contemporary lacquer production and technical practices lacquer employed to surface an object or structure. Furthermore the word lacquer is also a verb, used as a descriptor for making, working with, painting with, and constructing wares. The term is used to describe the raw material and the various phases of processing.

2.8 What is Lacquer

Lacquer is a sap collected from a specious of trees indigenous to Asian regions. The lacquer tree belongs to the family Anacardiaceae and genus Rhus. These include the Rhus verniciflua and the Rhus succedanea. China, Japan and Korea use lacquer from the Rhus verniciflua, whilst the Rhus succedaneum is cultivated in Vietnam for lacquer art practices and craft production. In the north of Vietnam lacquer sap is harvested by farmers between the months of September and January (Quang: 151). Diagonal marks are cut into the bark of the tree and small containers such as seashells are used to collect the sap (151). Lacquer in its raw state is a creamy viscous liquid and on exposure to air turns amber in colour. Once lacquer is tapped from a tree, the harvesters apply several processes to separate impurities and other compounds before refining to the purest lacquer. The central component of lacquer is known by the Japanese term “urushiol”.

Figure 10  Kathleen O’Ryan, Rhus succedanea, drawing
Urushiol is the catalytic ingredient, which chemically polymerises lacquer from its liquid to solid state. In its solid state, lacquer is durable and lightweight. Its physical properties are comparable to modern plastic (Watt 1991: 1).

There are historical associations with the word “lacquer”. Some literature describes lacquer by using urushiol to distinguish it from other resins. The word lacquer is believed to have come from the Hindustani word lakh (Watt & Ford 1992: 1), the resin produced from certain Indian and other South-East Asian trees (Garner 1979: 19). The resin produced from the shell of a species of beetle, Tachardia lacca and is known in English as shellac or resin lac (Bedford 1969: 5).

The term “lacquer” is often incorrectly applied to a number of other materials that have similar physical characteristics. This confusion relates to the histories of Asian lacquer and its introduction to the European market early as the fifteenth century (Webb 2000: 99). The enthusiasm for Asian lacquer in Europe caused local craftsmen to create recipes to imitate the glossy surface found in Asian lacquerware. Shellac, and other resins, oils and varnishes, were developed in Europe with the result that the term lacquer has been misused to describe materials with a shiny coating for a variety of surfaces (Watt & Ford 1992). It has only been recently that publications have distinguished the differences between Asian and European lacquer.¹²

2. Vietnamese Lacquer

The history of Vietnamese lacquer can be traced back to the Imperial reign of Lê Nhân Tôn (1443-60). Having received gifts of Song dynasty (960-1271 C.E.) lacquer, the emperor “impressed and desiring to imitate the splendours of the Peking Palace” (Nguyet 1971: 4) sent an ambassador by the name of Trần Tuong Công to China to learn the techniques. He introduced lacquering techniques from the province of Ho-nan to Hanoi (Huard & Durand 1998: 204). The historical museum in Hanoi holds some of the country’s oldest lacquer objects. These objects date from the fourth century BCE and examples include a black lacquered oar and lacquered box with decoration (Quang 2002: 149). Many historical structures and objects display remnants of lacquer. Examples include the royal palaces, pagodas, communal houses, Buddhist sculptures, ancestral tablets and jewellery boxes.

In Vietnam, lacquer is not restricted to three-dimensional forms but is also applied as painting to two-dimensional boards. The 1930s in Vietnam saw the reinvention of this traditional craft into a contemporary artform, employing lacquer as the new medium for Vietnamese painting. Two pioneering contributors are Victor Tardieu and Joseph Inguimberty who encouraged and propagated this practice (Phong & Tran 1996: 246).

Figure 11 Huong Do-Ky, Untitled, lacquer and eggshell inlay. Courtesy Huong Do-Ky, 2004.

Until recently there has been little scholarly attention on traditional Vietnamese lacquer outside of Vietnam (Nguyen-Long 2002: 27), partly due to the country’s social and political isolation. The doi moi (open door) policy in 1986 (Naess 2001: 2) radically changed Vietnamese society, particularly in the art circles. The increase of trade and economic urbanisation had also increased the production and enthusiasm for Vietnamese lacquerware (Do-Ky 1999: 8). The general use of the term sơn mài is associated with everyday lacquer practices, and used to describe lacquer objects both religious and utilitarian. However with the development of lacquer painting in the 1930s, the term sơn mài has been associated with contemporary art, rather than traditional craft. This divergence of the lacquer vocabulary is a result of both western art influences and the increasing education of the population (Nhat 2002: 161). Sơn mài is viewed as traditional and artistic, Nhat (161) argues that some of the general population

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13 Victor Tardieu and Joseph Inguimberty are part of the French colonial rule of Vietnam (1882-1956). Both introduced western painting techniques at the Fine Arts University, École des Beaux Art d’Indochine, which developed traditional lacquer as a medium for western painting.
continues to view sơn mài as a “multifunctional character” (161). That is, the term is not specific to only one expression of lacquer.

An alternative material to lacquer has been increasingly popular with the younger generation of lacquer painters in Vietnam. It is a synthetic lacquer, which is referred to as “Japanning lac” or “Japanese lac”. Japanning lac hardens quicker than Vietnamese lacquer and there is a greater range of colours available. The process of painting with a synthetic paint does not involve the numerous complex steps of its more traditional alternative.

2. Origins of Lacquer

The history of lacquer has been studied intensively in the last century by a number of experts. The earlier published material within this domain focused on lacquerware from East Asia, China, Japan and Korea. Often the author would trace the development of lacquer relative to the chronological periods and pictorial decoration. These texts would include an extensive discussion on the various lacquer techniques. However the descriptions concentrated on the visual language and not the technical processes. It was not until the 1960s that a scientific approach was used in studying lacquer’s technical underpinnings. The scholar Harry Garner was the first western scholar to apply a scientific methodology to lacquer research (Burmester 1988: 163).

The main body of published lacquer research covers its history and iconography, there is a lack of research on areas such as the technical and making processes. Furthermore despite major museums across the world holding lacquer collections and the expansion of the field from ongoing excavations, particularly those of the last three decades, the emphasis has been on aesthetic and cultural identification rather than technical analysis. The focus of this research has been on lacquerware from East Asia to the exclusion of South-East Asian lacquer practice. It is only recently that there has been a higher interest in lacquer from South-East Asia. This research it is hoped contributes to this body of knowledge in the English language and provides a platform for further study.

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The earliest examples of lacquerware are wooden bowls painted both internally and externally with a red lacquer. These relics date back six thousand years and were discovered in 1978 in Zhejiang province, China (Zhong 1988: 71). This initial function as a water-proofing agent and preservative was easily adapted as a decorative medium. Watt (1991: 15) notes that because of lacquer’s ability to work as a binding agent it has developed into a medium for artistic expression. That is, when coloured pigment is added to the raw lacquer, it evolves into a medium for painting and can be used as an adhesive for appliqué and inlay. Through trade and gifts, the art and manufacture of lacquer technology reached China’s neighbouring countries Korea, Japan, South-East Asia and finally Okinawa, also known as the Ryukyu Islands (Garner 1979: 16). The Chinese lacquerers initially influenced these countries and it is believed that Chinese craftsman made the early lacquer works found in Japan and Korea (1979: 16). However, over time these nations developed their own independent styles and techniques.

Lacquerware in China occupies an important position in that country’s art history. Garner’s scholarly work in the field of Chinese lacquer (1979) recognises the influence of Chinese lacquer on neighbouring countries. In the past much significance has been placed in other fields of Chinese art; bronze, jade and ceramics. These interests were concerned with scholarly acquisition and interest in Chinese antiques (Knight 1998: 91). Perhaps this imbalance is due to the fact that bronze, jade and ceramics were of non-perishable nature. However increasing amounts of lacquerware have been excavated from archaeological sites. This has provided further information on the medium, particularly on a historical and artistic level. The artistic endeavours achieved by lacquer craftsmen in China are extensive, and detail a history of technologies and their evolving applications.

2.E Lacquer in Contemporary Jewellery, Object and Furniture Design

Lacquer in the past has mainly been associated with official court ware, religious artefacts and in utilitarian objects. Amongst this history of objects there is a tradition of wearables extending from Chinese through to Japanese inro and hair ornaments and on to the lacquered jewellery of the European Art Nouveau and Art Deco periods. The traditional craft continues today in the form of home wares for urban populations. Lacquer is also a medium used in contemporary jewellery, small-scale objects and furniture design. The contemporary works preserve traditional elements of lacquer
working expanding these through the exploration of ideas via new forms, materials, techniques, and processes.

Contemporary lacquer jewellery is a relatively new field. Jewellers who have explored this territory reinterpret lacquer’s material boundaries to embrace new ideas. Traditional jewellery objects from Asia include combs, hairpins, netsukes, and toggles. The following is an analysis of how a small group of contemporary practitioners approach the use of lacquer in their work.

Small scale lacquered jewellery is reinterpreted in the works of Ay a Nakayama and Erico Nagai. Nakayama is a Japanese jeweller who has consistently explored and interpreted traditional Japanese techniques. Nakayama’s work emanates from an interest in the decorative arts of the older Edo period (1615-1868) particularly those non-jewellery traditions associated with body ornament. Focusing on both lacquer (Figure 12) and silk knotting techniques (Figures 13 & 14), Nakayama has reinterpreted these to construct contemporary jewellery works (Raber 1992: 41). This work is in contrast with that of Nagai’s who contemporary jewellery is a fusion of European goldsmithing art and aesthetics with Japanese art and culture (Weber-Stöber, 2003). Nagai’s jewellery making processes draw from traditional Japanese metal technologies and lacquer painting techniques combined with European goldsmithing skills (Figure 15). Nagai’s traineeship with a lacquer master craftsman Sawaguchi Shigeru has enabled her to develop a technique where the lacquer is applied directly onto the surface of gold and silver (Goedl, 2005). Her designs are characterised by the simplicity of form to maximise the tactility of the surface. The surfaces created reflects a combination of metals and lacquer to translate into a rich patina (Figure 16). Nagai quotes:

The craftsmanship and the work in small dimensions are important. I’m also fascinated to find that so many possibilities for expression await a discovery in the various materials. Jewelry lets me use my ability to think graphically and in a painterly manner. What impresses me most is that everything is inherent in jewelry, and that I can combine this genre with all of the other aesthetic areas.
(Schnabel, 2001: 53)

Nagai’s comments about jewellery reflect some of the ideas in this studio project, “Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery”.

Large-scale works are particularly characteristic of Sakurako Matsushima. A contemporary Japanese lacquer jeweller whose works consistently explore large format works for the body. On first impression, these large wearables reflect traditional
samurai armour (Ruyak, 2003). However on a closer inspection they reveal patterns either of interlocking loops, linear swirls, or organic structures (Figure 17). Matsushima uses traditional lacquering techniques to construct her jewellery. The technology are utilised during the process to form a hard, durable, and

Figure 12
Source: http://www.designtope.net/gallery/index_e.html

Figure 13
Source: http://www.designtope.net/gallery/index_e.html
Source: http://www.designtope.net/gallery/index_e.html


lightweight work as exemplified by her breastplate (Figure 17). The use of Japanese lacquer allows Matsushima to work with larger works and draw upon a variety of surface textures. Other surface techniques are explored in partnership with new technologies. Kenji Toki’s works combines the traditional application of Japanese lacquer with materials like carbon fibre to create sculptural forms. He is not limited to a particular scale. The works extend from small objects (Figure 18) to sculptures for public spaces (Figure 19). The forms he works with are generated with a computer software application enabling him to explore fluidness in his designs. Toki (2000) describes his form as “natural geometries” (Toki 2000). These forms are built using rapid prototyping\(^\text{16}\) before the final surface application of Japanese lacquer is applied.

\[\text{Figure 17} \quad \text{Sakurako Matsushima, Upper Body Ornament, 2000/2001, kanshitsu (natural lacquer and hemp cloth), shell, gold powder.}
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Source: http://www.sakurako.com

\(^{16}\)Rapid prototyping is a technology, which links the computer aided design (CAD) process and the manufacturing process to create prototypes in a plasticised wax form.
Interest in this oriental medium has not remained to the province of Asian practitioners. Western designers, Eileen Gray and Elsa Peretti have integrated lacquer into their practices. With a background in architecture and design, Gray incorporates traditional crafts such as lacquering and carpet weaving into furniture design and interior finishes. Gray studied lacquer techniques with Seizo Sugawara for over forty years (Rowlands 2002: 9) making her a master of the craft. The furniture works are a fusion of this traditional crafts with a modernist aesthetic. The designs including screens (Figure 21), tables (Figure 22) and lamps.
Figure 20  

Figure 21  
Peretti is known for her high-end jewellery designs for Tiffany & Co, and has worked lacquer into some of these products. Her experience in Japan in 1969 (Fashion Institute of Technology 1990) lead to a body of work inspired by the traditions of lacquer (Figure 23), silk and bamboo basketry. The application of lacquer in commercial jewellery is also seen in renowned French jeweller and watchmaker, Cartier. Cartier’s ring in The Panthère de Cartier collection (Figures 24 & 25) combines gold and lacquer.

Figure 22  

Figure 23  
Despite new approaches to lacquer practice, there are some lacquer practitioners working in the old ways. In particular, Kitamura Tatsuo’s works (Figures 26-28) represent the high ground of technical and aesthetic skills. Inspired by the Edo period (1615-1868). These objects are a testament to his masterful practice, Tatsuo states “My way forward became to restore this structure, to regenerate lost techniques and to produce superior lacquer art” (Kehoe 2002: 5).

The cited practitioners all use lacquer in a contemporary context. Each artist reveals a different process leading to unique surface textures from various applications of material and form.
Figure 26  Kitamura Tatsuo, *Incense Container*, gold silver red black *togidashi* and *shishiai makie* on a very fine *kinji* ground. Source: Kehoe, L., 2002, *Master of traditional Japanese lacquer, Unryuan, selected works*, Lesley Kehoe, Australia, p. 58.


Figure 28  Kitamura Tatsuo, *Incense Box*, Firefly cage, gold, silver, red and black *togidashi* and *kirikane* on a black and gold ground. Source: Kehoe, L., 2002, *Master of traditional Japanese lacquer, Unryuan, selected works*, Lesley Kehoe, Australia, p. 57.
"Lacquerers worked on lacquered and embossed leathers utilized in saddlery and harnessing of mandarins’ horses, as well as in the decoration of their palanquins. They applied also lacquer to wood, leather, metal, silk, fabric or paper and realized sculpted lacquerware (lacquer of Peking) where the material for sculpting was constituted either of a mixing of textile fibre, paper, egg-shell and camellia oil added with a coral red varnish, or of panels, entirely made of lacquer. One must not confound lacquer with the stick-lack (animal product) as lacquer is the milk-like sap obtained by incision from lacquer-trees, cày son (Rhus succedanea), well studied in North Vietnam by the French physician and botanist Balansa" (Huard 1998; Durand 1998: 204).


3.A The Development of Lacquer Techniques: From China to Vietnam
The variety and complexity of lacquerware techniques represented through extant examples of wares from China, East and South-East Asia is impressive. Each geographical region has its own unique set of terminology to describe a variety of lacquering techniques and processes. This research is not an attempt to look at all of the techniques individually, but some techniques are discussed to highlight the similarities between Chinese and Vietnamese lacquering methods. This study has contributed to the
development of a new application in of repertoire of lacquerware as articulated through the studio research.

Garner (1979: 18) recognised that the amount of surviving lacquer in South-East Asia is small and this is an obstacle when attempting to interpret Chinese lacquer’s influences on the lacquer objects of this region. There are, however, some interesting discoveries to be made in examining the available artefacts.

Some of the Vietnamese decorative styles of lacquer can be concluded to be a development from the Chinese tradition. The first category of classic lacquered objects uses traditional motifs to embellish the lacquer surface. Examples include the dragon, phoenix, and floral images rendered in silver and gold and positioned against a background of leaf or cloud patterns. The motifs of the dragon and phoenix seen in Vietnamese lacquer can be traced back through China’s lacquer history. Many official court lacquer artifacts from the Ming dynasty (1368-1644) utilise the images of the dragon and phoenix (Watt 1991: 31).

Chinese prototypes are also referenced in Vietnamese lacquer through the use of lacquer relief. Lacquer relief is used to emphasize a pattern or area in a design by raising the surface or alternatively carving into the lacquer layers to produce variations in surface levels. In this process, layers of a priming lacquer base construct the relief. The lacquer object is usually painted in black and the relief zones are emphasised by coloured lacquer.

Coromandel lacquer is another technique that requires incision or carving into a black polished ground. The result shows a distinct contrast between a glossy background into which line drawings of a contrasting colour are inlayed. The designs are transferred onto the worked object by carving the images with a sharp sculpting knife. The engraved surface is then filled with a coloured lacquer. The lacquer inside the incisions is left to dry and a cloth soaked in methylated spirits removes the excess lacquer. Similar techniques were developed in China in the Song period (960-1271). Described as engraved gold, this technique involves cutting thin lines on the lacquer surface and filling it with gold foil or powered gold (Watt 1991: 25). Similar to this

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development\textsuperscript{18} is filled-in lacquer. Filled-in lacquer objects are usually carved lacquer objects. Here the cavities are created by drilling or cutting into the lacquer surface, which is then filled with lacquer of a different colour. Both these practices require a cutting instrument.

Inlaid polished lacquer simply implies the use of another material inlaid into the substrate of the lacquered body. In Vietnamese tradition these materials are commonly, mother of pearl, oyster shell and duck egg shell. Chinese lacquer has a strong history of inlaying precious and semi precious material into lacquer for greater artistic expression. \textit{Pingtuo} is a Chinese technique developed in the Tang dynasty (618-907). Its decoration involves cutting out highly ornamental motifs from thin sheets of gold or silver and setting them into a lacquered surface. Successive coats of lacquer seal and polish the surface. Here the role of lacquer acts as both a surface decoration and as adhesive for the inlays. Mother of pearl inlay was developed in the Ming dynasty (1368-1644) with some of the most outstanding work produced in Qing dynasty China (1644-1911).

The last two techniques are polished lacquer for objects and polished lacquer applied to a painting surface. Polished lacquer objects are traditional and the decorative effect is achieved through the combination of pigments with the lacquer sap, this can combine some or all of the above techniques. However, the final layer is entirely of lacquer, which then undergoes further polishing for a smooth and glossy finish. Polished lacquer painting or \textit{són mài} is a more recent innovation. The decorative painting techniques combine the traditional lacquer crafts with western paintings techniques.

\textbf{3.B Learning Vietnamese Lacquering: Studio Documentation}

The theoretical overview of lacquering was staged to ground the practical investigations to be undertaken in Hue. An understanding of the variety of substrates and techniques used historically allowed for experimentation during the studio residency. A variety of materials have been used to support a range of approaches to lacquer. This is referenced in the literature, \textit{Vietnam Civilisation and Culture, English version of the work entitled “Connaissance Du Vietnam”}. The studio-based section of this study utilised organic

materials for the preliminary projects. Included in the range were bamboos, timber veneers, plywood and paper. These cellulose materials exhibit a sturdy quality providing a good support for lacquer. The research field trip 2004 to central Vietnam allowed for the specific investigation of traditional Vietnamese lacquering and techniques.

The residency in Hue\textsuperscript{19} provided access to many historic lacquer applications from historic sites, including the Imperial city, the emperor’s tombs and temples. The residency was critical in achieving the objectives of the research, to learn traditional techniques and processes. This is further discussed in Chapter Five. It was crucial to begin with an understanding of the traditions of sôn mài ground practices to provide a foundation for the execution of the basic skills and techniques outlined in this chapter.

3.C Understanding Lacquer Occupational Health and Study

The rhus succedaneum is a cause of dermatitis when in close or direct contact with the skin. This substance has the known potential to cause severe reactions to many people. It is an allergy causing plant and its seriousness is regulated by the Australian agricultural group (NSW Department of Primary industries). The NSW Department of Primary Industries reinforces this by declaring the rhus succedanea as a noxious plant (McMaugh 2002; Monaghan 2002: 6). It was nominated in the Noxious weeds Act 1993 and in New South Wales, Australia, its plantation and sale is controlled.

\textsuperscript{19} Hue is the old Imperial capital city of Vietnam under the Nguyên Dynasty (1802-1945).
According to the NSW Department of Primary Industries, the symptoms and allergies include rashes, redness and blisters to the skin where there has been contact to the rhus tree. The rash usually extends to swelling on the face, arms and legs. The most severe reactions usually occur with contact with the lacquer sap. These reactions are painful and they can occur anywhere between 12 hours and 7 days after contact. The symptoms can last for between 7 to 10 days.

During the residency in Hue, Vietnam, Huy Do-Ky’s concerns regarding potential allergies triggered through working with the Vietnamese lacquer were clearly expressed. Careful handling and usage of the material were strictly observed and taken into consideration. Gloves, mask and safety glasses were used at all times when working with the lacquer. Only small amounts of lacquer were used at a time. The workstation was positioned in an open studio environment in open air.

In contrast, very little information is given in lacquer publications regarding the health and safety approaches to this medium. Although lacquer allergies are discussed in some publications, there is a neglect of the seriousness of the symptoms associated with allergic reaction triggered through contact with the medium. Furthermore, there is less information on how to treat the symptoms and allergic reactions.

3.d Preparation of Traditional Tools
The documentation of this traditional approach to Vietnamese lacquering both, techniques and tools provided the base for the development of the studio research “Lacquer, Lustre and Laser- Contemplative Objects and Contemporary Jewellery”. The first working day in the studio was an introduction to the traditional tools used in Vietnamese lacquer working. This traditional approach to the learning’s of a craft where the novice is initiated by learning to make their own tools is lost from most western educational processes. Mr Houng Do-Ky demonstrated a step-by-step method for the preparation of each tool. Each tool then underwent a process of preparation and refinement, endowing them with degree of enhancement and elegance. This personalisation of the tools improves the technical application of the lacquer to the worked surface. Mr Houng Do-Ky introduced a range of tools, under observation each tool was transformed. The tools are mainly organic materials such as timber, human hair, buffalo horn, with the addition of steel. In 2004 some of these tools are replaced by a plastic equivalent.
3.E Brushes

Brushes have a number of applications, mainly to transfer the various priming agents and lacquer to the substrate. They allow for the application of putty and lacquer paint and for decorative creativity. Brushes are utilised throughout the lacquering process.

![Traditional tools; a wide bristle brush *Thép son*, Spatula *bay sung*, tweezers, and bowl of lacquer. Photography Bic Tieu, 2004.](image)

Because different priming agents are applied to the surfaces in numerous layers, different size brushes are employed for specific purposes. The most common brush used in Vietnamese lacquering is a flat rectangular bristle brush. In the Vietnamese language this brush is called a *Thép son*. A dictionary translation is literally ‘to be gilt and red lacquer’ (Nguyễn 1967). This unique implement is used in the primary stages of lacquering. The brush varies in size and shape. The bristles run the full length of the brush, and are made from human hair, and are compressed between four strips of timber. This economic design is built for long-term application. When the bristles are worn, wood can be removed to reveal fresh bristles. The brush production in Vietnam is the domain of specialists brush makers.

Lacquer artists generally will buy a large quantity of brushes to save preparation time. In their raw state the bristles are stiff and completely enclosed by the timber. Initially the brushes are left in a bucket of turpentine for around three to four days. This process softens the bristles and the turpentine kills any insects in the timber. The hairs are tightly packed, forming a dense flat brush. To expose them, about one centimetre of
timber must be sawn from both sides of the brush head. Before a wide bristle brush can be used it has to be worked. This method is described as “training the bristle”. The procedure softens the bristles and makes the application smooth, allowing the lacquer paint to transfer from the brush to the surface consistently without leaving any stroke marks. To “train the bristle”, the brush is repeatedly hit with a hammer or a mallet, a hard rectangular piece of timber. For a finer finish, the bristles are soaked in turpentine for a quarter of an hour between each session.

Figure 32 Drawing of the traditional wide bristle brush thếp sơn and its construction. Source: Cường, P. D., 2001, Kỳ thuật sơn mài, Nhà Xuất Bản Văn, Hà Nội, p. 29.

3.F Spatulas

The spatula is an essential lacquering tool. The tool is used predominately for scooping, lifting, spreading, or mixing the lacquer. The spatula is critical for the preparation of coloured lacquer mixtures, and for the refining of lacquer paint and ingredients in the various stages required for surface applications. Traditional Vietnamese spatulas are made from buffalo horn bay sung, or bone bay xitong, but plastic and steel can also be employed. Plastic offers greater flexibility, horn and bone are more rigid. These tools come in a variety of shapes and sizes and can be tailored to suit the lacquerer’s need. In

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20 I observed Mr Houg Do-Ky carefully saw into the timber of the brush stopping at the point of the bristles on both sides. He then filed the edges down and polished them with emery paper.
21 This process takes a few hours to complete. When the bristles are exposed from the timber, they are incredibly hard and quite rough to feel. I had to repeatedly work on my brush until it was soft as hair. That was how Mr Houg Do-Ky indicated, when the bristles were soft enough.
Vietnam buffalo horn and bone spatulas are commonly available at suburban paint hardware stores. They come in an elongated u-curve shape. The careful selection of a spatula is important and can affect the work at a later stage. A good spatula is defined by Vietnamese lacquer artists by how straight it is, this assists with the integration of pigment into the lacquer when preparing paints.

Once the spatulas are chosen, they are shaped and personalised. To achieve a depression on the end of the spatula they are filed and polished\(^\text{22}\). During this stage, there is an opportunity to straighten the working end of spatula. In order to keep the buffalo horn spatula in shape, a stand \(\text{cải mỏ}\)\(^\text{23}\) must be prepared. This is done by obtaining a small block of wood of the same length as the spatula, which is then incised with a notch the same length as the spatula. This device permanently holds the spatula’s form as shown in the illustration (figure 33).

\[\text{Figure 33}\]

Drawing showing the different shaped spatulas. The lower images show the device \(\text{cải mỏ}\) with the spatula in place. Source: Cường, P. D., 2001, \textit{Ky thuật sơn mài}, Nhà Xuất Ban Văn, Hà Nội, p. 35.

\(^{22}\) During the filing stages, it was important to obtain a depression in the tool. A flat coarse file is first used to remove as much material as possible. The following stages were sanded down and then polished with wet and dry emery paper until the buffalo horn turned to a smooth and shiny surface.

\(^{23}\) Particularly if the spatula is made from an organic material, it is best placed in the wooden vice. This keeps hold of the form. \(\text{Cải mỏ}\) translate as “implement mouth”.
3.G Steel Blade

This traditional tool is used for carving into lacquered boards or objects for inlaying. It is a traditional steel blade, completely flat with a double-sided blade on both ends. The Vietnamese term is Dao Tro, dao meaning knife and tro meaning point.

3.H Sanding Blocks

The word mài in the Vietnamese term for lacquer, sơn mài, means to grind, rub, polish, and sharpen. This is essentially the nature of lacquer painting. The quality of a lacquer surface relies on how well it has been hand-polished. Currently polishing is done using "wet and dry" emery paper. It is a continuous committed task, required throughout the whole lacquer process, starting with the preparation of the substrate, through the decorative phase and into the final phases of hand finishing the work. Sanding blocks are made in various sizes and personalised to suit the artist. The emery paper is wrapped around the block and polishing continuously lubricated with water is commenced. The smaller the surface contact area of the block, the more controlled and precise the results are. A desirable finish is obtained by moving across the surface in small circular rotations. The aim is to blend and be consistent to avoid ‘hills and valleys’, particularly on a flat plane. “Wet and dry” emery papers graded between 100\(^{24}\) to 2500 are needed throughout the process.

3.1 Polishing

Unlike other surface paints, the unique, shiny appearance of lacquer relies on the intense labour of hand polishing. A characteristic element of lacquer working is the application of numerous layers with intervening stages of grinding and polishing. The final finish is completely dependent on the effectiveness of these interventions undertaken throughout the process.

Different abrasives are used to carry out this procedure. Coarse materials are used for the first few layers and finer agents are used gradually towards the end phases. In preparing the substrate, particularly if it is of an organic substance, the surface must be ground down to a "rough but smooth" texture. This allows the very first coat to adhere adequately to the substrate. Once this coat has completely dried, the surface must

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\(^{24}\) These numerical values refer to the grade of wet and dry emery paper utilised in polishing. The higher the value of the emery grade, the finer the polishing.
be ground down again before the next coat can be applied. This action is repeatedly carried out in its various stages. Each worked surface must be completely smooth before an additional layer can be painted on.

The final stage in lacquer is polishing. This requires gradual transitions selecting an ever finer abrasive medium for each step towards completion. Starting with 600 grade emery paper and moving up to 2500 grade “wet and dry” emery paper, the surface is ‘rubbed’ back until the image reappears. The series of images (Figures 34-37) of a lacquer painting shows this transition. Further modifications can be achieved using 2500 “wet and dry” emery paper. In the final stage, the artwork undergoes a series of fine powder polishing for lustre enhancement. Powdered charcoal, red oxide, and wax brings the surface to a highly polished and glossy finish.

Figure 34

Figure 35
The four images (Figures 33-34) show the transition from a completed lacquer painting continuously wet polished until images are revealed. Photography Bic Tieu, 2004.

Charcoal: Black charcoal sticks can be reduced to powder using a mortar and pestle. Once crushed, the powder is collected and wrapped in a fine cotton cloth. The cloth acts as a sieve only letting the finest particles to pass through. The artwork is then covered by a sprinkle of the powder across the surface. Careful hand polishing is done by moving in circular rotations across the artwork using the palm of the hand or with a piece of leather cloth. Once complete, the artwork is rinsed with cold water and allowed to dry for at least 24 hours.

Red Oxide: Red oxide polishing follows the charcoal polish. The oxide is sprinkled evenly all over the surface. The surface must be wet prior to this action. A cotton sponge is then used to buff the image. Again it is important to move in a circular rotation. Once the red oxide is completely dry, it can be removed with a new sponge. Again the artwork is washed with water and must be left to dry for at least 24 hours.
Rouge powder, titanium oxide or toothpaste can be used as an alternate polishing source.

Wax: The application of wax in the final stages simply removes any impurities or dust particles remaining on the lacquer surface. The wax is applied onto the surface using a cotton sponge. With the palm of the hand or piece of cloth, buffing is achieved by moving across the surface in a circular motion. The surface must be continuously buffed until the wax is completely removed as a waxy surface attracts dust.

3.J Maintenance of Lacquer Work

Lacquer paint is not ultra violet resistant, therefore the work is best kept in areas away from direct sunlight. Exposure to UV will cause the paint to fade. Lacquer paint in its original and cured state is completely sensitive to weathering conditions. It is best suited to environments where there is high humidity. If the work is kept outside of its suited climate, it is best to leave a bowl of water nearby. Lacquer in its cured state is waterproof. To keep the work clean and free from dust, the object can be washed in a light detergent with water. Scratches and unwanted marks are unavoidable, but can be removed by polishing with the oxides. If this does not remove the scratch, very fine emery paper polishing may be necessary. However, it is sometimes best left untouched as further work can upset the surface state.

These recordings are based on my experience working with polishing a lacquer painting in Hue. However the same procedures can be applied to three-dimensional objects. The procedures are discussed below also with reference to lacquer painting.

3.K The Lacquering Process

The process of lacquer-working requires a sophisticated understanding of its various stages. It is an arduous and laborious process involving manual dexterity, time, hard work and patience. The process of lacquering is an accumulative one combining layers of varying substance and material to achieve a high lustre and glossy appearance. The quality of the end result relies heavily on both perfect application and perfect environmental conditions for a durable coat. Unlike other chemical reactions, lacquer hardens (polymerises) best in moist air. The dominant component of lacquer is an oil and water mix, and the polymerisation of this emulsion depends on water and oxygen in
the atmosphere to cure. Lacquer relies on a relative humidity (RH) of about 80 percent, between temperatures of 25 and 28 degrees Celsius. Each fresh new surface application undergoes a reaction that seals off the bottom layers. As a result, in order to achieve a superior end result, each layer must be applied thinly.

In this chapter, three sections of the lacquer working process will be discussed in detail: Refining and Processing Lacquer Resins, Preparation of the Substrate, and The Painting Techniques. The topics will be discussed in view of traditional Vietnamese lacquering and my own knowledge gained from the exercises and experiments contributing to the research.

3.1 Refining and Processing Lacquer Resins

As discussed, lacquering requires the application of layers of lacquer material, a botanical resin which lends itself to pigmentation, onto a substrate (base) to achieve a certain level of lustre. These integrated coats need to be seamless in order to maximise the overall lustre of the object. Mastering this process requires a complex understanding of its various phases. Material knowledge and consistent application is necessary in lacquer working in order to produce a durable and refined object.

The urushiol in raw lacquer, the sap of the Rhus species of tree, is the catalyst that polymerises the resin to form the hard shiny end result (Webb 2000). Vietnamese lacquer comes from the botanical tree called the *Rhus succedanea*. In Vietnam it is called *cay son*, literally translating, tree paint. In Vietnam, the best sap is harvested in the wet season between the months of September and January. The lacquer sap is very dense and creamy, comparable to raw latex. Upon exposure to light and air the sap turns into a dark brown colour and begins to solidify. The method of harvesting the sap is critical to the quality and outcome of the lacquer it will become. This becomes apparent during pigmentation (colouration) and is expressed in the final outcome of the work. The quality of lacquer resin can be influenced by the region in which the lacquer tree was grown and the time of the year it was tapped.

The lacquer resin collected from the tree is stored in airtight ceramic or plastic vessels, or bamboo baskets. During this period the lacquer resin settles, forming distinct layers. Each layer is collected and contained separately. The composition is made up of five different grades of lacquer (Figure 38). The bottom layer is the sediment and drying agent. The second bottom layer is lacquer paste. The centre layer is the second quality
lacquer. The second layer is the best quality lacquer and the surface level is lacquer oil. The different layers of deposits have varying properties and are applied to different uses. Following the breakdown of the lacquer resin, more preparation is needed before the actual material is applied directly onto the surface of an object.

![Diagram showing the layers of lacquer](image)

Each layer is employed in the lacquering process according to its particular properties. Adding substances like turpentine oil, tung oil, or mu oil can further enhance and strengthen the lacquer, making it more transparent and viscous.

The components for the studio projects were customised for compatibility to the scale of the pieces. The processes were based on the traditional lacquer painting practiced in Hue. Additional ingredients were introduced to the mixture to compensate for the scale and intricacy of the samples previously prepared in Australia. A recipe was created based on traditional lacquer working methods and adapted to the samples designed for the research.

3.M Preparation of the Substrate

The skeleton of a lacquer object is just as important as its surface appearance. Lacquer is a coating material, however it relies on a base form to maximise the remarkable lustre. The internal structure is significant, and the preparation of the substrate will influence the final outcome of the work.
A valuable point stressed in the early stages of the residency was the importance of producing an even waterproof surface that was non-absorbent. For an excellent result there must be sufficient hardening time between each application of material. Most lacquer practitioners have a drying cabinet or what Huy Do-Ky described as a “humid chamber”\textsuperscript{25}. It is best to use the humid chamber during the preparation of the substrate after every coat of material.

![Figure 39](image)

The image is a studio style “humid chamber”. It is a dusk free zone to improve the curing of lacquer. Water can be filled at the base and there is a plastic sheet covering to improve temperature conditions. Photography Bic Tieu, 2004.

The core of a lacquer object is what gives body and form to lacquer. In lacquer working the core is described as the substrate\textsuperscript{26}. The lacquer itself is a liquid coating over this substrate. Over the centuries many different materials have been used as a lacquer substrate. These include wood, bamboo, cloth, iron, paper, and leather.

The following describes the making of lacquer boards prepared by a traditional lacquer board maker in Hue. These observations were carefully studied and applied to two- and three-dimensional forms in a series of small projects. The next few paragraphs outline stages and materials in preparation for a painting substrate.

The two-dimensional lacquer painting in Vietnam is based on the factory produced particle-board MDF, this replaces the traditional hardwood board. A board’s shape has to be precise with no irregularities in the sheet such as warping. Any imperfections found in the substrate must be rectified, otherwise these flaws will appear

\textsuperscript{25} A humid chamber is a controlled and dusk free environment with the right humidity and temperatures to aid in the curing process of lacquer.

\textsuperscript{26} Sometimes referred to as the support.
in the final stages. A surface must be sandpapered down to a completely flat plane, removing any dimples or ridges. Furthermore it must be rendered completely free of grease, dust, splinters, or any foreign elements.

Figure 40 The image shows students preparing a substrate for painting. Courtesy Hue University College of Arts, 2004.

Once the substrate has been established, more preparatory work has to be applied before any lacquer can be applied. A variety of priming agents are used to rectify any uneven qualities found on the surfaces. These mixtures are called "grounds". Like any craft, every practitioner develops his or her own tools, style, method, and base set of ingredients. Ground mixtures vary and every lacquer practitioner provides his own palette of ingredients.

Figure 41 The image shows students applying a priming agent "ground" to the surface. Courtesy Hue University College of Arts, 2004.
Once the substrate has been prepared, the plywood board is sealed with lacquer oil. The oil floods into all the cracks and the grain, adding substance to the board. It is then ready for the ground. The ground is the primary step in smoothing out the surface. The first step is to fill all the dimples or holes occurring in the surface. This filler is made up of raw lacquer (second best quality lacquer son-nhi), young stone powder and saw dust. The board is then wrapped with Hessian cloth, which has been soaked in lacquer for a period of ten minutes. The addition of cloth to the structure gives additional strength and prevents the board from cracking or warping. Once the irregularities in the board are gone and completely uniform, a number of layers of this primary coat are applied, let dry for at least 24 hours and ground back for the next layer.

The substrate is then coated with many layers of another lacquer base ingredient. It is a heavy paste made from lacquer resin, refined kaolin, and water. The Vietnamese term is called hom. Hom is basically used to thicken the substrate. Additional layers of this material are required for particularly in carving and inlaying work. This base impasto is essential as it also hides wood grain and other appearances. For every application of hom to the surface, grinding is essential in between.
The next five to six layers are made up of a cashew nut oil lacquer. The texture is quite thick and runny. This is painted thinly and evenly onto the surface. This creates a seal when cured, making the board unabsorbent and impermeable. Again like all previous steps, the board must be left to dry for at least 24 hours and sanded down for every new coat. For an effective result, the sanding must be done wet with a fine abrasive. The board is left to dry and is ready for painting. Additional lacquer coats can be applied to the support before adding the decorative elements or painting. Processed lacquer paints are commonly used for this. This gloss base acts as an enhancer to highlight the details, paints, and colours of the proceeding top layers.

3.N The Surface Techniques
The decorative techniques for lacquer are numerous. The painting techniques studied in Hue were basic and characteristic of Vietnamese sơn mài. The residency research trip exposed a diverse range of Vietnamese lacquer paintings, both traditional and contemporary. Due to certain time limitations it was more favourable to work with the traditional palette. These colours include cinnabar vermilion son tau, bismuth oxide, arsenic yellow sulphide, and indigo. Gold and silver leaf were used to achieve metallic effects and eggshell for white.

The principle that applies to traditional Vietnamese lacquer painting is the reverse of western painting. The colours to be shown in the foreground must be painted on first. Colours in the middle ground must be applied above and any details following that will proceed. Eventually the lacquer board is sealed with layers of colours above
one another. The final few layers are made of lacquer vanish. Several coats are evenly painted on until the entire surface is covered and levelled. As a result, this creates a dark brownish film covering the surface. This final touch adds depth and volume to the scene or shape of the object.

The painting is left in a humid chamber for months to cure. There is no golden rule for the amount of time it should be stored away. The longer the painting is stored for curing the better the quality of the outcome.

Following curing, the work should be polished. The aim of polishing lacquer is to slowly rub layers back to reveal the colours beneath. This is achieved by using a fine sanding block. Because of the layers of colours beneath the top surface, certain aspects can be revealed depending on the artist’s desire. It is during this phase that there is a lot of freedom for the artist to create textures and tonal values between the layers of colours.

![A small set up, showing wet polishing on small samples. Photography Bic Tieu, 2004.](image)

(a) The Colours

Lacquer paint is a mixture of coloured pigment and processed lacquer. The colours are usually applied onto glass to test them before using. This test shows not only the colour but also gives an indication of the drying quality of the paint. The quality of the lacquer, temperature and humidity can all influence the tonal values of the colour. Because lacquer reacts with many mediums the palette of colours that was available was limited. Today, there are new synthetic pigments available to meet the needs of lacquer artists, particularly in Japan and Vietnam (Webb 2000). These colours include chrome green,
ultra marine blue, and synthetic vermilion. To prepare coloured lacquer, pigments are mixed with transparent lacquer using a buffalo spatula. The action of mixing is repetitive and must be done thoroughly by folding the lacquer into the pigment. To achieve black lacquer *son then*, this process is carried out slightly differently. An iron bar is stirred in direct contact with the raw lacquer. However black lacquer is commercially available as a prepared ingredient.

**Figure 45**

The image shows a variety of colour lacquer pigments. The vivid blue tones are synthetic. Photography Bic Tieu, 2004.

**Figure 46**

The image is a detail of lacquer mixed with red pigment. The raw lacquer I used was *(second best quality lacquer sôn-nhị)* and the pigment is vermilion imported from Japan. Local reds are of a different Hue. Photography Bic Tieu, 2004.
A buffalo spatula is used to fold the lacquer into the pigment. The paint can be stored by wrapping it in tracing paper. Photography Bic Tieu, 2004.

The image shows the local Vietnamese vermilion sơn trai. The colour is of an earth orange tone. Colours are usually tested by first applying it onto glass. Photography Bic Tieu, 2004.

(b) Relief

Relief is used to emphasise a feature on a flat surface. There are two ways to produce this effect. After the preparation of the substrate, additional layers of ground are applied in certain areas to build it up until the required thickness is obtained. This step is repeated and, again, there must be one day allocated for each layer to harden. Each layer also needs to be polished before the application of the next layer. A low relief is created by removing material from the substrate. A steel blade is used to cut the design from the surface. These high and low relief surfaces are further emphasised by the use of contrasting lacquer colours, inlay, or metal leaf.
(c) Inlay

A technique introduced from China (Hauard 1998; Durand 1998), it is believed that inlay began in North Vietnam during the reign of Le Thien Ton (1740-87). Seashells such as oyster and mother of pearl were used in the inlay of wooden furniture, and inlay is also found in Vietnamese lacquer painting. Eggshell inlay is unique to Vietnamese lacquer painting, and the Vietnamese have popularised eggshell in lacquer painting and commercial lacquerware. Eggshell is used to achieve white and contributes to the tonal manipulations of the surface. From this single technique of inlay many textural effects can be created. The variations of eggshell inlay includes:

1. Tight fit eggshell inlay: revealing cracks in joins of the design.
2. Loose fit eggshell inlay: Similar to the above, however the gaps are greater and exaggerated.

3. Carved eggshell inlay: an area of eggshell inlay is carved into and filled with lacquer.

4. Patch eggshell inlay: pieces of eggshell are and loosely arranged. It is not very noticeable within the design.

5. Carved lacquer with eggshell inlay: the lacquer is carved into and then inlayed with eggshells. The inlayed area should be at the same level as the surface. This means when carving into the ground, consideration has to be taken in for the depth.

The materials for inlaying can vary depending on the colours and textural effects. These materials include:

1. Duck eggshell: Duck eggshell is white and it is the most common material used in lacquer painting. The eggshell can range from different tones of brown by directly placing the shell over a medium flame. The longer it is exposed to the heat, the darker it will become.

2. Chicken eggshell: Chicken eggshell has a slight pink tone and it is not commonly used. As mentioned, eggshell can be acquire a colour with heat treatment.

3. Bamboo cuticle: This is the outer layer skin of a bamboo. There are different bamboo species which are known for its patterning and colouration. In Vietnam bamboo cuticle are usually used to achieve a yellow or green textural affect.

4. Mother of Pearl: Very lustrous, colour can range from white to pink. It is not commonly used in lacquer painting. It is a material more favourable to traditional lacquering in furniture and urbanised lacquer ware.
Basic eggshell inlaying is a very slow and time-consuming process. If a design requires eggshell inlay, then inlaying is the first requirement after the preparation of the substrate. Chalk is drawn onto the surface marking inlayed area. These sections are painted with lacquer. Eggshells are then broken up into smaller pieces. Using tweezers, an eggshell piece is selected to best match the area. The idea is like a jigsaw puzzle, where pieces fit perfectly into one another. Because eggs are spherical naturally, the broken pieces are not perfectly flat. This means it will not have direct contact with a flat lacquered surface.

The blunt end of the tweezers gently taps the shell into place. Using the tweezers, the fragments of shell can be pushed apart or together to suit desirability. This process is continued until the surface is covered with the eggshell. On completion the
work is left in a cool and damp place for the lacquer to harden. The cracks between the eggshells are then applied with undercoats of lacquer until completely smooth and levelled. Following this, the surface is either painted to add to further surface ornamentation or the work goes directly to final polishing.

(d) Silver and Gold Leaf
Silver and gold leafing adds a metallic lustre to the finished work. First a light application of transparent lacquer is painted onto the surface where the silver or gold leaf will be placed. Excess lacquer must be removed by placing old newspaper over the surface. The newspaper acts as an absorbent. Running the fingers softly across the
newspaper surface will help absorb any excess lacquer. The work must be left in the humid chamber for at least half an hour, during which time the lacquer begins to harden.

To establish whether it is ready for the application of silver or gold leaf, testing is simply done by touching the lacquered area. If no lacquer sticks to the finger, then it is ready for the application of silver or gold leaf. For large surface areas of leaf, an implement is required. Titanium powder is wrapped in cotton and used as a sponge to gently tap the leaf into place. The device also reduces the finger marks and creates a more consistent effect. The work is then left to dry for at least 24 hours. Excess silver and gold leaf can be removed using a very soft brush.

Figure 56 The image shows the substrate covered entirely with silver leaf. Photography Bic Tieu, 2004.

With the new skills acquired from learning the traditional techniques and processes of Vietnamese lacquering, new work was explored. The set of skills provided material for the surface exploration in the studio research outcomes.
“Played out on the global stage, the history of ornament is a many-faceted drama of creation and renewal, remembering and forgetting” (Thrilling 2001: 104).

4.A The Surface Studies
The research is articulated through its extensive application to studio practice. Through experimentation with lacquer painting and surface ornamentation, that combines traditional and contemporary processes, this research demonstrates new possibilities in visual language. The chapter discusses the use of pattern, drawing on the significance of the flowers of the four seasons adapted from the realm of Asian decorative arts exploring this theme through the studio project. To contextualise the works, a number of contemporary jewellery and object makers using floral motifs in their practices are examined.

4.B Surface Exploration
The testing of the processes of Vietnamese lacquer experienced in the Hue residency extends to a studio investigation of surface designs inspired by traditional floral motifs.
The contemporary application of the traditional crafts and traditional iconography extend the possibilities of a visual language in a new context.

The surface ornamentation applies the research and is a vehicle for translating ideas related to creation and renewal. The study employs digital technology to create surface patterns. The results are expressed as jewellery and small-scale objects that combine traditional lacquer methods with laser cutting and engraving. The works created are reflective of a history of ideas, cultural milieu, cultural exchange and a passage of time as interpreted through the four seasons.

Flowers of the four seasons are used to convey particular ideas for this studio project, chosen for its popularity as a concept throughout the Asian decorative arts, the motifs became the bridge to linking old practices to a new context. The chrysanthemum, prunus, lotus and peony symbolised a regeneration of ideas. These motifs were repeatedly employed in the development of the studio practice as a surface design treatment and for inspiration in developing three-dimensional forms. The motifs of the four seasons express ideas that transcend their purely visual representations. They aim to articulate ideas of creation and renewal forming a thematic framework for the generation of images. The reinterpretation of Asian motifs is employed to stylistically link past and present and to speak of a history of ideas, meanings and technologies. These are interpreted using contemporary applications and processes to regenerate creative production that combines lacquer and laser technologies. Thus, while the work displays traditionally-inspired iconography of cyclic renewal, it also revives the application of lacquer itself, bringing this time-honoured craft into a new summer of its own.

Thrilling (2001) talks about the power of material and techniques describing the evolution of a pattern as the result of makers crossing boundaries. Thrilling states (2001: 174) craftsmen would train in more than one craft and borrow from outside their field for inspiration. This hybrid approach reflects the development of the studio research, it overlays lacquer with jewellery practice and graphic ornamentation.

The studio work articulates the ideas of renewal by using current technology to stimulate variation in surface design technique. This extends and challenges new boundaries in the field, leading to new ways of making, in particular with new applications of materials. Teague (1946) argues that the kind of materials available influence the resultant work. He states:
Design to-day as always is directed by the interplay of materials, methods and functions, with forms determined by materials almost as much as by function, function affecting the choice of materials and materials influencing the scope and type of possible functions, materials instigating and hastening the devising of new processes. (Teague 1946: 71)

The studio research manifests theses ideas in the way lacquer technology has influenced the designing of the objects. Dormer (1996: 139) states that contemporary practice can require a combination of a number of thought processes, craft skills disciplines, and liaison with industries to produce the final result. This approach can be seen to revitalise ideas and practices. Here traditional craft methods are complemented by the application of technological approaches (Parker 2005; Tieu 2005). Creative outcomes can be produced by tailoring ideas realising them in new materials and sometimes translating them through industrial processes.

4.c Technology and Contemporary Jewellery Design

The use of laser cutting and engraving is apparent in the development of the body of work. Laser applications\(^27\) are critical to the outcome of the studio component as it is utilised as a technique to articulate surface patterns for the application of traditional Vietnamese lacquering. The selected surface patterns are derived from Asian floral motifs redrawn and manipulated for computer engraving onto the selected substrates. In the preliminary research, the materials found most suitable and compatible to laser engraving were timber veneer and ebony blocks. The veneer was chosen for its strength and stability enabling it to withstand the varying conditions of the laser. Furthermore the material served as the frame or substrate for lacquering. As a substrate for lacquer practice, veneers are thin and provide adequate strength for the skeletal structure.

Laser technology is usually affiliated with mass production in industries outside the realm of contemporary jewellery practice. The development of these new systems, however, has also given new opportunities to jewellery practitioners and manufacturers. Rapid prototyping, a technology for the computerised building of three-dimensional physical parts, has also influenced some contemporary jewellery and object makers. Its

\(^27\) A laser is composed of a gain medium that uses quantum mechanical physics called stimulated emission to amplify the beam. A laser is a pure light source, which emits photons in a narrow beam (Valenti 2002). To lase means to cut or treat with coherent light. There are varying capabilities with different laser machines and their power ranges.
implementation represents a growing domain in the jewellery industry. Both these expressions are driven by the generation of computer images.

Figure 58  

Figure 59  

The process employed for this project starts with a two- or three-dimensional drawing using computer software. The virtual information is then imported into another machine to be cut, or engraved. These machines all essentially use laser technology to build the final outcome. These technologies have already been employed in engineering and manufacturing companies in the automotive, white goods, and photocopier industries (Kerman 2000: 38). Kerman (2000: 43) also encourages jewellery manufacturers and artists to take advantage of this available technology. She (2000: 43) believes that it is the new tool for progressive manufacturing and design. An example of this is seen in laser applications to commercial gold jewellery manufacturing, here laser
technology is used to weld and further in marking, engraving, cutting, and drilling (Valenti 2002).

International and local conferences such as A Sense of Wonder – The Amalgamation of Art, Science, and Technology, Inherited Futures – Technologies to Trap Ideas, and Challenging Craft confirms the interest and debate surrounding the convergence between new technology and contemporary jewellery practice. Emerging contemporary jewellers and designers Christian Hall and Elke Kramer represent this fusion in their approaches to studio outcomes. Christian Hall’s jewellery employs a clean graphic language applied to sheet metal for formation into a three-dimensional model. Hall explores a specific technology to achieve these forms working with a simple set of line and fold he perforates and assembles the metal. Hall utilises a photochemical milling process to achieve these results (Hall 2004). Elke Kramer is a designer who also uses technological processes to manufacture her contemporary jewellery pieces. Kramer combines laser technology with hand skills to investigate brooch and pendant forms (Tieu 2004). These pieces have a unique appeal and acknowledge the combination of traditional craft hand skills with available new tools. This project adopts a similar philosophical approach to building the work.

4.4 The Use of Laser for Cutting and Engraving

Laser technology an essential component of this study it has been employed as a methodology in the creative process. However it is used as just another tool. This tool has the capacity to emulate the ancient tradition of hand engraving (Parker 2005; Tieu 2005). The qualities of the laser means that accuracy and precision could be obtained when translating imagery onto the surfaces (Parker 2005; Tieu 2005). This tool extends the vocabulary of both the craft in contemporary jewellery and of lacquer working.

Laser technology is employed in the studio research for developing a range of surface patterns. The images have been collated from the floral surface ornamentation selected from decorative Asian art. The floral images used in the studio project were either drawn by hand or scanned and further manipulated using

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30 Challenging Craft, International Conference 8-10 September 2004, Gray’s School of Art, Aberdeen.
computer graphic software. The computer graphic programs enabled the manipulation of the visuals transferring the information through computer from visual to vector\textsuperscript{31}. The image in its vector profile can be further manipulated to suit particular works. Finally, the data is transferred to another computer, which is systematically linked to a laser machine. The information is adjusted to a numerical system for rasturing\textsuperscript{32} or vectorising\textsuperscript{33}. There are some size and material limitations for the application of the process.

4.E Flowers of the Four Seasons

The theme, flowers of the four seasons, is articulated on many decorative art surfaces in the Asian art tradition. Flowers are employed as a symbolic image and their representations are familiar in everyday life and culture. The floral forms selected for the studio work are based on the Chinese and Vietnamese flowers associated with the four seasons. The peony, lotus, chrysanthemum, and prunus are floral motifs of the Chinese seasonal calendar. Vietnam also has floral motifs representing each season, however, Vietnam’s seasons are represented by the apricot tree, orchid, chrysanthemum, and bamboo tree. These selections may be influenced by the differences in climate and geography (Thuong 2003). The surface designs and forms in the studio work are derived from floral motifs, in particular by the chrysanthemum. This

\textsuperscript{31} Vector is a graphic language which recognises the illustration as a line point system.

\textsuperscript{32} Rasturing is CAD language for engraving.

\textsuperscript{33} Vectorising is CAD language for cutting.
motif was selected on the basis of its expressions across a range of materials and its dispersion across vast areas of this region.

Each floral motif has significance. When combined they convey the essence of cycle and time, the circulation of life and renewal (Thuong 2003). This concept is a popular one in Vietnamese art, literature and culture. Several historic sites visited during the field trip in Hue display the application of this cyclical concept. The tomb of the last emperor contains a room decorated with folk and poetic images. Within this complex there are a series of floor to ceiling panels illustrating the four seasons (Figure 61). The images are constructed in a mosaic style using ceramic and glass chips. The old town gates (Figure 62) in Hue show traces of landscapes displaying the seasonal motifs. These gates depict a stylised image of the flower. According to the local villagers, they are over a hundred years old. The gates were made in cast concrete with the relief of the motif modelled and embellished with pigment.

The tomb’s construction started in the 1920s and reflects European influence combined with Confucian references, and Vietnamese aesthetics.

Figure 61
Panels illustrating the flowers of the four seasons, Emperor Khai Dinh’s Tomb. Photography Bic Tieu, 2004.
Each seasonal floral motif is nuanced as a metaphor for abstract notions related to the meanings of life. The apricot tree, a spring flower, is a symbol associated with purity in life. The orchid, summer, is the symbol of grace and productivity. The chrysanthemum, an autumn flower, represents goodness and positive outcomes and finally the bamboo tree, representative of winter, has connotations of nobility and profundity (Thuong 2003). When comparing these to the Chinese and Japanese calendar of seasons and their associated meanings, there are strong similarities. The type of floral ornamentation is also prominent in traditional lacquerware and can be traced in lacquerware from early history through to contemporary artefacts.
These examples of floral ornamentation in the architecture of the Vietnamese culture are referenced in the studio research. In these architectural representations, the flowers are contained and bordered in rectangular panels. Their graphic visualisation is stylised in an aesthetic where the plant is spaced vertically in relief to the medium it is worked on. The graphics in the studio works is interpreted by manipulation of the linear aspect and translated using laser technology for a contemporary affect.

![Floral design on one of the many entrances in the ancient Imperial City of Hue. Photography Bic Tieu, 2004.](image)

The interest in the seasons developed from surveying the history of lacquer. The numerous examples and popular use of the chrysanthemum was of particular interest. The chrysanthemum floral motif was the initial trigger to fascinate insight into the inherit beauty of lacquer's surface textures, broad application and history extending more than five millennia. The primary affiliation with the chrysanthemum motif stimulated interest in its articulation in a contemporary context. The history of floral ornamentation is extensive and the evolution represented through changes in style has come about as a result of trade, migration, religion, and new technologies (Thrilling 2001). Early examples of floral decoration appear in China’s Song Dynasty (960-1271 C.E.), found commonly on lacquer boxes and dishes. These objects demonstrate an advanced level of artistry in the designs of the surface work and capture the shape of the flower within the border design (Watt 1991). Watt’s (1991) examination of a lacquer
dish in this period compares them to particular forms of ceramic Ding ware\textsuperscript{35} dishes. Another parallel is a style of rotating floral petal used in architecture and also found in the frames of lacquerware in the Song (960-1271 C.E.), Yuan (1271-1368 C.E.), and Ming (1368-1644 C.E.) periods. This assessment shows the intersection and influence between a variety of media and demonstrates the evolution of a motif and of a progression relative to material and technology.

This evolution is extended through the development of the studio research. Where studies of existing floral motifs are examined, reconstructed graphically and composed to suit the outcome of the designs. This analysis and reduction in the method the surface designs are created are revealed in the studio experiments.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure65.png}
\caption{A mirror showing the back design in Silver, from 8th century Tang Dynasty. Source: Rawson, J., 1984, \textit{Chine Ornament the lotus and the Dragon}, British museum Publications limited, London, p. 78.}
\label{fig:figure65}
\end{figure}

This articulation and treatment of the flower forms are translated into a variety of media including lacquer, silver and ceramic ware. The influence of framing the visual design is a predominant aspect in this studio projects. The concept of flowers and frames has an ancient lineage and it can be traced back to the introduction of Buddhism in China (Rawson 1984). With the arrival of Buddhism, large single lotuses were used in Buddhist cave ceiling decoration (Rawson 1984). Later the lotus was translated onto

\textsuperscript{35} Ding ware are porcelains of a creamy white tone made in Hebei province in China.
Han and Tang dynasty mirrors. The mirrors are in the shape of the lotus lobe petals (Figure 65). The use of the lotus flower as a frame has a continuous development and appears in architecture, religious relics, silver, ceramic, and lacquerware. These visual ideas have influenced the body of work in the studio research. The concept of flowers and frames are demonstrated in the studio experiments through to the body of works. The floral graphics are always worked within a define border or enclosed geometric shape (Figure 81). This gives a sense of structure to the contrasting element of the natural use of florals. Further it makes references to sites illustrating this idea in Vietnam (Figures 61-64).

4.F Florals Depiction in Contemporary Jewellery and Object Making

The floral motif is a universal subject and it is used in various forms at times and places throughout history. Flowers are manifest across the Asia as part of everyday cultural usage and more formally in art and design. In McNeil’s (2006) critical essay for _Everlasting: The flower in fashion and textiles_, an exhibition36 curated by Roger Leong, he states that the ‘floral motif is cross-cultural and ubiquitous’, commenting:

The flower provides a unifying and versatile stylistic device highly suitable for both two and three-dimensional surfaces. Furthermore, it is the carrier of deep cultural symbolism and emblematic charge. (McNeil 2006: 6)

In contemporary jewellery practice the flower too remains a popular motif. Flowers used to express diverse ideas are seen in the works of many Australian contemporary jewellery practitioners, including Julie Blyfield, Marian Hosking, Andrew Last, Carlier Makigawa, Sally Marsland and Margaret West. Whether they are influenced by the forms, exterior, or the phyllotaxis37, all share an idea emanating from the idea or image of the flower.

Julie Blyfield is a contemporary jewellery and object maker who constantly investigates botanical forms in her works (Walker 2005). Employing them as vehicles for ideas related to relationships. Her works, usually in metal resemble three-dimensional outlines of organic botanical species. The forms explore sculptural dimensions and surface finishes. For example in _Pressed Desert Plant Series_ (2005),

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36 Exhibition at the National Gallery Victoria
37 Phyllotaxis is the natural pattern existing in plants. See Lynda Dorrington, Catalogue, “Vast Terrain”, essay, Andrew Last Design and Aluminium.
Blyfield combines traditional metal working processes to reference indigenous Australian plants (Figure 66).

Figure 66  Julie Blyfield, Pod vessel, 2003-04, pure silver. Source: Artist profile, Julie Blyfield, Jam Factory Publications.

The use of indigenous plants in contemporary jewellery is also explored in the works of Marian Hosking. In particular in a recent exhibition, *Luminaries*\(^{38}\), Hosking makes direct references to plants in the Australian bushland (Hosking 2006). These are translated into silver brooches and neckpieces in a representational and realistic way. The works for this exhibition are usually in a circular format. The group of silver objects in the catalogue *Scattered Similarities*\(^{39}\) again references plants and displays the elements repetitively and intricately in minute detail. For example in *Banksia Leaves*.

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\(^{38}\) Luminaries, Galleries 1 & 2, Sydney College of the Arts, University of Sydney, 28 January – 25 February 2006.

In contrast to the sense of realism inherent in Hosking’s work, Makigawa’s latest work, *Hybrid* (2005) offers the viewer a careful deconstruction and analysis of the many plant forms explored. This is manifest through a series based on West Australian wildflowers. Brennan describes: “They are at once surreal and familiar. In these forms, most Australians could recognise the lineaments of seed pods of indigenous plants,” (Brennan 2005). Like the title itself, these works make many combined visual references. It is an exploration of the botanical reference, architecture, space, hybridity and the personal. Like Hosking, Makigawa uses repeated elements in her making to explore a number of issues over an extended body of work (Figures 69 & 70). Makigawa’s works, in particular, the collection from the *Hybrid* (2005) series influenced a more three-dimensional approach to the later studio projects. Studio experiments (Figure 100; 101; 109) were investigated into a three-dimensional approach to floral forms. This allowed for a new interpretation of volume and space. However due to the timing of the lacquer and other projects these ideas were not fully resolved as part of this study.
Figure 69  

Figure 70  

Margaret West interprets the flower in a more direct and painterly way. She takes the direct visual frame, a more two-dimensional approach, to convey her ideas, making subtle references to flowers. The materials explored reference gardens and cemeteries. West comments on the associations between marble and flesh, her marble substrates form the ground for explorations with pigment and mark. These works were read in the Luminaries exhibition of 2006 as a series of flat marble brooch forms worked in series along the wall to explore a rage of ideas, the work titled Frieze.
Sally Marsland uses bold colours and a sense of quirkiness in her floral forms. Although her works explores a range of ideas they are couched in the flower. In flat colour (2000), the parts of different colours patched together are reminiscent of the petals on a flower. Other works such as big yellow composite (2000) (Figure 71), capture the likeness of pods, blossoms and plant components.

In Andrew Last’s body of work for Vast Terrain\textsuperscript{40}, the group of objects, lights, bowls and jewellery are derived from an understanding of natural systems of growth. The patterns Last discovers in plants are translated through a computer, offering a new visual interpretation of his floral inspiration through the selection of material and technologies.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{sally-marsland-big-yellow-composite-2000}
\caption{Sally Marsland, Big yellow composite, 2000, acrylic paint, car filler, stainless steel brooch fitting. Source: Marsland, S., 2001, Sally Marsland Some work between 1997-2000, Sally Marsland, Australia, p. 32.}
\end{figure}

\textsuperscript{40} Object at Sydney Opera House Exhibition Hall, Vast Terrain: a new identity for Australian aluminium design, 26 March – 15 May 2005.
These practitioners reflect a range of approaches to the flower motif in contemporary jewellery and object practice. Flowers are used as vehicles for the exploration allowing for the development of notions relevant to the individual practitioners. Similarly this motif is used in this studio project as part of the study. Flowers are translated onto the surfaces of the objects not only to explore the material qualities of traditional Vietnamese lacquering, but also to add another layer of meaning and beauty. These influences are significant to the making process, in particular in the objects themselves, and are discussed in further detail in Chapter Five.
CHAPTER FIVE
The Studio Projects

“To explain the full charm of lacquer is, of course, not possible. But the sensitive person, considering the form and its fitness for purpose, and aware of the perfection of the craftsmanship through a knowledge of techniques; recognizing at least the presence of a symbolic reference; and feeling the surfaces, so agreeable to the touch, is unlikely to find himself unattracted by the beauty of this albeit minor, art” (Herberts 1962: 251).

Figure 73  Photo of Studio Projects in progress. Photography Bic Tieu, 2006.

5.A  The Studio Research Components
The studio research documents two major streams of enquiry. Both parts are integral to the study and show and record the development of Vietnamese lacquer techniques and its application to contemporary jewellery and objects. The first generation of works sequences and documents the applications of lacquer to various forms and surfaces. The works in this group are critical in the developmental stages of the research as experimental samples that were tested to examine the material characteristics.

The second generation progresses these experimental works combining jewellery-making skills with lacquer. Each group of works aims to express the traditional Vietnamese lacquer application to various surfaces. Positioning the work with direct reference to traditional studio techniques such as etching, inlaying and painting, the projects reveal floral investigation interpreted by technological processes.
The synthesis of Vietnamese lacquer and machine-worked surface serves to renew and reinterpret images and outcomes that were previously generated by hand engraving and hand carving techniques.

The works exhibited in the show “Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery”, summarised and selected outcomes from various stages of the research project. Although the primary investigation explored traditional Vietnamese lacquering techniques and its subsequent applications to contemporary jewellery and object making, there were a large group of unshown works, generated through experimentation contributing to the research but not included in the exhibition. These important ideas served to progress the project to the final outcome. Not all experiments or developments were fully resolved, however they are recorded as they contribute to the studio research.

This chapter will discuss the history of works, samples and studies developed between 2003 and 2006. It will be presented with pictorial examples and where relevant indicate the reference to the lacquer research, techniques and surface exploration.

5.B Working Progress

The priority in the studio research was the understanding of traditional Vietnamese lacquer and its application to contemporary objects and wearables. The first-hand experience of a traditional approach was acquired during the residency in Vietnam and established a working knowledge of lacquer and provided opportunities to witness its traditional applications. Part of the objective to this research was to extend traditional lacquering to wider contemporary application and audiences. Following the residency, the technical processes had to be adjusted to suit the Australian climate and the lacquer application modified to work with contemporary jewellery making.

In 2005 the investigation progressed from samples to finished works. These were exhibited at Object Gallery, Sydney. The works in the exhibition displayed the application of lacquer to a variety of perforated substrates wearables, vessels, and installation. Many of these works continued to use motifs commenced with the Hue samples. This progression from samples to exhibited works has contributed with further resolution in the final generation of studio outcomes. One consistent aspect through the

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studio explorations is the use floral iconography as the vehicle for surface experimentation and explorations. The four seasons is conveyed in many aspects from both Chinese and Vietnamese traditions and has been used as a springboard and starting point, notably, in the body of work that represents the culmination of this research. The following reports the studio research in Vietnam and outlines the samples and tests undertaken.

5.c Lacquer Bamboo Samples
The bamboo project forms part of the first generation of works developed during the residency in Vietnam. The first of three practical studio exercises, the bamboo project in essence enabled direct insight into the techniques and processes of traditional Vietnamese lacquering. Sections of bamboo internodes\textsuperscript{42} were sourced and prepared. The choice of bamboo served for the practice of Vietnamese lacquering onto a three-dimensional surface. The significance of this exercise enabled the entire process to be documented. Observation, documentation and digital photography recorded the various stages involved from the collection of raw material through to the completion of eight pieces of bamboo were developed. Each bamboo internode demonstrates a different lacquer painting technique. Each bamboo section displayed a specific painting technique: painting using a stencilling process, relief work, silver leafing, and eggshell inlay.

![The Bamboo Cycle Samples embellished with different surface techniques.](Image)

\textsuperscript{42} The internode is the description given to the length between two nodes. For a description on bamboo vocabulary see Nancy Moore Bess, “bamboo in Japan,” pp. 32-33.
The selection of bamboo reflects the material’s strengths. Bamboo is characteristically known for its durability and is a stable material with little moisture. It is also known to be the most hardwearing of the organic materials used in lacquer working. As a superior substrate, it does not change under weathering conditions. Lacquer once cured is an inflexible skin, and therefore if the substrate undergoes shrinkage or swelling, this has immediate and adverse effect on the surface. Bamboo was also selected for its significance in Vietnamese culture. The bamboo plant is identified in the Vietnamese tradition with the flowers of the four seasons and represents the period of winter. Bamboo allowed for the application of several techniques, each surface shows the techniques. The traditional colour palette is demonstrated in this group of objects.

Observations on making lacquer boards were documented and applied to a series of practical projects. Bamboo Cycle Samples was the first project undertaken and the series of images here show the preparation of a substrate on a three-dimension surface. Photography Bic Tieu, 2004.
After the bamboo has been cut up into sections, the surfaces have to be sanded down with a heavier grade emery paper of 100. All irregularities must be removed. Photography Bic Tieu, 2004.

The first coat of material applied is *horn*. Because I was working with small-scale works, it was suggested that I did not require the filler or Hessian cloth. Bamboo as a material for lacquer is hard wearing unlike other organic materials. *Hom* is painted on with the traditional tool *thếp son*. A total of 3 coats are applied onto the surface evenly and allowed to dry for a day in between. Photography Bic Tieu, 2004.

Sanding is essential in between each layer. Emery paper of grade 600-800 are used to grind the surface down to a even and smooth plane. Photography Bic Tieu, 2004.
The following 5 layers consist of a cashew nut oil lacquer. Again the work must be left to cure for at least 24 hours between each coat. Photography Bic Tieu, 2004.

Wet polishing is essential for a finer surface. This step must be applied before the next layer of material can be applied. After the final wet polish, it is recommended to leave the work for a day or two to improve the cure of the material. The substrate is ready for surface embellishment.

5.d Floral Veneer Samples

The Floral Veneer Samples follow from the Bamboo Cycle Series and form part of the first generation of studio experiments. Unlike the traditional approach employed in Lacquer Bamboo Samples, The Floral Veneer Samples utilises the first application of modern technology that was subjected to numerous tests. Problems were identified early in the field trip utilising the laser prepared samples. New technology and ancient techniques needed to adjust to each other.
A total of 45 laser-cut floral designs with either a circular, rectangular, or square formats were prepared prior to the field trip in 2004. Laser cutting technology was utilised to cut the frames and internal surface patterns into 0.55mm timber veneer. The designs on these templates displayed a repetition of a floral pattern derived from flowers of the four seasons. This incorporation of machine prepared templates within the project is significant and had a profound affect on the results when applying traditional processes of Vietnamese lacquer.

In the *Floral Veneer Samples* various stages in the preparatory process were altered to achieve the desired results. There was a required intervention or alteration to the process to respond to the open structure of the samples. The design and structure of
the veneer samples was not a conventional substrate for traditional lacquer working. In Vietnam, the plywood was considered far too thin and soft to act as a substrate and the surface with perforations as opposed to the usual flat plane caused concern. The scale of each template was considered too small creating problems for the application of ground and lacquer paint, the painted solutions quickly filled and sealed the perforated surfaces.

The veneer had been selected for its thin sheet quality. The addition of too many layers to the substrate meant that the veneer would loose its thin aesthetic appeal. The grain in the natural timber had to be completely smooth without the addition of many ground layers, as this would seal the perforated textures. With recommendations by Mr. Huy Do-Ky, a new method was devised. A new formula was developed with the addition of non-traditional materials. Although there were new ingredients added to the chemical mix, the basic traditional methods of Vietnamese lacquering were still applied.

The adaptation included the addition of acrylic latex and talc powder added to the process to prepare the substrate. The acrylic is used in the first layer as a sealant. Only one to two coats are required for this stage. The next few layers require three to four coats of hom. This stage proceeds the application of lacquer paint. A thin application of the paint was applied finely onto the surface, followed by an even distribution of sprinkled talc powder. The sample was left to harden for at least twenty-four hours before another layer of lacquer was finely applied. The work was left to cure for another twenty-four hours, this was followed by wet sanding. This process was repeated several times until the layers had built up to an even coat.

Figure 83 The image shows a sample of the lacquered veneer in a tray of talcum powder. Photography Bic Tieu, 2004.
The success of this experimental recipe lies in the talc powder. The soft mineral embeds into and seals the wooden grain textures allowing for a smooth surface. Other samples excluded the initial step of using acrylic in the primary layer and relied on talc powder, which proved successful. This modified the technical process as described has since been applied to other works. A total of forty-five floral veneer samples were lacquered using this methodology, predominantly in tones of red and gold and silver leafing.

Figure 85 The Floral veneer Samples coloured in red Japanese vermilion. Photography Bic Tieu, 2004.
5.E Miniature Lacquer Board Samples

Three miniature black lacquered boards represent process work. Although a minor exercise in the overall scheme of the residency, the small boards represent an important stage of the lacquering process and research. This exercise provided the opportunity to further develop the skills in preparing a substrate. Each lacquered board is unadorned, as their emphasis is to point out the significance of the structural support. This stage of the lacquering phase was crucial, as any marks or irregularities appearing would be visible in the successive phases. Each board was approximately thirty-five millimetres squared.

5.F Lacquer on Paper Samples

The application of lacquer on paper was a small exercise created to see the results on a flat two-dimensional medium. Direct lacquer was applied onto the paper without the base coats. The results showed that the lacquer adheres exceptionally well to paper, without flaking off the surface. There are disadvantages to working with paper as a substrate, however unless the paper is completely sealed, the high gloss cannot be achieved, as wet polishing will wear down the paper.

The colours applied onto the paper are traditional red, black and green. This experiment continued with cutting the paper into small circles and stitching with silk thread to show the possibility of moving from a flat medium on to a wearable. The appeal of using paper in the lacquering process is that this substrate can be manipulated.

Paper is lightweight and offers potential in creating a range of diverse shapes. This line of enquiry is influenced by some initial development in paper and polypropylene forms (Figure 101-103). This idea was also influenced by the Chinese dry-lacquer technique. In this technique the core is made from clay followed by successive layers of impregnated cloth and lacquer. Once the external coats are hardened the internal structure is removed. This technique allows for large items (Lee 1971: 26) to be made in lightweight form. Similarly the paper acts as the lightweight structure in this exercise. The paper and polypropylene exercise was unsuccessful in maintaining a static position with its fold. This weakness in the design required further investigation and because the lacquering process is incredibly time consuming, the project had to cease. However despite time limitation this idea will continue to develop outside of this research project.

5.G Synthetic Lacquer

Visits in Vietnam to manufacturing lacquer factories provided a perspective on how son mai is currently being produced to meet the demands of local and international markets. Policite, a polymer product from Japan was introduced to Vietnam’s lacquer manufacturers in the 1980s. Vietnam later produced a similar product of its own called polycashew. Synthetic lacquer paints, or what the local Vietnamese describe as Japanning lac, are used as a substitute for traditional lacquer, and although they include foreign materials, the process of lacquer making is still retained. They in effect condense the process, in particular the hardening time and offer a wider range of colours. As such, synthetic lacquer is popular because it reduces the labour and time intensive steps in lacquer working. However there are disadvantages when using synthetic compounds, primarily they lose the depth of lustre that is characteristic of lacquer.

Japanning lac was explored in a couple of samples. The samples show the diverse colours available, which cannot be achieved from traditional lacquer. There is a definite difference in the quality of lustre between traditional and synthetic lacquer.

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44 For a description of this technique see Michael Knight, “East Asian Lacquers in the Collection of the Seattle Museum,” pp. 4.
5.H Studio History and Development of Works

A reflection on the traditional techniques of Vietnamese lacquer resulted in the second generation of works. This studio research was developed as an examination of traditional and contemporary technical applications which are expressed as a series of diverse surface ornamentations. The visual inspirations are drawn from flowers of the four seasons, a cyclical concept popular in East and South-East Asian decorative arts. The chrysanthemum and other floral motifs, such as the lotus, peony, prunus, bamboo are conveyed through graphic application onto the surfaces, and interpreted through both the form and direct application of the materials, combining to convey the underlying notion of creation and renewal. The following part of this chapter describes works that inform and illustrate the development, concepts, and technical applications significant to the study. This series of works represented in a chronological sequence, depict the processes and developments leading to the body of works displayed in the 2006 exhibition ‘Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery’.

The initial works in the progression that became this research began in 2003 where floral ornamentation and surface exploration with lacquer application were tentatively explored with a project titled Integrated Box Pendant Series (Figure 88). Motifs from traditional imperial Chinese court symbols such as the dragon, phoenix and floral motifs were laser etched onto a timber surface with the intention of filling the engraved area with red pigment lacquer. This project is critical as it is the starting point
and catalyst for researching lacquer. The works, which proceed from this body of work, continue in series developing the use of floral graphics in surface designs.

**Figure 88**  
Ebony, 18k yellow gold, sterling silver, silk cord, crimson acrylic inlay.  
25 x 26 x 26 mm.  

Major developments stylistic development in this work resulted from utilising the laser engraving and cutting techniques. These projects (Figure 89) explored new graphic interpretations developed from traditional Asian floral motifs. Contemporary applications and processes were applied to reinterpret historical drawings and decorations. A variety of visual sources across a range of media from textile motifs through to the bronzes and mother of pearl inlay that used traditional Asian floral representations were collected and manipulated to create a contemporary composition. In particular flowers from the popular theme of the four seasons became the dominant feature for surface ornamentation. Asian flora such as the chrysanthemum progressively became the favourite symbol. The chrysanthemum’s visual appeal and popular interpretation across the Asian decorative arts offered possibility in extending to a contemporary context. Abstract (Figure 90) to linear (Figure 91) lines were developed to convey a stencil appearance on veneer plywood. Some works experimented with an enamel paint to test the surface results. The flat sheets were then interpreted as jewellery components in pendants and brooches. The body of work, Season Series Brooches (Figure 91) remains the turning and beginning for the style of graphics that evolved.
This pivotal stage in the studio project to this series of studies became the platform for the development of lacquer application experiments and later interpretations as three-dimensional objects.

Figure 89  Bic Tieu, *Floral Studies*, 2003.
Veneer plywood, sterling silver, stainless steel, acrylic, silk cord, enamel paint.
Dimensions within 35 x 38 x 5.5 mm.

Figure 90  Bic Tieu, *Floral Abstract Pendant Study*, July 2003.
Veneer plywood, silk cord.
36 x 34 x 5 mm (cord length 700 mm).

Figure 91  Bic Tieu, *Season Series Brooches*, 2003.
Veneer plywood, sterling silver, stainless steel, enamel paint.
35 x 38 x 5.5 mm.
5.1 Lacquer Generation of Developments

The style apparent in the preliminary development of works “Season Series Brooches” progressed through the sampling stages and was interpreted through to jewellery and objects in this research. The initial use of the floral motifs continues with the application of lacquer. The images of samples *Floral Square Samples* (Figure 92) show the applications of traditional Vietnamese lacquering techniques to various forms and surfaces.

![Floral Square Samples](image1)

*Figure 92*  Bic Tieu, *Floral Square Samples*, 2004.
Stencilled veneer lacquered plywood and non-lacquered plywood. 37 x 34 x 0.6 mm.

![Lacquer Bamboo Samples](image2)

*Figure 93*  Bic Tieu, *Lacquer Bamboo Samples*, 2004.
Bamboo, lacquer, gold leaf, silver leaf, eggshell, lacquer pigments. 50 x 350 mm.

5.J Seasons to Jewellery and Objects

The group of works developed during the 2005 and 2006 utilise the techniques developed during the Vietnam residency, and translated into contemporary jewellery and objects. It is the first series of works that adapts the techniques studied in Hue to the
wearable form. Importantly those works made in Australia on return from Vietnam are made in a climate foreign to optimum lacquering conditions. This initial group of jewellery and objects was exhibited in the project space at Object Gallery during 2005. The works in this exhibition represented a synthesis of Vietnamese influences illustrated through both the choice of materials and the visual style developed. The floral iconography in this group of work is represented as flat surface designs. Most of the surfaces particularly in the brooches and pendants (Figure 97; 98) experimented with a matt finish, some lacquered and some untreated veneer. The idea was to develop a contrasting matte surface against some of the polished metal combined in the works.

Integral to this body of work is the twinning of lacquer and technological processes to create a particular story. This body of work reveals the separate and combined machine and hand processes utilised and articulated through the surface designs of the flowers of the four seasons. This is equally to the final body of studio works. *Chrysanthemum Brooches* (Figure 94) directly reveals laser engraving in its raw form as a contemporary wearable. The work reveals the possibilities of this technology as a tool for surface design. In contrast to this, *Lacquer Studies* (Figure 95) are works created using traditional Vietnamese lacquering techniques. Each vessel displays on its surface the various basic techniques and colours of Vietnamese lacquer. The combination of laser engraving technology and application of Vietnamese lacquer is demonstrated in *Peony Pendants* (Figure 96). This translation is also interpreted in flat two-dimensional forms. Black lacquer is applied onto stencilled laser cut veneers (Figure 97) to create high gloss bracelets. In contrast to the stereotypical gloss appearance of lacquer a matte finish were experimented with in the designs of some brooches and neckpieces. *Seasonal Brooches* (Figure 98) and *Seasonal Chains* (Figure 99) demonstrate this particular finish. Silver dusk was sprinkled over the surface of the wet painted surface of lacquer and polished back to give a non-glossy appearance.
Figure 94
70 x 20 x 4 mm.
Beech veneer, sterling silver, stainless steel.
Photography Bic Tieu, 2005

Figure 95
55 x 520 mm.
Beech veneer, lacquer, gold & silver leaf, eggshell, lacquer pigments.

Figure 96
50 x 200 mm.
Beech timber, lacquer, lacquer pigments, silk cord.
Figure 97
1150 x 0.6 mm.
Veneer plywood, lacquer.

Figure 98
580 x 5 mm.
Veneer plywood, lacquer, sterling silver, stainless steel.

Figure 99
535 mm length.
Veneer plywood, lacquer, sterling silver, eggshell, silk cord.
5. Explorations on forms

The first group of work from the Object’s *Seasons* exhibition, as discussed shows an exploration of lacquer techniques on flat two-dimensional surfaces. This flat surface relates strongly to traditional Vietnamese lacquer painting, where the medium is applied to the two-dimensional surface of the lacquer board for lacquer painting. The jewellery and object forms developed for experiments were simple, geometric and importantly flat. New works, which resulted from this experimental phase expanded into a three-dimensional language. The aim was to depart from a flat appearance and move towards a body of work that evoked a sense of space and form. Materials were sampled and forms were researched and created. However some of these experiments were unable to be successfully resolved. Wire forms and paper folds were intensely worked on to evoke an abstract floral form. The interpretations were derived from the numerical values and systems found in the nature of flowers. For example (Figure 100) circular wire forms connected in a symmetrical order interrogates this notion. These samples were experimented with to develop a skeleton to support a paper substrate for the lacquer layers to be painted on. Unfortunately this application proved difficult to sustain with the paper not consistently adhering to the framework. Other experimentation included folding paper to create a vessel with side profiles contemplative of petals (Figure 101; 102; 103). The paper forms were developed from studying the traditional Japanese craft of origami. In creating a pattern in a circular base, the lines lend itself towards a geometric vessel. By increasing the numerical scores within the design, this changed the pattern meaning more sides were created. Again this was an idea, which was not successfully resolved during this research. However the experiments suggest avenues for future work.
Figure 100
Sterling silver.
50 x 35 mm.

Figure 101
Polypropylene.
115 x 95 mm.

Figure 102
Paper.
50 x 42 mm.
Other developments, which were introduced during this period of explorations, included forms that either echoed stylised notions of the floral anatomy or surface textures found in flowers of the four seasons. Material selection included metal, timber and bamboo. These materials were experimented with form and function, however they were not pursued at the later stage. However this developmental work became the platform for the application of lacquer and decision, helped form the final body of works. *Chrysanthemum Flat Ring Samples* (Figure 105), *Floral Finding Samples* (Figure 106) and *Floral Bud Studies I* (Figure 107) were small studies into surface etched metal as jewellery. Other experiments included developing vessels with lacquer veneers inlayed into the lids (Figure 108). After many successions of trial and error, the results could not be achieved. Other investigations into ideas of forms included building basic shapes for lacquer applications. For example timber cone shapes (Figure 109) and sterling silver conical vessels (Figure 110) were initial three-dimensional experimental beads. Their structures were too removed from the range developed for the studio research project and as a result were not further developed.
Figure 104  Bic Tieu, Process and Studies (detail), 2005.  
Timber. Lacquer, sterling silver, copper, veneer plywood, silk cord, bamboo.  
Various objects hand held size 10Ø - 50Ø mm.  

Figure 105  Bic Tieu, Chrysanthemum Flat Ring Samples, 2005.  
Sterling silver, copper.  
All within 27 x 17Ø mm.  

Figure 106  Bic Tieu, Floral Findings Samples, 2005.  
6 x 20Ø mm.  
Sterling silver.  
Figure 107
Sterling silver.
15 x 170 mm.

Figure 108
Veneer plywood, lacquer, copper.
65 x 65 mm.

Figure 109
Timber, lacquer.
21 x 150 mm.
5.L **Comments on Final Body of Jewellery Objects**

The final body of work “Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery” was produced to complement the lacquer research development. The selection of objects for this submission aims to summarise lacquer’s potential as a medium for contemporary jewellery and object making. Not all the works in this exhibition utilise lacquer application. It was important to showcase the synopsis of this research including technology and floral influences as other internal studies. Some designs reflect the integrated technologies applied and processes significant to this research. Most of the works were presented in groups of four or even sets echoing metaphorically the idea and circulation of the four seasons. Most of the works in this selection were small-scale objects. They were designed to reflect the tradition of contemplative objects for oriental scholars table.

5.M **Seasonal Vessel Series I and Series II**

The group of works “Seasonal Vessel Series I and Series II” reveals a progression from the floral seasonal concept. Objects with an outward appearance reminiscent of a lotus are captured in the form of a simple vessel. The small vessels simplicity in form explores basic Vietnamese lacquering on hard timber. Each piece was turned on a wooden lathe, sanded and polished. The aim of this project is to show distinct traditional colours on a simple surface. Traditional black, earth red, and eggshell inlay are applied to the surfaces. Critical to the production of small precious objects is a
richness of surface and attention to detail. Lacquer is contrasted to the sterling silver and copper for an alternative lustrous and metallic affect. Integral to the designs are the internal metal linings, which sit within and complement the shining lacquer coats. Further, the metal surfaces carry details of traditional Vietnamese floral plaques that are acid etched onto the metal surfaces.

Figure 111  Bic Tieu, *Seasonal Vessel Series I*, 2006. Hardwood timber, lacquer, eggshell, sterling silver. 28 x 250 mm. Photography Vanila Netto, 2006.

Figure 112  Bic Tieu, *Seasonal Vessel Series II*, 2006. Hardwood timber, lacquer, eggshell, copper. 28 x 250 mm. Photography Vanila Netto, 2006.

5.N  **Vessel Pendants Series I and Series II**

The group of work “Vessel Pendants Series I and Series II” translate the bud form from vessels to pendants. In Vessel Pendant Series I (Figure 113) the chrysanthemum motif
surrounds the bud object in gold leaf, sealed beneath layers of lacquer for an illusional affect. The separate veneer blossom detail to these works is derived from a laser cut chrysanthemum suspended on the silk cord to reinforce the floral concept with a decorative element to counterpoint the minimal approach of the pendant vessels.

![Chrysanthemum Rings](image)

**Figure 113**  
Hardwood timber, lacquer, gold leaf, veneer plywood, silk cord.  
27 x 250 x 2525 (length) mm.  

### 5.0 Chrysanthemum Rings

The four rings in "Chrysanthemum Rings" group again utilises a bud form to translate the floral chrysanthemum graphic in two different formats. One pair is designed in sterling silver with the surface both etched and cut out. The other set applies the traditional technique of eggshell inlay. The shanks are made from sterling silver and the rings combine the use of eggshell inlay set in contrast to the etched copper. Thus the internal hollow areas of each bamboo section are enclosed with decorative oxidised copper discs.
5. P  
Chrysanthemum Boxes

The four boxes “Chrysanthemum Boxes” designed in this group show the application of laser engraved technology on a light and dark timber. The geometry of these surfaces graphically reveals the use of floral graphics on a three-dimensional plane. The images of the chrysanthemum motifs are distilled from earlier works, Seasonal Brooches (Figure 98) and manipulated to explore on the surface of boxes.
5.Q Seasonal Bowls

The two objects in the “Seasonal Bowls” group depart from the miniature scale represented in the “Seasonal Vessels” series and expands into a slightly larger format though still of a scale that would have adorned the scholars table. These are closed vessel forms, each dome is articulated with floral designs circling the flat top surface border. Thus the surface design appears on donut shape discs that close silver hemispheres spun on a metal lathe. The original intention for this group entailed the production of four in the set with a focus on the application of lacquer as the central feature. These works developed from earlier works, Seasonal Brooches (Figure 98; 116), where the circular shape donut shape was exploited. This flat decorative plane was to be carried across to the three-dimensional forms. The top surfaces of these hemispherical objects were to be inlayed with the lacquer veneer (Figure 108). This proved unsuccessful. Unfortunately the lacquer bled into engraved areas leaving veins through the grain of the timber. The final solution was achieved using only metal.

Figure 116

Bic Tieu, Seasonal Brooches, 2005.
Veneer plywood, lacquer, plywood, sterling silver, stainless steel.
580 x 5 mm.
5.R Chrysanthemum Series II

The series of four brooches “Chrysanthemum Series II” are a continuation from a previous work *Chrysanthemum Series I* (Figure 94). In *Chrysanthemum Series II* (Figure 118), the work is an exploration of the use of laser engraving technology. The brooches evolve to a three-dimensional format. The images are the flowering of chrysanthemum spanned over four oval brooch forms. The four brooches work visually when exhibited in unison or worn independently. The ideas developed from the notion of transition, a concept found in the seasons and screens popular in the Vietnamese,
Chinese and Japanese art. A further note to the development of this project results from the survey of traditional lacquer techniques in East and South-East Asia.

Figure 119  
Veneer plywood, sterling silver, stainless steel.  
72 x 21 x 10 mm. 

5.s  **Spring Blossom Pendants**

The use of the eclipse shape frame continues in “Spring Blossom Pendants”, however in the form of pendants (Figure 120). The surface graphics are identical, however one surface is filled in with synthetic lacquer and silver leaf. The work demonstrates the introduction of colour to a laser engraved veneer. The work is the beginning of direct lacquer application to raw veneer surfaces. A series of samples were trialed (Figure 121) and failed with the lacquer bleeding through the grain of the unsealed timber. By painting a fine layer of synthetic lacquer to the base of the engraved veneer the surface was sealed.
Figure 120  Bic Tieu, *Spring Blossom Pendants*, 2006.  
Beech veneer plywood, sterling silver, silver leaf, lacquer, synthetic lacquer, silk cord.  
72 x 21 x 10 mm (cord length 750 mm).  

Figure 121  Bic Tieu, *Lacquer Engraved Samples (detail)*, 2006.  
Veneer plywood, lacquer.  
72 x 21 x 0.5 mm.  

5.T  **Chrysanthemum Strings**

The two neckpieces “Chrysanthemum Strings” (Figure 122) in this category are made from sterling silver and bamboo with the application of lacquer. The work focuses on the traditional process of the hand made. Each circular lozenge is articulated with images of the chrysanthemum. On one side of the surface the pattern is conveyed using a method of etching, while the other side are saw pierced cut outs of the floral motifs. The units are held in between thin sections of polished bamboo. The work represents the
movement between the seasons of autumn and winter, where autumn is depicted through the surface illustration and the bamboo is conveyed through the actual material.

5.U Autumn Earrings

The work "Autumn Earrings" (Figure 123; 124) is a reflection of spatial elements both flat and three-dimensional. The work is a reflection on the various developments
achieved in the studio works. The object wearable combines the linear flat element in a three-dimensional form creating earrings that attach to the end of the tube. The materials consist of eggshell inlay on a bamboo substrate. The caps or in this case earrings with saw pierced chrysanthemum motifs are constructed from sterling silver.

![Image of Autumn Earrings (closed) by Bic Tieu](image)

**Figure 124**  
Lacquer, sterling silver, bamboo, eggshell, silk cord.  
220 x 32 mm.  

5.v **Summary**

The synthesis of different technologies and exposure to a variety of materials and surface forms has contributed to enriched perspective of the language of lacquer and its potential application in a contemporary context. The introduction of traditional Vietnamese lacquering to jewellery and small object making has widened the possibilities for surface designs, through its combination with other processes, old and new. The various stages involved in the studio components discussed in this chapter outline the importance at each level. The studio research has expanded the documentary research and enabled opportunities for the application and expression of lacquer in contemporary jewellery and objects.
Lacquering techniques have been explored, predominantly, in Asian regions for over 6000 years. The material was first harvested by the Chinese to paint over objects as a preservative to prolong their lifetime and usefulness. Lacquer coating eventually developed as a medium for surface decoration and this form of craft reached high levels of technical innovation, particularly in the Song Dynasty (960-1270 B.C.E).

The dynamic movement, of exchange and trade from China through to neighbouring countries led to the dispersion of lacquer to other East and South-East Asian countries, which in turn led to the further development of different regional styles, processes and surface aesthetics. Vietnam, located on the southern border of China, historically endured political domination and cultural influences from China, in particular in the arts. When lacquer reached Vietnam during the reign of Lê Nhân Tông (1443-60), the techniques for lacquer embellishment were reproduced and applied locally. The 11th century Temple of Literature in Hanoi, Vietnam, with its lacquer interiors, reflects the influence and connections between China and Vietnam. While Vietnam’s lacquering techniques and processes vary from lacquer methods in East Asia and South-East Asia, it shares similarities through the brilliant shiny decorative surfaces, iconography and symbolic nuances of the designs. The reinvention and translation of the traditional craft to a national style of two-dimensional lacquer painting sơn mài has also contributed to new avenues for expression in lacquer.

The techniques and processes illustrated in the studio project represent a documentation of traditional craft renaissance of the Vietnamese sơn mài technique. Older Vietnamese traditional and the more recent two-dimensional lacquer painting contributes to a unique approach to the surface aesthetic and designs of the lacquer repertoire. This investigation of traditional lacquer techniques and processes extends the vocabulary to contemporary jewellery and object making. Lacquer’s integration into the studio project was prompted by many factors: an interest in the material’s origin, a personal attraction to the surface’s colour and lustre and, perhaps most importantly, the scarcity of published material written in the English language on Vietnamese lacquer technologies.
These imperatives resulted in a field trip to Vietnam in 2004, providing opportunities to investigate traditional Vietnamese lacquering techniques. The skills, techniques and knowledge recorded are exemplified in both the study and the studio projects. As a result a large quantity of information was sourced and collected. Sample projects, set up in the initial stages, contributed significantly to the investigation. Visual documentation contributed to the information for both knowledge and inspiration. Finally, visits to lacquer galleries, artists’ studios, historical sites and lacquer factories demonstrated the variety of lacquer embellishment and techniques available. The written document records the practical application of traditional Vietnamese lacquering processes. It traces both the traditional fundamentals of the craft as well as the discoveries from studio experimentation and sampling.

Although there are numerous techniques to explore, many are beyond the scope of the study. The basic traditional techniques became the foundation for learning. With the new skills, the studio projects resolved a number of challenges and proved that lacquer is a medium that can extend to contemporary applications. The project *Floral Veneer Samples* is an example of the success achieved through experimentation, from trial and error, a resolution was achieved through the application of non-traditional methods and materials. The integration of new techniques opens up new possibilities for traditional Vietnamese lacquering.

Studies of the literature surrounding surface techniques were critical to the experiments and exercises leading to the body of work exhibited in the exhibition, “Lacquer, Lustre and Laser- Contemplative Objects and Contemporary jewellery” Kudos Gallery, Sydney 2006. As a result the techniques acquired during the residency are resolved by the surface articulation of the jewellery and objects represented in this report. The techniques include lacquer painting, gold silver leafing and eggshell inlay. These techniques were explored alongside traditional and modern applications of rendering the surfaces of wood and metal work. The project also examines laser cutting and laser engraving as a tool for creating surface textures, and leading to a personal style inspired from flowers of the four seasons found in the decorative arts in Asia. The theme of the flowers of the four seasons is significant to this study. Surface design possibilities and development were resolved and articulated by means of graphic floral development. The applications of these motifs were investigated from a historical perspective and adjusted to give a contemporary translation. Through this process a
style was propagated by both graphic and technological applications, extending to a language and style important to the studio documentation.

There is a relationship between lacquer’s past and lacquer’s present day, a mix of the old and the new. This informs the research and declares that the evolution of lacquer is continuous.
REFERENCES


Kerman, S., 2000, ‘Building Bridges between Art and Technology: Rapid Prototyping and Manufacturing’, *Metalsmith*, vol. 21, no. 3, summer, pp. 36-43.


Matsuura, K., 2002, ‘Vietnamese son mai, an art both traditional and modern’ in *Lacquerware in Asia, today and yesterday*, M. KOPPLIN, United Nations Educational, Scientific and Cultural Organisation, France, pp. 5-.


Phong, Q. & Tuy, T., 1996, *Vietnamese Contemporary Art*, The Fine Arts Publisher, Ha Noi, pp. 246

Quang, T. H., 2002, ‘Traditional lacquerware manufacture in Viet Nam’ in *Lacquerware in Asia, today and yesterday*, M. KOPPLIN, United Nations Educational, Scientific and Cultural Organisation, France, pp.149-


Form Contemporary Craft and design, 2005, *Vast Terrain*, Form Contemporary Craft and Design, Australia.


Exhibition Presentation

The exhibition “Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery” showcased a selection of works to support the thesis document “Traditional Vietnamese Lacquering Processes and its Application to Contemporary Jewellery and Small Scale Body Related Objects”. The works were exhibited at Kudos Gallery for the duration between 3 - 6 May 2006. Additional works were presented as a separate entity to the exhibition for the examination process. Furthermore a verbal and visual presentation was prepared for the examiners illustrating the significance of this research project.

A series of images, experimental work and lacquering tools were displayed for examination on the 5th May 2006. These additional documents were presented to aluminate the examiners to the Vietnamese lacquer experience. A number of images collated from the research field trip were presented in a grid structure highlighting the environment of working with Vietnamese lacquer. The photography reveals the lacquer
working process, lacquer tools, materials, motifs, lacquerware, lacquer applications in furniture and architectural structures, otherwise not presented in the exhibition.

APPENDIX II

Exhibition Installation

The following plates show installations from the exhibition “Lacquer, Lustre and Laser-Contemplative Objects and Contemporary Objects”, presented at Kudos Gallery, 6 Napier Street, Paddington, NSW, Australia between 3 - 6 May 2006.


Bic Tieu, *Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery*, 2006, Exhibition view showing all three long tables and square plinth in space.

APPENDIX III

Images of Selected Works
The following plates are a selection of works from the exhibition “Lacquer, Lustre and Laser - Contemplative Objects and Contemporary Objects”, presented at Kudos Gallery, 6 Napier Street, Paddington, NSW, Australia between 3 - 6 May 2006.

Bic Tieu, *Vessel Pendant Series I (detail):* Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery, 2006, 27 x 250 x (cord length 2525) mm, Photography Cybele Malinowski.

Bic Tieu, *Vessel Pendant Series II (detail):* Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery, 2006, 27 x 250 x (cord length 2525) mm, Photography Cybele Malinowski.
Bic Tieu, *Seasonal Bowls (detail)*: Lacquer, Lustre and Laser – Contemplative Objects and Contemporary Jewellery, 2006, 30 x 570 mm, Photography Cybele Malinowski.
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