

Computer-Assisted Carving Pattern Construction for Wood Sculptures

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Abstract : This research aims to learn about wood carving patterns, to design patterns using computer-aided design, and to promote job creation and revenue for the wood-carving community. Sample used in this study included 10 manufacturers of wood carving craft products from Chatuchak markets in Bangkok, 10 members of wood-carving group from wood carving district in Ayutthaya province, 15 consumers, and 15 people from wood carving handicraft products group. Tools used in this research were an interview of experts and a satisfaction questionnaire.

The results show that popular wood carving patterns were flowers and intertwined sprays. The researcher used Illustrator, Flash and Photoshop software programs to design woodcarving patterns. The programs made woodcarving pattern design simple, fast, accurate and easy to adjust. Computer-based design facilitated learning and increased opportunities to earn more income for people in communities and interested individuals.

Keywords : Computer-assisted Carving Pattern Construction, Wood Sculptures

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1. Introduction

Wood carvings are considered as ones of ancient arts. Thai carvings are beautiful as that of other countries. Wood carvings have required components that are patterns such as flower, animal, or people patterns. Wood carvings can be founded from every corner in the world. During prehistoric period, carvings were not detailed. When humans knew the value of beauty, carvings were more detailed as could be seen from evidences such as decorated sanctuaries.

In Thailand, there are not only stone carvings, but wood carvings also can be seen from various patterns on, for example, buildings, houses, temples, or palaces. It is founded that there are many wooden carvings in this country as can be observed from the evidences in museums such as Ayutthaya period artworks. Today, the form wooden carvings are transformed into furniture or handicrafts for home decorating. (<http://www.siamwoodcarving.com/wood-carving/274>)

Wood carving products are ones of artworks that are beautiful in terms of shape. Generally, carvings can be divided into three main types: low, high, and round relief carvings. There are various types of wood carvings that can be either visual or applied arts. The patterns of carvings are also very essential because they are as the guidelines for carvings. Accordingly, if a goal is to produce similar artworks, then the patterns used can be the same ones. Wood carvings are wisdoms valuable and inherited from the past. The factors that influence on designing or developing the forms of wood carvings are such as patterns.

For a step or process before wood carvings in the past, patterns were drawn on woods. This process was called as “drawing without the aid of drafting equipments”. Drawing patterns on woods requires experiences because wrongly drawn patterns can make woods unusable. For instance, symmetric patterns usually cause asymmetric drawings. Therefore, this process was used for drawing freestyle patterns. Presently, patterns are printed on papers that will be stamped upon woods. However, this process frequently results in problems if patterns or ratios have to be adjusted. In other words, it is difficult to solve the problems or may require newly created patterns that are time consuming. The researcher tried to enlarge or shrink the sizes of patterns. But, it was difficult to do so. Sometimes, the patterns have to be copied for many times until the proper sizes are achieved. That is, this way is wasteful.

The uses of computers for designing and drawing patterns are considered as convenient and fast ways for creating precise and balance patterns. Beautiful and clear patterns can be created from computers. By using computers, patterns are accurately created according to plans. Moreover, patterns can be improved or adjusted anytime. For designing patterns, computers are very necessary for solving problems or mistakes. Currently, computer technologies are quickly developing and having roles in our daily lives. For teaching about woodcraft, computer technologies are used for, for example, designing, copying, and creating patterns.

The researcher saw problems in woodcarving pattern design. Therefore, computer software was used to design the patterns in order to produce accurate patterns giving a clear picture of end pictures. This research is beneficial for people creating woodcarving products especially in the design process, which is key to woodcarving.

2. Experiments

Methodology

The researcher examined information about designing wood carving patterns with computers according to the following steps.

1. Examine information about designing the patterns of wood carving products.
 - 1.1 Collect information about the patterns of wood carving products from a wood carving village in Bang Ban District, Ayutthaya Province.
 - 1.2 Examine various processes for creating the patterns of wood carving products.
2. Examine information about woodcraft techniques from the patterns and designs of wood carving products.
 - 2.1 Examine techniques for creating patterns by designing and drawing lined patterns or structures with computers.
 - 2.2 Examine the appropriately and conveniently uses of computer software (e.g. Illustrator, Flash, and Photoshop) for designing and drawing patterns of wood carvings.
3. Examine information regarding woodcraft techniques from the patterns and designs of wood carving products.
 - 3.1 Examine techniques for creating patterns by designing and drawing lined patterns or structures of both ancient and modern wood carvings inside and outside Thailand.
 - 3.2 Examine the uses of wood carving machines and equipments such as scroll saws and drum sanders.

The Processes for Creating the Patterns Wood Carvings with Computers

To creating patterns with computers, important things are master images that are considered as information for analysis. To creating master patterns, it requires skills and knowledge about arts because pattern design is an applied art consisting of the principles of visual arts and pattern arrangements. Thus, preliminary designs are important and necessary for creating patterns. Commonly, master patterns are simply drafted on papers without many details. Even though drafted patterns have unclear lines, those lines do not cause problems in drawing patterns with computers because we can select parts from the drafted patterns by using or separating layers provided by instant computer software. There are three types of devices for conveniently and quickly importing patterns or images into computers: cameras, scanners, and mobile phones with cameras and services for sending image by e-mails. Master images do not need to be detailed because they are only used as examples. For instance, Figure 1 is a drafted image imported into Flash for drawing patterns. On the whole, the image will be separated into parts; for example, heart shaped frames, rose shaped patterns, leave shaped patterns, stem shaped patterns, butterfly shaped patterns, and the master image itself.

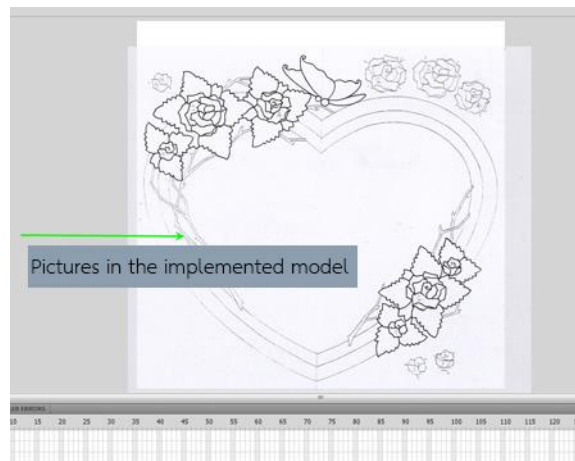


Figure 1: The Use of a Master Image Imported into a Computer

To create patterns in computers, some parts can be copied without drawing new patterns. For instance, to create similar flame flower shaped patterns, the patterns can be copied as shown in Figure 2. The figure demonstrates copying a flame flower shaped pattern with computer without drafted pattern.

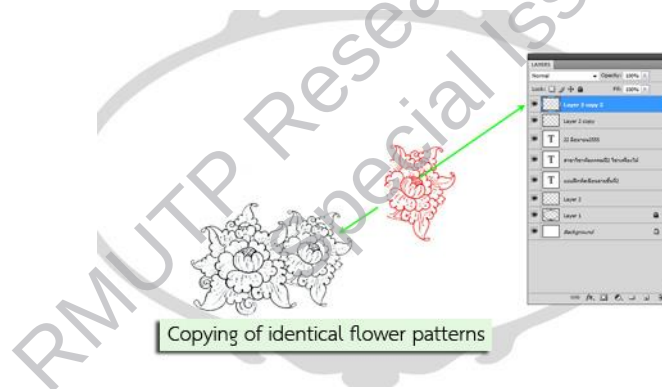


Figure 2: Copying a Pattern with a Copy Layer

To draw and adjust patterns in computers, we can rotate the patterns in any direction in order to make the patterns look natural. According to the principles of arts, we should not use many patterns having same sizes or shapes. Hence, we can rotate the patterns because we may want to adjust master images with computers as many duplicated patterns can make wood carvings common and inconsistent with the principle of art components as shown in Figure 3. The figure shows the directions of flower shaped patterns in order to demonstrate that same patterns can have different directions in order make the overall pattern beautiful.

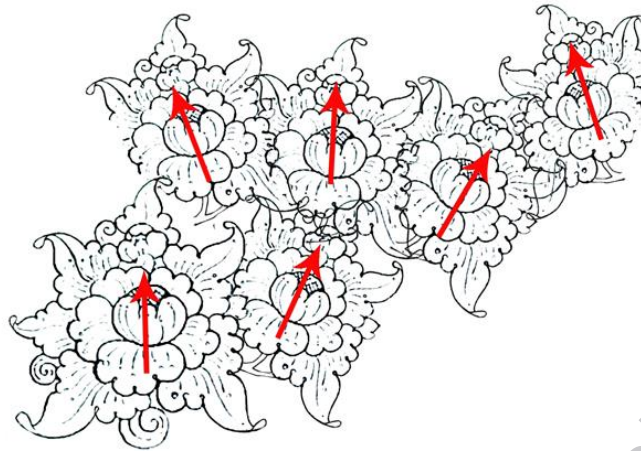


Figure 3: Copying and Rotating Patterns

There is an important principle for adjusting wood carving patterns with computers. The principle is layer creation for separating parts of patterns. For example, a pattern can be divided into a flower shaped part, a leaf shaped part, a stem shaped part, and other parts in order to conveniently and nicely create any pattern. To separate important parts from an image, it is necessary to frame or cut those important parts from the image as show in Figure 4. The figure illustrates creating layers with Flash examined and done by the researcher.

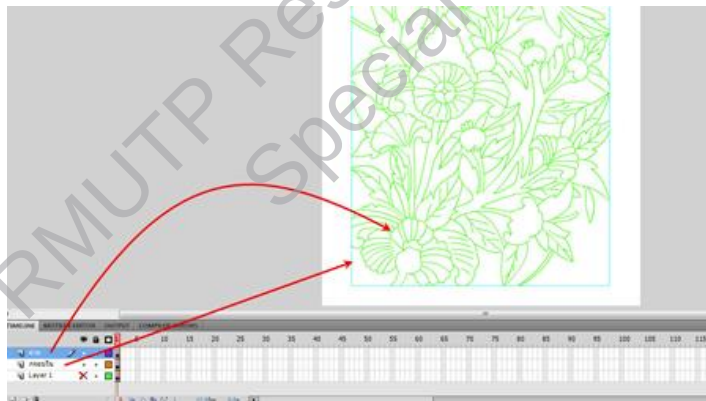


Figure 4: Creating Layers

To create layers, it needs simple and convenient principles, the researcher examined and experimented with drawing patterns by using single and multiple layers. However, it depends on patterns or may need consider than what patterns do not need layers as the flower and stems shaped pattern shown in Figure 4.

Positioning Internal Lines in Computer Drawing Process

Figure 5 shows drawing internal lines with a computer. There are internal lines that cross and parallel with the center line. The directions of internal lines of the *coccinia grandis* leaf shaped pattern in the figure are consistent with the direction of the leaf without considering whether they cross or parallel with the center line or not. Although the positions of internal lines that parallel with the center line is easy for carving, there must also be internal lines that cross with the center line.

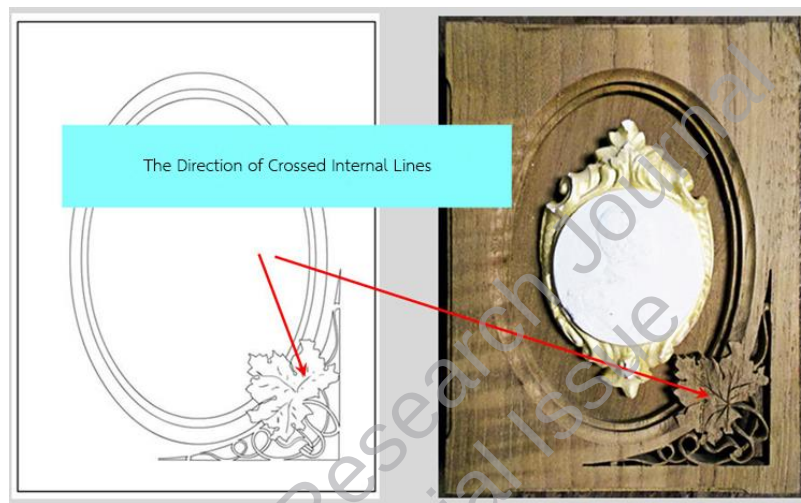


Figure 5: The Directions of Internal Lines

3. Experiment Results and Discussions

This Results was found in this study that computer-based design yielded woodcarving patterns of the same size with high definitions. In addition, files containing patterns could be copied, improved and passed on to people in communities and those interested in wood carving, the majority of which had problems with wood carving pattern design.

However, good computer-based design of wood carving patterns requires good drawing. Results of this research will benefit people studying and learning computer-based design of wood carving patterns.

4. Conclusion

In this study of designing the patterns of wood carving products with computers, its results can be concluded that there are three computer software (i.e. Illustrator, Flash, and Photoshop) used for designing the patterns. It is founded that even though the three computer software have similar tools or functions, they have different capabilities and purposes. The first computer software used for creating the patterns of wood carvings is picture management software, Adobe Photoshop.

This software manages drafted images, photos, scanned images, or any image. Picture management is the first important process for creating the patterns of wood carvings with computers. In this process, designs are usually drawn on papers and then imported into computers. By using Photoshop, the size of a pattern of wood carvings must be clearly determined according to the dimensions of a wood that will be carved. The sizes are determined with ratios such as 6 inches or 50 centimeters. Photoshop allows users to set the sizes of papers or areas in units: millimeter, centimeter, meter, inch, and foot. After setting the size of a pattern, the next process is pattern creation with other instant graphics software (i.e. Illustrator or Flash) that are especially for drawing lines. By using the software, lines are created as vectors. These vectors have different features from the lines of Photoshop. That is, vectors can be shrunken or enlarged without limits. If lines are shrunken or enlarged by using other software, then the lines will be disproportionate. These are the key feature of the software. After the researcher used Flash and Illustrator for designing patterns, it is founded that the capabilities of these software are similar. Also, they have same or interchangeable tools. Therefore, the use of computers can be a convenient way for quickly and accurately creating artworks.

The study of designing the patterns of wood carvings with computers is conducted in order to create patterns useful for persons interested in them, and helping businesspersons and communities create jobs and make incomes by producing wood carving products and adjusting old or existing patterns in order to create newly complete patterns with computers.

5. Acknowledgement

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6. References

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