

## EKSPLORASI DESAIN DENGAN PETA MORFOLOGI (STUDI KASUS: PERANCANGAN DESAIN MEBEL TERINSPIRASI GAYA MEMPHIS ERA 1980-AN)

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### INFORMASI ARTIKEL

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### ABSTRACTS

The paper studies how morphological charts from engineering methods are applied in a creative design process. The method allows designers to think differently and logically. On the other hand, history have inspired many designers to create many new things. Memphis is postmodern design style that occurred between 1981-1987, characterized by form following fun paradigm by creating objects that are bizarre from common object over time. This is a paper analyzing student design history projects to create a design inspired by Memphis design. It presents the framework for exploring design with morphological charts. The chart generating five new ideas ranging from very to less similar to Memphis-like style. Using the morphological chart method, the study discovered three key factors affecting the difference of ideas generated on the study: level of variation, which deals with how many variations the means can provide, the more variations the newer ideas can be generated. Unity level means showing how each element is in harmony with each other. Level of abstraction means the degree of inspiration from the original idea. By paying attention to these three factors, morphological chart can produce better design. The research contribution aims to provide a product design methodology for product design students that uses morphological maps as a means of design exploration. The research contribution aims to provide a product design methodology for product design students that uses morphological maps as a means of design exploration.

Key words: product design, memphis design, morphological chart

### ABSTRAK

Makalah ini mempelajari bagaimana peta morfologi dari ilmu rekayasa diterapkan dalam proses desain yang kreatif. Metode ini memungkinkan desainer untuk berpikir secara inovatif dan logis. Di sisi lain, sejarah telah menginspirasi banyak desainer untuk menciptakan banyak hal baru. Memphis adalah gaya desain postmodern yang terjadi antara tahun 1981-1987, ditandai dengan paradigma "*form follow fun*" dengan menciptakan objek yang aneh dari objek umum dari waktu ke waktu. Makalah ini menganalisis proyek sejarah desain siswa untuk membuat desain yang terinspirasi oleh gaya desain bersejarah Memphis. Selanjutnya makalah ini menyajikan kerangka kerja untuk mengeksplorasi desain dengan grafik morfologis. Proses eksplorasi menghasilkan lima ide baru mulai dari yang sangat hingga yang kurang mirip dengan gaya seperti Memphis. Dari proses eksplorasi, penelitian ini menemukan tiga faktor kunci yang mempengaruhi perbedaan ide yang dihasilkan pada penelitian: tingkat variasi, yang berkaitan dengan berapa banyak variasi yang dimasukkan dalam peta morfologi, semakin banyak variasi yang dapat dihasilkan oleh ide-ide yang lebih baru. Tingkat kesatuan berarti menunjukkan bagaimana setiap elemen disatukan satu sama lain. Tingkat abstraksi berarti tingkat inspirasi dari ide aslinya. Dengan memperhatikan tiga faktor ini, ide yang dihasilkan dari peta morfologi dapat menghasilkan desain yang

lebih baik. Kontribusi penelitian adalah merumuskan proses desain produk dengan menggunakan peta morfologi sebagai metode eksplorasi desain bagi mahasiswa desain produk.

Kata Kunci: Desain Produk, desain Memphis, peta morfologi

## INTRODUCTION

In a 1988 marketing survey conducted by Bruce and Whitehead, cited in [1] 60% of respondents recognized the design as the most important for new product development. Design is the first window to interact with certain products or services. Therefore, a designer always tries to find a unique angle to bring ideas for novelties that can provide competitiveness in the market by inspiring different aspects, such as local culture or history, in the design process.

[2] said that understand the present, we must know the past. This statement carried deep meaning; we cannot create something by not learning the past. By not understanding the past, we will keep repeating the same mistakes that hinder progress. Hence, history has always been a constant inspiration for the designer in various field. For example, a successful designer who is inspired by history is Vivienne Westwood encouraged by the 1970s punk subculture and create a fashion collection, that made met museum gave her the title of mother of punk [3]



Figure 1 Punk Vivienne Westwood Collectio  
[Source: [https://www.metmuseum.org/toah/hd/vivw/hd\\_vivw.htm](https://www.metmuseum.org/toah/hd/vivw/hd_vivw.htm)]

History has inspired designer beyond form, formafantasma an Italian design studio, explore the designer's local heritage and inspired by ancient Sicilian Italy baking technique called Salemi, in which flour-based material is molded into architectural ornamentation. This baking technique inspired designers to make an edible home decor collection title baked in 2009. This new approach brings innovation and competitiveness to the saturated home decor market.



Figure 2 Bake Collection

[Source: <https://www.dezeen.com/2009/10/21/baked-by-formafantasma/>]

From the two examples, it is concluded that history has inspired designers from form to content. Using history as inspiration has been proven can bring innovation in the design process. Therefore, it is a good exercise for future designer to learn how to design inspired by history.

History has been a major subject for product design students in which they can learn about various historic design style that came about as industrial revolution counteraction started from Arts And Crafts Movement, Art Nouveau, Art Deco, Streamline, Bauhaus, De Stijl And Postmodernism Design Movement Memphis. This paper is an analysis of student's design history projects to create a design that is inspired by Memphis Design.

Although Memphis was a short-lived design movement as it only lasted for 7 years. Memphis design was revived again lately in furniture and interior design landscape. Some examples of recent works that were inspired by Memphis design



Figure 3 Memphis Furniture and Interior Trend [Source: pinterrest]

Good design always comes from a good structured methodological process. One of commonly used design method to generate ideas is a morphological chart. The structured process can help a nascent designer to generate ideas in a structured and objective manner. This paper presents the findings of a morphological chart

study. The method is implemented for a short-term educational project on history of product design's project

## MORPHOLOGICAL CHART

Derived from morphology means learning about form or structure. Morphological chart originated from engineering discipline. A morphological chart is “a systematic approach to analyse the structure or form of an idea, device, product, system or process to generate ideas in a structured and systematic way” [4]. The morphological chart is part of idea generation tools that are both intuitive or logical. The tool promotes both creative divergent thinking and logical [5].

Developed by Fritz Zwicky from the General Morphological Analysis (GMA) to study non-quantifiable problems by breaking down the problem into components (problem decomposition), it generates solutions by selecting and combining ideas. The benefit of using this chart by allowing an unexpected matching of different means to be considered [5].

The tool enable designer to examine all possible combinations of all the variables in a systematic way. The steps to do morphological chart:

1. Identify the components that will give solution to the problem
2. List several feasible solutions in each component.
3. Make the morphological chart matrix
4. Combine each row and column and generate feasible solutions.

## RESEARCH METHOD

The research was conducted in a structured and systematic way as follows

ANALYZING DESIGN STYLE			IDEA GENERATION	IDEA SELECTION
01. CONTEXT ANALYSIS	02. FORM ANALYSIS	03. CONTENT ANALYSIS	04. Morphological Chart	05. Select best ideas that well represent the content of design style
Politic	Form	How context influence form	Defining functions	
Economy	Shapes		Generate means for each functions	
Social	Color		Combine means and create design ideas	
Technology	Material			
	Texture			
	Surface			
	Finishing			
	Proportion			

## An example of morphological chart

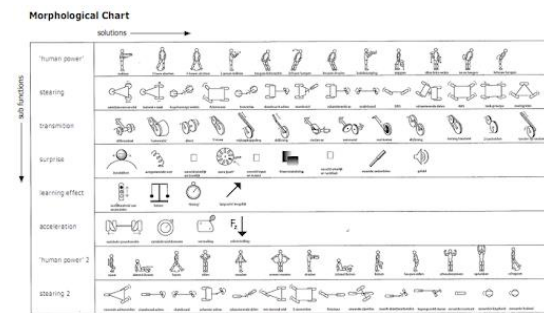


Figure 4 Morphological Chart

[Source: [http://wikid.io.tudelft.nl/WikID/index.php/Morphological\\_chart](http://wikid.io.tudelft.nl/WikID/index.php/Morphological_chart)]

The morphological chart is commonly used in an engineering major and rarely in the design process. The novelty of this research is to use this tool in design process that used historic design style as inspiration. [6] suggested that to generate better ideas morphological chart should have more means (the columns) than functions (the row). So, the designer should have the ability to gather means for each parameter of functions.

On the other hand, for the students to understand the context of the historic design style. They made a form, context and content analysis prior to idea generation process. Form describes all the design elements of the design style from shapes, color, pattern, texture, material. The context describes the politic, economic, social and technological context that influenced the design style. Finally, content is the relation between form and context. For example: how technology enables designer at the time to create certain form and shapes with certain material.

## Research instrument

Components	Memphis Idea	Personal Preference	Memphis Idea	Personal Preference
	Means 1	Means 2	Means 3	Means 4
	Means 5	Means 6	Means 7	Means 8
	Means 9	Means 10	Means 11	Means 12
	Means 13	Means 14	Means 15	Means 16

Idea 1

Idea 2

Idea 3

Idea 4

Figure 5 Research Morphological Chart  
[Source: Researchers' data]

The row is the means and the column is the components. From the morphological chart four students generate five design ideas with a balance use of each mean. The table can generate  $4^{16}$  = different mean combinations. For example, two ideas from Memphis and two ideas from personal preference.

## RESULT AND DISCUSSION

Memphis is a design style that originated in Italy between 1981 and 1987 founded by Ettore Sottsass and there were 22 designer and architects as members. The Memphis name itself has an unusual origin. Memphis came from the line of Bob Dylan's song "*stuck in mobile with the Memphis Blues Again*" that was played repeatedly during the first Memphis group meeting.

The Memphis design was influenced by the previous Radical design, design style that flourished in Italy in the late 1960s. The radical design emerged because of the desire of designers and architects to be free from the means of design are considered conventional [7]. At that time designers and architects began to question the

potential of design when it was linked to the articulation of the ideological, social and environmental problems of cultural consumerism at that time. As a result, Italian designers and architects experimented with materials, as well as new forms that were suppressed at that time, which were bold, strange, and unfit to taste the market [8]. Radical design has been developed mainly in Florence, Turin, Milan, Padua and Naples. Superstudio and Archizoom were two design studios that became radical design icons.

The Memphis designers were fed up with modernism and its dominating minimalism in the previous decade. Therefore, the Memphis group tried a design approach characterized by creativity and humor to liberate the shape of a product from its function. The Memphis design style paradigm' form follows fun ' so that the Memphis group designers' approaches in designing products were fresh, unusual, or more eccentric and bizarre [9]. This design style takes the reference from the Art Deco geometric figures, the colors of Pop Art, the aesthetics of the Kitsch style in the 1950, the Aztec art, and the totem. The Memphis design style is characterized with the use of bright color combinations and pastel colors, geometric shapes, line elements [10]. The aesthetics of ' bad taste '

and shape and material applications that are not commonly used in a product. The application of laminate and terrazzo material in the product characterizes Memphis design objects. Memphis also famous for its patterns such as squiggles pattern, also known as Bacterio print, by Ettore Sottsass.



Figure 6 Memphis Style Reference

[Source: <https://www.veniceclayartists.com/charles-catteau>,  
[https://www.moma.org/collection/works/61239?installation\\_image\\_index=2](https://www.moma.org/collection/works/61239?installation_image_index=2),  
<https://www.onlinedesignteacher.com/2016/05/graphic-design-styles.html>]

#### Memphis Style Reference

Context Analysis
Political background: The Christian Democratic Party (Partito della Democrazia Cristiana, commonly known as DC) and the Italian Communist Party (Partito Comunista Italiano, also known as PCI) were two dominant parties in Italy between the end of the Second World War and the 1990s.
Economical background: Since the end of the Second World War, Italy experienced a dynamic economic advance with the transformation of major agricultural sectors into industrial sectors. In the years 1950-1963, Italy's economic development was the fastest in Europe, but it declined in the 1970's.
Social background: The development of the tourism sector and the social outlook that those who can go to other countries and learn about the culture of the country are considered to have more knowledge and insight. A designer who draws his inspiration from outside culture is considered trendier and more modern.
Technological background: Development of industrial engineering in Italy, for example in the

manufacture of arms, textile machinery, machinery and household, automotive and other means of transport. Designers can also quickly and on a large scale realize their ideas. Plastic laminate technology is also growing rapidly.

Form Analysis	Content Analysis
Forms: Geometric, non-organic	Mass production
Shape: Following what is considered a fun and unusual	Radical and designing in an unusual way at that time
Material: material combination that has not been used like laminate, terrazzo, with metal, wood, glass	Form follows fun, freeing the form of functions
Proportions: generally, asymmetry, there is a symmetrical	Bad taste aesthetic
Textures: generally, not textured, but some provide a perforated surface from the terrazzo material	Anti-Minimalism and modernism, embrace postmodernism
Color: Bright color combination with pastel color	Mixing contemporary pop culture with past cultures
Pattern: Squiggling pattern (for example the Bacterio print by Ettore Sottsass) although not always worn	

Then three key Memphis design objects was elaborated



Figure 7 Memphis Design Object 1

[Source: <https://mymodernmet.com/what-is-memphis-design>]

The German Silver Vase designed by Ettore Sottsass in 1985 is a unique vase during the time because it used Silver material and carved by hand to produce a Bacterio pattern, a typical Memphis pattern. This pattern was also used in the Carlton Room Divider, the bookshelf inspired by totem designed also by Ettore Sottsass in 1981 which attracted the most attention in the early



development of the Memphis group. Hollywood Table is the work of Peter Shire in 1983 representing his birthplace, Los Angeles, with unusual geometric shape applications applied to the table. These three works have been selected for the Represents the Memphis design style as the three are iconic masterpieces of the Memphis era, showing geometric shapes, featuring a combination of color use bold and pastel colours, showing the use of wood and metal laminate materials, applying the typical Memphis pattern of Bacterio, and showing the form follows a fun aesthetics paradigm.



*Hourglass Teapot* (Peter Shire, 1984)



*First Chair* (Michele De Lucchi, 1983)










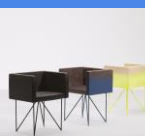




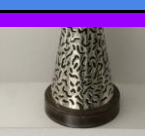





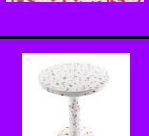


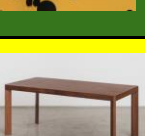



*Ananke Vase*  
(Ettore Sottsass, 1986)

Figure 8 Memphis Design Object 2  
[Source: <https://mymodernmet.com/what-is-memphis-design/>]




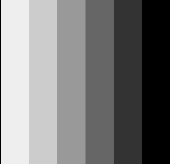

These next three Memphis design objects were selected to represent the Memphis style as they were some of the products made by Peter Shire, Michele De Lucchi and Ettore Sottsass, the most influential and important members of the Memphis Group. They were influential people who created, represented, and advocated Memphis to the world. These selected products represent the idea of a Memphis design style that would want to keep away from the idea of its functionality. This paper hourglass Teapot Peter Shire has a very different shape from the usual teapots, the First Chair by Michele De Lucchi has a unique armrest due to the presence of a ball so that the chair looks uncomfortable to be seated, while Ananke Vase looks too clumsy and tall to be a flower vase.

As mentioned in the previous section, to generate good ideas with morphological chart more means is better than having more functions. Therefore, aside from taking inspiration from Memphis style, the students may add objects from their personal preference.

Components	Memphis Idea	Personal preference	Memphis Idea	Personal preference	Memphis Idea
<i>Table top</i>					
<i>Table leg</i>					
<i>Table feet</i>					
<i>Pattern</i>					
<i>Support (apron, stretcher)</i>					
<div> <div>Idea 1</div> <div>Idea 2</div> <div>Idea 3</div> <div>Idea 4</div> <div>Idea 5</div> </div>					

### Coffee Table Design 1

From all the red elements are gathered and inspired designer to create new design

Component	Table top	Table leg	Table feet	Pattern	Support (apron, stretcher)
Reference	Memphis Design 1980 element	Design student's preference	Design student's preference	Design student's preference	Memphis Design 1980 element
Idea 1					

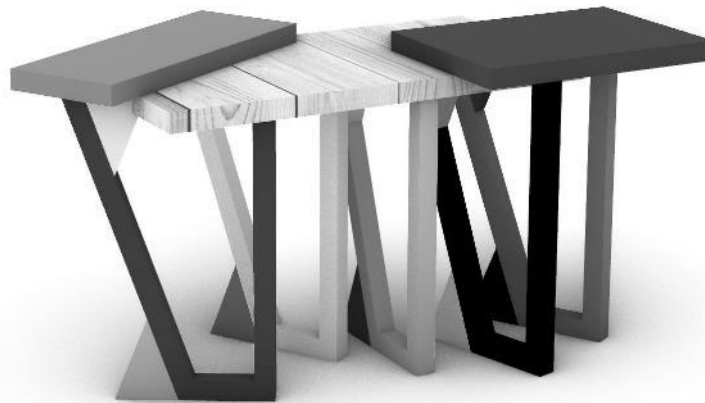



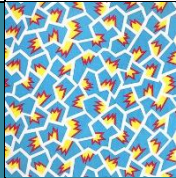



Figure 9 Coffee Table Design 1  
[Source: researcher's data]

#### Coffee Tabel Design 2

Component	Table top	Table leg	Table feet	Pattern	Support (apron, stretcher)
Reference	Design student's preference	Memphis Design 1980 element	Memphis Design 1980 element	Memphis Design 1980 element	Design student's preference
Idea 2					

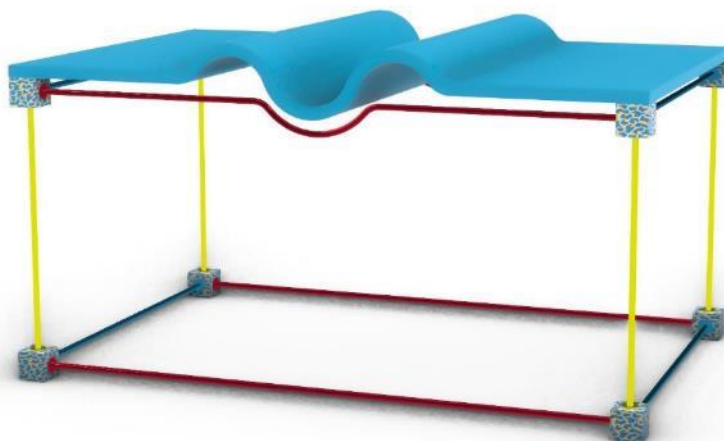


Figure 10 Coffee Table Design 2  
[Source: researcher's data]



### Coffee Table Design 3






Component	Table top	Table leg	Table feet	Pattern	Support (apron, stretcher)
Reference	Memphis Design 1980 element	Memphis Design 1980 element	Design student's preference	Memphis Design 1980 element	Design student's preference
Idea 3					



Figure 11 Coffee Table Design 3  
[Source: researcher's data]

### Coffee Table Design 4











Component	Table top	Table leg	Table feet	Pattern	Support (apron, stretcher)
Reference	Design student's preference	Memphis Design 1980 element	Design student's preference	Memphis Design 1980 element	Design student's preference
Idea 4					



Figure 12 Coffee Table Design 4  
[Source: researcher's data]

#### Coffee Table Design 5

Component	Table top	Table leg	Table feet	Pattern	Support (apron, stretcher)
Reference	Memphis Design 1980 element	Design student's preference	Memphis Design 1980 element	Memphis Design 1980 element	Memphis Design 1980 element
Idea 5					

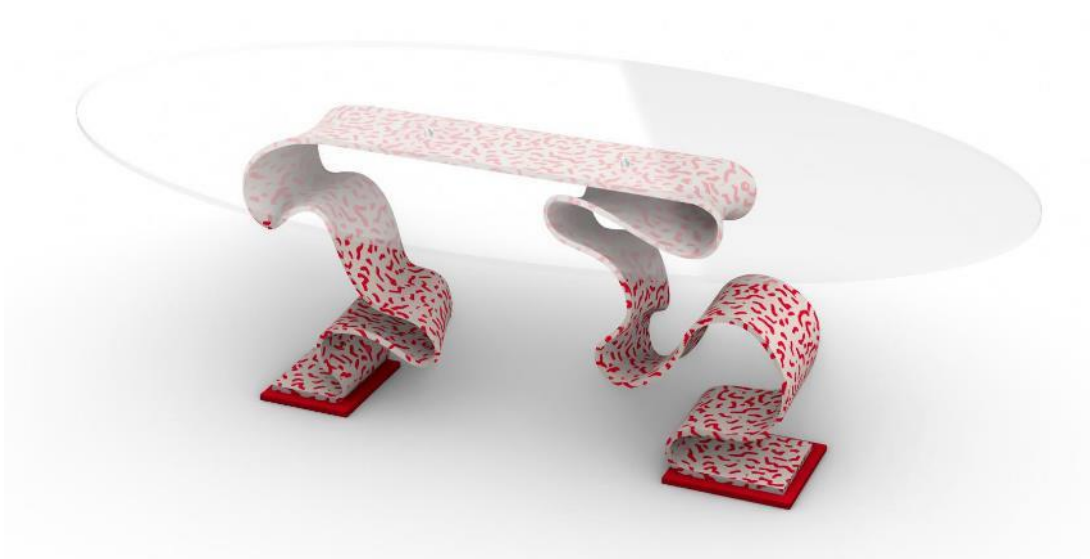
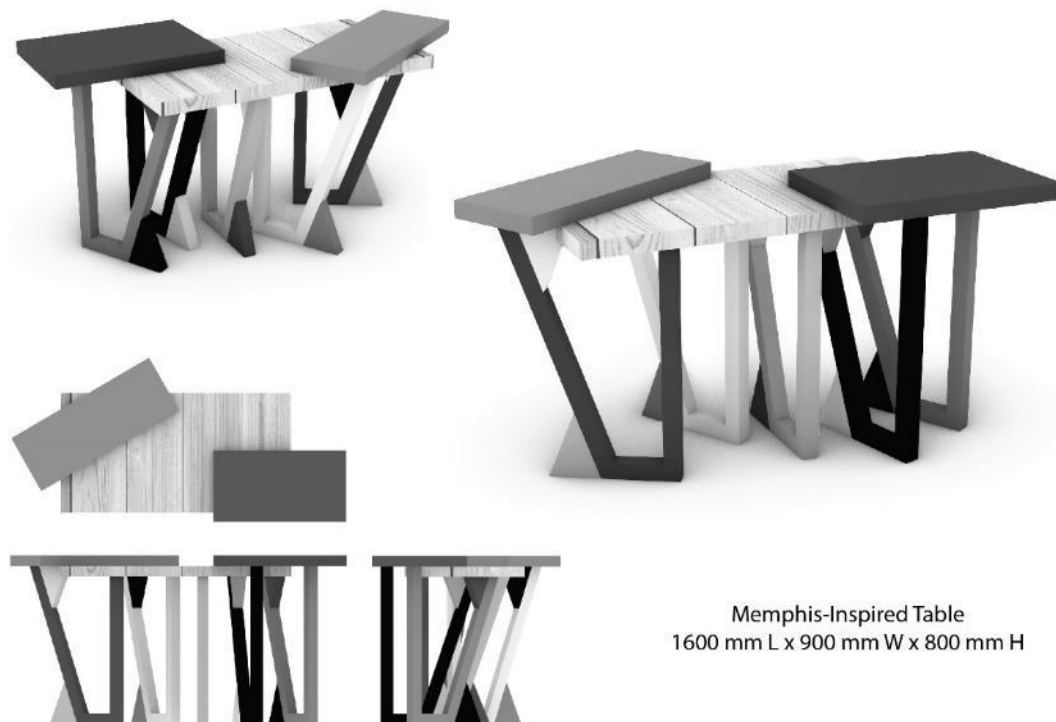


Figure 13 Coffee Table Design 5  
[Source: researcher's data]

Among the five ideas, design 1 is finalized



Memphis-Inspired Table  
1600 mm L x 900 mm W x 800 mm H

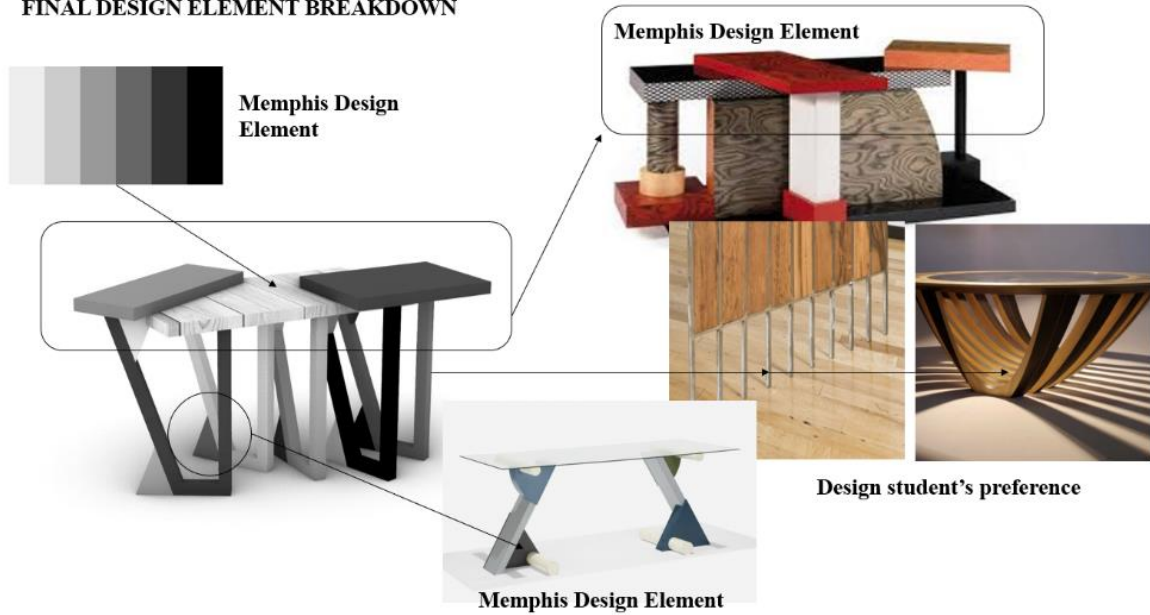
Figure 14 Final Design  
[Source: Researcher Data]



Figure 15 Coffee Table in the room  
[Source: Researcher Data]

From the design, the spirit of “form follow fun “1980s Memphis design still can be seen through the uneven tabletop and spiral arrangement. and the integration with student’s preference.

#### FINAL DESIGN ELEMENT BREAKDOWN



## CONCLUSION

From the study several recommendations can be drawn.

### 1. Level of variations

The elements of variation inside the morphological chart are important. In this scenario, the more items other than the coffee table that are included in the chart, the better. For example, here the student has put lasagna as one of inspirations. The connection between lasagna and coffee table is very far. Previous study suggested that experience matter in using morphological chart, the more experience you have, the more balance ideas (Troy and Summer, 2016). Therefore, the morphological chart must be applied in many design exercises for the student to be more affluent in using it. The pattern can be found also beyond the student mentioned here as the study technique has also been used by 29 other design students who have taken part in the course.

### 2. Level of visual harmony

In the form giving process using the morphological chart, it may be difficult to combine the different elements of the morphological chart and how to make all the elements as one visual harmony. Henderson & Cote (1998, 16) stated that *“visual harmony can be defined a congruent pattern or arrangement of parts that combines symmetry and balance and captures good design from a Gestalt perspective”*. Visual harmony is concerned about how design elements are manipulated in such a way that they look as though the elements belong together or there is a visual connection that makes them come together (Lauer 1979; Veitzer 1993a, 1993b). Previous research stated that visual harmony can influence viewers cognitively, affectively and interact with individu differently. In general, people prefer design with better harmony (Orth, U. R., Nickel, K., Böhm, R., & Röwe, K. (2020). Thus in order to explore design with a morphological chart, the designer should master visual harmony skills and aptitude.

### 3. Level of abstraction

Abstraction mindset is also needed in the process. By combining different means, morphological chart aims to spark ideas, not completely taking the form and apply it on different context. Abstraction enable designer to perceive beyond the tangible and how to create newness from something that is

so realistic. The form still needs to be explored. Elaborating visual elements during design development to evoke desired perceived qualities and positive response is a key challenge for product designer.

Finally, we recommend that morphological chart can help product designers to do design exploration by connecting different design elements. To create a better design exploration with morphological chart product design, students should pay attention to the level of variations of the items they put on the chart, the level of visual harmony between all the chosen design elements, and the level of abstraction in which the new design should not literally look like all the design elements on the chart.

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