

# A Study on Media Development Based on Theory of Yin-Yang and Five Elements

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**Abstract:** Design would reflect cultures and different regions and cultures might have different views on good design. Although many ways are considered to find relevant design systems for the oriental cultures, it will be an option to find it based on the traditional thoughts. In Orientalism, theory of Yin-Yang and Five Elements, or the Sun & Moon and the Five Elements, understands the nature and people as a comprehensive and organic relations of the universe. This unified relations of the whole and the part, and organic relations of things are manifested as features in each area of the oriental cultures. From this point of view, the relations of media elements can be interpreted based on the theory of Yin-Yang and Five Elements.

This study is designed to search the applicability of theory of Yin-Yang and Five Elements to media, focusing on the interpretation of the relations of each element, such as colors, shapes, and sounds, based on theory of Yin-Yang and Five Elements.

As methodology, it developed an algorithm for theory of Yin-Yang and Five Elements with several case studies, applied the algorithm to media elements to find its possibility, and studied media tools that would express the relations of media elements in many ways.

As a result of the case studies, it is possible to interpret and express various relations of media elements in different ways based on theory of Yin-Yang and Five Elements, and to find the potential of organic connectedness to them. Although it is experimental, many case studies together with follow-up studies will lead to the concrete development of application systems in the future.

**Key words:** *orientalism, Yin-Yang and Five Elements*

## 1. Introduction

### 1.1 Background and Purpose

In oriental societies, Yin-Yang and Five Elements has influenced great on almost every part of the art, everyday life, and natural phenomenon, as well as incantation, religion, philosophy, science, and medicine. The theory of Yin-Yang and Five Elements provides a conceptual model of the nature, implying that all things of the universe, including the natural changes and people, is the whole unity that cannot be separated into and has organic relations each other. This unified relations of the whole and the part, and organic relations among things have been developed as features in each area of the oriental cultures.

From this view, it is inferred that relations among media elements can be interpreted based on theory of Yin-Yang and Five Elements, and that it is possible to find design systems development fit for the oriental cultures accordingly.

So, as a part of the current study to develop design or interface design systems from orientalism, this study is to focus on the interpretation of relations of each elements, such as colors, shapes, and sounds, based on theory of Yin-Yang and Five Elements, and to find its applicability to media design.

## 1.2 Scope and Method

To find the applicability of theory of Yin-Yang and Five Elements to media, it perfumes case studies as follows;

Case study 1. logic simulator : development of logical formulas for compatibility & incompatibility of Yin-Yang and Five Elements.

Case study 2. application of the theory to colors and shapes : application of compatibility & incompatibility theory to media elements

Case study 3. suggestion of media tool development : the entire links among media elements and the role of media tools.

## 1.3 Limitations

In implementing an algorithm for compatibility & incompatibility based on theory of Yin-Yang and Five Elements, there are questions whether it is conform to process compatible & incompatible relations of Yin-Yang and Five Elements mathematically, and whether the features of compatibility & incompatibility is reflected in the programmed logics as it is. The conformance and logic issues need to be developed and supplemented further with many studies.

## 2. Theory of Yin-Yang and Five Elements

### 2.1 Theory of Yin-Yang

- Concept of Yin-Yang

Yin(the moon): soft, inhumanness(minerals), winter, rocks, water, woman, despair, space, dullness, poor, back of the head, dark, inactive

Yang(the sun): hard, humaneness(organism), winter, woods, fire, man, hope, time, wisdom, rich, face, light, active

-Law of Yin-Yang circulation

陰極即陽生 陽極即陰生

The energy of Yin is at the height, the energy of Yang generates,

The energy of Yang is at the height, the energy of Yin generates

Yin-Yang are opposed to each other(conflict), have a root(same root)

Cause to change by going through continuous rises and falls.

### 2.2 Theory of Five Elements

- Concept of Five Elements

The Wu of Five Elements means the 5 elements, such as wood, fire, earth, metal, water, and the Xing indicates motion, movement.

Wood: spring, east, eyes, child age

Fire: summer, south, vision, young age

Earth: the seasons, center, mouth, middle age

Metal: autumn, west, nose, adulthood

Water: winter, north, ears, old age

-Interrelations of Five Elements



compatibility(相生) : relation that helps and supplies each other.  
(Yang relation)  
compatibility sequence: Wood supplies Fire, Fire does Earth,  
Earth does Metal, Metal does Water.

incompatibility(相克) : relation that controls destroys each other.  
(Yin relation)  
incompatibility sequence: Wood destroys Earth, Earth does  
Water, Water does Fire, Metal does Wood

figure 1. Relations of Five Elements

### 3. Case study

#### 3.1 Logic simulator(Description of compatibility & incompatibility simulation)

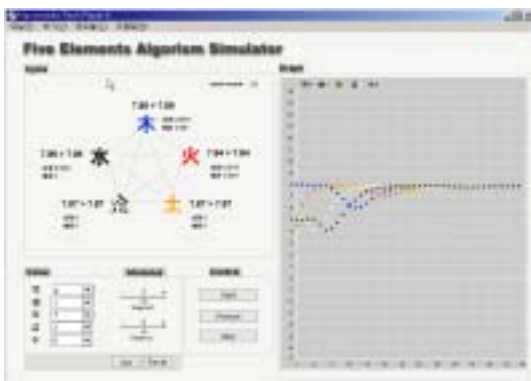
##### Outline

Logic simulator is the foundation to interpret or combine the correlations of colors, shapes, and sounds based on theory of Yin-Yang and Five Elements.

Based on the initial value input of Five Elements, the values are increased or decreased by compatibility & incompatibility function, through which process the changes of each Five Elements can be indicated numerically and graphically.

This will allow us to see the interactions and dynamic relations of media elements based on compatibility & incompatibility logic, and to expect the possibility of re-interpretation of them.

##### Structure of logic simulator



Logic simulator is divided into the entry of Five Elements initial value and index, the controls of start/stop/reset, and the display of numbers and graphs.

The number and graphs show the process that the initial value of Five Elements is changed by compatibility & incompatibility of Yin-Yang and Five Elements

figure 2. Logic Simulator

-Cycle : shows the process that the initial value of Five Elements is changed by compatibility & incompatibility numerically.

-Value : input the initial value of Five Elements.

-Modulus : set up compatibility index and incompatibility index.

-Control : start, reset, and stop the simulation after setting the initial value of Five Elements and indices of compatibility & incompatibility .

-Graph : shows the changes of Five Elements initial value.

##### Description of logic simulator

Each element of Five Elements interrelates to the rest 4 elements except itself. Through these four interrelations, individual five elements are closed related and influenced. If one of the 5 elements changes, it will have impact on the connected 4 elements, resulting in having the affected one influenced. This process moves in a cycle.

#### -compatibility implementation code

```
function support(elementsID, supportFromScore, resultScore) {
  switch (elementsID) {
    case 1:
      if (supportFromScore >= resultScore) {
        supportFromDegree= ((supportFromScore - resultScore)/supportModulus);
        _root.wood.supportFromDegree = supportFromDegree;
        _root.wood.currentScore += supportFromDegree;
      } else {
        _root.wood.supportFromDegree = 0;
      }
      break;
    ...contitue
  }
}
```

\*code description

-elementID : Five Elements to be addressed  
 -supportFromScore : Present value of element compatible with me  
 -resultScore : present value of elementID  
 -supportModulus : compatibility index

#### -incompatibility implementation code

```
function destroy(elementsID, destroyFromScore, supportFromScore, resultScore) {
  switch (elementsID) {
    case 1:
      if (supportFromScore < destroyFromScore) {
        destroyFromDegree= - ((destroyFromScore - supportFromScore)/destroyModulus);
        _root.wood.destroyFromDegree = destroyFromDegree;
        _root.wood.currentScore +=destroyFromDegree;
      } else {
        _root.wood.supportFromDegree = 0;
      }
      break;
    ...contitue
  }
}
```

\*code description

-elementID : Five Elements to be addressed  
 -destroyFromScore : present value of element incompatible with me  
 -supportFromScore : present value of element compatible with me  
 -resultScore : present value of elementID  
 -destroyModulus : incompatibility index

### Results of Case Study

compatibility & incompatibility values of Five Elements are not the values of dynamic relations at a standstill in a moment. It is very valid as the descriptive model of an object that would change in connection with the change of time. That is, the description of a situation changing over time would develop another situation because the moment of description takes another time. So, in principle, the description or interpretation of a situation over time can be an ever-changing model due to a consistent logic such as compatibility & incompatibility model. It is found that compatibility & incompatibility logic simulator would be applicable to an interpretation of the sequence with time system and the complex correlations, and that extension/shrinking conditions would be controlled by setting the correspondence with the attribute of an entity.

### 3.2 Application of the Theory to Colors and Shapes (Description of compatibility & incompatibility applied to element attributes)

#### Outline

This case study is to interpret the creation, change, and correlation of elements by applying the theory of Yin-Yang and Five Elements compatibility & incompatibility to media elements, such as colors, shapes, sounds and motions.

For the study, first, it provides each media element with Five Elements attribute (Wood, Fire, Earth, Metal, Water),

Second, let it form compatibility & incompatibility relations.

Third, it applies various ways of media element correlations, such as colors, shapes, sounds and motions, having both Five Elements attribute and compatibility & incompatibility relations.

Fourth, it infers correlations among colors, shapes, sounds and motions for re-interpretation.

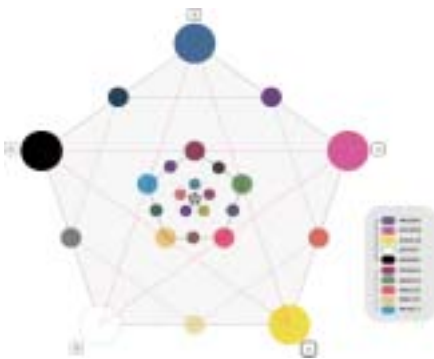
## 1. Color Representation

It is said that the traditional five-colors(Wood-blue, Fire-red, Earth-yellow, Metal-white, Water-black) and five-neutral colors are created by compatibility & incompatibility relations of Yin-Yang and Five Elements. Based on the identical principles as in the five-colors and five-neutral colors, it would generate various colors.



The left figure shows a mode that new colors create according to compatibility & incompatibility theory as the entity of five-neutral colors meets each other, with a principle of generating two neural colors based on RGB values corresponding to the initial five-colors.

figure 3. Color Creation by compatibility & incompatibility Relations



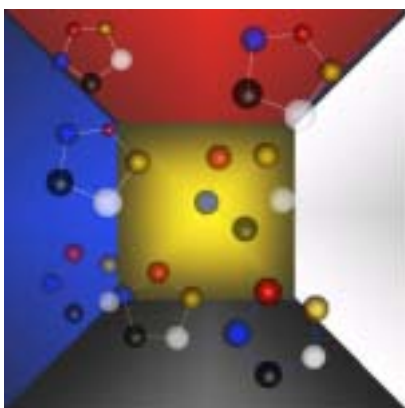
This figure shows the structure in which colors are created from the five-colors and five-neutral colors with compatible & incompatible relations.

The model points out a possibility to explain the semantic relations of color mix in the Orient.

figure 4. Color Derivation Structure from the five-colors and the five-neutral colors

## 2. Representation for Relations of Media Elements

For inter-correlations as well as intra-correlations of each media element such as colors, shapes and sounds, it examines the connectedness to Five Elements attributes and relations. That is, different media element, such as colors, shapes, and sounds, can create different interactions based on the same attribute, Five Elements, and be possible to represent accordingly..



The left figure, a relation of colors and patterns, shows the organic relations of colors and patterns according to compatibility & incompatibility effect. It indicates the change of colors influences on the change of patterns, so does in turn. Thus, organic relations of the entire media elements can be found through the correlations of Five Elements attributes and compatibility & incompatibility among media elements.

figure 5. Representation for Relations of Media Elements

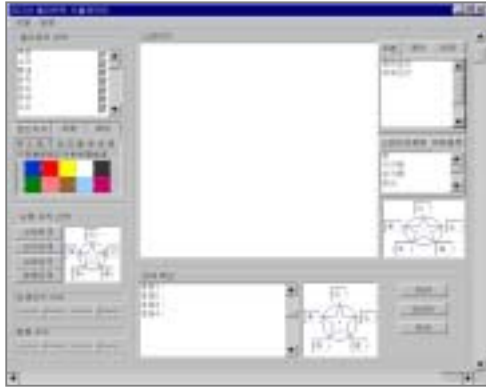
## Result of Case Study

It has interpreted and created colors and shapes based on its meaning and relations in the Orient. Because each media element has been applied the same theory, so called Five Elements attribute and relations, this theory is used to

represent in various ways and to find an organic connectedness among the complex relations of media elements. The case study establishes that it is possible to develop the concrete application systems with further studies.

### 3.3 Media Tool (Description of element correlations as media tool)

With previous case study, it is possible to create and interpret media elements based on theory of Yin-Yang and Five Elements, and to find the possible connectedness of each media element. Based on the study, it examines the production of media tool that would represent the connectedness of media elements variously.



As a tentative plan, the left figure shows the changes by selecting each media element, environmental variables, space to be displayed, theory to be applied, and representation method, etc., directly.

### Result of Case Study

When it studies sounds and motions of media elements, as well as colors and shapes, previous subject of study, it is expected that it is possible to interpret and represent the various, comprehensive relations of these media elements. Also, it might include environmental variables as influential variable, with time and space interpreting based on Yin-Yang and Five Elements. Then, further studies will help develop the application systems in the specific area.

### 4 Conclusions

It has applied Five Elements attribute and relations to each media element based on theory of Yin-Yang and Five Elements via case studies previous stated. As a result, it is found that it is possible to represent in various ways and to find an organic connectedness among the complex relations of media elements. We believe that case studies and advanced further studies will contribute to the concrete application systems development.