POSTMODERN ARCHITECTURE VS. FENG-SHUI

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Abstract. We start with two paradigms, Postmodernism and Feng-Shui, which seem to be no commonalities between them –western and eastern, new and old–. In both, however, they deeply root in the essence of "place" interweaved culture and social interaction with physical design. Hence, this paper presents a particular viewpoint and method to examine the coherency between the two paradigms. In accordance with the evolution of information technology, a full of metaphoric phenomena and codes within Feng-shui and postmodern architecture is able to visualize by means of computational knowledge. This gives a flexible knowledge-based system to trigger captivating concepts, which are seeds of creative thought.
Keywords: Feng-shui, postmodern, context, knowledge-based system

1. New Western Paradigm – Postmodernism

Prosperous discussions of postmodernism formed by many philosophers such as Gadamer, Derrida, Foucoult, Habermas, etc. in the 1980's are visually embodied in architectural area. The definition of postmodern architecture is still controversial. Most of writers, however, seem to agree that it is characterized by eclecticism and multiplicity. Jencks (1991) describes 'radical eclecticism' as follows: "We can point to three basic justifications for choosing a style, or mixing styles, as the case may be: the context the building fits into, the character of the particular functions which must be enhanced by style and the taste-culture of the inhabitants." Similar theme is present in Klotz (1988). He remarks that postmodern architecture takes into account the history of architecture and refers to the given factors of the whole cultural setting. Note that Charles Moore's *Piazza d' Italia* in New Orleans is mentioned as a good example by both writers.

One of the foremost proponents of the postmodern architecture is Peter Eisenman, who was influenced by Derrida. Eisenman's *House II* (Figure 1)

exhibits full of inspiration of his design. First, there are internal rules to create a form. Second, he uses diagrams that describe the relationships among deep structure, prior conditions, and actual environment. Third, there is a relationship between deep structure and a prior condition in the essence of architecture (Lao, 1999, p. 123-124). Deep structure possesses the potential to reveal the spatial experiences but requires a physical alteration to make them manifest. This manifestation is a prior condition in which the act of shifting creates these readable spaces but the initial platonic form is no longer a singular unit, but a fragment of its original whole.
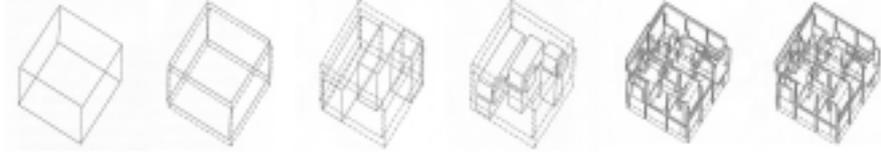

Figure 1. Peter Eisenman's House II

Eisenman's works proceed in his concept. Especially, by working with computers he enables to represent a vector notion. For example, in the *Virtual House* (Figure 2), he expresses each connection as a vector. The house initially stemmed from the interaction of nine cubes that constitute a potential field of internal relations and interconnections. A field of influence is attributed to each vector, which updates its virtual movement through time. The visualized lines, together with their geometric properties, become moving forces. These correlated movements produce a mechanical system capable of generating forms influenced by the position and orientation of the vectors (Galofaro, 1999, p. 66).
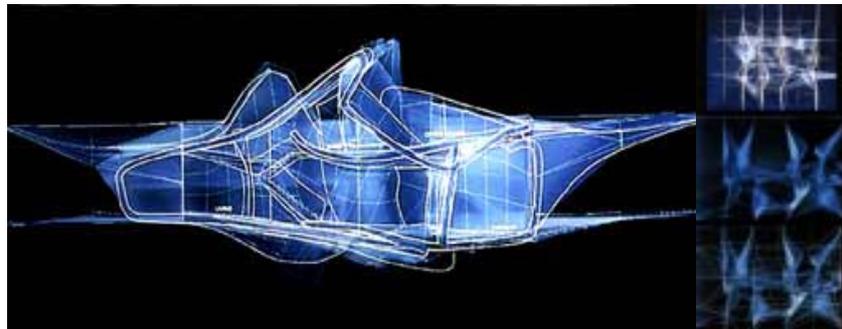

Figure 2. Eisenman's Virtual House

Recently, we can find another architect, Greg Lynn. He heavily depends on computers to present the process of his work, named 'animate form'. This can be found in his *house prototype* in long island (Figure 3). He assigns

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various elements of the existed site forces of attraction and repulsion, and then mapped the resulting behavior patterns…The shapes of these forces included linear, vortex, and radial directions along with various parameters for decay, acceleration and turbulence (Lynn, 1999, p. 144).
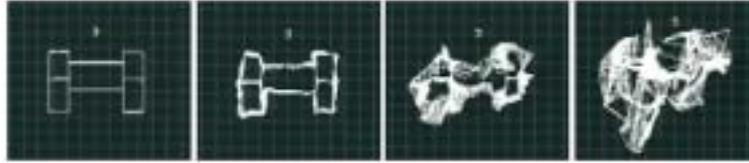

Figure 3. Greg Lynn's House prototype in long island

2. Old Eastern Paradigm – Feng-Shui

The ancients assessed all probable consequences of erecting a structure on the balance of nature and designed for the relationship between a building and the cosmos (Bramble, 2003, p. 8). Feng-shui is a set of rules developed by ancient Chinese to relate people and the man-made environment to the natural environment. In fact, Feng-shui encompasses wide areas and what we explore here is a part of it that can be applied to the form and arrangement of residential space. The cycle of five-elements (Wu-Xing), namely, metal, wood, water, fire, and earth, is basic and the most important concept of Feng-shui. The relationships between five-elements are shown in Figure 4.
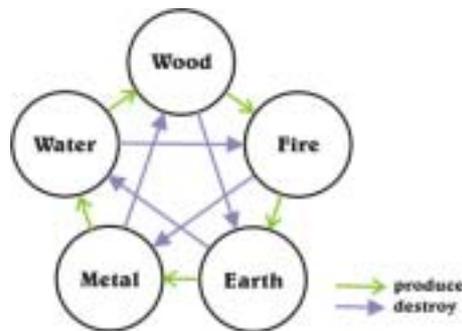

Figure 4. The relationships of five-elements (Wu-Xing)

It was believed that everything belonged to the five-elements so that one had to follow rules of producing and destroying the five-elements to bring fortune or protect energy (qi) (Chiou, 1996, p. 31). We anticipate that the five-elements relate to our exterior environment, which is able to influence on our houses and residents inside it. Therefore, we explain the relationship

between exterior environment and five-elements first and then explain the relationship between housing layout and five-elements.

2.1. RELATIONSHIP BETWEEN EXTERIOR ENVIRONMENT AND WU-XING

Each of the five-elements has its own conception of shape. Feng-shui experts classified the *nine-stars* – the seven stars of the Great Bear constellation and two other smaller stars near Polaris – corresponding to the shape of the five-elements (Chiou, 1996, p. 71). The shapes of the nine-stars are shown in Figure 5.
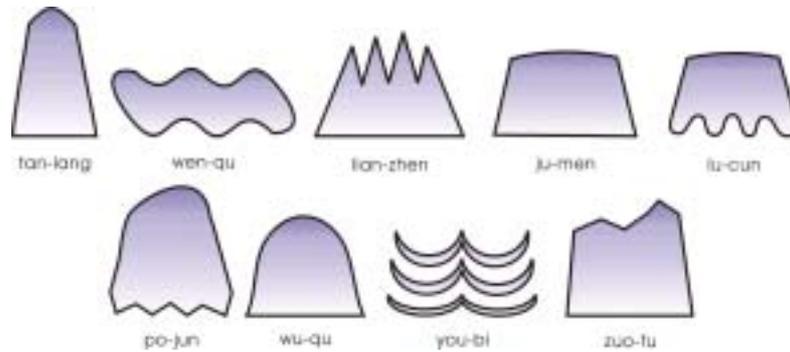

Figure 5. The shapes of the nine-stars

The nine-stars have been used to determine the shape of the mountain surrounding our houses for a long time. However, when we consider our housing environments in modern cities, the mountain is obstructed by the high-rise buildings so that a lot of Feng-shui experts try to adapt and redefine the knowledge to apply continually to the current situation. In this case, the shape of the mountain can be replaced by the shape of the building around a house.

2.2. RELATIONSHIP BETWEEN HOUSING LAYOUT AND WU-XING

The nine-stars correspond to the orientation and since one is related to the center, eight-stars match with the eight orientations, so called the 'eight trigrams'. The eight trigrams are divided into two parts: one is East Four Fate, each of which indicates the north, east, southeast, and south, and the other is West Four Fate, each of which indicates the northeast, southwest, west, and northwest respectively. Figure 6 illustrates the eight trigrams. The colored areas are the East Four Fate and the white areas are the West Four Fate.

Figure 6. The eight trigrams

Based on the relationships of the eight trigrams, eight different kinds of Fate are defined by individual's gender and the year of birth. That is, any individuals must belong to one kind of the Fate according to their personal information. The nine-stars are classified into eight 'fortune classes' which were assigned to the trigrams. Of these, vitality (生氣) is considered as the most fortunate. Three others in decreasing rank of good fortune are: longevity (延年); heavenly doctor (天醫); and essence (伏位). The remaining is unconsidered as ill-fortunate –disaster (禍害); six goblins (六煞); five ghosts (五鬼); and death (絕命) (Chiou, 1996, p. 71).

Figure 7 shows the eight different kinds of Fate, each of which has the eight fortune classes that correspond to the five-elements. The colored positions represent *auspicious* orientations for the Fate. After making sure which kind of the Fate one belongs to, the diagram of the Fate embodies the layout of the one's house.

In Feng-shui, generally, the eight fortune classes are related to the functional spaces in a house, each of which is suitable to be arranged in the orientation. The suitable matching between them is shown in Table 1.

Figure 7. The eight different kinds of Fate

TABLE 1. Matching between the eight fortune classes and the spaces

Eight fortune classes	Functional spaces
essence (伏位)	Bedroom
vitality (生氣)	main entry, bedroom
Longevity (延年)	main entry, bedroom
Heavenly doctor (天醫)	main entry, bedroom
Death (絕命)	bathroom, kitchen
five ghosts (五鬼)	bathroom, kitchen
six goblins (六煞)	bathroom, kitchen
Disaster (禍害)	bathroom, kitchen

3.   When Postmodern meets Feng-Shui

Norberg-Schulz (1985) investigates the concept of dwelling as follows. "To dwell implies the establishment of a meaningful relationship between man and a given environment. This relationship consists in an act of experiencing a 'total' environment as meaningful, that is, in a sense of belonging to a certain place." In China and Korea, many people still believe that good Feng-shui makes their houses good so that they choose and arrange their living environment according to Feng-shui. It means in those areas the rules of Feng-shui can be constrained in residential design. Context is reality as defined by the "natural and cultural history" of place. Context as planners and designers use it is a spatial representation of the metabolic processes in motion in space and time. It becomes a four-dimensional construct composed of culture-based organizational and structural relationships (Kasprisin and Pettinari, 1995, p. 49, 50). This is the exact match with "history consists essentially in seeing the past through the eyes of the present and in the light of its problems (Carr, 1961)" and this is the reason why some of postmodernists focus on transferring those historical contexts into design problems.

However, the same Feng-shui constraints can be interpreted differently according to the resident's personal information such as gender, time of birth, and occupation. Residential designs are evolving constantly in response to changing societal values and needs. Like in the automobile industry, buyers looking for specialized products have a growing influence in the housing industry; instead of cookie-cutter houses, they want room configurations that reflect and accommodate their particular lifestyle (Wentling, 1995). Homebuyers including apartment buyers often have a chance to choose the location of their houses and customize the interior of their units before the building construction begins. Therefore, not only for the postmodernists, but also for most of the recent designers considering customized architecture for individuals is optimal.

Traditional architectural design was not just an embodiment of social, cultural, and technological factors, but also incorporated highly interdependent compositional and constructional considerations. It is these latter aspects that make traditional architecture eminently suitable to grammatical analysis. It is the former aspects that endow such rules of composition with meaning (Chiou, 1996, p. 14). However, designers often suffer from acquiring Feng-shui information as the general public; in that transition from abstract concepts to tangible design solutions there is a big gap to be filled up through a well planned and executed process with correct interpretations from jargons or archaic texts. In this point of view, Eisenman's internal rule concept is interesting. Especially, his words 'deep structure' and 'prior condition' can correspond with Chiou's former and

latter aspects mentioned above. Moreover, Eisenman's diagram concept, originally from Alexander, may able to overcome the difficulties applying abstract concepts to concrete design. We can see the reason from Somol (1999)'s explanation of Eisenman's diagramming works as follows. "Proceeding with halting steps through serial obsessions with form, language, and representation the diagram has seemingly emerged as the final tool, in both its millennial and desperate guises, for architectural production and discourse."

Communicating perceived relationships in shapes and patterns is greatly facilitated by a graphic or visual language that integrates parts, organization, and structure (Kasprisin and Pettinari, 1995, p. 50). This is shown in Eisenman's projects because for each deformation of diagram Eisenman uses vector notion to deal with information of context in a parametric way. A vector has density, a direction, and a force that we cannot draw. Vector cannot be conceptualized, but we can use the computer to represent a vector (Eisenman 1992). These computer-aided technologies are so versatile that they give us the power to reinterpret the knowledge of Feng-shui, make us to create the way of representation by visualized and parametric mechanism, and help us to store and retrieve a huge amount of information interweaved among themselves.

The parameters of vector can be influenced by external forces. We can see this from Greg Lynn's animate design. He points out the relationship between external forces and the form like this: "Instead of a neutral abstract space of design, the context for design becomes an active abstract space that directs form within a current of forces that can be stored as information in shape of the form (Lynn, 1999, p. 11)." Postmodern space is unlimited or ambiguous in zoning and 'irrational' or transformational in its relation of parts to whole. The boundaries are often left unclear, the space extended infinitely without apparent edge (Jencks, 1991, p. 96). Similarly, the action of Feng-shui is considered as environmental forces that we explained in the previous section. Through the rules of producing and destroying among the five elements in Feng-shui, we try to visualize the relationship between environmental forces and the form of an artifact. That is, producing and destroying are interpreted by increasing and decreasing the size of the layout components. This concept is corresponding with Lynn's forces of attraction and repulsion. One example of the interactive process between the exterior forces and the layout of the house is shown in Figure 8.

Up to now, we have discussed how the new western paradigm and the old eastern paradigm can be connected in the new technological era. Table 2 summarizes the issues raised in this section.
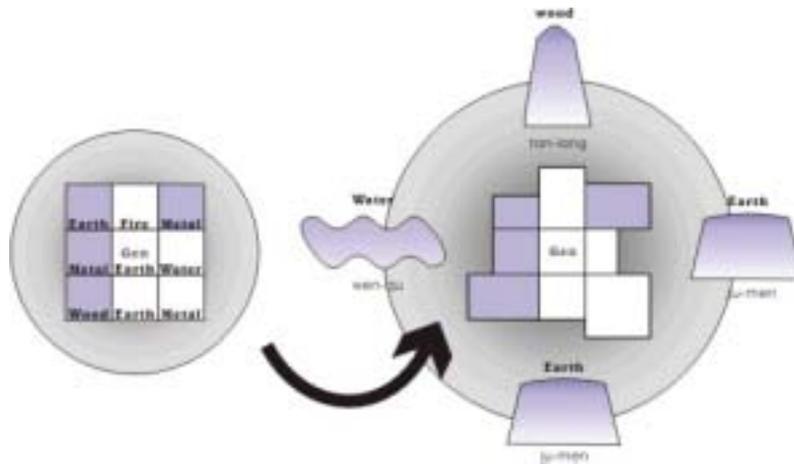
Figure 8. An example of the interactive process

TABLE 2. Summary of discussions about two paradigms

New western paradigm (Post-Modernism)	Old eastern paradigm (Feng-shui)
Context	Local culture (China & Korea)
Customized housing	Individual information
Deep structure	Meaning (social, culture, technological factors)
Prior conditions	Grammatical analysis (compositional, constructional)
Vector (parametric)	Visualized Five-elements knowledge
Attraction and Repulsion	Producing and Destroying

4. Platform for a Prototype Implementation

Our system is divided into three parts, which are the knowledge base module, inference engine, and conventional CAD software module as the graphical user interface (GUI). Figure 9 shows the architecture of our system. We describe below the components of our system in detail.

The system contains CLIPS, an inference engine for building expert systems, in order to deal with the functional and Feng-shui constraints. All rules are stored in CLIPS to generate the alternative results that will be shown in AutoCAD as the conventional CAD software. We customize AutoCAD to connect with other two modules and to provide an efficient mechanism to communicate between a user and the system. Prototype development uses an Object-Oriented Software Engineering (OOSE) methodology using UML, which develops use cases describing the functionalities, designs a GUI of the prototype, and generates the source

code. This methodology governs all software development process that includes the analysis, design, implementation, and test phases.
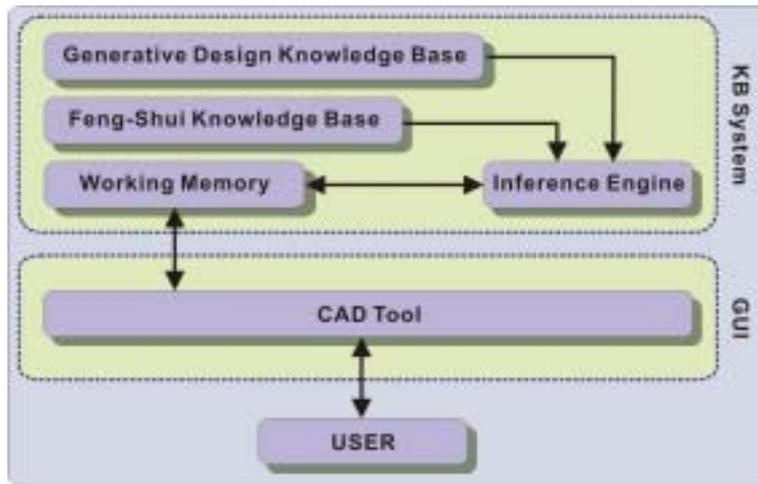

Figure 9. System architecture

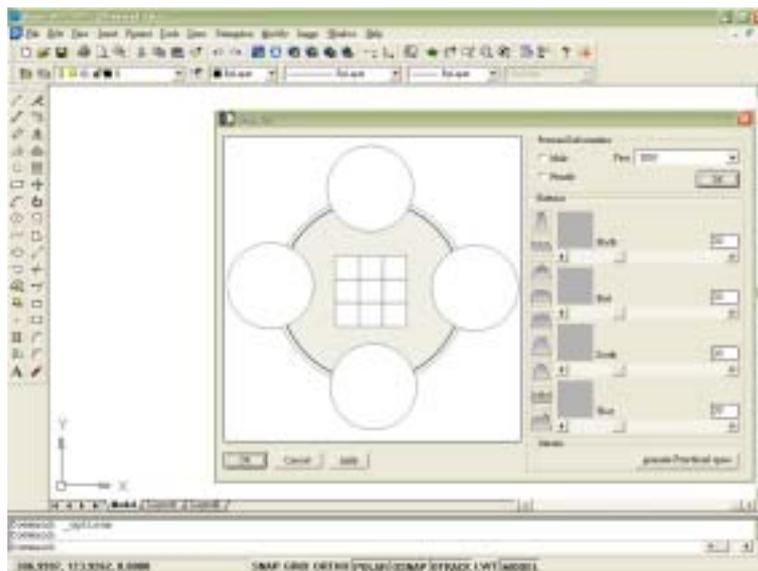From Figure 10 to Figure 12 is the consecutive process of our first prototype and shows how to work.

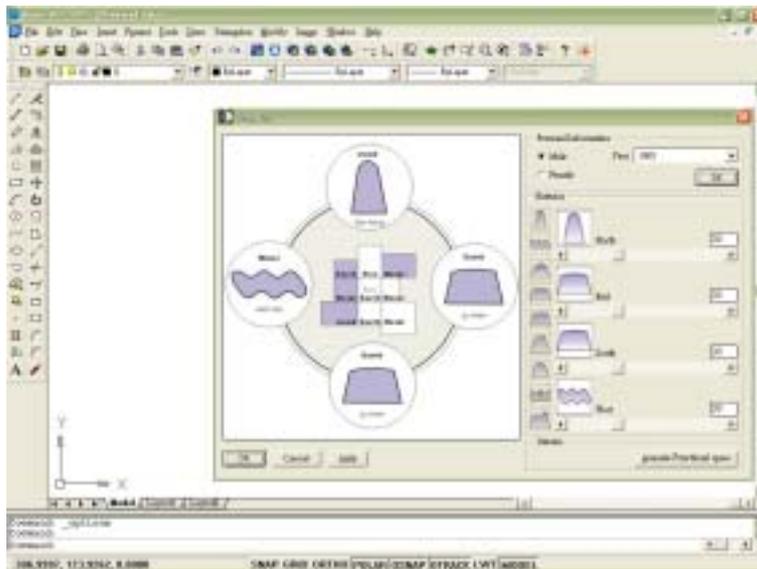*Figure 10. Initial window of Feng-shui system*

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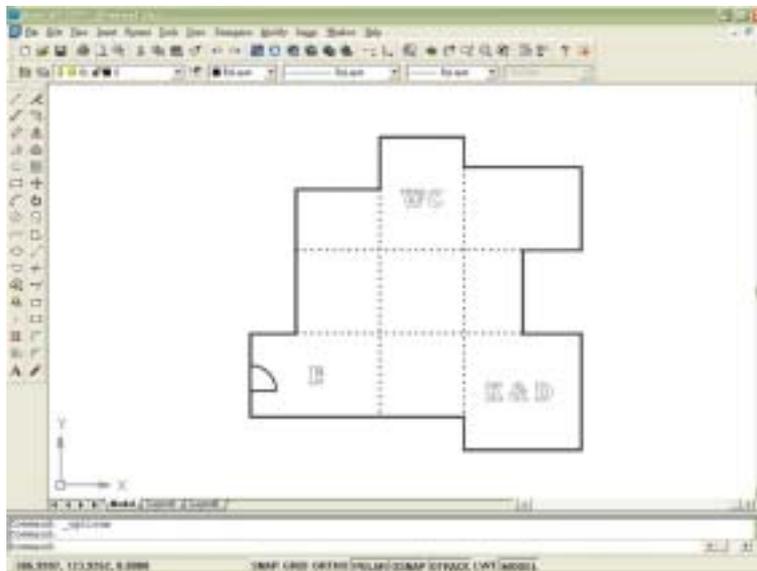*Figure 11. The exterior environment for the layout*

Figure 12. The final layout shown in AutoCAD

5. Conclusion

This paper presents a new approach for reinterpreting Feng-shui with postmodernism and extensibility for architecture CAD software. Through the individual information and environment forces manipulated by Feng-shui, our system can provide various combinations of floor plans. The idea still needs development, since Feng-shui has a lot of parts remaining unexplored.

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