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# Adaptation Of Fengshui Based On Windflow On Shop Houses In Medan City Indonesia

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## ABSTRACT

Fengshui is the science of architecture that evolved as an adaptation of building design to climatic and geographical conditions by the Chinese. Based on the formulation of the principle of windflow, the science of Fengshui has set several rules that regulate the position, direction and elements in architecture, so as to create harmony between the building and its environment. This study aims to identify the application of Fengshui as a form of adaptation of windflow to climatic conditions, by taking a shop house in Medan as the object of study. The principles of wind flow that moves from high pressure to low pressure was adapted to the geography and climate of Indonesia, as the basic formulation of Fengshui applications. From the study of the adaptation of Fengshui based on wind flow principles in the shop house, it can be concluded that Fengshui basically utilize the properties of air movement in an attempt to speed up, slow down, drive or divert air into the building. In architecture, the pressure difference caused by the position of the land, windows, doors and the relationship between the interior spaces was utilized to create optimal flow of ventilation.

**Keywords:** *Fengshui, Windflow, Climate, Shop House*

## 1. INTRODUCTION

*Fengshui* is a science that assists us in living in harmony with the land that we occupy by obtaining as many benefits as possible from the sources of energies provided by the land to achieve harmony and prosperity (Skinner, 1997: 19). The science of *Fengshui* is founded upon the science of Geomancy, in which the Chinese, as an agricultural nation, attempted to coordinate the arrangement of their land with the activities of nature, including the changes in seasons. The system of *Fengshui* has a strong connection to the philosophy Daoism originating from China but is universal in its practical applications.

The term Fengshui consists of two words 'feng' and 'shui,' meaning wind and water respectively. *Feng* connotes the flow of wind energy that passes above the head and water connotes the water energy on earth that flows beneath. This term evolved from the Chinese belief that wind and water are two of the most powerful forces of nature. The two elements are independent in nature and possess different characteristics that represent the dualism of *Yinyang*. Wind that is active in nature represents the positive *yang* while water that is more passive represents that negative *yin*. (Dian: 2005, 2011). The movement of wind and water energies is termed as *qi* and *qi* is believed to be present in every part of the earth including the human body, mountains, rivers, the sky and even the soil. (Mariana, 2008, Dian, 2012, Skinner, 1997). The Chinese believe that *qi* brings good fortune and that it originates from the peak of a mountain that flows to the valley, cities and villages.

The concept of wind and water evolved from the desires of the Chinese agrarian society who depended on rain (water) and weather (wind). The unstable and unpredictable climatic conditions have been transformed into the *Fengshui* metaphor so that the Chinese people could obtain a visual perception in making architectural decisions. Mariana (2012) elaborated the

actualization of the basic idea of *Fengshui* in an articulation of a cosmological concept through the ideal scheme of the four sky creatures known as *Cang Feng Ju Qi*. This scheme was made based on the geographical conditions of China that are different in one part from another, in which the initial process of analyzing *Fengshui* is to determine the caught wind quality. The appropriate wind quality is believed to bring positive effects and good fortune, whereas lack or excess of wind would bring misfortune.

Purwanto (2012) explained that until today, *Fengshui* has been applied holistically in the dwellings of the Chinese people in Indonesia. The *Fengshui* that developed as an adaptation to the climatic conditions of China has been filtered to obtain its universal values and was developed further according to the climatic conditions of Indonesia that consisted of two seasons. This research is a qualitative study that aims to describe the application of *Fengshui* based on the principles of wind flow as a form of adaptation of the Chinese *Fengshui* to the climate of Indonesia, specifically in Medan. Unlike other Indonesia cities, the shop houses in Medan are still mainly used as a living as well as business space until today. Some shop houses in strategic business locations has been taken as research objects, such as those located in the streets Jalan Sutomo, Jalan MH.Thamrin, Jalan Asia and Jalan Madong Lubis. All these objects are located in the main urban street of Medan city, and in a shopping complex with a rectangular layout plan spreading to the back of their buildings. These shop houses are one of the distinctive features of the Chinatown that continues to develop till today.

By determining the minimum occupancy time as ten years, it could be deduced that these buildings were built between the 1980s and 1990s. This criterion has been maintained to differentiate the research object from the traditional shop houses built during the Colonial period. From the age of the buildings that are relatively similar, the buildings could be

grouped according to their physical characters particularly in terms of form and ventilation system. The analysis of the wind flow was conducted by studying the cosmological concept of *Fengshui* towards the description of the wind character, landform as well as the architectural and interior elements of the shop houses.

## 2. RESULTS AND DISCUSSION

### The Adaptation of the Chinese *Fengshui* to the Climate of Indonesia

*Fengshui* evolved as a result of the Chinese people’s resistance to climatic conditions. The movement of the wind became the reference in making architectural decisions both in the macro

as well as the micro scale. Pratiwo (2010) explained this condition as a cosmological guidance that is applied through the practice of *Fengshui*. The south is the direction of the South China Sea that gives warmth and has been associated with summer, fire and the red phoenix. The wide Pacific Ocean on the east has been associated with the wood season, dragon and the coming of life. The vast and unfriendly Gobi Desert in the North has been associated with winter, water and the turtle. Finally, the Himalaya Mountains in the west have been associated with autumn season, metal and the white tiger. From this cosmology evolved the concept of land arrangement known as “leaning on the mountain and looking to the sea,” in which the most ideal condition according to Fengshui is the location where a building has its back towards the mountain while facing to the river or sea (Skinner, 1997; Mariana, 2010; Dian, 2010; Pratiwo, 2010).

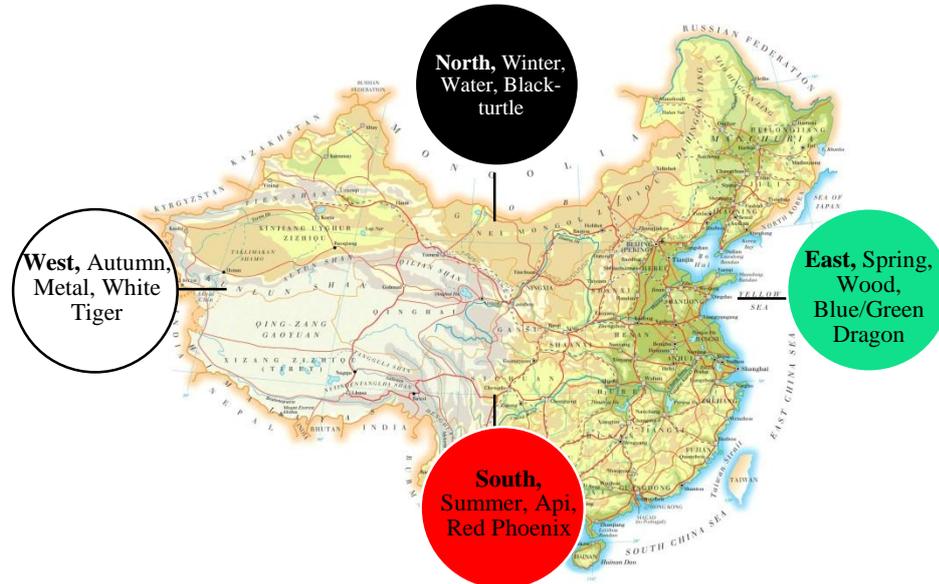


Figure 1. Geographical Condition of China and its Influence on Climate

This principle is a result formulated from *Fengshui* that is focused on the adaptation of the geographical conditions of China that cannot be applied in other countries including Indonesia. The geographical condition of Indonesia, a country of islands and enclosed between the Indian and Pacific Oceans is very different from China’s geographical condition. On the north and east are parts of the Asian continent and the Pacific Ocean. On the south and west are the Pacific Ocean and the Australian continent. The position of the continents of Asia and Australia enclosing Indonesia in between influences the climatic changes in Indonesia. The western monsoon winds move from Asia to Australia bringing a lot of evaporated water resulting in rainy seasons in Indonesia. On the other hand, during the dry season, the hot eastern monsoon winds from Australia flow toward Asia causing the hot season.

With the different climatic and geographical conditions, the rules of orientation in *Fengshui* cannot be applied in Indonesia, particularly in Medan. However, the principle of “leaning against the mountain and looking towards the sea” is a result deduced from the adaptation of wind flow. Lechner (2007) explained that the differences in air pressure and temperature causes air movements. This principle can also be the basis of why mountain winds and valley or sea winds occur. Viewing from the geographical conditions of Medan city in terms of landform, we can analyze the movement pattern of the local winds that occur. To the west of Medan city, there is the

Bandahara Mountain and to the east and south there is the Malacca coast. To the south lies the Danau Toba Mountain and to the north there is the Malacca strait. Analyzing this condition through the concept of *Fengshui*, the mountains in the southwest of Medan can be considered the mass to lean on or the position of the Black Turtle, whereas the Malacca peninsula waters on the northeast could be considered as the position of the Red Phoenix.

According to the character of the wind the flows from areas of high to low pressures, this condition permits wind flows from Bandahara Mountain to the waters of the Malacca peninsula. With this pattern of wind movement from high to low pressures, the potential direction of the local Medan wind would flow from southwest to the northeast, and the reverse also applies. The local winds that occur, when judging from the geographical conditions of Medan, are sea winds, onshore wind, mountain winds and valley winds. During the day, the air from the Malacca strait that is colder than the air on the land results in the flow of air from the sea to the land, known as the sea winds. The Bandahara Mountain on the southwest of Medan city also triggers the wind movements from the valleys to the mountain slopes. In Sumatera, the land winds that flows during the day is known as *Sumatraantjes*. At night, cold air moves from the land exchanging with the air above the sea thus forming wind flows from the land to the Malacca waters known as onshore wind. The land or valleys would in turn

release hot energy and the Bandahara peaks that have cooled down would move the air to the valleys causing mountain winds.

The southeast and northwest positions where the White Tiger and Green Dragon are considered located respectively consist of stretches of mountains that surround the city of Medan. With this condition, the most potential wind movement is from the Malacca strait to the Bandahara Mountains and vice versa. Thus, it can be concluded that the analysis of the movement of local winds according to landform in Medan city shows that the most potential direction is the from the sea to the wind which then moves up to the mountains and this occurs during the morning and noon. Meanwhile, in the evening and night times, the wind would move from the Bandahara Mountain to the valleys and lands towards the Malacca waters (figure 2).

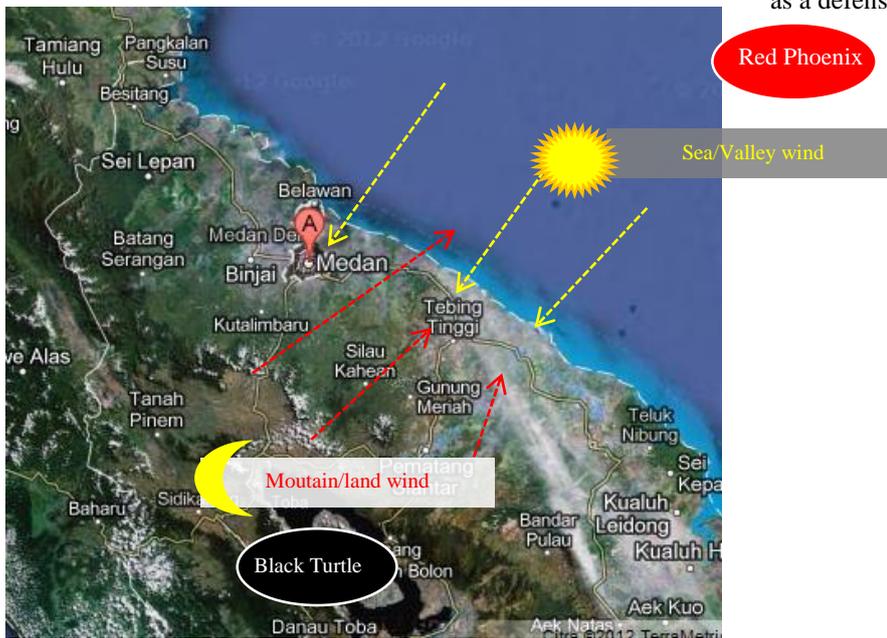


Figure 2. Analysis of Wind flow in Medan City

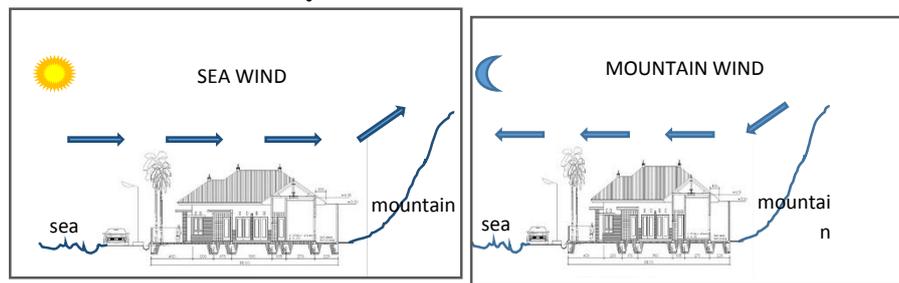


Figure 3. Mountain Wind or Land Wind pattern during the Day and Night

Besides the position of the landform, the position of the object building to the surrounding buildings also influences the wind that enters into the building. The conceptual position of “leaning against the mountain and looking to the sea” can also be used in the analysis of the land position. Lower buildings on the front and taller buildings at the back would assist in creating air movements. The presence of a building or other large objects around the object building would reduce the rate of air movement and veer its direction. Hence, in dense shopping complexes such as those in Medan city, the design of windows and other building details ought to help in returning the direction and speed of wind. In the row of densely packed shop houses, the wind is not able to flow from the angle of 90° (frontal and perpendicular to the window), because it will need a rate of at least 6 times the height of the obstacle that it passes

### Wind Flow towards the Fengshui of the Land Position

Studying from the landform position of Medan city, the most appropriate position of “leaning against the mountain and looking towards the sea” according to the concept of Fengshui is the position facing towards the northeast. The position of the mountain at the back and the sea on the front of the building results in the movement of wind from the sea to the land and the land to the mountain in the day passing through the front of the buildings. During the day time when there is human activity, maximum air movement is needed passing through the front of the building. On the other hand, during the night time, the cold wind from the mountain to the land and land to the sea ought to be hindered by placing the back of the building as a defense shield.

through in order to return to its original direction. With the position of the front of the shop houses that are averagely the same, possibility of the strong wind entering from the front would be difficult to achieve. At certain conditions such as the location of a cemetery that is considered a negative area in Fengshui, when analyzed through the principle of wind flow in buildings. Vast and sloping lands in front of the building influence the speed of wind flow. On the other hand, high buildings on the front hamper wind flow.



**Figure 4. The density of buildings in Jalan Sutomo Ujung Medan**

From the analysis of the building position on the right and left of the shop house, its position between one another forms a density of buildings that creates a corridor and directs the wind flow. The dominant condition of the shop house in Medan has a potential of directing the wind to move along the corridor of the shops.

The shape of the land in *Fengshui* influences the flow of *qi* energy in the building. Dian explained that square lands bring positive influence as the composition between the length and depth of the building is equal. This balances the front area as the receiving point of *qi* and distributes it into the building. Square or rectangular plans with a ratio of 1:2 or 1:2.5 between length and depth are considered capable of delivering positive energy well in architecture (Dian, 2011). However, the proportion of the land area with the length and depth of 1:2 and 1:2.5 as suggested by *Fengshui* is not entirely correct when judged from the principle of wind flow. Lechner (2007) and Mediastika (2002) explained that the optimum wind flow in a building is not only influenced by the proportion of the land area but also by the dimension and position of the inlet and outlet openings. In the research objects analyzed, most of them have the appropriate proportion between their length and depth. When analyzed through the principle of wind flow, the proportion of the land area does not guarantee the formation of maximum wind flow from the front to the back of the building. In reality, majority of the shop houses consisted of two room layers. Mediastika also explained that the layer in one building can block or reduce the intensity of wind flow inside the building. The second problem faces is that almost all the room layers in the research objects use artificial ventilation or the air conditioner (AC). This type of ventilation forces the buildings to be enclosed thus blocking wind flow from the front to the back of the building.

#### **Wind Flow towards the *Fengshui* of Doors and Windows**

Skinner (1997) mentioned that in traditional Chinese houses, the main entrance would be placed facing the south of the east. This condition is a result of adaptation to the geographical conditions of China that has been contained into its cosmological concept. The China Sea in the South and the Pacific Ocean in the east brings warmth and the position is

considered positive, bringing good fortune. Looking at the geographical condition of Medan, the northeast is considered the best position for the entrance of a building. In this position, the door functions as the access point of wind flow during the day. Meanwhile, in the night time, the cold mountain winds would be blocked by the back of the building.

The benefits of wind flow in the architecture of a building can be classified into three functions namely: health, comfort and cooling of space. (Manley, 2009; Kusoy, 2011). In the micro scale, the application of *Fengshui* is the formulation of the concept to let air pass through into the building. Windows and doors as access openings on the exteriors determine the quality of the movement of Earth energies inside the building. Skinner (1997) explained that just like the human body, a building requires openings like doors and windows to inhale the flow of *qi*. These openings have to be circulated to provide opportunity for the building to breathe normally. However, they must also be strictly guarded to avoid negative effects caused by the building or the arrangement of passages surrounding it. The function of building coolers is also a form of application of *Fengshui* rules to allow air flow inside the building in order to provide comfort and good health both physically and psychologically.

From the analysis conducted on the reach object, the main entrance of the shop house is directly connected with shop area on the first floor. According to *Fengshui* principles, this passage ought to be opened as wide as possible towards the direction of where positive energy flows. On the other hand, the direction of the building that faces negative elements such as cemeteries, the main door ought to be guarded strictly by keeping it shut. Viewing from the pattern of wind flow, the main door of the shop house plays an important role in managing the air flow, particularly on the first floor. Main doors that are wide opened without any partition expand the circulation of air in the room. Sloping grounds such as cemeteries cause the quantity of caught wind passing through the front of the building to be too large. However, this fact does not always happen because the air flow only occurs when the shop is open. On the other hand, when the shop is closed, the air flow inside the room is halted. On some shops having artificial ventilation systems, the main door has been closed such that there would not be any air flowing from the outside.



Figure 5. The form of doors and windows on the main façade of the shop houses

Besides the doors, windows are also access points that ought to be considered after doors according to *Fengshui* rules as they influence the passage of positive energy in the building. In good land locations, *Fengshui* sets openings as wide as possible to maximize wind flow or *qi* into the building. According to the concept of passive ventilation of buildings, the character of the windows truly influences air flow in the

building. Their type, dimensions and positions determine the quality of wind flow circulating in the building (Lechner:2007, Mediastika:2002, Kindangen:2005). Majority of the shop houses use artificial ventilation system, while using windows for the circulation of natural ventilation. In the shop house having artificial ventilation system, the window only functions as access elements for natural light and cross ventilation.



Figure 6. Windows as access elements of natural light

In the shop house that uses artificial ventilation systems, the condition of the windows that are located on the front and back of the building creates cross ventilation and maximum air flow from the front to the back of the building. Through observation of some of the research objects, hinged and *jalousie* windows were dominantly used. Lechner (2007) explained that thrust windows can allow 90% of air flow into the building while *jalousie* windows veer vertical air flows and deflect the wind the enters to pass above the head of the occupant. This type of window also deflects the rain water from entering the building. The use of thrust windows and *jalousie* windows assists in allowing maximum passage and circulation of air inside the building without significantly reducing the quality and quantity of wind flow. In tropical buildings such as the shop houses in Medan, the use of these windows help in maximizing air flow inside the building as the cross ventilation system is considered the best type of ventilation system in tropical buildings.

inside the room because the connector doors are usually closed and thus cannot function maximally in delivering air flow.

Another problem faced by the use of natural ventilation system is the use of room layers inside the shop house. The dividers or partitions to separate one area from another are only connected by the door as the access point for goods, humans and air. The room layers of the shop houses often hamper the air circulation



Figure.7 Layout plan of the Second Floor of the Shop house and the position of back windows

In some of the shop houses, natural ventilation is only used in parts of the back room layer, particularly the kitchen. In this condition, the back windows function as inlet and outlet at the same time and become the access point of entrance and exit of air flow. This position is considered less favorable because with the inlet and outlet parallel to each other, the air flow would be confined only the back areas of the building.

Meanwhile, artificial ventilation is dominantly used in the front part of the room layers on the second and third floors. With the use of artificial ventilation system, the window no longer functions as the access point of air circulation. The large unframed windows that are dominantly used only function as access for natural lighting and help in expanding the scale of the room. The Air Conditioner (AC) helps in drawing out hot air outside while delivering cold air that has been processed in its cooling machine inside. The use of this artificial ventilation system in the building has shifted from the original meaning and purpose of *Fengshui*, in which *Fengshui* has originally attempted to arrange and adapt the building to nature so as ensure the circulation of air inside the building.

In the interior design of the building, bathrooms, kitchens and bedrooms are important areas that should be arranged according to *Fengshui* principles. The bedroom is arranged so that the emphasis is on the position of doors and the direction of where the bed is facing. The bedroom door should not directly face towards the bathroom door and the kitchen area. The position of doors facing others causes direct flow of air from one room to another. These two areas are service areas that have the potential of creating negative air in the room. The moist from the bathroom would disturb the air quality in the kitchen as well as the bedroom.

Hot air and smoke are produced by the kitchen and these have the potential of polluting air that travels to other rooms. With the nature of air travelling from high to low pressures, the position of doors facing each other would also cause the flow of hot air from the kitchen to other cooler areas. The position of the bed as a resting facility should also be arranged to avoid facing directly towards the openings and the direction of passages. If placed that way, the bed would be in the position

where the wind is passing and this is considered negative and unhealthy for the occupant.

### 3. CONCLUSION

- The position of “leaning against the mountain and looking towards the sea” is a concept formulated in *Fengshui* to create wind flow. The impact of the difference in air pressure resulted is caused by the positions of surroundings of the building that are utilized to create air flow into the architecture and interior space. *Fengshui* utilizes the nature of air movements in its effort to speed up, slow down, direct or deflect air flow into the building.
- The arrangement of the main entrance door and windows play an important role in controlling the passage the wind flow from the outside to the inside of the building. This arrangement, however, would not have function if the AC (Air Conditioner) is used as the main ventilation system.
- The position of doors in connecting areas in the interior space can create direct air flow and affect the air quality between one room to another.

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