FengShui – A Systematic Research of Vernacular Sustainable Development
In Ancient China and its Lessons for Future

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ABSTRACT
Creating and keeping balance is the basic and the most important principle of Chinese traditional philosophy. It provides the fundamental philosophical basis for Chinese FengShui in pursuing coexistence between human and nature. Influenced by the traditional philosophy, Chinese FengShui displays the concept of balance, harmony and order in the design of ancient living environment and development of traditional settlement with many detailed manifestations that embody representative sustainable character. This paper discusses the principle of sustainability in FengShui practice from philosophical, environmental, ecological, socio-cultural and economic perspectives. It further intends to reveal the inherent connection between FengShui, traditional Chinese culture and the vernacular sustainable development of the agricultural society in ancient China.

KEYWORDS
FengShui, Qi, balance, harmony, order, sustainable development

1. INTRODUCTION
One of the core principles of traditional Chinese culture is that of harmony between human and nature. Different philosophies all emphasise the wisdom of a balanced environment (Huang, 2001, Zhang 2006). Whether it is the Confucian idea of man and nature becoming one (Zhang, 2003), the Taoism view of the Tao reflecting nature (Zhang, 2007), or the Buddhist belief that all living things are equal (Zhang, 2001), Chinese philosophy is enriched with pure ecological balance wisdom that has helped Chinese culture and civilisation to survive for thousands of years. For example, criteria used in the ancient settlements site selection and social life modification in ancient China reflect FengShui principles and theory that is deeply rooted in Chinese culture. Pursuing harmony, balance and coexistence between human and nature, establishing a society with balance, harmony and order have through time become the fundamental principles of FengShui.

Over the recent decades, the research of FengShui mainly focuses on the value of FengShui theory and its application in urban planning, architectural and environmental design in ancient China (KeyYoon, 1989; Feng, 1991; Liu, 1984; Lu, 1990). However, few researches have connected Fengshui principle with sustainability, its importance to the sustainable development of ancient China and the lessons that we could learn for contemporary developments. In today's world, the core concept of sustainable development is defined as economic growth, environmental protection and social justice. Accordingly, this paper is set to discuss FengShui's characteristics of sustainability and summarises its historical value in ancient China from the environmental, ecological, socio-cultural, economic and historical perspectives.
2. FENGSHUI THEORY AND IDEAL FENGSHUI ENVIRONMENTAL MODEL

2.1 Basic Theory of FengShui
FengShui theory originated in later Qin Dynasty around 2,200 years ago, and its philosophy is mainly based on Taoism – one of the Chinese traditional religions. Its principle of balance and order, the concept of Qi, and the theory of Yin Yang and Five Elements were developed along with the FengShui practice. The concept of Qi is the core theory of FengShui, as well as the basis of Taoism and Chinese philosophy (Zhang, 2004). According to FengShui, Qi is an invisible and intangible substance that exists in the Universe as a form of energy. In Chinese, ‘feng’ literally means wind and ‘shui’ means water; water and wind being two mediums carrying and transferring Qi on the earth.

FengShui believes that the Universe, the world and everything on it is formed by the interaction of Yin Qi and Yang Qi – two opposite energies interdependent of each other. The movement of both Qi must be kept in a dynamically balanced state to facilitate the harmonious growth and development of everything in the Universe. Thus, the concept of Qi and the theory of Yin Yang have been closely associated with harmony and balance. In addition, FengShui creates the theory of Five Elements, believing that the planet is consisted of water, wood, fire, soil and metal. The interrelation, circulation, generative principles and orders of Five Elements suggest the interdependent and opposite relationship of all things in the world. Combined with Qi and Yin Yang, it further adds to the concept of transformation and circulation of substance and energy in FengShui theory.

Furthermore, FengShui innovatively creates the connection between human, earth and the Universe. It is believed that human being is a type of Qi filled with subtle energy; natural environment comes into being through the movement of Qi and is the manifestation of all kinds of energies of the Universe. Thus, pursuing the perfect combination of both Qi of human being and the Universe is the most fundamental and important principle of FengShui; or in other worlds, the essence of FengShui principle is to pursue balance, harmony and coexistence in the interaction between human and nature.

2.2 Ideal FengShui Environmental Model
The fundamental principle of Qi is that: the accumulation and concentration of Qi can bring positive benefits to FengShui settlement and local inhabitant in ancient China. This was achieved by controlling the movement of Qi through careful selection of site, and consideration of water, prevailing wind and surrounding landscape such as trees and hills in order to receive good Qi. In relation to this, the central objectives of FengShui practice are to search for an ideal living environment by investigating landscape configuration and quality to judge Qi’s accumulation, condition and formation. Furthermore, remedying the shortcomings of landscape improve the accumulation of good Qi, increasing the approaches of obtaining living Qi, preventing the disperse of Qi, and minimising the invasion of bad Qi.

Thus, ancient Chinese established an ideal FengShui environment model that helps people to find a suitable living space and achieve the accumulation of good Qi. Usually, a good FengShui settlement should be provided with six basic conditions (see Fig. 1): falling back upon Dragon (back mountains); embraced by multiple layers of surrounding hills; river or stream at front with lake or pond nearby; buildings facing southward orientation; having flourish forest and abundant natural resources in surrounding environment; and placing architectural symbols such as pagoda, bridge, pavilion and memorial gate in varied positions such as entrance and exit of village, entrance and exit of river and on the top of surrounding hills. In general, an ideal FengShui settlement can be described as an expansive land area that is embraced by mountain and hills, surrounded with exuberant plants and trees, with available plentiful of water resources, and with man-made architectural aspects added as regional symbols.

It is characterised with spatial enclosure, isolation and separation, which increases the difficulties in the flow of people, information, energy and natural resources in and out of a village (Yu, 1998). According to Kaplan (1989), it delivers privacy, security, defence and protection from the psychological viewpoint, providing good conditions for local residents to set up a stable living environment without worrying too much about negative outside influences. Also, an ideal FengShui
settlement has abundant natural resources that are essential for local production and economic development. Therefore, the design and development of ideal FengShui environment model forms the fundamental basis for this research into ancestral and present principles of sustainability in FengShui practice for contemporary developments.

![Diagram of FengShui environment model](image)

Figure 1.- Prototype of ideal FengShui environmental model

3. PRINCIPLES OF SUSTAINABILITY – ENVIRONMENTAL AND ECOLOGICAL CONTEXT

3.1 Fully respecting the inherent pattern of surrounding landscape and environment

The natural landscape located at the edge of a FengShui settlement is believed to be full of living Qi that is beneficial to local inhabitants. Through the connection and merge between mountains, water and forest, the living Qi supplies vital energy for the existence and promotion of a whole village both under the ground and on the surface of land. The flow of river, the accumulation of water (such as lake and pond) and the exuberance of FengShui forest all indicate the quality and condition of the living Qi. With the mountain to mountain, water to water and forest to forest, concealed local energy links with the national energy (Dragon Qi of royal family), interactive and complementary to each other, which enables local settlement to receive continuous living Qi from the heart of the nation. Therefore, keeping the environmental quality of local settlement and fully respecting the inherent pattern of surrounding landscape is not only a necessary approach to provide constant protection of Qi and ensure prosperity of the whole nation, but also a necessary condition to maintain the long existence of the whole community (see Fig. 2). In addition, turning wasteland to be cultivated land and planting trees and crops was an ancient method used by local inhabitants to keep the good condition of living environment in a FengShui settlement.

3.2 FengShui trees and biodiversity

Flourishing FengShui forests is one of the most potent landscape components regarded as a natural heritage in a FengShui settlement (Marafa, 2003). They act as a natural shelter around the edge of village, creating a physical barrier between inside and outside, possessing the function of protection and defence. FengShui believes that a well-arranged FengShui forests are able to supply purified
living Qi to the settlement. More importantly it is capable of deterring the invasion of bad Qi to prevent the related negative impacts. From the environmental and ecological perspective, FengShui forest is capable of preventing soil erosion, protecting water resources, improving local climate, providing fresh air, alleviating flood and drought, breaking unfavourable monsoons, and sheltering from direct sunshine (see Fig. 3). In addition, well organised FengShui forests are suppliers of local energy, and provide renewable natural resource for building and local development.

Due to the variation of local climate in such expansive country, China has a wide range of flora and fauna (Ming, 2006). Forests provide expansive green belts, which facilitate growth of different species of vegetations and the movement of animals. On the basis of the environmental protection and maintenance of Qi, the propagation of animals and plants guarantees the biodiversity in ancient China. With detailed rules established to regulate the behaviours in hunting, farming and disafforestation (Wang, 2001), ancient Chinese ensured the development of biodiversity with the purposely designed administrative policies.

![Figure 2.- FengShui settlement in natural valley surrounded by stream and mountain in Anhui province, east of China](image1)

![Figure 3.- FengShui trees in Changxin area of Zhejiang Province, east of China](image2)

3.3 Use of water resource

In FengShui, water is regarded as a substance that contains living Qi. Appropriate use of water in FengShui practice is to maximise the function and performance of Qi. Through the thoughtful arrangement in the design, accumulation and delivery of water flows, FengShui aims to not only bring living Qi to a settlement but also to the every corner of the village. The methods used in ancient China for provision water resources comprise of three aspects. Firstly, through planting FengShui trees at the edge of river and lake, the desire is to control the movement of water and protect water. Secondly, FengShui emphasises on collection, storage and delivery of water (see Fig. 4, 5, 6). Through the excavation of pond, water could be collected from the different sources such as rains, underground water and surrounding mountains' water. Through the storage of collected water, the impact of low water season could be minimised. Moreover, through the sophisticated designed water supply system (Thayer, 1989), both natural water and the collected water can be delivered to each house. Thirdly, recycling and reusing water resource is also highly addressed in Fengshui practice. Natural lake and man-made pond in FengShui settlement is suitable for water recycle (see Fig. 5). Each house also has at least one pond in the middle of courtyard (see Fig. 4), collecting rainwater for daily use; the grey water is drained into the man-made pond (see Fig. 7), which is recycled and used in agricultural irrigation and other interests of production.

Such criterion and methods assist in controlling impact of droughts and floods, facilitating the growth of crops, regulating local climate and improving local hydrological conditions. As water is closely associated with living Qi, the full use of water resource also brings positive psychological effects upon local inhabitants (Kaplan and Kaplan, 1989). In general, the creative use of water resources in FengShui practice encourages the ecological sustainable development and brings benefits in both physical/psychological and economical aspects.
3.4 Use of local resources for building and construction

According to FengShui theory, human being – as the embodiment of Qi must be harmonious with the Qi of dwelling and surrounding environment in order to achieve the coexistence with nature. In other words, a good environment that is suitable for living is the consequence of the balance and perfect combination between Qi of human and Qi of all types of substance and materials. For those who live in a FengShui settlement for long time, using local materials for building and construction becomes natural to accept (see Fig. 8). Mountains and hills provide stone; FengShui trees, being the renewable resource, provides a large amount of timber; local soil is the basic material for the production of brick and roof tile; the Chinese traditional adhesive material is a creative architectural production with three renewable materials, sticky rice, egg white and brown sugar, mixed in suitable proportion. The use of local natural materials minimizes the economic input, decreasing the energy consumption in the searching, purchasing and transportation of such materials outside village. It reduces the impact to the local environment, keeping the maintenance cost at a low level by taking advantage of local resources and cultural traditions.

3.5 Reuse of construction waste

Ancient Chinese settlements emphasised on the reuse of construction waste in FengShui practice to reduce the costs and the burden to the local environment, especially in the course of improving the
spatial layout of FengShui settlement. In a FengShui settlement, searching for an ‘ideal’ landscape, there often will be shortcomings. For example, hills are not high enough, the shape is not perfectly satisfied, or sometimes it needs a new artificial hill to increase the requirement of spatial enclosure. According to Wang (1992), local inhabitants often use local construction waste to reconstruct the spatial configuration and remedy the landscape shortcomings in line with FengShui principles (see Fig. 9). In addition, with the planted FengShui trees and vegetation on top of the artificially-created hills, FengShui merges the old with new in a perfect combination. The positive result of such alteration not only remedies the landscape shortcomings but also turns waste into a resource. By recycling and reusing material and waste generated onsite, it further minimises the impact on environment and costs, whilst providing benefits to local inhabitants.

3.6 Use of rudimental renewable resources
Energy provision is necessary for human existence and social development. Combustion of available local resources is the most direct and popular method to obtain thermal energy in a FengShui settlement. As forest and FengShui trees are the embodiment of living Qi, use of timber resource for burning has been almost abandoned in most ancient developments. Thus, the agricultural waste, such as straw and hay, and withered leaves and branches become the main natural resources for obtaining thermal energy in FengShui settlement. As they can be recycled and are easy to obtain, consumption can be easily supplemented by the agricultural activities later on. Thus, they are able to provide steady and continuous raw materials as a renewable source for heating and thermal gain. In addition, the generated plant ash provides good nourishment to farm land. It is favoured by local inhabitants, not only because it is free but also because it contains many micronutrients helpful to the growth of plants. The process of such kind of circulation is also in line with the FengShui principle of Five Elements – circulation of energy and material.

4. PRINCIPLES OF SUSTAINABILITY – SOCIO-CULTURAL CONTEXT
4.1 Family and clan-oriented village
Traditional FengShui settlement is formed based upon the family and clan-oriented culture. The interpersonal relationships of local inhabitants are firmly associated in kindred connections (Ma, 2006). In many Chinese villages, it is common situation that majority of local residents actually have same surname with the close blood relationship. Thus, a traditional FengShui settlement/village can be regarded as an independent local community with similar social and cultural background. The interpersonal relationship between local inhabitants is firm, close and solid, which in turn helps them to set up a good community. Village and homestead is the root of community, and the highly enclosed living environment reduces the frequency of the people in and out of a village. Therefore, it
enables to create a peaceful living environment, and maintain a well organised local community with stable constitution ranging from old to young and with balance in the numbers, age and sex. They are very important for the stability and growth of local population as well as sustainable development of the whole village.

4.2 Influence of balance and order
The principle of balance and order derived from traditional Taoism, Confucianism and Buddhism confirms the stable, harmonious and balanced relationship between individuals in a family and local community. It also establishes the basic moral principles and social behaviour rules for individuals to follow in the aspects of respect, love, care and kindness in the society. Caring for the young and respecting for the elder were the core principles of ancient Chinese philosophy and the fundamental characteristic of Chinese social culture. Any detrimental behaviour destroys the quality of FengShui settlement and damages the community, traditional culture and social balance. Severe punishments were therefore ordered by clan and family to the person who broke those rules.

Also, a highly enclosed and isolated FengShui site offers an encouragement for the development of a stable social environment; any outsiders or strangers were viewed with caution. A FengShui settlement with appropriate size, suitable location and ideal spatial layout is propitious to the recognition of local community and the development of social moral and cultural tradition (Yu, 1991). The whole settlement is claimed by a single clan as territory. Space of a settlement coincides to the size of clan and community; existence and growth of a community entirely rely on this limited space (Kaplan and Kaplan, 1982), enabling future generations to grow with a strong sense of family. It further strengthens people’s respect of natural environment, encouraging local inhabitants to follow the principle of FengShui to develop the community, thus establishing an intimate relationship between human, family, community and natural environment.

4.3 Qi circulation between living and dead
Following principles of circulation in traditional Chinese philosophy, FengShui believes that death is not the end but the beginning of a new life. People’s numerous descriptions of their pre-existence and the visions of their later age life demonstrate the great influence of this philosophy (Zhang, 2003). In accordance with this, FengShui believes that the dead ancestors are still alive in another world, guarding and looking after current family members. From the viewpoint of Qi, the energy released from the buried ancestor brings exceptional effects to the life quality of the living family. Thus, selecting an ideal site with good FengShui environment and landscape for family cemetery is not only a way of respect, but also indicates people’s expectation of health and prosperity of a whole family as well as the community in whole. It means that people attach even more importance to the environmental immaculacy of the ‘residential buildings’ for dead. The establishment, protection and maintenance of memorial halls ensures lucky, healthy and prosperous destiny for living generation.

4.4 Ancestral respect and worship of sanctity of FengShui
Owing to the coincidence of socio-cultural space and natural region of FengShui settlement, a friendly and intimate relationship between local inhabitants and natural environment has been established. It is important for local people to fully understand the function of the local ecological system and promote positive ecological consciousness (Gadgil, 1985). Each community member receives continuous edifications of ancestor’s legend in developing and protecting the village in order to raise people’s awareness of their roots and village history, leading to the ancestral respect and worship of sanctity of FengShui (see Fig. 10). As a result, each member regards him/herself as an important part of family; the central predisposition is to enable them to make contribution to the future development of the whole community.

In addition, a FengShui settlement is recognised as an heirloom of clan (Liu, 1998). It demands compulsory attitude and activities for individuals to preserve village and family belongings inherited from ancestor and pass to future generations with the original and improved quality, including cultural traditions, architectural heritage, natural resources, landscape and environment (see Fig. 11). Each member has the responsibility to preserve these values, and pass them onto the future generations. This actually leads to individuals being able to connect their personal benefits to the longer term benefits of the whole community. The awareness of village historical and cultural tradition further
confirms individual’s obligation and responsibility to family and community from social and moral perspectives. Protecting environment, promoting respect, care and love, and sustainable development thus becomes the self-conscious behaviour practised in every day life. The patriarchal social system acts as the supervisor, promoter and implementer of such activities.

4.5 Place for communication
Ancestral hall, memorial hall, temple and local arena are community places that offer meeting and interaction opportunities for local inhabitants in a traditional village (see Fig. 12). Bridge, pagoda and pavilion are the venues where people can gather together for daily communication and relaxation. Through encouraged spiritual communication, it provides an environment with less materialistic demands and thus further reduces the requirement on natural resources, especially in the highly materialised Chinese society nowadays.
5. PRINCIPLES OF SUSTAINABILITY – ECONOMIC CONTEXT

5.1 An autarkic production mode
For a long time, China was an agricultural country with endogenous characteristics in economic development (Cheng, 2005). Due to the spatial enclosure and separation of a FengShui settlement, the existence and development of a local economy highly relied on the energy and natural resources generated inside (Dasmann, 1985), featuring self-reliant and self-supporting economic pattern. Exploitation of natural resources is mainly based on the estimated amount that meets the basic living requirement without exceeding the nature’s capacity. Thus, it is necessary to understand that the purpose of local production and making use of natural resources in traditional FengShui settlement is merely based on daily consumption needs instead of material gains. Moreover, the self-reliant and endogenous economic pattern encourages the internal circulation and smooth running of material supply chain, further reducing the impacts of vulnerability of outside imposed economic mode that may not be suitable for a local production.

5.2 A prudent consumption mode
As mentioned above, the renewable capability of natural resources is crucial to local economic development. However, the supply of natural resources is not infinite. Once the balance between exploitation and renewal of natural resources is broken, the decreased production will compromise the quality of living, resulting in the potential collapse of local economic development and the continuity of the whole community. In response to that, resources are regarded scarce and defensible in an isolated enclosed FengShui settlement. The community as a whole makes efforts to protect natural resources through well organised and prudent consumption behaviour. Long-term stable social and natural environment, the increase and saturation of population, and less developed agricultural technology encourages the survival and development based completely upon perceivably scarce resources and their regeneration capability (Gadgil, 1985).

In addition, climate change and unexpected natural calamities caused by excessive use of resources are mostly local and limited to the FengShui settlement. They occur as a warning which gives the local community as a whole an opportunity to adjust its economic and consumer behaviour towards the environment, thus, acting as an external stimuli. It means that the prudence is necessary and local inhabitants must have enough raw materials, products and natural resources not only to use at present but also to store for future development and generations.

5.3 Strong self-resumable function
In traditional FengShui settlement, natural resources are protected and defensible. The impact of local calamities to economical production is partially but not fully destructive. With enough effort and preparation, the negative influence can be limited in a controlled manner. The long-term ecologically prudent behaviour, earlier stored materials and goods, and the endogenous economic pattern enable the partly destroyed economical production to be restored in a short time. The regular patterns of nature, such as seasonal rains, changes in the water flow and consistent snow in the winter determines the frequency of occurrence of natural calamities, thus guaranteeing people’s constant adjustment of economic and cultural behaviour in order to achieve sustainable development in a well-organised FengShui settlement. The clear division of community work and individual responsibility provide necessary labour resources and spiritual motivation for the resumption of local economy.

6. CONCLUSIONS
The practice of FengShui emphasises environmental protection, landscape defence and maintenance of good Qi quality of a settlement. The spatial configuration of a FengShui settlement is fundamentally influenced by FengShui principles, and is the crucial factor for the sustainable development of local community as well as the whole of agricultural society in ancient China. The principles of sustainability in FengShui practice are presented in three contexts. From the environmental and ecological perspective, FengShui emphasises the appropriate exploitation of natural resources, sensitive use of renewable energy, recycling and reuse of materials, and consistent protection of natural environment. From the socio-cultural perspective, FengShui principle of harmony, balance and order regulates inhabitants’ behaviour in terms of respect, care and share in
dealing with interpersonal relationships within local community. Through the establishment of a well-organised micro-social system, FengShui confirms the group and individual responsibilities in the development of local community. From the economic and historical perspective, the spatial enclosure and isolation encourages ecological prudence and frugal behaviours so that the balance is achieved between material production, goods consumption and exploitation of renewable resources.

Therefore, it can be concluded that FengShui theory, principles, its practice and influence was the driving power for the vernacular sustainable development of ancient Chinese society. FengShui concept of searching for an 'ideal' living environment with the balance between human and nature is also a systematic approach to the realisation of pure sustainable development in traditional Chinese society. Furthermore, the interpretations of sustainability in FengShui are based on the balance between social, cultural, environmental, ecological, economic and philosophical aspects, which are also the fundamental and the most important factors for contemporary sustainable development. Nowadays, China's environmental crisis has arisen, partly because of the discontinuity and destruction of cultural traditions. FengShui principles and theory could be used as a means of preventing looming environmental crisis and building a more harmonious society, helping us to recall the core principle of Chinese moral and cultural traditions, and thus becoming theoretical and practical foundation in achieving sustainable development in contemporary China.

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