A Holistic Approach for Evaluating Sustainable Development: Exploring Indigenous Approaches in China

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Abstract

Traditional reductionist methods of analysis, which breakdown and isolate the component parts will bring the risk of fragmented decision making with potential unforeseen consequences. Systemic, holistic and hierarchical assessment of sustainability is therefore needed. This paper shows that there are two kinds of sustainability evaluation frameworks which are identified: one is in nominal loops. The other is in linear, ordinal categories, without loop. Each category has its strength and weakness because of their intrinsic characteristics. There is also systemic approach in eastern way of thinking that could combine the strength of both sides: Chinese indigenous knowledge to view the environment is keeping the balance of waxing and waning between sub-systems in the cycle of the universe. Discussion on the overlapping worldviews could provide better understanding on systems theory to be applied on sustainability evaluation methods based on the indigenous approaches of China. The framework developed in this research will inherit the character of “ordinal loops” of Chinese traditional diagrams. The conceptual process utilizes the eastern thinking model into the organisation of sustainable development evaluation framework, which can be adopted by policy-makers, designers, and stakeholders in Asia-Pacific.

Keywords: Sustainable development evaluation; typology; holistic framework; indigenous knowledge
1 Introduction

Sustainable development can be described as a journey toward the goal of sustainability. Agenda 21, the milestone of sustainability recognised the integrated concerns in decision making of environment and development. A complex system to manage ourselves, individually and collectively is required. Traditional reductionist methods of analysis which breakdown and isolate the component parts will bring the risk of fragmented decision making with potential unforeseen consequences. Systemic, holistic and hierarchical assessment of sustainability is needed. This could be found in both the modern integral environment system and Chinese indigenous knowledge. Despite the similar psychological and social roots, the two diagrams of each human-nature interface are inherently different, where the western one is simplified, linear and bipolar in terms of space and time, the eastern approach represents a circular movement with periodical recurrence in a tri-polar frame.

Entering the 21st century and distancing itself from its early planned economy there are now new economic and social imperatives in China. However, in the last twenty years Chinese cities have confronted serious problems of balancing fast, intensive economic and urban development while attempting to achieve sustainability (Xiong 2005). Meanwhile, many of the urban theories and sustainability evaluation methods applied to Chinese cities have been appropriated from western models of urban development. Since the concept of sustainability is value-based, and values can vary over time and between cultures (PCE 2002). The sustainable development evaluation needs to be tailored-to-fit the environmental, social and economic conditions in an individual region (Roberts, 2006b).

There has recently been a movement toward indigenous approaches to sustainability supported by local knowledge (George and Dei 1995; Phillips O. and Titilola O. 1995; Bank 1997; Berkes 1999; Appleton, Fernandez et al. 2005). This has provided motivation for this research to find best practices in sustainable urban development and evaluation methodologies that are based on indigenous philosophies and thinking and the urban practice in Chinese cities.

2 Aim and methodology

This paper aims to explore the sustainable development evaluation trends and types and provides insights into the theories which could underpin the sustainability evaluation framework for Chinese cities and Asia-pacific regions. The approach of this paper has been to review international sustainability evaluation frameworks that are widely adopted and Chinese indigenous knowledge to conceptualize theory by logical argumentation. They are integrated into the framework for the organisation of city data, indicator system, theories and guidelines for sustainable urban developments.
3 Structure based categories of sustainable development evaluation framework

In order to compare the western and eastern sustainable development framework, Markovie (2006) refers to the integral environment system in the western one which represents a simplification of linear and bipolar structure in terms of space and time (Markovie, 2006). This drives the research to look into the differences between the eastern and western thinking models.

In the review of the sustainable development evaluation framework based on the philosophical structure, the following categories are identified: Circular and spectra categories, holorchy which is often associated with the integral theories, and other novice forms, such as PRISM and pyramid (Figure 1). Table 1 Summarize the aims and limits of the theories.

![Figure 1: Identified categories of sustainable development evaluation framework](image)

Circular categories include the complementary relationships and feedback loop. The later models, take Pressure -State-Response model (PSR) for instance, allow for a better inclusion of non-environmental variables. But there are problems of compatibility when the model components are simple, and actual situations are more complex. The former models assume that parts could be substituted for each other, and that improvement in one area would compensate for degradation in another (PCE, 2002), such as Weak Sustainability’ Model and the Philips' Physical – Functional – Institutional – Cultural model. The limits of the complementary relationships include the failure for acknowledging the ecological constraints that humans, other species, markets, policies and developments must operate within, and the inclination to put the main priority at the health of the economy (Humphrey et al, 2002). It has been pointed out that sustainable development based on the pursuit of economic efficiency and ecological pragmatism only slows down ecological and social degradation rather than reverses it (Knight 2000). Philips (2003) discovers the potential of the four constituent parts to be a holistic model by describing them as integrated and interconnected, holding and pulling each other into a state of balance. However the difficulty to identify the rules under the management of indicators and their quantifiability constrains its full potential.
Table I: Summary of the aims and limits of the theories

<table>
<thead>
<tr>
<th>Tri-modalities of Circular Categories</th>
<th>Quadra-modalities of Circular Categories</th>
<th>Pentagonal Modal (Nijkamp, 1995)</th>
<th>Quantifiable City Model (May 1997)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak Sustainability Model (PCE, 2003)</td>
<td>PICABUE (I Cooper, 1997)</td>
<td>Physical – Functional – Institutional – Cultural</td>
<td>It aims to identify critical success factors influencing the introduction of renewable energy technologies.</td>
</tr>
<tr>
<td>Assumes that environment and society are competing stakeholders, but environmental and social problems can always be solved if the economy is sound (Lowe, 1998). This model assumes that parts of the economy should be substituted for each other, and that environmental problems can always be solved if the economy is sound. This means that this model has the potential to make decisions that are meaningful in practice. The PSR model is suitable for practical purposes at most cases.</td>
<td>It is difficult to identify the roles under the management of indicators and the quantifiability.</td>
<td>It is to aid policy development and test for research ideas in the city of Leeds (UK).</td>
<td></td>
</tr>
<tr>
<td>There are problems of compatibility between the economy and the environment, which can be translated into knowledge about the economy and the environment, as well as their mutual interactions.</td>
<td>As the early stage of BEQUEST</td>
<td>It’s limited in the assessment of urban policy interventions</td>
<td>The “urban metabolism” and “quality of life” are all part of the sustainable development of the city.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hierarchical Relationship</th>
<th>PRISM and Pyramidal</th>
<th>Integral Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Sustainability Model (PCE, 2003)</td>
<td>3-Q Model</td>
<td>Lovelock’s Gaia theory</td>
</tr>
<tr>
<td>Strong sustainability requires ecological thinking to be integrated into all social and economic planning (Lowe, 1998). It recognizes that economy is a product of human society, and that economic and social systems are interdependent within the capacity of the natural system (PCE, 2002).</td>
<td>The 3-Q Model: Quality integration for Urban Sustainability. The 3-Q Model appeared in the BEQUEST workshop.</td>
<td>Physiosphere-diosphere-Phystiosphere-Physiotouchsphere (Wibber 2000b). Human culture must define the rules of the biosphere and the environment. This is not possible when the biosphere is not understood.</td>
</tr>
<tr>
<td>Without the relationships and dependencies the “Strong Sustainability” model becomes meaningless. It is not clear as to what the economy is about, with ecological considerations being less important and peripheral.</td>
<td>The 3-Q Model: Quality integration for Urban Sustainability. The 3-Q Model appeared in the BEQUEST workshop.</td>
<td>Wilber’s integral map of reality (Wilber 2000c)</td>
</tr>
<tr>
<td>Quality of life is dependent on the other factors. It is a measure of the economy, not on the environment. It is a measure of the economy, not on the environment. It is a measure of the economy, not on the environment.</td>
<td>The PRISM is not fully developed yet. The four corners of the pyramid can be evaluated, especially on their gradual meanings.</td>
<td>It recognizes four different categories of methods for understanding or constructing reality: objective (or systemic), subjective (or psychological) and intersubjective (or cultural) methods in the giving the four (Khaled, 2005).</td>
</tr>
<tr>
<td>The term “capital” which is commonly refers to money and material goods. As the Wilber’s integral map of reality, this theory perceives human mental world to beyond everything including the environment. A typical ideology of materialism.</td>
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<td>Wilber’s integral theory is only interested in the human mental world. There are still problems not solved for its adaptation to the sustainable development.</td>
</tr>
</tbody>
</table>

Philips defines sustainable development as a place where, through natural or man-made attributes, is able to grow in a sustainable way. Functional, culturally and institutionally that growing and nurturing life-generating forces for man. The four constituent parts are integrated and interdependent, holding and pulling each other into a state of balance that is part of the holistic nature of sustainable development.

Humphrey et al. (2002). Besides, the main priority in this model is the health of the economy, which has been pointed out that sustainable development based on the pursuit of economic efficiency and ecological pragmatism only slows down ecological and social degradation rather than reverses it (Knight 2000).

Table I: Summary of the aims and limits of the theories
There has been a trend to enrich the components of the circular models from eastern knowledge. The PRISM includes an institutional dimension with the moral imperative of sustainability emphasised (PRISM and Knight, 2000). UN Habitat II (1996) also accepts a hex-modalities structure to include ethical and spiritual dimension, which is much treasured by the eastern philosophies, especially in the Confucianism which stresses the humanity's relationship and moral. In the absence of the moral dimension, which is one of the principles of confucianism, will make the sustainable development incomplete.

A ‘holarchy’ is a hierarchy of holons in which each ‘higher’ level in the hierarchy transcends and includes the previous levels (Riedy, 2003). Holarchical models like strong sustainability requires ecological thinking to be integrated into all social and economic plan (Lowe, 1998). It recognizes that economy is a subset of human society, and they are constrained within the capacity of the natural system (PCE, 2002) (Lilley, 2006). But without the relationships and dependencies the ‘Strong Sustainability’ model represents, it can be misinterpreted as showing the economy at the centre of decision making, with ecological considerations being less important and peripheral. According to the diagram of Dooyeweerd’s framework, each modality affects and informs those above. The second, the greater the distance between the ordered modalities the less influence they have on each other. And the third feature is that the modalities are nested within each other thus providing continuity. This theory is contributing for revealing the complexity of an urban environment as a system and its multi-dimensional meaning (Lombardi, 2001).

Holarchical Relationship is especially preferred by the integral theorists. Wilber’s map of reality integrates the different ways of knowing that humans have discovered or developed over the course of human history (Wilber 2000a, 2000b, 2000c, 2001). He seeks to include objective and subjective knowledge, individual and collective knowledge, scientific and spiritual knowledge and Eastern and Western knowledge within a coherent framework that finds room for all (Figure 2). Integral theory recognises four different categories of methods for understanding or constructing reality: objective, inter-objective, subjective and inter-subjective methods in the giving the four (Riedy, 2005). As the Wilber’s integral map of reality, this theory perceives human mental world to beyond...
everything including the environment. As a typical ideology of mentalist, Wilber’s integral theory is only interested in the human mental world. There are still problems not solved for its adaptation to the sustainable development.

4 The spectrum of sustainability

Spectra categories represent the linear, ordinal categories, no loop. As to the two extremes of the linear sustainability, there are various opposing views available (Table 2).

Table 2: The spectrum of views on sustainability (Brandon & Lombardi, 2005) (Knight-Lenihan, 2007)

<table>
<thead>
<tr>
<th>Weak sustainability</th>
<th>Strong sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conserve at all cost</td>
<td>Seek technical fix</td>
</tr>
<tr>
<td>Anthropocentric view</td>
<td>Anthropocentric view</td>
</tr>
</tbody>
</table>

The commonly ‘weak’ and ‘strong’ sustainability actually correspond to two sustainability models. The weak sustainability model, as discussed before, goes to the left side of the shallow-deep ecology spectrum, and the strong sustainability model, goes to the other side.

In Brandon & Lombardi’s illustration, the spectrum of views on sustainability is ended with ‘Conserve at all cost’ and ‘Seek technical fix’. The former are those who suggest that we should conserve at all costs, change the way we live and seek a reduction in economic growth as a means of reducing consumption. The latter are those who believe that necessity is the mother of invention and a technical fix will be found which will remove the need for drastic measures to be taken. They believe the market will drive up the price of non-renewable resources and this in turn will encourage innovators to provide sensible alternatives (Brandon & Lombardi, 2005). This spectrum also displays a matter of weak or strong, as in the following O’ Riordan’s spectrum. ‘Seek technical fix’ corresponds to the somewhere between ‘accommodators’ and ‘soft technologies’. ‘Conserve at all cost’ is the ‘deep environmentalist’ view which is also what we called ‘Deep green’.

Anthropocentric-Ecocentric view is another way to generally depict the degree of emphasis put on ecological sustainability in terms of achieving sustainable development. It should be noticed that the above two-extreme spectrums don’t imply a greater level of sustainability.
Riordan’s spectrum (1981), describes the individual beliefs that tend to be held by those supporting either a weak or strong position. Dobson’s Typologies summarises the shift from an emphasis on assessing natural ‘capital’ for human benefit through to appreciating nature for itself. The typologies are listed under three ‘conceptions’ of what Dobson calls views on ‘environmental sustainability’. Critical natural capital is what is required for the production and reproduction of human life (Dobson, 1998). And irreversible nature captures the idea of a shift away from seeing nature as providing capital, to the idea that what should be sustained are elements of non-human nature whose loss would be irreversible (Dobson 1998) (Figure 3). However, Dobson’s Typologies don’t include renewal, which in Knight-Lenihan’s view, renewal is encompassed because ecological systems constantly change and replenish.

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The SD Framework is developed by Knight-Lenihan (2007) after the above typologies. It is used to assess how ecological issues are likely to be balanced against economic or social needs. The key aspects relating to different approaches taken to sustainable development emphasis differing views of nature and how it should be traded off where the left extreme assumes all natural capital can be traded off (Figure 4). The framework could help to make it clear that what approach will be taken towards ecological sustainability when compared with economic and social needs.

The summary of the above categories are listed in the table 3.
Table 3: Summary

<table>
<thead>
<tr>
<th>Circular Categories</th>
<th>Spectra Categories</th>
<th>Holarchy</th>
<th>Integral Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical-Environment (Enyedi 1996)</td>
<td>Social Anthropocentric-Eco-centric</td>
<td>Economy-Society-environment</td>
<td>Sustainable community indicators (Pyramid)</td>
</tr>
<tr>
<td>Economy-Society-environment</td>
<td>Dobson's Typologies</td>
<td>Economy-Society-environment</td>
<td></td>
</tr>
<tr>
<td>The PSR model</td>
<td>The 3-Q Model</td>
<td>Physio-Bio-Noosphere holarchy</td>
<td></td>
</tr>
<tr>
<td>Society-economy-environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Explorer</td>
<td>O'Riordan's spectrum (1981)</td>
<td></td>
<td>Integral Theory by Wilber</td>
</tr>
<tr>
<td>Physical-Functional-Institutional-Cultural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PICABUE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enyedi 1996</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Techware- Socioware- Ecoware- Financeware- Orgware</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment Explorer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSUD</td>
<td></td>
<td>Dooyeweerd's theory</td>
<td>PRISM</td>
</tr>
</tbody>
</table>

The Spectra Categories are actually not measuring frameworks for sustainability. They are only a reflection on the attitudes that the individual or a framework holds. However, it represents a linear, reductionist thinking in the western philosophies. It is also lacked in most of the circular categories.

The circular categories are most common in current evaluation frameworks with different modalities. As the weak sustainability model represents, this category inclines to the views that all of the categorical modalities could compensate to each other's losses. While the holarchy, which is represented by strong sustainability model, mostly stresses the irreplaceable position of natural environment.
The integral theory, including the PRISM model has valuable attempts on the integration of the eastern and western thinking, circular and spectra structures. But Wilber’s integral theory is only interested in the human mental world. There are still problems not solved for its adaptation to the sustainable development. The PRISM is not fully developed of its potentials. It still needs to explore the eastern way of thinking the universe, especially traditional Chinese understanding of the human-environment interface.

5 Searching for an indigenous approach in China

The Chinese worldview derived from Chinese philosophical traditions of Confucianism, Taoism, Buddhism, neo-Confucianism which are based on ideals of harmony, human perfectibility and systemic theory within natural systems and processes. In imperial times, institutional religions are various organic mixtures of Buddhism and Taoism within a Confucian framework (Jenkins, 2002).

Chinese traditions offer conceptual resources for ecological thinking by placing economies within a wider socio-ecological fabric, emphasising soft technologies, challenging meta-economic assumptions, and encouraging systemic wisdom (Goossaert & Keith, 2006).

5.1 Dominating philosophies in traditional China

Confucianism is a humanistic philosophy and socio-political doctrine with religious qualities (Yang, 1961). It involves a deep-rooted combination of political, moralistic and cosmological ideas which establish a philosophical basis for the interconnectedness of all things in a unitary, holistic, dynamic and morally charged universe (Jenkins, 2002).

However, Confucianism is confined to human social questions rather than extending to an analysis of nature. The social ecology Confucianism promotes is ‘anthropo-cosmic’ view which reflects a view that human moral virtues have their natural counterpart in cosmic processes (Tucker and Berthrong, 1998).

The world consists of human activity and natural phenomenon in mutual interactions changing over time. This is represented in both the Yin-Yang diagram of Taoism and also the integral environment system (Markovic, 2006). Taoism believes that there are ‘natural laws’ which are summarized as opposition, interdependence, inter-transformation, and dynamic between Yin and Yang (Figure 5).
Yin and Yang consist of two stages of a cyclical, wavelike, and continually changing relationship. This is the law of opposition; Yin and yang are not inherently paradoxical since they can change into each other. This is the other law of Interdependence and inter-transformation. The last law is that the qualities of yin and yang counter and complement in oscillating flux. Taiji (Supreme Ultimate) is the expression of their unity, opposition and energy. So the dynamic balance explains the gradients on a scale of complete yin and yang (Bramble, 2003). Luo-Pan as the integrated tool for Taoist to assess the world could be divided into holarchic four modalities: central pool of heaven, earth, human and heaven. This is the traditional framework for ancient Chinese to evaluate sustainability. The indicators within the holons represent the circular movement and periodical recurrence.

Buddhism is the only non-indigenous member of the three chiao in ancient China. It is found that there are close links between Buddhist philosophy and systems theory. They are summarised as the synergies based on the nature of holism and the cyclical nature of communication and feedback loops. The key relational qualities are interconnectedness, interdependence and mutual conditioning (MacKee, 2008).

The three philosophies of Confucianism, Taoism, and Buddhism were formally synthesised in the philosophically eclectic neo-Confucianism. It avoids reductionism views which explain the whole only in terms of parts, focuses on organisational principle and understanding of systems, dynamics and tensions, and produces a supple conception of law with moral content.

5.2 Deep ecology and indigenous philosophy

Chinese indigenous philosophy and contemporary ecological perspectives share theoretical and practical approaches to the human-nature dialogue. Its notions mirror the aims of disciplines such as deep ecology, eco-feminism, and eco-psychology.

Deep ecology is an important turn and leading power in the course of contemporary environmental movement. It doesn't believe the science and technology could adjust the serious problems of the environment (Girardot,
Miller, & Liu, 2001). Its thoughts reflect the development of modern ecology and change of the philosophic paradigms in recognizing the relations of man and nature.

Various narratives link Taoist texts and concepts to one another, and potentially inform Western religious and scientific perspectives (Biridwhistell, 2001). An examination of the Taoist and ecological notions of ‘order’ discusses how the notion of ‘otherness’ relates to a potential dialogue between Taoist mystical thought and ecological inquiry (Lafargue, 2001) (Kleeman, 2001). The nature and evolution of the Taoist notion of ‘Central Harmony’ is viewed as its self-evident relation to the interdependence of humans and nature (Lai, 2001; Zhang & Li, 2001).

Campany (Campany, 2001) discusses how westerners perceive ecological messages in Taoist texts, and how the folk religion component of Taoist traditions can be unscrambled in environmental language. Richard Sylvan and David Bennett address that Daoism could enrich the Deep Ecology theory from various aspects. Although deep ecology also acknowledges the organic unity of diversities, it lacks the cosmology behind it (Bennett, 1988).

It is suggested in the context of Chinese culture, the impacts of Confucianism and Taoism should be integrated. The Confucian social model will be a crucial biosphere to the ecological system. Therefore, there is tremendous potential for an indigenous Chinese environmental ethic based on ancient Chinese thought. The religions form people’s attitudes towards nature (Tucker 1994). In regarding to the environment issues and social justice, Chinese Taoism and Confucianism separately contribute to the natural ecology and social ecology with emphasis on the harmony with nature (Callicott, 1994).

5.3 Sustainability evaluation framework

Figure 6: Holistic Sustainability Evaluation Framework for Asia-Pacific Regions

The framework above is embedded with the character of “ordinal loops” of traditional diagram ‘Yin-Yang’ that is suitable for sustainability evaluation framework for Chinese cities. In this framework the “ordinal” is represented in “individual-collective axis”. “Loop” is represented in cyclical structure (Figure 6). The left diagram shows the hierarchical modalities. The middle one illustrates
the dynamic changes between the human and environment interfaces. The right diagram displays the distinction between basic modalities and linking modalities.

The linking modalities which are on the rims of the cells include axis modalities and quadrant modalities. They are shown in the following table.

Table 4: Holistic Sustainability Evaluation Framework for Asia-Pacific Regions

<table>
<thead>
<tr>
<th>Human Environment</th>
<th>Objective Human Env</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Env</td>
<td>Psychology</td>
</tr>
<tr>
<td>Human</td>
<td>Culture</td>
</tr>
<tr>
<td>Objective Env</td>
<td>Society</td>
</tr>
<tr>
<td>Human</td>
<td>Behavior</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Environment</th>
<th>Modified Physical Env</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Env</td>
<td>Climate</td>
</tr>
<tr>
<td>Physical</td>
<td>Ecol</td>
</tr>
<tr>
<td>Modified Physical Env</td>
<td>Land-use</td>
</tr>
<tr>
<td></td>
<td>Kinematics</td>
</tr>
</tbody>
</table>

The last diagram (Fig 7) shows the hierarchical contents of the basic modalities. The framework above is embedded with the character of “ordinal loops” of traditional diagram that is suitable for sustainability evaluation framework for Chinese cities. In this framework the “ordinal” is represented in “individual-collective axis”. “Loop” is represented in cyclical structure.
6 Discussion

The development of integrated theories shows that the western culture needs other’s help from those who cherish nature, like the introduction of Eastern religious thought. In Asia, western science and technology are introduced to the east in the past century along with the danger of the unbalanced nature. Thus indigenous traditions are urgently recalled in respect for the nature. The construction of a theoretical framework towards an indigenous environmental philosophy can be applied viably to practical ecological issues that concern us today. There are western scholars and Chinese influenced by Western culture that have tried to derive theories from the Chinese classical works. However, whether an adulterated version of Taoism could be antithetical to resolving western forms of anthropocentric thinking and environmental issues is still questioning (Paper, 2001). Whether indigenous Chinese approaches could really work in the west is also not approved.

It is noted that there is insurmountable distance between the ancient Eastern philosophy and contemporary environmental issues from the history and culture. An overview of current Chinese environmental activities and the impact of the Taoist tradition in China provide reminders regarding the Taoism and contemporary environmental awareness (Miller, 2001a, 2001b; Zhang, 2001). John C. Cobb suggests that traditional Chinese view of nature did not stop the environmental destruction of ancient China, so the feasible approach is to amend the Western tradition, rather than transplant foreign ideas (Tucker, 1993). John Passmore rejects the learning from Eastern philosophy and religion, assuming
that the eastern wisdom and value do not prevent environmental degradation in the East (Passmore, 1974).

Environmental problems are pressing so much. It is rather doubtable that any philosophy could heal the world. Deep Ecology could be more effective in the Western tradition; In China, the indigenous ecology should also be viewed holistically. Chinese environmental destruction and degradation has already indicated that the contemporary environmental problems are getting severe in China. It will be difficult to understand how the Chinese traditional ideal environment can be praised by their attitudes.

Scholars are cautious about the possible contribution of Chinese philosophy in case of the cultural transplantation, the effect of the eastern impacts, and the current environmental problems of China. They are more willing to rediscover their tradition by the inspiration of Taoism. Indeed, Taoist represents the perspective of only a small number of hermits, ordinary Chinese has been changing the in the environment in the long history (Tuan, 1968). What should also not be ignored is that all cultures have their own soil to grow so the world view and its tradition are hard to be separated. The model worked in the east may not be well adapted in the west. Cultural transplantation does not necessarily work for this sake.

So the indigenous Chinese model needs to be renovated to be utilized as tools for Asia-Pacific Regions, not for the whole world. But it could searched as inspirations for a reinterpretation of the traditional western approaches to reverse environmental degradation (Ames, 1990). The framework introduced in this paper provides one possibility. It still needs to be verified by the local urban practices in future research.

7 Conclusion

From the review on modern evaluation frameworks, different kinds of sustainability evaluation frameworks have been identified: one is in nominal loops, such as triangle (OECD, 1994), rectangle (Cooper, 1997; Phillips, 2003), pentagon (May et al., 1997; Nijkamp, 1998), hexagon (Engelen, White, & Nijs, 2003; UN, 1996), representative holarchy s is Dooyeweerd’s theory for revealing the complexity of an urban environment as a system and its multi-dimensional meaning (Lombardi, 2001).

The other is in linear, ordinal categories, no loop (such as Weak sustainability- Strong sustainability (PRISM & Knight, 2000), an anthropocentric view- An eco-centric view, Dobson’s Typologies with a sequence of Critical Natural Capital—Irreversible Nature—Nature Value (Dobson, 1998), O’Riordan’s spectrum “Comucopians—Accommodators—Soft Technologies—Deep Environmentalists” (O’Riordan, 1981), SD Assessment Framework “Net Benefit Cumulative—Net Benefit Individual—Net Benefit Critical—Net Benefit Irreversible—Net Benefit Ecological” (Knight-Lenihan,
Each category has its strength and weakness because of their intrinsic characteristics.

The framework developed in this research will inherit the character of "ordinal loops" of Chinese traditional diagram 'Yin-Yang' that is suitable for sustainability evaluation framework. The result of this research will have significant implications, including: Providing internationally applicable approach for best practice in urban development and sustainable evaluation method which is based on the eastern way of thinking and the practice in Chinese cities; The conceptual process utilize the eastern thinking model into the organisation of sustainable development evaluation framework; Generating systemic recommendations by the systemic framework and combinational analysis method.

This paper also noted that the construction of a theoretical framework toward an indigenous environmental philosophy can be applied to current sustainable urban development issues in China and Asia-Pacific. However, its applicability in different cultural regions and local practice still needs to be tested. The future work is to further establish the qualitative criteria and quantitative indicators for evaluation and validate this framework by case studies on urban developments at different spatial scales of selected Chinese cities. The paper forms part of the first author's higher research degree literature review and conceptual process.

References


