Values, Value Change and a Sustainable Built Environment

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Abstract

It has been increasingly accepted that a ‘paradigm shift’ to sustainability in the built environment is not only necessary but also inevitable. Nevertheless, this will not occur unless there is a fundamental change in personal values, as these will play a significant role in behavioural change towards sustainability. However, most current sustainable building practices and indicators are still based on a framework of values appropriate for an industrial-affluent-consumer society. It is therefore certain that a better understanding of notions of value, the differences between dominant values of the present society and sustainable values, whether architecture reflects sustainable values, and strategies for producing value change in the built environment are all necessary to promote physical change in the built environment. This paper first clarifies notions of values, provides a framework of sustainable values, and compares different approaches to value change in the built environment by examining two case studies, the Hockerton Housing Project (HHP) by the Vales in the UK and the New Cave Dwellings (NCD) (Yaodong) by the Green Building Research Center of the Xi’an University of Architecture and Technology in North Central China. Although the two projects both reflect similar sustainable values, the approaches to value change are quite distinctive. The HHP shows how to implement sustainable values in the built environment from a Western perspective, while the NCD presents an example of how the traditional culture and forms of Chinese cave dwellings are preserved and adapted to produce a ‘modern’ sustainable built environment, thus offering a linkage between vernacular architecture and sustainable architecture. Through exploration of the two case studies, this paper concludes that undertaking sustainable building predicated on maintaining the status quo of values may make it impossible to bring forth a ‘paradigm shift’ in architecture, and that despite similar goals of placing sustainable values into the built environment, strategies and implementations should be diverse with regard to different cultures.

Keywords: Value Change; Sustainability; Built Environment

Introduction

Value change has been recognised as the difficult, but crucial, starting point in the transition to a sustainable society (Schumacher, 1997; Trainer, 1995; Milbrath, 1989), and in turn the dissemination of a sustainable built environment (Guo et al., 2009a). For the purposes of this paper a sustainable built environment is defined as one which in use has the minimum impact on the natural environment. In terms of measurement, this would be the built environment that supported the lifestyle of its users with the lowest ecological footprint. The latter is a measure of how much productive land it takes to produce the resources to maintain a way of living on a sustainable basis. However, in the current field of architecture, a majority of practices and indicators measuring the sustainable performance of buildings still reflect the values of an industrial-affluent-consumer society (Vale and Vale, 2008; Guo et al., 2008). This is because no attempt is made to require the building/user impact to fit within a fair earth share footprint (currently 1.9ha/person) (WWF Cymru et al., 2005:4).

As a result, a better comprehension of how value or values are perceived, the conflicts between the dominant values of a post industrial society, where economic growth is still considered vital, and
sustainability values, and means to produce value change to bring about sustainability in the built environment all form important themes in this paper. Two case studies, the Hockerton Housing Project (HHP) in the UK and the New Cave Dwellings (NCD) (Yaodong) in North Central China have been chosen as the means to examine the relationship between value change and the built environment in reality. The examples also show the different approaches to implementing sustainability values in two quite different communities.

**Notion of Value**

Values are central to human daily life. They shape psychology and agency (the capacity to make choices and to impose these choices on the world), and influence behaviour (Dunn, 2006). Value is a very difficult and complex concept to define as values vary across people and cultures although there exist some common human values such as survival and responsibility (Bok, 1995). Value can also mean the quality or fact of being excellent, useful or desirable (Noah, 1961). Rescher (1969) has provided a long list of notions of value from various writers to prove the complexity of defining the notion and the loose way in which the word is often used. As a result, Rescher (1969) regards values as intangibles, things of the mind that have to do with the vision people have of ‘the good life’ for themselves and their fellows, which manifest themselves concretely in the ways that people talk and act, and especially in the pattern of their expenditure of time and effort and in their choices in the marketplace. This is important for the sustainability debate as it suggests that people will only hold the values that underpin true sustainability (living within a fair earth share) if their vision of a good life is a sustainable one. With a holistic approach, Frondizi (1971) defines value as a Gestalt quality, meaning that values do not exist for themselves and need something in which to be embodied or a carrier. Thus if a building which only marginally lessens environmental impact is labelled ‘sustainable’ then this is what ‘sustainable’ as a value comes to mean. This is because a Gestalt quality is more than the aggregate of constituent parts, and is a new quality which arises from a unique configuration of these parts which are not homogenous. Without any detailed knowledge of how sustainability might be measured, the not very good ‘sustainable’ building becomes accepted as such because without analysis the ‘sustainability’ parts cannot be separated from the whole. In modern Western society the number of people who can make this detailed analysis is limited.

Rokeach (1973) offered another systematic way of looking at the issue by saying that value is an enduring belief where a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence, and that a value system is an enduring organisation of beliefs concerning preferable modes of conduct or end-states of existence along a continuum of relative importance. In any given value system, there must exist a principal value on which other ‘secondary’ values are based. Thus values and value systems function as standards that guide conduct in a variety of ways and are determinants of attitudes and behaviour, and can be measured by a reasonably valid instrument, the Value Survey. Value as a term is utilised in many fields ranging from mathematics, ethics, politics and economics to law (Smith, 2004). In this paper value refers to personal and socio-cultural value. In the end, the question is by what standards people should live and why? The answers are crucial to sustainability on a finite planet. As Schumacher once remarked “in the question of how we treat land, our entire way of life is involved” (Senge, 1974).

**Sustainability Values versus Modern Western Capitalist Values**

Three important underlying values of the industrial-affluent-consumer society are freedom, democracy and progress. A value survey conducted by the Pew Research Centre for the People and the Press shows that more than 80% of respondents from 34 nations think that it is very important to live in a country with freedom (PRCPP, 2004). The US-based organisation, Freedom House, regards freedom as a fundamental value worldwide and since 1962 has annually published reports on the degrees of freedom in 193 countries (FH, 2009). Freedom of choice is considered as the basic reason for happiness (Inglehart, et al., 2008). According to the World Values Survey, 88% of respondents worldwide agree that democracy is the better form of government although it has many problems (Inglehart, 2004). In 14 non-Western nations 67% of respondents believe that democracy is not just for the West, and would work well in their own countries (PRCPP, 2003). Despite the fact that 46% of respondents worldwide are not satisfied with democracy in their own countries (WVS, 2004), the assumption is that the problem with democracy lies in its implementation rather than in it as a value. It has been argued that the third value, that of progress, has become a threat to the sanctity of life (Shiva,
The pursuit of progress based on the mechanistic world view, and evaluated by technological advancement and economic growth, has become fundamentally anti-natural to the point of threatening human survival (Guo et al. 2008). Freedom and democracy as important values are also problematic. For example, the freedom to breed, which means the human population continues to grow exponentially, is one of the main factors causing 'the tragedy of the commons' (Hardin, 1968), and unsustainability of current society (Ehrlich and Ehrlich, 1997; Daily and Ehrlich, 1992).

The real problem with these values in relation to sustainability lies in the fact that they are actually 'secondary' values, subservient to the principal value of present society, the growth economy. In terms of the Pew Global Attitudes Project, 75% of respondents worldwide think that economic growth is very important (PRCPP, 2003). An economy that is growing at 3% per annum is thought to be performing adequately. More growth is splendid, less growth is worrying, and no growth or negative growth indicates widespread economic failure. The assumption is that all problems are to be solved, or at least ameliorated, by an ever growing Gross National Product (GNP) (Daly, 1996), and that more is better, and big is good (Ekins, 1986). The growth economy has become the true master of modern society and is manipulated as the fundamental value to guide and judge human activities. It acts free of ethical values (Schumacher, 1974), as the growth economy itself is the principal value against which to measure almost all human activities.

Democracy has been a political weapon defending the growth economy (Vale and Vale, 2009). Probably, no voters in a democracy would vote for any politician who promises less in the short term but more in the long-run. Less growth which means less consumption and fewer undesirable wants has become the ‘nightmare’ of the industrial-affluent-consumer society, as seen in the current global economic crisis.

Choice is an ideal of modern times made possible by material plenty. The crucial impact of economic growth is that it increases freedom of choice. Economic scarcity is one of the most important constraints on choice, and increased use of resources enriches freedom of choice (Inglehart, et al., 2008). Choice is an ideal of freedom rather than of constraint. Indeed, freedom of choice is now available to almost everyone with a major credit card. However, eventually limitless choice is boredom, induced by the feeling that nothing really matters if all that matters is personal taste (Tuan, 1989). In this sense, it is hard to accept that freedom of choice is the crux of personal happiness, as Inglehart (2008) suggests. In fact constraint might have a more profound psychosocial effect as often the best things in life come to people unexpectedly, beyond their conscious control (Tuan, 1989). Without constraint, freedom of choice is of no value. China’s birth control policy has been long criticised as a constraint on individual freedom and a violation of human rights. In fact, it is one of the reasons Freedom House has listed mainland China as a non-free nation (FH, 2009). However, as discussed above, freedom to breed challenges a more fundamental common value, human survival. The population of the earth has virtually doubled since 1967 (3,468,000,000 in 1967 and 6,908,688,000 in 2010 (UN, 2009)), but the fundamental resources of the earth to support that population have not increased.

Freedom of choice based on the growth economy has made people begin to take survival for granted (Inglehart et al., 2008). Bauman (1992) has argued that modern society is constructed on the basis of the illusion that death is far from individuals, itself an echo of not being able to accept the finite nature of the self or the planet. Growth increases freedom of choice, which in turn supports the capitalist free market. As early as 1759, Smith (1759) stated that even though self-interest is human nature, a good society should be constructed on moral and ethical values. This should serve as a constant reminder for 58% of respondents in a survey who believed that most people are better off in the free market economy regardless of the gap between the rich and the poor (PRCPP, 2003).

Progress has also been ideologically linked with economic growth (Guo, et al., 2008; Pirages and Ehrlich, 1974). Economic growth is synonymous with progress which is frequently measured in terms of GNP. A fundamental problem with GNP is that it confuses means with ends. The end purpose of economic activity is to increase the quality of life. Although economic development is conducive to rising happiness or wellbeing, above a certain level of GNP per capita (approximately $US 14,000) the relationship between GNP and well-being disappears (Inglehart, 1999). In the case of China, national happiness is actually declining despite a fast rise in GNP (Brockman et al., 2008). Taking Cuba as another example, it is the 7th happiest nation in the world with a small ecological footprint (1.8 global hectares) (Abdallah et al., 2009), but has less growth, less freedom (although health care
and education are free), less democracy and less progress in capitalist terms (FH, 2009). This suggests that low footprint societies may be based on different values.

So, what is wrong with the growth economy? Fundamentally, it neglects the reality that the unlimited growth cannot be sustained in a finite planet, and that there are limits to growth (Meadows et al., 1972). Graham Turner (2008) of CSIRO in Australia has compared the past 30 years of reality with the predictions made in *The Limits to Growth*, and found that current human progress is in line with its predictions of economic and social collapse in the mid-21st century. Human beings already need 1.3 planet Earths to sustain current lifestyles (GFN, 2008), meaning humanity already lives beyond its means. Using growth as a fundamental value in society leads to other values in everyday life, such as wealth, consumption, bigness and technological advancement. According to an annual survey of college students in the USA, values have changed since 1978, with more respondents now feeling that being very rich is more important than developing a meaningful philosophy of life (Myers, 2000).

Sustainability values are also difficult to define (Milbrath, 1989; Trainer, 1995). The perplexing long lists of sustainability attributes from different sources are one of the barriers preventing the translation of sustainability values into actions (Leiserowitz et al., 2004). Leiserowitz (2004) using sustainability values from three major reports (authored by the Earth Charter, the United Nations Millennium Declaration and the Global Scenario Group) concludes that peace, freedom, democracy, development and environment are commonly shared sustainability values. This runs counter to earlier arguments in this paper suggesting that freedom and democracy may be part of the pressures that are creating an unsustainable world. Referring back to Rescher’s approach to classifying values, sustainable values should be the personal and cultural values necessary for sustaining life support systems for present and future generations. Thus a principal sustainability value should be living in harmony with nature based on a holistic and organic worldview. The Chinese call this, Tao or the balance between Yin-Yang (Guo et al., 2009a). It also corresponds to the Middle Way of right livelihood (Schumacher, 1974).

The issue of growth is a good illustration of Tao. Physical growth has an optimum level beyond which further growth is not beneficial, and can indeed turn malignant (Abdallah et al., 2009). Batra (1991) takes this point to the extreme by saying that growth in the physical arena is impossible unless there is also spiritual betterment. Tao accepts the earth is finite, so ‘positive’ waves in this finite realm (growth) have to be counterbalanced by a negative wave. Based on this worldview, sustainability values are fundamentally about how humans should live in and with nature. This paves the way to other ‘secondary’ sustainability values such as finding harmony between freedom and constraint, and more obvious daily values like following the Middle Way in terms of consumption, technology and distribution of resources (equity). The Middle Way is part of Buddhist doctrine, and consists of knowing the right amount and knowing moderation, terms that may be considered as synonymous with the idea of balance or equilibrium (Payutto, 1994). It is awareness of the optimum point where the enhancement of true well-being coincides with the experience of satisfaction. Consumption, for instance, when attuned to the Middle Way, must be balanced to an amount appropriate to the attainment of well-being rather than the satisfaction of so-called desires. A further meaning of the term ‘right amount’ is of not harming oneself (by causing a decline in quality of life) and others (by causing problems in society or imbalance in the environment) (Payutto, 1994). The Middle Way for technology means a technology more productive and powerful than the technology of the past, but at the same time non-violent and cheaper and simpler than the labour-saving technology of modern society (Schumacher, 1974). It also means a technology in the control of ordinary people rather than a in the hands of a few elite who generate wealth from it. Equity, in its simplest form, means sharing, fairness and harmony in the distribution of wealth and resources, and along with the Middle Way to consumption and technology, frees people from exploitation of nature and man by man so as to ensure everyone has a reasonable quality of life. These values all are embodied in the two case studies discussed later.

**Value Change and a Sustainable Built Environment**

After *The Limits to Growth* the Club of Rome published a second report, stating that the basic values ingrained in human societies of all ideologies and religious persuasions are ultimately responsible for many of today’s troubles (Mesarovic and Pestel, 1975). Given the significance of values in everything people do changing to sustainability values appears to be crucial for a ‘paradigm shift’ towards sustainability in society, of which the built environment is a part. Rescher (1969) identified seven models of value change, namely, value acquisition and abandonment, value redistribution, value
emphasis and de-emphasis, value rescaling, value redevelopment, value re-standardisation, and value implementation retargeting. Rescher (1969) also proposes four ways to change values, value change induced by a change of information (persuasion and social learning), value change induced by ideological and political change (leader led system change), value ‘erosion’ induced by boredom, disillusionment and reaction (too much choice may make people bored with being consumers), and value change induced by changes in the operating environment of a society (lifestyle changes). Value change towards sustainability probably involves all these models and means. Jackson (2005) has identified persuasion, price signals and social learning as the most used strategies to promote sustainability values in the West. He also found that social learning, especially through demonstration (the role-model effect) tends to be most effective. These strategies for value change are based on the assumption that consumers can make their own decisions in a rational way, through calculating the individual costs and benefits of different courses of action and choosing the option that maximises their net benefits (Elster, 1986). In other words, value change towards sustainability leads to sustainable behaviour in a rational or logical way. However, this is not always the case, because of the value-action gap (Blake, 1999; Guo, et al., 2009b). People can sometimes betray their own values by not acting on them (Dunn, 2006).

There appear to be three barriers to bridging the value-action gap; the global extent of capitalist values; the capitalist growth system itself (Leiserowitz et al., 2004); and the individual ‘lock-in’ of unsustainable habits (Jackson, 2005). These can be contrasted with vernacular culture which tends to lock in sustainable values to preserve the local cultural system (Guo, et al., 2009b). Therefore, value change generally involves three processes, transformation (from capitalist values), preservation (keeping vernacular values) and the integration of both. Transformation means changing to sustainability values using the four ways of value change proposed by Rescher, by means of value acquisition and abandonment, value rescaling, value re-standardisation, and value implementation retargeting. This process has been seen in Western sustainable community projects (Guo, et al., 2009a), as in the HHP, discussed below. Preservation of vernacular values has been observed in the development of sustainable communities in rural areas of developing countries such as China (Guo, et al., 2009b). NCD is an example of this approach. Despite the value-action gap, value change is vital to the implementation of sustainability values in the built environment, as the breaking of ‘locked-in’ old habits needs right values to begin the process of change.

Despite the importance of values and value change for moving towards sustainability, most current sustainable building practices and indicators still focus on technological and technical solutions, suggesting that problems of the modern built environment can be solved within the growth economy system, and that ‘business can go as usual’. For example, The Bird’s Nest in Beijing and The Millennium Tower in Tokyo have been cited as good practices of sustainable architecture (Rogers, 2008; Edwards, 2001), in spite of their large impacts on the environment. In addition, the behaviour of the users of buildings is largely neglected in many building indicators without the holistic approach (Vale and Vale, 2008, 2009). Vale and Dixon (2005) have shown reduction in ecological footprints through behavioural change based on the transformation of values to sustainability (22% reduction) is more effective and cheaper than through built environment changes (12% reduction). Quite simply eating organic food or commuting to work on foot is more significant than living in a house with earth walls or solar heating (Vale and Vale, 2009). Similarly, the sustainability of the organic tube-house in Hanoi is mainly determined by the lifestyle of the local people based on traditional vernacular values of shared space (Tran, et al., 2009). Another study suggests that in Thailand Buddhist values play a more important role in sustainable education than having schools with conventional sustainability attributes such as passive solar design (Chansomsak and Vale, 2008). These last two studies demonstrate value change for sustainability of the built environment based on the preservation of traditional values. The two case studies below further strengthen the impossibility of having a radical change in the built environment without fundamental values change, and the existence of different approaches to value change in different local cultures.
Case Study 1: Hockerton Housing Project (HHP)

“When I was 14, I wanted to be with my mates in the town, but now I am a bit older I would much rather be here at HHP because of the space and it’s so nice. I am so used to recycling stuff and remembering to turn lights off and not leaving the TV on standby. This is now my way of life and I would not like to live any other way. My friends put on heating in winter which seems really abnormal to me as we do not need it and yet their homes still seem cold” (Megan Martin, 18-year-old resident at HHP, White, 2004).

Designed by the Vales and completed in 1998, the HHP is located in a rural area of Nottinghamshire (Figure 1). It is the UK’s first earth-sheltered, self-sufficient ecological housing development and has received a number of green awards (HHP, 2009). This project was initiated by the residents of the five households with a clear goal of living in harmony with nature based on a holistic and organic worldview (White, 2002). Guided by this fundamental value change, the residents have embraced such sustainability values as smallness, the balance between freedom and constraint, and the Middle Way regarding consumption, technology and resource distribution both in their built environment and daily lives.

A solar photovoltaic system and two wind turbines generate most of the energy required to run the homes. The typical energy consumption per day for a house is about 11kWh, which is about 10% of a typical UK home (EST, 2003). A report shows that the Hockerton homes actually consume less energy than a so-called zero-heating house featured in the study (EST, 2003). The earth sheltered superinsulated high-mass construction ensures that the winter indoor temperature remains at 17 °C, which may be considered a ‘constraint’ for those who are accustomed to central heating. It is reasonably comfortable as external temperature can go as low as -6 °C. Water entirely comes from rain to meet all demands, and water use is reduced through low-flush toilets and flow-restrictions on shower heads. The overflows and grey water are treated on site using a reed bed and a large lake which has provided increased biodiversity and is used for swimming, canoeing and raising carp. Solid waste is captured in a septic tank. These sustainable performances have been achieved with the assistance of the Middle Way approach to technology, meaning the technology is simple and easy to operate, and in control of the residents. However, once the project was completed its sustainability credentials are almost entirely dependent on the behaviour and values of the users. Having to deal with the small amount of sewage solids from the homes best illustrates this point (Figure 2). Most food consumed at HHP is from their own organic gardens, fish from the lake, fruits from the orchard area, and honey from the apiary (HHP, 2001). The most used car is the community-owned electric car and each household is allowed only one fossil-fuelled vehicle. This reflects their values of having a balance between freedom and constraint. Each of the families has their own home separately financed and leased, but shares communal utilities, food growing, business responsibilities and sometimes childcare. This is overlaid with individual friendship, weekly social meetings and occasional

Figure 1: The Hockerton Housing Project
social events (HHP 2001). The residents have experienced times when they found the community commitment onerous, but on the whole find the benefits overtake this temporary feeling. Smallness is another sustainability value of HHP, as they believe that smaller projects are more likely to facilitate group members participating in decision-making and can act as a model for others through social learning, especially through demonstration (HHP, 2001). Educational programmes are conducted within and outside the community to promote their values in a wider context to create a ‘ripple effect’ (HHP, 2001).

The main difficulty facing the HHP is the conflict between generally held modern capitalist values and sustainability values. It took two years to gain planning permission (value re-standardisation). The wind turbines had to have separate permission and were strongly opposed by both the local villagers and those in distant communities with no visual connection with the project. However, no complaint has been received after the installation of the wind-powered generators. In fact, the village now plans to install a wind turbine to generate electricity for the whole village, showing the ‘ripple effect’ does work. HHP is very effective, so much so that in a report on the project developers were recommended to copy it (Vale and Dixon, 2005). It is a very good example of how value change towards sustainability through transformation has led to radical change in the built environment and lifestyles. The HHP is indeed an embodiment or ‘carrier’ of the sustainability values of its members.
Case Study 2: New Cave Dwellings (NCD)

Located in Zaoyuan Village in the Loess Plateau of China, the NCD project (1996-2001, Figure 3) was designed by Liu Jiaping and his team at the Green Building Research Center (GBRC) of the Xi’an University of Architecture and Technology in North Central China and partly funded by national government. However, it is the villagers who are the real ‘designers’ as the main goal of this project was to combine the Middle Way approach to technology with vernacular cave dwellings (Yaodong) to create an architecture without ‘professionals’. Like the HHP, it reflects similar sustainability values. The GBRC cited the six principles of; energy conservation, working with climate, minimising new resources, respect for users and sites, and holism, proposed by the Vales (1991) as a guideline for the project (Liu, et al., 2002). Unlike the HHP, NCD are a case of value change towards sustainability by preserving local vernacular culture based on the balance of Yin-Yang which has guided the Chinese way of life, especially in the countryside, over many centuries (Guo, et al. 2009a). The GBRC has redeveloped, redistributed and reemphasised vernacular values in this project so as to conserve the ‘old’ way of life, based on the Middle Way regarding consumption and a sense of community.

The history of Yaodong dates back to the Qin dynasty (c. 220. BC). Over 80% of the rural residences in the Loess Plateau are Yaodongs or derivatives thereof (Liu, et.al, 2002). A study has found that almost all the features of traditional cliff cave dwellings coincide with modern sustainable design principles, and that they reflect the core value of Chinese culture - being in harmony with nature (Earthwatch, 2006). However, old Yaodong units have no cross ventilation and are often humid. This project was aimed to solve these problems by means of fenestration and buried tube technology to exhaust heat and improve indoor air quality (Liu, et.al., 2002). Rather than being dug into the side of the mountain, the NCD are free-standing Yaodongs of two stories which both adapt to the hilly terrain and increase the capacity to bring light into the interior. Solar energy systems and natural ventilation methods have been introduced while retaining the conventional arched Yaodong front which has cultural importance (Liu, 2006). The earth-sheltered building methods retain the thermal qualities of the original Yaodong (Liu, et al., 2002) and plants and vegetables are used on the roof and in the sunroom to adjust the microclimate. The NCD have a reduced energy consumption of 60% (GBRC, 1999). The overall resource consumption is much less than in urban apartment buildings due to the vernacular way of life. For example, organic food is grown in the vegetable patch, fertilised by human waste from the composting toilet and pig waste from the pig pen in the front yard, and food is kept in underground cave storage instead of a refrigerator in winter (GBRC, 1999).

The greatest contribution to sustainability perhaps lies in the fact that the NCD have provided a physical environment which helps continue the vernacular cultural lifestyles of the local people. This is what Liu (2003) has called ‘cultural sustainability’. The traditional cluster configuration, the old well where the residents, especially women, chat when getting water and the opera stage are all retained to maintain a sense of belonging (GBRC, 1999; Liu, 2006). The traditional built-in elevated sleeping area (Kang) is also kept in the NCD. The heat from the cooking units in the kitchen is still piped under this area for warmth (Liu, et al., 2003). In terms of local opinion, the people feel that the NCD are a continuity of their building tradition, and that the NCD have grown out of their lives (Liu, 2006). This project shifts the focus from the forms of the built environment to cultural continuity, which leads to the recognition that the former depends on the latter. After all, it is the life of the local people that needs to be sustained in a holistic sense (Liu, et al., 2002).

Like the HHP, the key difficulty facing the NCD is the contradiction between modern capitalist values and traditional vernacular values. The older generation prefer the Yaodong, while the younger residents especially those who have worked in the city, prefer the modern city-type dwelling to look like something in London or Beijing. In China the Western residential standard is becoming pervasive (Liu, 2006), because of the market economy. However, the new Yaodongs have attracted many of the younger generation to stay or come back, and ‘return to nature’ (Liu, et al., 2003). The pilot project of 85 NCD was completed in 2001. Since then, the house-type continues to be constructed, with over 1000 new Yaodongs completed by the villagers with help from their friends and neighbours. This project may serve as a good model of value change towards sustainability of the built environment through the preservation of vernacular culture, the model is appropriate for rural areas of the developing world where such culture still exists.
Conclusion:

In terms of sustainability, value is fundamentally about what standards human beings ought to live by to achieve quality of life. The principal value in a value system should be living in harmony with nature based on the holistic and organic worldview, which is incompatible with the key modern value of economic growth with its underlying ideological values such as progress, freedom and democracy. Although there exists the ‘value-action’ gap, a sustainable society and in turn a sustainable built environment begins with value change towards sustainability thorough transformation and preservation. The HHP shows the former, while the NCD project illustrates the latter. They both represent similar sustainability values, but with different approaches to value change towards achieving sustainability of the built environment due to distinctive local conditions. Furthermore, as the embodiment or carrier of their sustainability values, they both demonstrate modern problems cannot be solved by a ‘technological fix’, but only through fundamental value change, and that it is impossible to bring forth a ‘paradigm shift’ in architecture unless values change. Ultimately, sustainability of the built environment relies on the battle to win hearts and minds.

References:


