

**Environmental Education in China:
Provisional Results and Characteristics**

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Introduction

China's monumental environmental crises are no longer news, as for two decades they have stimulated headlines in the world press, hundreds of scientific studies and reports, attention of global governmental and non-governmental organizations (NGOs), and delicate diplomatic negotiations with global powers. Much less reported on are the attempts within the Chinese state system to learn from the mistakes of the past and to deal with the environmentally polluted present, through a formal and non-formal educational process.

Although the term "environmental education" (EE) had been used in the United Kingdom in the mid-1960s, the first definition of the concept was the product of the "International Working Meeting on Environmental Education in the School Curriculum" held in Nevada, USA in 1970. The co-sponsors of the event were UNESCO and the International Union for the Conservation of Nature (IUCN). The definition, still in use in 2014 (but amended as education for sustainable development (ESD) and climate change education (CCE) were added in the evolution of the field), was adopted by the meeting participants:

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behavior about issues concerning environmental quality.¹

In this paper we describe and analyze China's three decade effort in environmental education.² Initially, we titled it "failures and successes," but decided that was inappropriate—because ours is an exploratory survey and insufficient research has been done to establish final outcomes. Instead, we consider "provisional results" in both formal and informal domains of education.

Beginning with a brief discussion of the philosophical background to environmental education, we then treat the formal components of the system: the compulsory 1-9 public education system, post-secondary education and the "green university" concept, and the training of teachers. Following this we turn to the media and non-state actors (both business firms and

non-governmental organizations [NGOs]), and the role they have played in environmental education. Then we point out two important variations of EE: 1) first, the ways in which China's geographic, ethnic, and income diversity affect transmission of EE, and 2) second, variations evident across greater China. A brief penultimate section examines how difficulties of measurement complicate assessment of EE outcomes.

In the final section of the paper we ask, based on a survey of experts in the field, whether there are "Chinese characteristics" of environmental education.

Framework Questions on Environmental Education

An *ethic* has various definitions, but in most it expresses a moral predisposition to action or behavior. The subject of an ethic is a human, considered to be rational and self-interested. The object of an environmental ethic is an element or elements in the broader environment, for example non-human animals, other living things (e.g. plants), inorganic matter (e.g. soils, water), communities (e.g. ecosystems), the earth and even the cosmos.

The first framework question is: Who populates the moral universe? Are humans alone members of the universe, or do other units have membership or citizen status? A related question, for those situations in which humans alone are moral citizens, asks whether other units are due moral considerability, meaning that their interests, although lacking intrinsic value, still should be taken into account?

Environmental philosophers in the West often categorize answers to these questions as forming different types of human–environment interactions. One such scheme is: anthropocentric, sentientist, and eco-centric.³ In the anthropocentric type, only humans are moral citizens, having intrinsic value (and there may even be questions concerning the human members: their age, race, gender, etc.). Only humans, as Aristotle pointed out in *The Politics*, can reason and communicate in a sophisticated manner. All other units exist to serve human needs and have only an instrumental function.

Most traditional ethical theories (and religions as well) fall into the anthropocentric camp. Yet in recent decades, some differentiation has occurred among anthropocentric ethics, so that it can be said an ethic is "strong" or "weak", with respect to being human-centered. Weak

anthropocentric differs from strong primarily regarding the moral consideration extended to non-human animals or things. Thus, “being kind to animals” might mean treating them nearly as well as humans, without respecting them as ends in themselves. Further, weak anthropocentrism acknowledges that human interests extend beyond economic ones, and include the welfare of the environment.

A sentientist perspective includes a much larger number of units. Jeremy Bentham, the founder of utilitarian ethics, said it did not matter whether a species could reason but whether it could suffer pain or enjoy pleasure. All such units – including humans and non-human animals (with central nervous systems) – shared citizenship in the moral universe. There are important differences in sentientism regarding whether humans must treat non-human animals solely as ends and never as means, and thus not kill them for food. This approaches the weak versus strong distinction in anthropocentrism. A human might respect a non-human animal, but need to use it for food in order to avoid starvation, very much as humans used non-human animals in spirit-based systems such as Native American⁴ or Chinese spirituality.

The final perspective has several names: biocentrism, shallow or deep ecology, or ecocentrism. It is at the opposite pole from anthropocentrism, and also has the most crowded moral universe. Biocentrism stresses the equality of all species, and is regarded as extreme because humans are just a part of a vast chain of life and have no special status. A related perspective, called the ‘land ethic’ by its creator Aldo Leopold, is less extreme. To Leopold, this concept:

[E]nlarges the boundaries of the community to include soils, waters, plants and animals, or collectively the land . . . [It] changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.⁵

Unlike deep ecology, which prohibits inter-species killing, the land ethic does not prohibit such use in a condition of need, so long as there is no waste.

Confucianism is both a philosophical system and a social ethic. It envisions humans at the center of a universal system of values, and it most prizes relationships humans have with other humans and institutions created by them. Yet Confucianism is an exceptionally rich

philosophical system, and has regularly been reinterpreted to meet changing exigencies of the times. Thus, although the Confucian ethic appears to be solidly anthropocentric, it also can accommodate higher-order animals and ecosystems.

Some may object to our use of Western models to analyze China's major philosophical tradition. We do this because not only did environmental education (EE) and education for sustainable development (ESD) develop in the West, but also in affluent Western nations there is a high degree of awareness of environmental problems and established research into the ideological and philosophical roots of environmental degradation. Conducting a brief and preliminary analysis of the Confucian canon, we can identify elements that could be considered anthropocentric, sentientist, and eco-centric in orientation. Overall and unlike many of the dominant historical environmental paradigms in the West, Confucianism appears to be at least a "weak" anthropocentric environmental ethic. Recent additions to the canon and authors in the neo-Confucian tradition have cosmic dimensions; the *tianrenheyi* concept⁶ of Confucianism may add to an emerging global environmental ethic that emphasizes sustainability.

The revival of Confucianism in China leads some observers to think (wishfully) that it will have a decisive impact on popular attitudes toward environmental change and direct people toward pro-environmental behavior. This would be in error because the gap between thought and action is broad and deep. Nevertheless, Confucianism is a rich and complex philosophical and ethical system; over the centuries it has adapted well to social, economic and political changes. China may become more pluralistic in the future, which would open up avenues for Confucian influences. Of the five different analytical strains of Confucianism developed by Rozman,⁷ the "reform" version has great promise in stimulating the transformative nature of Confucianism to address the large environmental problems that China confronts.

Formal Components of Environmental Education

Compulsory Education (grades 1-9).⁸ China was among the first of developing nations to adopt the UN's Agenda 21, and it has also adopted a large number of policy documents related to EE, ESD and CCE.⁹ Among these documents, we argue that the "EE Guideline for Primary and Middle School" is the most important. The national Ministry of Education, provincial and local departments of education as well as a large number of NGOs and even business

corporations has encouraged EE through development of an award system for green schools, the new curriculum and school living and management systems.

Beginning in 1984, state officials began to integrate environmental education into several different subject areas. By 1996, the state had promulgated the nine-year compulsory education requirement and incorporated EE in all areas (yet relatively little EE content was infused into courses at that time). Curricular areas accommodating the largest infusion were science and social studies at the primary level and biology and geography at the middle school level.

Great gaps remain between policy and practices of EE in China. Today's EE teaching in the compulsory 1–9 curriculum is mostly that of subject matter (mathematics, biology, geography) instructors presenting knowledge drawn from textbooks. A smaller number of teachers attempt to train students to think about why the environment has become a problem. An even smaller number bring students “to” the environment, by taking advantage of opportunities NGOs and business firms may provide or by constructing their own.

The practice of EE is still unbalanced among different regions in China. Teachers lack training to become proficient in the goals of environmental education, both with respect to raising awareness, adding to knowledge and changing attitudes. The lack of curriculum resources is another limiting factor. Finally, EE is a new trend and movement in education and follows a policy cycle, including a pattern of influence by powerful external sources (such as funding constraints).

Yet this relatively new area of education, focusing on the environment, reminds us that the overall quality of education can be improved through incorporating new areas of emphasis and inquiry. This is especially the case because EE, ESD and CCE emphasize highly participative pedagogical methods, which the new generation of students finds appealing.

Finally, the outcomes of environmental education potentially may be as good in developing nations as in the economically developed countries. After all, lesser-developed countries such as China early in the twenty-first century have a proportionately larger number of environmental learning experiences to offer students. Combined with a pedagogy emphasizing action research and environmental awareness, this may produce student outcomes superior to the limited knowledge-based results of environmental education in the West.¹⁰

Post-secondary Education.¹¹ Colleges and universities were the starting points for EE and ESD in China. Based on development of concepts of EE and sustainability in other nations and as expressed in global environmental summits, by 2000 “green school” activities began in China, and these were the foundation of the green university.

Scholars have different definitions of what the “green university” entails, but they can be reduced to four basic concepts. First there are core ideas, such as comprehensive implementation of SD. Second is embedding “green” thought in the teaching and extracurricular activities of the university. Third is a focus on the campus environment, its ecological footprint and attention to beauty in its design. Fourth is a focus on the spiritual nature and culture of the university, which should permeate its material essence.¹²

China’s two pre-eminent institutions of higher education are examples of green universities: Qinghua University and Beijing University.¹³ In 1998, Qinghua began aspiring to become green. It defined green education as composed of curriculum development, professional practice and outreach activities. Its characterization of “green technology” incorporated basic studies to resolve environmental problems, innovative processes and adaptations (including work on clean production such as expansion of nuclear planning). Work on a green campus stressed environmental-friendliness and harmony between people and nature. The case of Beijing University involved similar work in four areas: improvement of the spatial design of the campus, sustained excellence of teaching and scientific research, promotion of campus cultural heritage and creation of a low-carbon campus.

Discussion of the green university in China raises questions about the university as consumer of resources and energy and the core function of the university in teaching and scientific research. A number of universities other than Qinghua and Beida have made strides. Their efforts reveal challenges and opportunities in five areas: operation of university management, changes in curriculum and individual courses, changes in research, alteration of campus culture, and ultimately, change in the relationship of the university and society.

A scholar who has examined prospects for action on sustainable development, Yu Huang, makes three recommendations. The first suggests formation of a structure for policy formation, led by the Ministries of Education and Environmental Protection. The second proposes new

investment and construction (including some reallocation of resources) as well as creation of new incentives. His third recommendation calls for a system of outreach and evaluation.

Teacher Training.¹⁴ Few teachers at the primary or secondary level receive dedicated instruction in environmental education.¹⁵ Instead they are trained in the subject matters they spend most of their time teaching. Yet two decades of experience in EE, ESD and CCE suggests that programs relying on the initiative and voluntary participation of teachers can be effective, whether one discusses pre-service or in-service teacher training. Teachers in such programs (and we emphasize the Environmental Educators' Initiatives [EEI] from 1997 to 2007 and Green Schools projects) appear likely to have developed a sincere interest in raising environmental awareness of students, enhancing their knowledge levels, and changing destructive behaviors.¹⁶ These programs accord well with the latest trends in educational pedagogy, as they emphasize active involvement and engagement of students, development of inquiry methods and critical thinking skills.

Yet the projects now in the mainstream of China's primary and secondary school education in the areas of EE, ESD and CCE are those of the UNESCO-China Environment, Population and Sustainable Development (EPD and ESD). Quickly, these projects became more commercial than academic in their orientation, and their peculiar financial arrangements opened them to charges of collusion, impropriety and corruption. For example, schools were coerced to participate in the EPD projects, and a percentage of fees collected were returned as kickbacks to leaders of local education units.¹⁷ Given this situation, we wonder how well trained teachers are becoming in environmental education and the degree of environmental literacy that will be attained by students. Irregularities in the structure, operation and delivery of the EPD and ESD projects under UNESCO-China auspices might increase alienation of teachers, staff and students from the goals of EE and ESD.

Non-formal Components

The Media. In the early Communist era, the media were indeed the "throat and tongue" (*houshe*) of the party-state, but since the liberalization beginning in 1978, some differentiation of roles has occurred, with a greater amount of investigative reporting and some public advocacy. This primarily is a consequence of the commercialization and partial privatization of China's

media leading to a more competitive nature of the media today than at any time in the recent past.

The print media has the longest history and has devoted the greatest resources to expanding awareness and knowledge about environmental problems. The first environmental newspaper, *China Environmental News (Huanbao)*, was founded in 1984 and was sponsored by the state environmental administration.¹⁸ Since then, environmental news items are carried with a high degree of frequency by government newspapers (*People's Daily*) as well as by the private press such as *China Daily*. One advocate of environmental reform has even popularized a journalists' salon in Beijing (and on occasion in other cities).¹⁹ Although electronic media and particularly television score higher in popular rankings of media influence, they are not an inventive source of environmental education.

The growth of the Internet in China has been rapid. Notwithstanding many government attempts to remove offending blogs, bloggers have effectively highlighted many environmental crises. As a means of enhancing environmental awareness, they may soon be superior to both electronic and print media. Certainly they have affected the behavior of people who protest against NIMBY-like events.

The relationship between the Chinese media and the state has become more bi-directional than previously.²⁰ Environmental policy is far less sensitive than foreign policy, an area in which the media customarily have been presented as mouthpieces of the state. While the government retains the upper hand, the media now are more engaged participants than heretofore.

Non-state Actors. In the second decade of the twenty-first century, China remains an authoritarian state system, and it does not provide an environment in which social groups and other non-state actors, including business organizations, can freely compete with one another in articulation of different ideas of the future. Nor has China developed a robust "civil society" as is found in many post-industrial nation-states, a society that stands as a counterbalance to the state and protects social groups and individuals from excessive state power.

Yet civil society in China is evolving, and the major source of change of civil society is growth of popular organizations with an interest in improving protection of the Chinese

environment. We divide environmental NGOs²¹ between international and domestic groups, and also considered associations of shorter duration, both at the university level and grassroots organizations. Our focus has been on the programs in environmental education developed by these groups which have different kinds of missions. Nearly all of the environmental NGOs print newsletters or reports describing their activities, which is one form of environmental education. Many of the NGOs work in the K-12 school system. They visit schools to describe their objectives and some bring students “to” nature, exposing them to ecosystems and species they may not otherwise have encountered. A smaller number of NGOs, with the international ones more active than the domestic, engage in extensive capacity-building activities in local communities. Heading the list is WWF-China, which in a cooperative venture with the environmental administration established environmental education centers at teacher training institutions throughout China.

Altogether, NGOs play an increasingly important role in environmental education in China. In this role, and outside the state, they are joined by business firms. A new concept of business activity, corporate social responsibility (CSR), has become more prevalent in China²², but still less widely spread than in Western countries. Whether CSR as practiced by Chinese firms (or foreign multinationals operating in China) is mostly “greenwash” or is a sincere attempt to look beyond the bottom line and improve quality of life dimensions including environmental protection is an open question at this point in time.

Variations of Environmental Education

EE Differences within China. China’s history of highly centralized government leads to the assumption that new programs, such as in the area of environmental education, will be centralized as well. An important aim of our research was to explore areas of both uniformity and difference in environmental education. A large problem we examined was educational inequality among China’s regions, represented in the urban–rural divide.²³ We examined differences in the teaching staff of elementary and junior middle schools, the financing of basic education, school facilities and equipment, and differential access of students to education.

In all of these areas, the differences in what is presented to students inside urban and rural classrooms are significant. Schools in Beijing and Shanghai have environmental education programs that are little different from those in large cities of the West. Schools in rural areas may have no environmental education programs at all, and students and teachers may be unfamiliar with what the concept entails. Yet we did notice that schools outside China's large cities did take advantage of the unique environmental features of the countryside and exploited local environmental problems for their pedagogical value.

In our research we visited green schools in both urban and rural areas, and found common elements in the approaches they have taken to environmental education.²⁴ We also found that in rural areas, educators were able to take advantage of local environmental issues and problems to the benefit of school children's education. Thus, while there is much less exposure to environmental themes in rural than urban compulsory education, there is a foundation on which educators can build – should the green school concept remain vital.

Too, our research on EE variation includes a case study composed of random sample surveys administered to student and teacher respondents in 40 schools of Lanzhou city, Gansu province.²⁵ Using an index of four dimensions of environmental education – awareness, knowledge, attitudes and behavioral disposition – we examined results from primary, middle and high schools. We also considered the information sources that respondents used, including schools, the Internet, television, and the family.

Environmental education learning outcomes differed by grade level. In primary and middle schools (part of the compulsory 1–9 educational system), knowledge gains were low compared to changes in environmental awareness and positive environmental attitudes; for high school students, knowledge gains were greater. Electronic media were a more important source of information than others as one rose up the grade ladder; school was more important at earlier stages than later.

We noted small but interesting gender differences. Slight knowledge differences separated boys and girls (boys were a bit ahead of girls); girls, on the other hand, were ahead with respect to environmental awareness and attitudes. School played a more pivotal role in EE for girls than boys. Surveys from teachers revealed few gender differences; overall, teachers had

the highest level of awareness, and were most dependent on electronic sources of environmental information.

The purpose of this case study was to determine whether at a distance from the increasingly highly economically developed east coast of China, we would find more differences than similarities in the practice of environmental education. We conclude that there are important commonalities in the substance and delivery of EE, climate change education and ESD throughout China.²⁶

EE Differences in Greater China. This section focuses on environmental education (and ESD) in Taiwan and to a lesser extent in Hong Kong, with comparisons to China. China's EE/ESD schools program is similar to those in Taiwan and Hong Kong, although teachers and principals say students spend less time learning about environment-related issues and processes.²⁷ Significantly, China retains the *dakao* (as does Hong Kong), while Taiwan no longer mandates the *liankao*. This gatekeeping examination offers a potential metric both for changes in student awareness and cognition in environmental areas, as discussed in the next section.

We conducted research on Taiwan's environmental NGO milieu²⁸ (with far briefer reference to that in Hong Kong), because NGOs are important actors in the non-formal aspect of EE/ESD. Taiwan's list of NGOs tops 200 (far smaller than the number in China), and we examined how they functioned as organizations, comparing them to NGOs in China. We found that Taiwan's NGOs are better institutionalized than those in China and Hong Kong, yet all NGO communities are specialized. The degree in professionalization of Taiwan's NGOs is higher than China's. However, the international NGOs operating in China (about 40) bring significant technical expertise and environmental knowledge to their work. Taiwan's national NGOs also have a large volunteer base. Few of China's national NGOs have many volunteers. Student groups at the college/university level attract volunteers, and of course grassroots NGOs depend on volunteers. Capacity-building efforts for China's local environmental activists are now underway. Funding is a greater problem for organizations in China than in Taiwan (except for China's international NGOs, but their future funding is uncertain). Hong Kong benefits from its role as a global entrepôt with the presence of many rich multinational corporations, desiring to attain a good and "green" corporate label. Although its EE and ESD activities are less well defined than those in China and Taiwan, they are handsomely funded. Finally, environmental

NGOs are reasonably well connected to power centers in each state. Taiwan's NGOs, being more institutionalized, have greater success in playing roles as quasi-governments, thereby linking environmental values to the furtherance of state goals and objectives.

Because most environmental NGOs have educational objectives, we asked how they contributed to environmental education (both EE and ESD), and gave examples of their work in raising awareness of environmental problems, disseminating environmental knowledge and changing attitudes toward the environment. In most areas, for example development of materials for teachers and the public, there are few differences in NGO activity. In one area, the difference was significant. Taiwan's NGOs have been much more effective in bringing children and adults "to" the environment, which, to environmental educators, is greatly important, not only in raising awareness but also in changing attitudes and behavior.

We examined briefly participation, protest demonstrations and resistance organizations. In all three jurisdictions, environmental NGOs emphasize participation. Because Taiwan's political environment is far freer than China's, participation opportunities are greater. Protest demonstrations on environmental issues occur in all three areas also; however, they are illegal in China (yet occur nonetheless). Finally, the most obvious difference is lack of legitimate resistance organizations in China, while they are present in Taiwan and they have figured as part of environmental protest in Hong Kong. Clearly, in Taiwan's case, environmentalism has been closely related to democratization.²⁹ NGOs have empowered individuals, improved their personal and political efficacy, and nurtured transformative values; overall, NGOs assisted in the furtherance of grassroots activities and orientations, and provided incentives for democratic development and consolidation. We shall see whether China's community of NGOs, operating in far different and more constrained circumstances, matches Taiwan's strides.³⁰

Assessment of Outcomes

A recent critical review of environmental education opines:

Environmental education has failed to bring about the changes in attitude and behavior necessary to stave off the detrimental effects of climate change, biodiversity loss, and environmental degradation that our planet is experiencing at an alarmingly accelerating

rate.³¹

Even in the most economically advanced post-industrial societies, environmental education has no easy metric to assess successful or failed outcomes. In China, the search for an effective metric has been even more difficult. In our work, we considered three different topics related to measurement of EE outcomes.

First we briefly considered whether high stakes exams such as China's *zhongkao* and *dakao* provided a useful metric for the efficacy of environmental education program. One of our interview respondents was a well-known expert of environmental education, Dr Wang Min, Professor of Geography at Beijing Normal University. His doctoral dissertation was a study of the environmental awareness of elementary school students with a focus on how their growing knowledge affected behavior. Since the mid-1990s he has regularly led research projects on environmental protection attitudes across grade levels. In a 2009 interview he made this argument for use of gatekeeping exams to assess environmental education:

We have looked at the *gaokao* and the results do denote changes. We have considered test results in history, geography and civics—as well as in chemistry and biology. There are 300 points in the *gaokao* including 70 in biology and geography. We have studied the efficacy of education through these tests—from the 1970s, 1980s and 1990s. Altogether, we have 32 years of *gaokao* data. Beginning 10 years ago, with the desire to improve environmental protection as the background, the test preparation group of the Ministry of Education (in which I participated) has paid attention; also, the Beijing municipality, which uses the *zhongkao* (high school entrance examination examination), has considered new means of assessment . . . There are environmental questions on these tests. In this area, the government pays attention to it.³²

Many educators in the field of EE and ESD believe that an experimental period of at least 10 years and preferably longer is necessary before the subject is measured. In 2007, Professor Wang did baseline research for the municipality of Beijing.³³ By 2014, however, no prospectus had been developed to use either of the two national gatekeeping examinations as an assessment of China's venture into environmental education.

Our second attempt to develop a metric involved observations of academic experts on the problems and difficulties of secondary school EE in China.³⁴ In the view of practitioners and experts, students had relatively weak environmental awareness, and they did not embody a strong environmental protection consciousness. The proficiency of full-time teachers was not high, and training programs for teachers were weak. Although geography is the pivot of middle and high school environmental education, it has not reached its potential in integrating the diverse goals of EE and ESD. The nature of these goals and the difficulty of assessing them all quantitatively present an obstacle to the development of an effective evaluation system. In the late twentieth century China's K-12 education system became more decentralized, and at the sub-national level, where financial control is asserted, no specific environmental education act or set of regulations exists. However, we should remember that we are considering secondary school EE and ESD through the prism of experts, who tend to make highly critical observations. To obtain a different view of the subject, we turn to media reports of broader surveys conducted in China since 2000, some of which include responses of a sample of the mass public.

These survey materials are complex and in some places contradictory, yet they inform us of the general state of environmental education, of differences among important sub-groups, and of the degree in uniformity of problem perceptions.³⁵ Given the goals of environmental education – increased consciousness, knowledge, favorable attitudes, and behavior – surveys of China's population produced mixed results. Most of the surveys do report a relatively high level of environmental consciousness and sensitivity to changes in environmental conditions. Yet, with exceptions, levels of environmental knowledge are low. This is especially the case with respect to environmental law, regulations and policy. A second area that is disappointing with respect to the goals of EE and ESD is that of behavioral dispositions. Few of the respondents of the several surveys indicated that they had been participants in environmental protection activities. For example, a small number indicated that they used energy-saving products, that they avoided use of plastic bags when shopping, or that they separated household waste and recycled used products.

Not all of the survey researchers provided breakdowns of the different relevant sample sub-groups. Although there were some differing interpretations across the surveys, in general terms sub-group analyses were consistent. Education was a major explanatory variable, and

degree of education of respondents tended to be related directly to environmental awareness, attitude and knowledge: the more educated the respondents, the more likely they were to be aware, to have attitudes friendly toward the environment and to be environmentally knowledgeable. Also, the higher the degree of education, the more likely they were to take environmental problems seriously, to be more sensitive to them, and to be more satisfied when environmental protection efforts ensued.

Gender differences, however, tended to be slight. Female respondents were slightly more concerned about environmental problems, while male respondents paid more attention to environmental issues. Overall, men were 'less green' than women respecting environmental attitudes. Age differences were pronounced but not consistently across the different surveys treated here. With several exceptions as noted above, younger respondents appeared to have greater degrees of environmental consciousness, were more sensitive to issues, more knowledgeable, and tended to exhibit better environmental habits (such as switching off the lights when leaving a room). In general, their attitudes were more opposed to the dominant social paradigm than were older age cohorts.

Rural–urban differences remained consistent across the different surveys. City dwellers were much more environmentally aware and knowledgeable than their country cousins; they were more sensitive to environmental issues, and their behaviors were more consistent with green norms. Occupation, a very important variable in Western public opinion surveys, was mentioned in only three of these surveys. Only two occupational groups stood out: students, who took environmental problems seriously, were aware and knowledgeable; and government cadres at the national level, who were nearly as environmentally friendly as students (a significant finding because some of them are environmental law/policy enforcers).

Some of the surveys asked respondents open-ended questions on environmental issues and problems, while others asked them to respond to closed-ended cues. As a result, responses to issues can be compared only at a relatively high level of generality. What is clear, though, is that most of the respondents were bothered by the same kinds of environmental problems: pollution of the land, air and waters; loss of biodiversity; and reduction in the amount of arable land. There was greater concern for problems with a direct impact on their lives than with more abstract and vague concerns, such as climate change. This kind of response set is typical across the globe.

The tendency of respondents was to say that these problems in their backyards (reflecting the NIMBY phenomenon) were serious or very serious, and they were dissatisfied with the way they had been treated up to the present by environmental protection officials.

Altogether, we lack a good metric for the evaluation of the success or failure of EE, ESD, and CCE in China, and in this respect our findings would not be greatly different were we exploring change in environmental cognition, attitudes and behavior in most other countries of the world. Because of the lack of a good metric, and the relative youth of environmental education efforts in China, our findings truly are “provisional.”

Chinese Characteristics of Environmental Education³⁶

Environmental education developed in the West and is based on Western concepts, not on Chinese values. Yet today China is part of a global though somewhat disjointed network of scholars, specialists and activists, all of whom seek to improve attitudes, cognition and ultimately human behavior in order to better protect the environment for the current and future generations.

All programs in environmental education, like projects in environmental protection generally, have movement components. They aspire to mobilize people against environmental “wrongs” (such as pollution to the air, land and water), and then to organize them for effective action. The context for this global emphasis is the onward march of industrial civilization, which has been especially pronounced in China since the late 1970s.

Many of the differences between environmental education in China and elsewhere are a product of the kind of state–society relations one finds. China has a very strong state and a relatively weak society. This factor has a significant bearing on the national characteristics present in environmental education.

A second factor influencing the way in which China has approached environmental education is its unique historical thought system. In the past two decades, traditional philosophy has re-emerged. In the second decade of the twenty-first century, Marx is less important to social life than the ancient thinkers. Primarily, the resurgence has been of Confucianism and the ideas of Confucius, Mencius and to a lesser extent Xunzi. Daoism, which pertains even more directly

to environmental change, has become popular as well, and writers and commentators emphasize the works and aphorisms of Laozi.

These two factors – the *structure* of state–society relationships and the *values* of Chinese traditions – lead to three distinctive characteristics of environmental education: a top-down orientation toward change; a greater attention to attitudes and behavior in the educational process than to knowledge acquisition; and restraints on group activities. We discuss each in turn.

Top-down Orientation. The Chinese system is top-down in its orientation, notwithstanding much devolution of power and authority to provinces, special administrative districts and local governments in the reform era. This is in contrast to strong grassroots, or bottom-up, elements in the democratic nations, including Taiwan in greater China.³⁷

The disadvantage of a top-down orientation is that it discourages innovation and stifles initiative; as well, it creates a pattern of dependency when lower-level officials and civil society organizations look to the state for leadership instead of forging ahead to find solutions to environmental problems on their own. Also, top-down approaches discourage broad-scale participation in activities, because they might threaten the control the state exercises over groups and individuals.

Yet there are advantages to top-down approaches. Generally, it is easier to establish consensus and make a decision in a smaller group than in the broad society as a whole. Because environmental protection decisions are usually time-sensitive, the top-down approach appears to be more efficient. Second, implementation of decisions is faster in top-down as opposed to bottom-up approaches. Third, enforcement (and monitoring of outcomes) is easier when moving down a hierarchy, where each decision point is identified, than when moving up the trunk and branches of a decision tree.

In the Maoist era, national campaigns were often used to bring people into conformity with new agendas once the elite had reached consensus. Some campaigns initiated since China began economic and political liberalization in the late 1970s; for example the afforestation and reforestation campaigns of the late 1990s were remarkably successful in focusing public attention on environmental problems and in engaging the actions of millions. This is to suggest

that the top-down orientation of policy-making and implementation is not necessarily a limitation.

Focus on Change in Attitudes and Behavior. One of the environmental education experts we consulted had this to say about the difference between the Chinese system of educating the public on environmental problems and the system in other nations, especially North America and Europe:

The Chinese attitude toward education is different from that in other countries. It has a very long history, from the time of Confucius. The attitude to individuals is different. Chinese teachers emphasize students' attitudes and behavior more than in other countries.³⁸

Gilbert Rozman, who compares the impact of Confucian culture across East Asia, points to the common focus leaders have emphasized:

[They] seek . . . to counteract excessive materialism and to cultivate a willingness to dedicate oneself through hard work and sincere belief to socially approved goals. This path reminds us of the Confucian appeal to cultivate one's mind, to set one's inner self in order, and to learn high moral principles in order to put them into practice.³⁹

This accounts for the ardent hortatory style that Chinese teachers bring to their lessons on environmental education.

During the Cultural Revolution, education became highly ideological in China; since the opening of China in the late 1970s, the ideological quotient has lessened somewhat but has been replaced with "citizenship education" that contains both ideological and moral elements – at both the primary and secondary levels of schooling. This particularly affects EE because of its increased emphasis on sustainability that contains a moral calculus.⁴⁰

Restraints on Group Activity. There tend to be fewer group activities in Chinese classrooms that discuss EE and ESD, and as we noted above, there is much less emphasis on taking school children "to" the environment, or conducting classes "in" the environment than one would observe in a Western milieu. There are several reasons for this difference. One of our

experts responded this way to a query as to why schools have relatively few environmental education activities:

I think most important is the one child families . . . Parents can't make any mistakes. There has been kidnapping of kids and some episodes of violence in the schools, and these have influenced public attitudes. I approve of better security at schools. There was a recent case of a *lioulang han* (a stray, perhaps homeless person) who was treated as though he were a criminal. He was perceived as a threat to the school.⁴¹

Another respondent mentioned that few schools had buses to take students off campus to engage in environmental education activities. A third reason for the relative lack of activities is that EE and ESD are part of several subjects. They are not like chemistry or physics, and thus it is difficult to focus on them without disrupting lesson plans for subjects on which students will be tested.

We think a more powerful explanation is the relatively slow development in growth of environmental NGOs, because of the tightness of the registration system and publicized monitoring of their activities. Groups that might sponsor activities for young people see few incentives for doing so, and the evidence for this is seen in the far greater level of NGO-led EE activities in Taiwan than in China, notwithstanding the greater number of organizations in the latter.

A number of environmental NGOs fail to register with the state, even after the loosening of requirements following the Wenchuan earthquake of 2008 and in 2012. This we find unfortunate, because environmental organizations pose little threat to the state and promise great benefits if their activities are welcomed. We are reminded that in 1998, Secretary-General of the State Council, Luo Gan, stated: 'Government has taken up the management of many affairs which it should not have managed, is not in a position to manage, or actually cannot manage well.'⁴² He then proceeded to urge an expansion of "social intermediary organizations."

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At the local level, environmental and other NGOs have interacted with increasing frequency in recent years, with bonds that can loosely be described as corporatist.⁴³ Perhaps such connections will reduce the apprehension of central state institutions regarding NGOs, which, particularly in the case of environmental groups, advance the interests of the state.

Endnotes

¹.IUCN. *International Working Meeting on Environmental Education in the School Curriculum*, Final Report, September, Gland, Switzerland: IUCN, 1970.

² The paper is based on the concluding chapter of our soon-to-be published book: Gerald McBeath and Jenifer Huang McBeath with Qing Tian and Yu Huang, *Environmental Education in China*, Cheltenham, UK: Edward Elgar, 2014. Research was done from 2004 through 2012 and included both surveys of existing literature, archival sources, visits to many primary, middle, secondary schools and college/universities, and more than 100 interviews with specialists and practitioners.

3. See Thomas Mappes and Jane Zembaty, *Social Ethics: Morality and Social Policy*, Boston: McGraw Hill, 2002, especially pp. 475–530.

4. See, for example, Vine Deloria, Jr, *God is Red: A Native View of Religion*, 2nd edn, Golden, CO: North American Press, 1993.

5. Aldo Leopold, "The land ethic," in *A Sand County Almanac*, New York: Oxford University Press, 1966, pp. 219, 220, 240. There are many parallels between Leopold's conception of human–nature interrelationships and that of Zhuangzi, the Daoist philosopher.

⁶ Dainian Zhang, "A thought analysis of 'Tianrenheyi' in Chinese philosophy (in Chinese), *Beijing University Report (Philosophy and Social Science Edition)*, Vol. 1, 1985.

⁷ Gilbert Rozman, "Can Confucianism survive in an age of universalism and globalization," *Pacific Affairs*, 75, 1, Spring 2002, 11-38.

⁸ This section of the paper was developed primarily by Qing Tian, Associate Professor of Environmental Education, Beijing Normal University, 2013-14.

⁹. See, among others, *China Agenda 21* at <http://www.inip.org/zc/ShowArticle.asp?ArticleID=574>. Accessed 14 November 2011; Ministry of Education, *Guideline for Environmental Education in Primary and Middle Schools*, Beijing: Beijing Normal University Publishing, 2003; Qing Tian, *Documents on EE and ESD Compiled from UN Conference* (in Chinese), Beijing: China Environmental Science Publishing House, 2011; Ministry of Education, *New 11th Five-year Curriculum Guidelines* at: http://news.xinhuanet.com/misc/2006-03/16/content_43009517_7.htm. Accessed 14 December 2011.

¹⁰. Grades 10-12, the Chinese equivalent of high school in the United States, is not mandatory, and for that reason our research did not treat it extensively. For general comments in this area, see Emily Hannum and Albert Park, eds., *Education and Reform in China*. New York: Routledge, 2007 and Xiufang Wang, *Education in China since 1976*, Jefferson, NC: McFarland & Co., 2003.

¹¹ This section of the paper is based primarily on the work of Yu Huang, Lecturer in Geography, Beijing Normal University, 2013-14.

¹² See, among others, Dongjie Niu, Cahje Jiang and Fengting Li, "Higher education for sustainable development in China" (in Chinese), *International Journal of Sustainability in Higher Education*, 11, 2, 2010, 153-62; Jiusheng Li and Zhiren Xie, "Discussion on creation of the 'green university'" (in Chinese), *Jiangsu Province Higher Education*, 3, 2003; Xiofeng Zhang and Donghui Wang, "Green construction management studies at the university" (in Chinese), *Journal of Environmental Protection Science*, 12, 2008; Qingshan Tan and Lanfang Liu, "The new thinking of logistics in the background of the green university" (in Chinese), *Journal of Hengyang Normal University*, 12, 2010; Na Chen, "Higher education reform and building the 'Green College'" (in Chinese), *Hunan Normal University, Journal of Education and Science*, 11, 2004; and Jianjun Shi, "The idea of creating a low carbon campus in green" (in Chinese), *Journal of China Higher Education*, 12, 2010.

¹³ See Dazhong Wang, "Create a 'green university' to achieve sustainable development" (in Chinese), *Tsinghua University Journal on the Study of Education*, 4, 1998 and Peking University, "Building the Green Campus in Peking University" (in Chinese), available at: <http://www.efglobal.org/news.php?id=450>, accessed August 15, 2012.

¹⁴ This section of the paper is based primarily on the work of Qing Tian, Associate Professor of Environmental Education, Beijing Normal University, 2013-14.

¹⁵ See Xudong Zhu, "Ten problems and their solutions in China's teacher education (in Chinese)," *Contemporary Teacher Education*, 5, 3, September, 2012, 5-21, and Mingren Zhao and Xudong Zhu, "Teacher education system research in the new era" (in Chinese), *China Higher Education Research*, 1, 2010, 50-56.

¹⁶ The EEI program was a cooperative program of WWF-China, British Petroleum and the Ministry of Education; the State Environmental Protection Administration (precursor of the Ministry of Environmental Protection) initiated the Green schools project in 2000. For information in the Chinese journal literature on in-service training, see, among others: Maocong Zhang, "The conflicts in teacher training for primary and middle schools and system construction" (in Chinese), *Contemporary Education Science*, 13, 2012, 25-9; Xin Wang and Xiuzhi Chi, "The situation analysis of in-service teacher training in China" (in Chinese), *Journal of Educational Institute of Jilin Province*, 25, 6, 2009, 39-40; Xuemei Ding, "The facts influencing the quality of teacher training in primary and middle schools and their solutions in China" (in Chinese), *Adult Education*, 3, 2008, 6-8; and Jiao Wang and Xiaoping Wang, "The bias and its correction for teacher training: Reflection of 10 years on teacher training since basic education curriculum reform" (in Chinese), *Journal of Education Guidance*, June 2012, 61-3.

¹⁷ Personal interviews of Qing Tian with local education leaders in Xicheng District, Beijing and teachers of pilot schools in the EPD program, mid-end April 2005.

¹⁸ Personal interview of author with Director, Center for Environmental Education & Communications, Ministry of Environmental Protection, May 28, 2010.

¹⁹ Interview of author with chief editor, *China Green News* and attendance at Journalists' salon, Beijing, June 16, 2011.

²⁰ See Jianwei Wang and Xiaojie Wang, "Media and Chinese foreign policy," *Journal of Contemporary China*, 23, 86, March 2014, 234.

²¹ For reviews of environmental NGOs in English see, among others: Jonathan Schwartz, "Environmental NGOs in China: Roles and limits," *Pacific Affairs*, 72, 1, Spring 2000, 38; Peter Ho, "Greening without conflict? Environmentalism, NGOs and civil society in China," *Development and Change*, 32, 907; Fengshi Wu, "New partners or old brothers? GONGOs in transitional environmental advocacy in China," *China Environment Series*, 5, 45; David Da-hua Yang, "Civil society as an analytic lens for contemporary China," *China: An International Journal*, 2, 1, March 2004, 1-27; and Jin Hong, "NGOs and environmental education in China," in S. Wooltorton and D. Marinova, eds., *Sharing Wisdom for Our Future: Environmental Education in Action*, Proceedings of the 2006 Conference of the Australian Association of Environmental Education, 2007, 324-32.

²² See Joe Mullich, "Corporate social responsibility emerges in China," *Wall Street Journal*, September 12, 2011.

²³ For information on this important difference, see among others: Chuanyou Bao, "Policies for compulsory education disparity between urban and rural areas in China" (in Chinese), in *Journal of Beijing Normal University (Social Sciences)*, 2005, 3; Wen Li, A. Park and S. Wang, "School equity in rural China," in Hannum and Park (eds), *Education and Reform in China*, New York: Routledge, 2007, 32; G. A. Postiglione, "Schooling and inequality in China," in Postiglione (ed.), *Education and Social Change in China*, Armonk, NY: M.E. Sharpe, 2006, 17; and Teng Margaret Fu, "Unequal primary education opportunities in rural and urban China," *China Perspectives*, 6, 2005, 5.

²⁴ These visits took place in late June and early July 2011, including visits to both elementary and junior middle schools.

²⁵ Our collaborator Professor Qing Tian directed this study, supported by the Asian Green School Program, initiated by the UNESCO Jakarta office.

²⁶ The journal literature in Chinese contains an increasing number of studies which permit, with qualifications, some comparative analysis. See, among others: Jing Du and Yexi Zhong, "Investigation on the state of EE in primary and middle schools in Jiangxi Province" (in Chinese), *Journal of Jiangxi Research in Educational Science*, 2006, 34-5; Zhanhua Wang, Yan Ying and Yuan Xing, "Comparative study on the survey of environmental consciousness of primary and middle school students in Western regions of China" (in Chinese), *Journal of Environmental Education*, 4, 2003, 9-11; and Xiaohui Yang, "Research on students' environmental consciousness in Green Schools" (in Chinese), MA thesis, Shenyang Normal University, 2011.

²⁷ A consortium of environmental education professors and researchers from China, Taiwan, Hong Kong and Macau meets at least biennially. Educators share information on effective practices and contribute papers to a proceedings of the conference.

²⁸ Our research on Taiwan's NGOs began in 2003 and we re-interviewed about 10 NGO representatives in 2011, thereby adding a longitudinal dimension to the study (altogether, we included 35 NGOs in the study). In China, we first began work on the NGO community in 2004, and also re-interviewed at least a dozen NGO reps 8-9 years later. Many of the China interviews and a few of the 2003 Taiwan interviews are reported on in earlier publications: McBeath and Leng, *Governance of Biodiversity Conservation in China and Taiwan*, Cheltenham, UK: Edward Elgar Publishing, 2006 and J.H. McBeath and J. McBeath, *Environmental Change and Food Security in China*, New York: Springer, 2010.

²⁹ See Ching-Ping Tang and Shui-Yan Tang, "Democratization and capacity building for environmental governance: Managing land subsidence in Taiwan," *Environment and Planning*, 38, 2006, 1131-47 and Ching-Ping Tang, "Democratizing urban politics and civic environmentalism in Taiwan," *China Quarterly*, 176, 2003, 1029-51.

³⁰ See Yangqi Tong, "Environmental movements in transitional societies: A comparative study of Taiwan and China," *Comparative Politics*, 37, 2, January 2005, 181.

³¹ Charles Saylan and Daniel T. Blumstein, *The Failure of Environmental Education*, Berkeley, CA: University of California Press, 2011, 1.

³² Personal interview with Professor Min Wang, Professor of Geography and Director, Center for Geography and Education for Sustainable Development, Beijing Normal University, 26 May 2009 (and also 24 May 2010 and 17 June 2011).

³³ 2011 interview of author.

³⁴ The observations we collected include Xiaofei Zheng, "Research into the environmental consciousness approach in high school geography" (in Chinese), Thesis, Northeast Normal University, 2003; Xiaogong Sun, "Exploration of environmental education in middle school geography teaching" (in Chinese), Thesis, Jiangxi Normal University, 2005; Huiying Chen, "On the environmental consciousness of high school students in middle school geography education" (in Chinese), Thesis, Northwest Normal University, 2006; Yingchun Liu, "A study on the implementation of environmental education in geography teaching in senior high schools" (in Chinese), Dissertation, Hunan Normal University; Huijing Liu and Yuzhen Liu, "Henan province rural middle school geography teachers' environmental literacy" (in Chinese), *Journal of Geography Education*, 12, 2011, 47-8; Su Wang and Xin Yu, "Survey of teachers' environmental literacy in Beijing" (in Chinese), Conference proceedings, Women, Environment, Mission: Seminar on Women and the Environment, Beijing, 1998; Yanfen Shao, "Discussion on the environmental training of primary and secondary school teachers" (in Chinese), *Journal of Adult Education*, 2003, 201; Linlin Xie, "Survey report on primary and secondary school teachers of environmental education" (in Chinese), *Shaoxing Journal of Liberal Arts*, 24, 12, 2004, 91-3; and Lianying Lu, "Environmental education and teachers' environmental quality" (in Chinese), *Journal of Hubei Normal University*, 25, 1, 2005, 107-10.

³⁵ The surveys were conducted by different authorities, and full information is available from the authors. They include the Beijing Broadcasting Institute, Environmental Journalists' Association assisted by the Unilever Cup; China's National Conditions Research Center of Beijing University; Institute of Sociology of the Chinese Academy of Social Sciences; Beijing Millward Information Consulting Co. Ltd.; Environmental Quality Evaluation Center of Lanzhou University; Humanities and Social Science Division of Ministry of Education; Environmental Protection Department of Hebei Province; Xinjiang Uygur Autonomous Region Environmental Protection Agency; and Horizon Research Consultancy Group commissioned by the Beijing City Environmental Protection Center.

³⁶ We developed this section by asking a dozen researchers and educators, mostly in the Beijing area, what they thought were the distinguishing characteristics of Chinese environmental education. We attribute only direct quotations to the sources.

³⁷ Personal interview with a leading EE expert, in Beijing, 8 March 2011. On this point, see also Jing Lin and Heidi Ross, "Addressing urgent needs: The emergence of environmental education in China," *China Environment Series*, 7, 2005, 74-8.

³⁸ Personal interview with division chief, Environmental Education, Ministry of Education, Beijing, 13 May 2012.

³⁹ Gilbert Rozman, "Comparisons of modern Confucian values in China and Japan," in Rozman (ed.), *The East Asian Region: Confucian Heritage and its Modern Adaptation*, Princeton, NJ: Princeton University Press, 1991, 198.

⁴⁰ See Libby Tudball, "Multidimensional citizenship education and an internationalized curriculum in a time of reform: Is this the future trajectory for schools in China and Australia in the twenty-first century?" In Janette Ryan (ed.), *Education Reform in China: Changing Concepts, Contexts and Practices*, New York: Routledge, 2011, 191.

41. Personal interview with professor of environmental education, Beijing, 28 May 2011.

42. Quoted in Tony Saich, "Negotiating the state: The development of social organizations in China," *China Quarterly*, 161, March 2000, 128.

43. Jennifer Y.J. Hsu and Reza Hasmath, "The local corporatist state and NGO relations in China," *Journal of Contemporary China*, 23, 87, 2014, 533–4.