

Synergism in Education

—Reflection of Education Upon the Wenchuan Earthquake

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Abstract 05.12.2008, the tremendous Sichuan-Wenchuan Earthquake brought China great financial and psychological destructions. The quake destroyed thousands of lives, homes and public recourses. After such trauma, one of the most immediate concerns has been how to reconstructing appropriate infrastructures to better withstand, response and recover from future natural disasters. However, in this article, the author points out that it is even more critical to plan and establish an efficient recovery from such trauma through thoughtful reflection from the educational prospective; through the re-examination of our basic social and individual values, and through the understanding of the human-nature relationship. The article took a systematic look at the education in China today and argues that it should not just function as a tool, nor be framed as rules and regulations. The author suggests that instead of passively adapting the environment, we humans should SYNC harmoniously with our environment: natural and/or artificial.

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Authors use “Wei Yu”(quote from Confucius) in Chinese to describe this kind of education which should obey the rule that make people develop better in their own living situation. In another word, education ought to comprehensively use various elements to help the world to be harmony of nature and human. It is difficult to translate it into English. We only find the word *synergism* have something in common. Synergism, in general, may be defined as two or more agents working together to produce a result not obtainable by any of the agents independently. The word synergy or synergism comes from two Greek words: erg meaning "to work", and syn meaning "together"; hence, synergism is a "working together".

The historian Toynbee Arnold Joseph once said: “Between education and catastrophe, there is intense competition.”

If an unprecedented catastrophe could not arouse a deep introspection and reflection on the Chinese education system and the core ideology, we will lose in the intense competition against the powerful nature without a doubt.

American philosopher Abraham J. Heschel said: “the most valuable insight about the human’s situation would not be achieved by patient introspection and comprehensive survey, but by surprise and shock when encountered enormous setbacks. The result of thorough review is usually emerged at the time of being aware of the setbacks or facing the crisis. Only few people made it in a glorious performance at the time of joy.”

The significance of such reflection is to better understand and realize the true value of human beings. If we could not obtain “the most valuable insight” after the tremendous earthquake of Wenchuan, we learned nothing from the catastrophe.

Chinese President Jintao Hu said, at the Fourteenth Academician Convention of Chinese Academy of Sciences and the Ninth of Chinese Academy of Engineering on June 23, 2008, “Nature disasters are common challenges for human society. China is one of countries, which the world's worst natural disasters happen to. The work of forecasting, preventing and mitigating disasters is concerning with the overall economic and social development of China. We have to reach a better understanding of the causing, developing, evolution, spatial distributions and the mechanism of disasters to provide theoretical knowledge for the scientific prediction and prevention. We also have to strengthen capacity-building work to establish disaster forecasting network, which combines the monitoring research and early warning together. The in-depth study should focus on the relationships among various kinds of natural disasters, and among disasters, ecological environment and the development of economic and society. We have to develop the key technology of disaster monitoring and prevention to create national and local emergency rescue systems and to establish a comprehensive disaster management platform for information sharing. The work needs to optimize the integration of various technological resources and bring scientific and technological knowledge into national education to improve disaster awareness. We have to widen

Abraham J. Heschel(1994). *The Sabbath*. Guizhou:Guizhou People Publication. p13.

international exchanges and cooperation for the sake of not only using abroad experience and advanced technology for reference, but also contributing to the work of disaster prevention and mitigation of whole human society.”

The intensive reflection should result in action: educating. Because the key of disaster prevention–fighting scenario doesn’t just come from the “physical” knowledge, but most importantly, we need to achieve breakthroughs on the humanity perspective. Therefore, we argue that the educational backbone in China should be based on the synergy of both physical and humanity levels.

1. Instrument and Value

1.1 Review 1: Instrumental Education

Max Weber’s divided human reason into instrumental reason and value reason. From the aspect of “instrumental reason”, education will no doubt contribute to disaster prevention and mitigation. For example, Ye Zhiping, principal of Sangzao Middle School of Anxian in Sichuan, beginning in 2005, requested each semester to organize a school emergency evacuation drill. As a result of repetitious exercises, more than 2,200 school students, hundreds of teachers from different school buildings and classrooms all safely rushed into the playground in one minute and 36 seconds when the Wenchuan earthquake happens. No one injured in this disaster. There’s another example whereas before the Tangshan Earthquake happens, Qinglong County of Hebei Province introduced knowledge of earthquake to all the masses through radio, meetings and other possible forms. By timely and widely education, the mortality and loss greatly reduced. Actually those kinds of educations are popular in the earthquake-prone area, such as San Francisco, Los Angeles, Japan and Taiwan. In those areas, schools open curriculum about disaster prevention, mitigation and rescue. They also hold some correlative drill.

Those examples proved that when “the physical” environment is damaged, the power of education is still functional: through education, students not only get to learn the knowledge of disasters, but also gained awareness and self-help capacity in long-term training. Education should and have to play it proper role in disasters prevention, though the education at the times only plays an “instrumental” role.

Unkown(2008). *Important Talk of Jintao Hu on the academician conference of Chinese Academy of Sciences and Chinese Academy of Social Sciences*. http://news.xinhuanet.com/politics/2008-06/24/content_8427462.htm.

Yu Zhu, Yi Wan, Hongchan Liu(2008). *A country middle school headmaster’s idea of avoiding disaster*. http://news.xinhuanet.com/politics/2008-05/24/content_8253945.htm.

Herbert A Simon(1988). *The Sciences of the Artificial*. Beijing:People's Liberation Army Publication. P4.

In fact, we can find instrumental education everywhere. In any place with human activities or social division, there is education: such as the political, military technology, legal education and so on. These educations even have its derivative education forms. For example, the hygiene education's derivative forms include the health education, the sex education, the pre-marriage education, the prenatal education and so on. However these are just functions of education, not the core ideology of education

Instrumental education is only concerned about certain aspects of education, such as functions or motives. It's not for the overall development of human nature in the holistic and systematic approach. The complexity nature of human is the nature of education, so the theory behind education should be conducted in a holistic and systematic fashion. Instrumental education is short-sighted and often overlooks the long-term and overall development of human and society for its utilitarian and practical nature. This kind education is surly separated and static in theories too. Its manifestations are self-contained "disciplines" and each goes its own way. There are various disciplines and different categories in education which makes education rigidly mechanical and isolated from each other. Finally the education dismembers the indecomposable human nature and spirit. The less we understand the true meaning of humanity, the harder it is to craft a long-term and saturated development for us human beings.

Unilateral instrumental emphasis on education, in essence, are highlighted the importance of what education can do, or what can manufacturers, or what to create, instead of recognition what is education nature as well as what is the humanity behind the education development. If we only put emphasis on instrumental educations, we will still repeat the error to set the education, which is responsible for development of human being as well as the heritage of civilizations, under one-sided cognition basis.

1.2 Review 2: Educational Institution

Educational institution, in strict sense, is part of instrumental education. Education institution is not a special entity form of "instrument", but rather a soft and programmed "instrument". In order to distinguish them and obtain a more thorough discussion for better understanding, we singled it out to discuss.

The Wenchuan Earthquake brings an all-round review on educational institutions, such as how to develop a emergency relief institution, which includes the training of disaster response team, the actual exercise of relief materials allocation,

preparation and transportation and so on, how to cultivate of civil awareness on disaster relief and how to plan, design, construct and inspect the quality of buildings. Putting emphasis on educational institutions is designed to consider building a permanent, institutionalized disaster defense and relief system, in which education, in terms of instilling awareness, dissemination of public opinion and implementation of measures and so on, is indispensable. Lots of cases emerged in disaster relief and post-disaster reconstructions are illustrating that all these measures are serious responsibility vacancy nowadays.

Case 1

Yesterday (date of 19), Mr. Li Chengpeng, a famous media professional, said in his abundant guest: “In addition to Liu Han Hope Primary School, the builder also constructed four schools in Mianyang. These four schools, like Liu Han Hope Primary School, are successfully endured severe test of 8 Richter scale earthquakes and remained intact.” The builder said: “During construction, you have to think what would happen after ten years. Whatever losses, a loss should not be education.”

Case 2

May 28, 21st Century Business Herald said that according to official statistics, as of May 26, the death number of student increased to 4737 and more than 16 thousand students injured in the Wenchuan earthquake. The collapse area of school buildings in hardest hit area accounted for 1.997228 million square meters.

These two cases illustrated the importance of review on educational institutions. In the case 1, Liu Han refused to step back and insisted the quality control in the constructions. His “insistence”, in essence, is an “institution”. That is why the loss of Liu Han Hope Primary school is very small in the earthquake. On the contrary, the losses are great in many other schools under the same seismic intensity. The reason is institution deficiencies. If we can set up a good earthquake prevention system through institutional review, our losses will certainly be greatly reduced in future.

Chinese scholars have taken the notice of the importance of institutional review. Song Yingquan’s article *How to Protect School Buildings*, published in the 7th bulletin of CIEFR (China Institute for Educational Finance Research) in 2008, did a comprehensive review on the safety institutions of school building. The author said

Unknown(2008). *Five primary schools survived from earthquake*.
<http://www.yyjs.gov.cn/jigou/1/shownews.php?id=2282>

Yingguang Zhang, Xiaolu -Chenzhong, Bingbing Yang(2008). *The bad quality of school building makes school collapse in earthquake*. <http://www.caijing.com.cn/2008-06-03/100067212.html>.

that the discussions on the safety of school buildings, triggered by Wenchuan earthquake, are initiated by journalists and internet users with the participation of few “scholars from education and architecture field”. So the author questioned that “whether this is an implicit that the educational scholars simply ignored this problem or just consider it as a subject without any academic value”. By the integrated analysis on Chinese laws and regulations relating to the safety of school building, the author concluded that “in the state-level of laws and regulations, those regulatory documents have no direct link to the safety of school buildings”, and “China’s systemic and specialized seismic fortification standards does not have any special requirements for school buildings”. Furthermore, “the financial responsibility of compulsory education, before 2001, was assumed by lowest township, which makes the building construction in the primary and secondary schools fall into arrear in most rural areas. Nowadays, a lot of constructions of school buildings rely on the central transfer payments in forms of project. There is no such favorable solution with sustainable development.”

In a word, there are serious problems worthy of solemn review in our institutions. While, we can not only focus on institutions related directly to disaster prevention and mitigation. The deeper-seated institutional problems also should be analyzed, such as school systems, discipline institutions and so on. These institutions, existing not only in china but also in the other countries, are regarded as the international mainstream and have their legitimacy. While, once they did harm, the harm will be much stronger, deeper and more extensive.

We have broken knowledge down into various disciplines and formulated education in such way, such as in the preparation process of syllabus and teaching materials, in the tests and examinations, in the quality assessment, in the school management and in the teacher’s training. This kind of education begins in the primary school and goes worse in higher middle school by separating arts and sciences. Though we do have some “elective courses” or “integrated courses”, those measures basically get half the result with twice effort and are just regarded as ornaments under the great burden of national college entrance examination system. After or even before the entrance into colleges, students, their parents and teachers in higher middle school run into those complicated and closely guarded “disciplines”. Many students, teachers, presidents and principals treated those disciplines as “certainty”, “sacred” and

Yingquan Song(2008). *How to protect school building?*. China Institute for Educational Finance Research Bulletin. Vol.7.

“international standards”. Thus, their attentions intensively focus on the possibility of matriculation and the difficulty of job hunting. In a word, it is “consumption-oriented”, rather than those so-called “useless things”, such as “interests”, “curiosity”, “discovery” and so on (those, in essence, are closely concerned with development of human nature). Furthermore, after graduation, views and practices of “professional counterparts” and “regular professional training” are guaranteed by employment system. In the end, the entire life have been potentially regulated by so-called “diploma society”. In this kind of society, students were regarded as “instrument”. That is why people only deal with problems by so-called “professional knowledge” instead of lively facts. A categorized management system could only put emphasis on separated development and benefits of single department, which inevitably dismembered the overall development and departed from the development of the ultimate goal – human being. With this thinking mode, there is no surprise that the only thing comes into the minds of officials from the Ministry of Water Resources and Land Resources is the benefit and electricity at the first sight of river. As a result, many dams and power plants were built around the interface or transition zone of the Three Ladders of China. On the one hand, these places could generate large quantity of energy with abundant rivers and high terrain which is naturally potential energy, on the other hand, these places show a three-dimensional and changeable climate, diverse topography, three-dimensional variety of animals and plants distribution, geological fragility (or even geological fracture zone) as well as multi-cultural and multi-ethnic humanity characteristics.

Wenchuan is the typical. Abundant water of Minjiang River runs fast from Minshan mountain of Tibetan Plateau with 5000 meters altitude to Dujiangyan City with 700 meters altitude. The horizontal distance of two places is less than 200 kilometers with average drop of almost 200 meters per kilometer (fall of 20 meters in horizontal distance of 100 meters). The huge altitude fall always is accompanying with three-dimensional climate. Temperature drops with height. In this place, the temperature decreases 1 with 150 meters elevation, which causes huge temperature difference of day and night. The topography here, distributed by the snow-capped mountains, mountain pastures, deep ravines, valley mesas or basin plains, is also

Japanese education scholar Jitiansheng said this. Quote from Daheneiyinan, Haihouzongchen, etc.(1984).*The theory problems in pedagogy*. Beijing:Education Science Publication. P298.

(according to Chinese News) At 10:55am on 6,10,2008, because of low cloud bad fog and big whirl, a helicopter of China Chendu Military region crashed.

extremely complex and fragile. Various plants distributed from the Chengdu Plain to the Tibetan Plateau, which includes broad-leaved forests, mixed forests, coniferous forests, shrub forests and alpine tundra. This place has famous giant panda, wildebeest, white-lipped deer and many other rare wild species. The place is also a well-known historical and multi-cultural symbiotic zone with the residence of Tibetan, Qiang, Yi, Hui and Han ethnic nationalities. There have the world-renowned Dujiangyan Water Conservancy Project, Erlang Temple, the former residence of Bai Li, Qiang stockades, watchtowers, castles and lots of nationality villages. In this place, the basin agricultural civilization created the Chinese richest “Land of Abundance”. The plateau of nomadic civilization brought up the fearless and unconstrained Kangba people and the mountain civilized life of half husbandry and half farming generated the warm hearted Qiang peoples. Those multi-cultural symbiosis, mixed and complemented with each other, are the product of natural selection and historical evolution under the structure and function of sky-earth-men system.

The facts of large dams and power plant project launched in this zone illustrated that the final decision-making preferred the hydro-electric power to other significant or potential harms. Maybe they believed that those potential harms are of secondary importance or they have confidence of overcoming or eliminating. In a common sense, the fully scientific risk estimates shall be done not until the terrible earthquake happened. After the disaster, people became to realize that the loss is much greater than the power generation efficiency. According to official statistics of Sichuan Province, the “direct economic loss” of the earthquake is 845.1 billion RMB. In October, 2008, the National Committee of Population Resources and Environment of CPPCC (the Chinese People’s Political Consultative Conference) began to investigate the problems of hydro-electric power in the southwest of China. Though the investigation is just the beginning on institutional review, it advanced the former practice, which simply attributed the loss to the nature.

Furthermore, this problem has an underlying cause - the thinking mode. The thinking mode from single and simple dimension, the so-called professional

According to National Cultural Relic Bureau preliminary statistics, the earthquake affects the provinces almost belong to our country cultural heritage crowded area. Altogether has 169 nation key Cultural relic preservation organ, 2 have included the world heritage name list, 250 provincial level Cultural relic preservation organ receives the varying degree harm, altogether has 2766 collection cultural relics to suffer injury, cultural treasures 292. http://www.xian.cgs.gov.cn/xinwenzixun/2008/0630/content_1851.html.

The direct damage caused by earthquake reached 854.1 billion. Sichuan province is most serious, occupies the total losses 91.3%. And Gansu province occupies 5.8%, Shanxi province occupies 2.9%. 1000 billion is needed to rebuild the damage.(quote from: http://www.gov.cn/wszb/zhibo264/content_1087193.htm)

perspective, rooted from the concept of “instrumental education”. The emphasis on “disciplines”, “professions” and “practicality” leads to disassembling the lively organic links of complicated problems. It, in practice, finally leads to unilaterally emphasis on management performance and department benefits.

In the end, both of the education system and the management system narrowed their eyes on the small field of “efficiency”, “technology” and “project”, leaving the harmony of nature and human far behind.

1.3 Reflection 3: Educational Value

Regardless those limitations, it is certainly necessary to reflect upon instrumental education and education institution. While the only way to see the essence is to review the educational value.

The Wenchuan earthquake, in a certain sense, destroyed not only the material existence of society, but also social organizations and social structures. The true meaning of disaster relief and reconstruction, in essence, is a kind of social reconstruction. If this premise is right, the important thing that we have to reconsider is what value that the instrumental education and the education institutions should be accordance with, besides the quality of school buildings. Only by the establishment of the value, we can have the central-axis of reconstruction.

Then, what is the review on educational value? What is the value lost in our past education? I believe that the most important thing is to rebuild the relationship between human and object, which consist of another two aspects, the relationship between human and natural objects and between human and the artificial.

1.3.1 Relationship between Human and Natural Objects

Any life body has its own interaction environment. The environment could be various landforms, or sky-earth system, or the dependency and competition among biological populations. The interactions between Life and environment permeated through the history of biological development. Darwin inducted the history as “natural selection and survival of the fittest”. America professor Albert A. Simon, the founder of management and decision-making theory, has a famous ant metaphor: an ant is crawling on the beach which was covered with large and small stones. The twisted and zigzagged track that the ant left does not represent the complexity of ant’s cognition, but only expresses the complexity of the shore. In other words, the complexity of ant behavior is determined by the external environment. The obstacles appear and the ant’s behavior changes under the guidance of the adaptive system in accordance with

environment change. If we understand this principle, we could realize that the diversity and complexity of environment is the premise of the diversity and complexity of human cognition and behavior. If we destroyed the diversity and complexity of natural environment, we destroyed diversity and complexity of human development. For education development, its space shrinks and the possibility reduces.

This viewpoint also could be proved by the formulation of human life. The brain volume of newborn baby is one third of adult, which reaches an average of 385 milliliters, and the ape is half, which reaches an average of 200 milliliters. What does this fact mean? Why the human baby could not be more mature neonatally and the brain volume reaches the half as the ape?

If the human baby do reaches the half, “Homo sapiens, with 1350 milliliters brain volumes, do need 21-month pregnancy, rather than the actual experience of 9 months.”

We do could prolong the pregnancy to 21-month by technology. For example, the technology of caesarean section could solve the production problem if the birth canal is too small for such huge baby. Actually the major problem is not the pregnancy technology, but rather the diversity and complexity of human being. Fetus in the uterine only interact with mother’s body in a limited space during limited time, which determined that the brain volumes of human baby accounts for only one-third. The other two-third, growing after birth, plays more important role in the development of human baby. It is the diverse and complex environment detached the matrix body finally makes human brain matured. Richard Leakey quoted viewpoint from Barrg Bogin, a biologist in University of Michigan of America, and said that “the growth rates of human child’s body are slow comparing with the apes, but the growth rates of the brain are almost same. The result is that if human child grows in the normal growth rate of apes, they could be less than normal scale. Bogin suggested that if young people must accept culture edification, the benefit of growth spurt is associated with high intensity study. It would be better to learn from adults for young children with big difference of body size and it is easier to establish relationship between teachers and students. While, if their body size is similar, the relationship probably will go into confrontation instead. After the study period, children’s body size will catches up by virtue of growth spurt. By insensitive study, the human person grows up. Human not

Herbert A Simon(1988) *The sciences of the artificial*. Beijing : Publishing House of People’s Liberation Army.p19.

Richard Leakey (1995). *The making of mankind*. Shanghai: Shanghai Science and Technology Publish Hose.p6.

only study the skills to survive, but also the traditional family relations and social laws, etc., that is cultural.” The mature of human biological nature and social nature needs mutual interaction and complementation from both inside and outside the matrix body. This genetic and social co-existence determined the nature of education and its extreme importance. Thus, the diminishment or destroy of the complexity and diversity of natural environment will do reduce and destruct the complexity and diversity of human’s development.

The harmony means getting along with all natural objects. Any natural objects are the resources not only for human to recognize, reconstruct or use, but also to self-develop. That is why we have “bionics”. If we agree that any natural object is the result of a few million years evolution and has its own unique and essential mystery and value, then the forms and values of its interaction with human being are also unique and indispensable.

Monk Zhanran of Chinese Tang Dynasty, in his *the Explanation of Hokke Mystery*, proposed “the Ten Fujiies”, which has a “Positive Fujii”. Daisaku Ikeda, the founder of Japanese Soka Gakkai, explained “Positive Fujii” in details. He said according to the Buddha Doctrine, the nature is a existence which maintained independent existence of life beings. Human could not co-exist with and benefit from nature unless integrate with their environment. There is no other creative survival pathway. The principle of “Positive Fujii” is based on this nature view and advocates the mutual dependent relationship between human and nature instead of conflict or opposition. Daisaku Ikeda criticized the modernization which damaged human’s environment. He said that the modern civilization of science deals with the relationship between human and nature in conflict or opposite way. Its start point is to conquer and utilize nature in favor of human benefits, which is the profound reason for the collapse of relationship between human and nature. He took Japan as an example. Ancient Japan preserved perfect natural environment. Until the modern times, in order to catch up with those developed countries, such as the United States and other European countries, Japan abandoned the right attitude to treat traditional religion and nature, especially ethic concepts among human beings so that the environment was tremendously damaged in favor of mad pursuit of material desires.

Richard Leakey (1995). *The making of mankind*. Shanghai: Shanghai Science and Technology Publish Hose.p9.
Arnold Joseph Toynbee & Daisaku Ikeda(1985). *Choose Life: A Dialogue With Arnold J. Toynbee*. Beijing: Beijing Sinoread Books Co.,Ltd.p198.

English historian Toynbee Aronold Joseph believed that the ancient Greece and Roma also have the similar notion of “Positive Fujii” before Christianity’s ruling the western world. Christianity originates from Jewish monotheism and believes that the whole nature and human are created by an imaginary God. *Genesis*, from section 26 to section 30 in chapter 1, records that God permits human to dispose everything he created and permits utilize everything according to their desire. This principle ruined the idea of “Positive Fujii” and separated human from their environment. The sacred and the inviolable of nature finally lost.

There is an old saying in *Yi*, “the big virtue of nature is growth.” It stresses to revere nature. Actually the value of the modern educations and institutions is guided by instrumental reason. Reviewing our educational value, the first thing is to reconsider the value localization between human and nature and to alter the former philosophy in institutional design. Though we have begun to put effort on this process and put forward the idea of “scientific concept of development”, “human-oriented concept” and “the harmony society”, knowledge classification does not change. Our education must establish the value of natural reverence, natural respect and symbiotic harmony with nature, rather than the contrary. The instrumental educations and educational institutions shall be designed around this central-axis.

1.3.2 Relationship between Human and Artificial things

According to Professor Simon, the artificial is created by human beings in a synthetic manner, which includes symbols, such as imaginable, abstract, scientific and artistic symbols, and the rules, regulations and customs of the symbols’ operating. The real objects, such as instruments, constructions, appliances, stationeries and so on and invisible things, such as laws, procedures, organizations, and social relationships, are also included. In a word, all the materialized and intellectualized things are artificial things.

Professor Simon believed that the nature sciences study natural objects and the sciences of the artificial study artificial things. He also puts forward four standards to judge whether it belongs to the artificial.

1. The artificial is created by human beings in a synthetic manner. The result of synthesis is usually the realization of human’s intention, but there are also some results beyond human’s expectation.

Herbert A Simon(1988) *The sciences of the artificial*. Beijing: Publishing House of People’s Liberation Army.p4.

2. The artificial can simulate some superficial representation of natural things, and because of their simulation, it is inferior to natural objects in many ways.
3. The artificial could be characterized by their functions, purposes adaptations and other features.
4. People usually discuss the artificial in a descriptive manner, sometimes in the normative approach.

The development of sciences of the artificial has gone through all the history of human evolution. We usually regard the tool invention as the ladder of human progress. Adjusting human's behavior is only a passive and negative way to adapt to the environment, but through the invention of tools, people could creatively take the initiative in changing the environment. Thus, we divided human development stages by tools, such as Paleolithic Age, Neolithic Age, Bronze Age, Iron Age, Electrification Age and Digital Age. The invention and advancement of tools became the mark of development of whole human history. The knowledge, explorations and experiments about tools were widely spread. The socialization of tool's production eventually brought about various changes and progresses of society, sciences, organizations, institutions, productive relations and cultures.

The invention of tools is great and it is the key power assistant for human's progress. While when persons rely on tools, the substitutes or derivatives of human physics and intelligence, to interact with their environment, human greatly reduces the possibilities of evolution or capacity development compared with animals and plants. Thus, human pays their internal cost in a manner of degradation to achieve the development of the artificial on the occasion. For example, I have seen that American students were learning four arithmetic operations with the assistance of calculators or computers. If the whole calculating process relies on key-pressing precisely, the mental arithmetic ability of student's would be greatly weakened. Which one is much more important in education, the development of mental arithmetic ability or relying on tools? Should the abilities of running and climbing deteriorate after the inventions of shoes and cars? How can we develop the inner "instinct", the basis of life, at the time of massive inventions and uses of tools and other artificial things? When we are putting forward those questions or are cognizant of those problems, we have abandoned the theory of simple linear evolution, which simply divided human society into the advanced and the laggard by the extant of modernization.

The interaction with environment is an eternal process for human and other life bodies. The interaction should have two aspects: the first one is the instinctive adaptation of animals, plants and human; the second one is to discover and create more and better artificial things. The question initiated by the earthquake is whether we have to develop the instinct, the basis of life? If we have to, how? How could we handle the relation between the development of instinct and the discovery of artificial things at the same time?

2.Adaptation and the harmony of nature and human

All creatures interact with the environment and have different adaptive systems. For example, there is little rainfall and the weather is torrid in Taklimakan Desert, so the diversifolious poplar trees there utilize several kinds of leaves to keep water and reduce evaporation effectively. The upper leaves are big and covered with wax, while the lower leaves are needlelike or strip-shaped. On the contrary, huge broadleaves and buttress roots in a tropical forest grow quickly and must emanate the excess water.

Such adaptability is the result of evolvement in hundreds of millions of years. Compared with plants and animals, human beings are marvelous. They laid a foundation for the whole civilization by inventing the artificial—tools. But the cost is enormous! Because the more we rely on the artificial, the more we ignore the development of our inner potentialities. As a result, the flexibility of our lives atrophies greatly!

Generally speaking, creatures will face two types of changes. One is gradual change in daily life, and the other is radical change even disastrous change. An earthquake belongs to the latter. Before an earthquake, some animals have exceptional reactions that help them to be in harmony with the environment in peacetime and to get through when a disaster occurs. It is reported that no animal died in Indian Ocean Tsunami, while almost 300000 people died.

Many problems emerged in the earthquake. Nowadays, more and more wild animals have been domesticated. But we shouldn't forget the fact that the domestication process is in fact a process of animals' losing their instincts. In the work of protecting wild animals, it is the most difficult task to regain their ferity. After a long period of confinement in the cage, some rare animals such as tigers and pandas would lose their ferity because they have adapted themselves to the comfortable

Sun Xiaohui. *Is it sixth sense? No animal body has been found after Sri Lanka Tsunami.*
<http://www.people.com.cn/GB/keji/1059/3088116.html>

breeding circumstances and needn't search for food, needn't participate in competitions and needn't forebode the upcoming disasters. Actually, domestication is a kind of education for the animals. As it progresses, the ferity becomes less, the viability becomes lower and the flexible space of adaptation becomes smaller.

Similarly, when human beings put more reliance on the artificial, they would also lose their instinct very soon. Did human beings have such instinct originally? How did they lose their instinct in the long history of evolution? If we haven't thought about these questions after the disaster, we can't say we have drawn a lesson from it.

What is life? "The distinction between an organism and other natural systems is that the former has a kind of complicated integrity. In order to maintain this integrity, its components, namely molecules, must 'know each other' in some sense," said A.G. Smith, a British scholar. That is to say, life is a kind of force that can organically bring all parts together to form a living integrity. When confronted with a crisis, these parts can feel each other and form a resultant force to shuffle off the crisis. As for this, he added, "the most basic phenomena of consciousness are sense(eg. hunger and pain) and perception(eg. identification of colors). I think the approach that produces all these kinds of consciousness evolves constantly. The ability to feel pain and hunger has been improved continuously through the process of natural choice because it is very useful. The ultimate reason why the evolving function works lies with the information contained in DNA molecules. The only function of DNA molecules is to change the structure of other molecules."

These words are enlightening. First, sense and perception constitute the foundation of life. Sense makes us to feel pain and hunger, and perception helps us to distinguish what kind of pain/hunger it is. Combination of sense and perception functions to recognize crises, avoid crises and save one's life finally. Without life, nothing is meaningful. In other words, when it comes to the issue of life-and-death, the value of the artificial—material wealth, spiritual possession or cultural form—is secondary. Second, the foundation of life can evolve because of mutual recognition among all DNA molecules. When a crisis comes up, DNA molecules can change the structure of other molecules. That is to say, through mutual information exchange, they can change self-organization and establish new contact to cope with the crisis. So, it means the development of life foundation can be achieved through education. For

Keynes Smith(2000). *Mental evolution*. Beijing:China Translation & Publishing Corporation.pX.

example, Ye Zhiping, headmaster of “Sangzao” Middle school of Anxian County in Sichuan province, transformed his premonition of earthquake and awareness of earthquake prevention into students’ ability of acting. His knowledge about earthquake is a kind of information that can not only change his own structure, but also structure of the students and structure of the school. And the change must be based on the change of individual’s life structure.

Unlike animals, human beings haven’t the instinct of foreboding disasters. So, they have to learn about disasters through education and cultivate the ability of saving themselves when a disaster is approaching, which is the most effective way to reduce personnel loss. It includes not only knowledge about earthquake, but also practical ways of escaping. The point is how to survive successfully instead of disaster relief afterwards. “The wise see an affair even before it has sprouted!” So, in education, we should put more emphasis on training human beings themselves instead of relying on the artificial.

But nowadays, our education attaches great importance to the study of the artificial, such as science, knowledge, culture and so on, while looking down on or even completely ignoring the life foundation education for human beings themselves.

We should deal with the relationship between the development of the artificial and the development of human beings themselves properly, or human beings would be hurt. Abraham-J· Heschel gave us a wonderful explanation for this point. He said, “What we care about is the whole existence of a human being, not merely or mainly some aspects. A lot of scientific activities are applied to explore different aspects of human life, such as anthropology, economics, linguistics, medicine, physiology, politics, psychology and sociology. But, any specific research separately discussing some enginery and momentum aims at viewing the integrity of a human being in the perspective of a particular enginery or momentum. Such practice makes our understanding of human beings become fragmented, thus leading to split personality, figurative misunderstanding and confusion of mistaking the part for the whole. Without thinking about interdependence among all impulses, can we know any impulse separately?” This is not only a misunderstanding of human nature, but also a problem of practice. Wenchuan earthquake informed us that education should commit itself to a person’s all-round development.

Herbert A Simon(1988) *The sciences of the artificial*. Beijing : Publishing House of People’s Liberation Army.p4.

“In the final analysis, philosophy is created by human beings, but not for the purpose of philosophy.” Besides philosophy, science, politics, economy and so on are created by human beings too, so they should be subject to the development of human beings, but not vice versa. Here comes the concept of “Shiying”(Chinese Pinyin) which is used widely but wrong in essence.

Equivalent word of “Shiying” in English is “adaptation” with “adapt” being its etymon. According to *oxford Advanced Learner’s Dictionary of English with Chinese Translation*, “adaptation” means making something suitable for a new need. Since the introduction of Darwin’s evolution theory, “adaptation” had been translated into “Shiying” in Chinese. But Mr. Pan Guangdan didn’t approve this translation because he thought the version “Shiying” only emphasized the environmental influence on creatures, while failed to reveal the fact that creatures were also changing the environment. According to Mr. Fei Xiaotong, early in the 1930s, Mr. Pan selected two Chinese characters “wei” and “yu” among four characters “zhong”, “he”, “wei”, “yu” from Confucius Hall of Confucius Temple in Shandong province. Then, he replaced the version “Shiing” with a new version “Weiyu”, meaning the harmony of nature and human. Since the notion of the harmony of nature and human was derived from Confucian thought, cultural tolerance and cultural sharing spirit expressed by it reveals the other signification of adaption.

So, in the concept of “Weiyu”(the harmony of nature and human), “wei” means order, stressing the environmental stipulations for the organism, and “yu” means advancement, emphasizing creatures’ own adjustment and activities of changing the environment to suit their advancement. Mr. Pan’s complete understanding included these two aspects. After conducting further researches on this issue, Leakey, a biologist of Oxford University brought forward the concept of “Leakey gene”. In addition, he realized that there existed cultural DNA in human beings’ cultural adaptation and called it “minic”. When he began to distinguish between human beings and other creatures, he found that only human beings inherited both biological gene and cultural DNA. The complementary structure of “biological gene” and “cultural gene” makes human beings come into being. It is this structure that makes human beings to organically combine the development of their life foundation with the

Xiaotong Fei(2001). *Cultural consideration. Read Book*.Vol.4.

development of ability to use the artificial. Only in this way can we resume the education of the harmony of nature and human.

The education of the harmony of nature and human includes four levels: the harmony of nature and human (interaction); the harmony of group and group (eg. among countries, nations, cultures and so on); the harmony of individual and individual; the harmony within an individual (eg. sense and sensibility; hope and reality).

3. Synergism in education

Education obeying discipline classification—whether it emphasizes ancient times or today; whether it stresses science or humanities; either it puts politics in command or it serves economy or it lays a foundation for science—is a mere adaptation in essence.

If we understand that plants animals and even human beings are the result of the interaction between them and the environment in hundreds of millions of years, we wouldn't demand unilateral adaptation and wouldn't try to arbitrarily alter or conquer something.

We learned a bitter lesson from the earthquake. At the beginning of it, communication system was destroyed completely, so people couldn't obtain information to make arrangements. The difficult situation is caused by today's blundering advancement. We ceaselessly throw away the existing achievements and adaptive approaches to imitate the west. We threw out our previous communication means and transportation patterns just because we thought we had found more advanced means to replace the backward ones.

Harmony of nature and human also means we must adjust measures to local conditions and time, cope with different situation according to different time, space and object, and abandon the practice of copying what seems right irrespective of specific situation. In the educational field, we must advocate the school-based harmony of nature and human rather than simply following the school-based curriculum. The harmony of nature and human insists on combining theory with practice to seek development. Only in this way can thousands of good headmasters appear and students' lives be saved. The aim is not to enter Tsing Hua University or Peking University, but to foster healthy and harmonious people in local area. Being a qualified headmaster means more than gathering and passing information. He should be capable of using his head to develop school-based harmony of nature and human on

his initiative. That is what we learned from YE Zhiping. And this duty is indispensable.

After the earthquake, we must reflect on how to develop human nature and how to shape a whole person according to his nature. In fact, the development of tools is merely a practical dimension to handle environmental changes. Though we can't deny its value, we should not regard it as the only value and core value in value orientation, or we will deviate from the human—oriented principle. In human nature, it seems that instinct drops behind, while it is the most unvarying foundation of being humans. Some education—training of mental arithmetic, sense of space and sense of time in mathematics lessons; recognition and utilization of plants and animals near a community in natural science lessons; exercises for diatheses in physical education lessons—are far more important than training dependent on the artificial. In our education, knowledge and training of human nature itself are ignored, which in fact are vital when we deal with disasters. In the earthquake, a boy at the age of 11 saved his 6-year-old younger brother from under the tree and walked for two and a half days before they were rescued. And another boy at the age of 11 carried his 3-year-old younger sister on his back, walked for 12 hours and finally came through. Can city kids do this? In fact, only country kids can! Why? Because in their childhood, country kids trudged a lot, carried heavy load and looked after the younger ones, hence accumulating some practical experience. In the first example, carrying his younger brother, the boy underwent innumerable trials and hardships before coming off the danger. He could complete the hard task because his viability in mountainous region was reinforced through those activities in his childhood.

So, curriculum concerning mutual adaptation between students and nature should be added. In digital era, we can use digital simulation and video to reproduce the natural environment. It shouldn't be regarded as life experience in the countryside. Instead, it is real life education, with a thorough understanding of the relationship between human beings and the environment. If it goes well, we could perform better when encountering a disaster again.

The more important meaning of reflecting education after the disaster is to understand and upgrade human beings' value. Heschel said, "our difficulty is that we know so little about the humanity of man. We know things made by man, but we don't

Unknow. *Old brother Zhiqiang Zhang help 6 years old little brother Pingyong Zhang leave disaster area.*
<http://www.5ilog.com/cgi-bin/sys/link/view.aspx/6273505.htm>.

Unknow. *11 years old Jiwan Zhang shouldering little sister survive from earthquake.*
<http://renwu.baidu.com/0806/st-4.html>.

know what man is. Many descriptions about man's characteristics — man was described as a kind of animal that could either make tools or think—only talked about man's enginery, but didn't mention man's existence. Our whole civilization is based on the misinterpretation about man, ...ignorance of man is not because of knowledge deficiency, but because of wrong knowledge.”

Heschel held that the history of man changed a lot and made a big mistake. Our current civilization puts its emphasis upon what man has done, while fails to emphasize what man is. After the disaster, we should reflect on what man is instead of just thinking about what man has done. That is the reason why Heidegger called on “living with poetic flavor” and post-modernism is prevalent. H. Marcuse, a representative of Frankfurt school, also argued against turning man into “one-dimensional man” . In our educational system, it is discipline classification that turns man into instruments. On one hand, we should admit the significance of this classification. On the other hand, we must realize that it merely embodies the development of instrumental rational and we shouldn't overemphasize the economic interests of discipline classification. Or, we may deviate from the human-oriented principle.

After a thorough research on how Japan grew up again after World War , Jean-Jacques Servan-Schreiber advanced a meaningful question. He said, “Could it be said that one must experience the martyrdom of Hiroshima, then he could liberate his spiritual creativity, just like releasing atomic energy?” We must undertake the task of reconstruction after the unprecedented 8 magnitude earthquake. But this reconstruction means far more than rebuilding houses. Most importantly, we should rethink our education and reflect on how to nurture our new generation. Only in this way can we live up to the expectations of the dead.

2008.2.4.

Abraham J. Heschel(1994). *The Sabbath*. Guizhou: Guizhou People Publication. p6.

Abraham J. Heschel(1994). *The Sabbath*. Guizhou:Guizhou People Publication. p2.

Herbert Marcuse(1989). *One-Dimensional Man*. Shanghai:Shanghai Translation Publishing House.p4

J.J.Servan-Schreiber(1984).*The American Challenge*. Shanghai: Sanlian Book Store.p247 248.