

## **Action for the Protection of the Environment : The roles of national governments, local governments, and civil society**

by

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### **Abstract**

While environmental degradation quietly accelerates, part of human society prospers in the deceiving splendor of great wealth in things, other parts aspire to this affluent life style and the rest of humanity remain in various levels of poverty—be it relative or absolute, living either lightly on the land as their ancestors before them or in the squalor and filth of new urban and rural slums.

Yet, all human beings regardless of their condition are bound to be concerned about the planet's future, for themselves, their children, and successive generations. It would not be pleasant to live in a milieu bereft of the resources it once offered and enveloped in poisonous gases and contaminated waters. There is need to worry now as millions of people scratch barren earth to grow food, swelter in endless days of heat waves, and when cloned animals and genetically modified seeds are beginning to replace or contaminate the rich varieties of hardy plants and animals nature had placed on earth. Worry is even more pressing when, in the not so distant future, millions more people may freeze in climates heretofore warmed by gulf streams. And finally, in addition to the physical discomforts and inconveniences brought by a sick planet, everyone must be most concerned about the damage to the character and soul of humanity that comes with vanishing nature.

In the middle of the 19<sup>th</sup> century, John Stuart Mills prophetically described the negative impact socio-economic progress and development would have on the natural environment and how this would affect the life and more importantly the character and soul of humanity:

A world from which solitude is extirpated, is a very poor ideal. Solitude (...) is essential to any depth of meditation or of character; and solitude in the presence of natural beauty and grandeur is the cradle of thoughts and aspirations which are not only good for the individual, but which society could ill do without. There is not much satisfaction in contemplating a world with nothing left to the spontaneous activity of nature; with every rood of land brought into cultivation, which is capable of growing food for human beings, every flowery waste or natural pasture ploughed up, all quadrupeds or birds which are not domesticated for man's use rooted out, and scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture.<sup>1</sup>

Given the profound effects of environmental change on the whole human condition, a holistic approach must be taken to design and implement policies to discourage and put an end to further degradation of the planet. Unlike other major areas of public policy such as industrial development, social welfare, economic growth or poverty reduction, the protection of the environment involves all aspects of life in society and all dimensions of the human experience including the spiritual.

Environmental protection must thus be seen through the prisms of religion and philosophy, as well as that of science. It is only with a sense of purpose informed by these fundamental sources of knowledge that legislators, entrepreneurs, scientists, representatives of non governmental organizations and ordinary citizens can meaningfully cooperate in the task of

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<sup>1</sup> John Stuart Mills, *Principles of Political Economics*, [New York: Oxford University Press, 1994]: 128-129.

preserving the environment with a profound sense of meaning and a shared feeling of urgency. To take any lesser route to environmental policy making is to rely upon limited solutions, for example using plugs to slow down leaks in a dam, while one is aware that the pressure of water continues to mount and will eventually force the barrier to collapse. Given the magnitude of the environment problems facing the world, partial and parochial solutions cannot reasonably be expected to stave off catastrophe. Yet, this is the way policies are drawn up today.

There are great obstacles to designing and implementing measures that would serve the long term interests of humankind. Private and public decision makers are too often inclined to abide by the wishes of constituents who uncommonly see beyond their short term interests, narrow prejudices, and material values. To adopt major policies that will stave off further destruction of the environment is the most serious responsibility facing humanity. The destiny of human life may depend on it.

This paper offers, in Part I through Part IV, a holistic approach in arguing for ideas that are intended to move constituents as well as policy makers to take a broader and more caring look at the issues at stake:

In Part I, the importance of knowledge and feelings about Nature to be gained from religion, philosophy and science is emphasized. Philosophy and religion rarely companion with knowledge gained from scientific thinking in public and private policy making, but in designing the wide ranging and long term measures to protect the environment, these sources of human knowing and action offer dimensions essential to this task.

In Part II, reflections on human nature are presented for the purpose of having the clear image of the best way to direct the effort of policy making which will be discussed in Part III.

In Part III, the policy making by different actors, including national governments, local governments, and civil society is taken up. In outlining the problems, responsibilities and activities carried out by these actors, the underlying roles of religion, philosophy and science are again evoked.

Finally in Part IV a model showing the engineering of a large scale solar-energy project is presented.

## **Part I**

### **The roles of religion, philosophy, and science as foundations for human action to protect the environment.**

The role religion plays in influencing social behavior is critical for believers and non-believers in relation to preserving the environment. Any seeming proof of the existence of God for believers is indirect; the existence of God cannot be proved or disproved. Like poetic inspiration, knowledge gained from religion derives from intuitive or mystical experience, revelation as the gift of grace, and spiritual insight. This form of knowing is beyond, or rather outside the philosophical and the scientific. For believers and non believers receptivity to this way of knowing inspires wonder, empathy, and an ethic of caring in relation to Nature. These thoughts and sentiments are crucial to the development of holistic policies.

Philosophy is an essential way of approaching the type of thinking that should guide policy making to protect the environment. As described by leading 20<sup>th</sup> century Thomist and Aristotelian thinker, Jacques Maritain, the instruments of thought philosophy employs include intelligible perception, abstractive intuition and judgment. Animated by the human intellect, these instruments provide legitimate sources of knowledge of a meta-physical nature. Philosophical thinking questions the primary principles of being, including identity, unity, finality and causality. It distills the intelligible contents from sense experience.<sup>2</sup> Because it seeks the essence or 'being' which exists in things but is not perceptible to the senses, philosophy so understood is essential to environmental decision making. Many phenomena of Nature are imperceptible to the senses. By applying its

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<sup>2</sup> Jacques Maritain, *Degrees of Knowledge*, [New York: Charles Scribner's Son, 1938] 1-7; 248-301.

tools and methods of thinking, philosophy can shed light on them. Such illuminations are essential to guide decisions aimed at preserving the environment.

Natural science is the third foundation of knowledge. It focuses on what the senses see as “what is.” This must be measurable and observable. It formulates laws that are demonstrable concerning the characteristics and observed behaviors of the object under study. Since the advent of modernity, positivism practically monopolizes what humanity considers knowledge. It is commonly believed that whatever has no meaning for scientists is invalid. Thus, only methods of experimental and mathematical analyses produce authentic knowledge.

Fortunately for society, all scientists do not share this view. Many of the most brilliant minds of the 20<sup>th</sup> century, rejecting both the mechanistic view of the world and the limitations of their discipline joined philosophers and religious thinkers in their insatiable quests for understanding the origins and essences of “things” in the universe. These scientists include Jeans, Eddington, Einstein, Weyl, and Lecompte de Nouy, to mention a few. Science offers the physical laws and measures that can address the immediate and observable problems of the environment. The wisdom of the scientists, whose mental horizons extend beyond their narrow fields, substantiates the necessity for a more holistic approach to the destruction of the environment.

## 1 The Role of Religion

From time immemorial, religion provided answers to the questions, hopes and fears of humankind. In the East as in the West, in all known civilizations and so-called primitive societies, it met human longings for a sense of purpose, it provided a basis for social organization and morality, and it defined the relation between Man and Nature. Bewildered by natural phenomena, from the thunder to the eclipses of the sun, the distant ancestors of modern men and women wrapped Nature in sacred garments. They prayed to their divinities and consulted their oracles for protection and guidance in a terrifying and yet wonderful world.

Everything changed with the advent of modernity and the reign of instrumental rationality. People learned to use reason and experimentation to understand the world and its natural phenomena. In many respects, this was remarkable progress. It meant liberation from the shadows of ignorance and superstition and from the often abusive power of institutionalized religions. But, in the past two centuries, the progress of reason was accompanied by a gradual rejection of the spiritual realm and by the development of a vulgar form of human arrogance. Despite the messages to humanity from profoundly philosophical and religious scientists, including Newton, Darwin and Einstein, technology has become a new religion. The mysteries of life and nature have ceased to inspire awe and are seemingly amenable to explanation and manipulation.

A majority of people especially in the technologically developed regions, rather than hold to and reflect on the strengths that sincere beliefs in a transcendent power had given them, have left institutional religion and its constraints on their freedom. They also appear to have abandoned a sense of the inexplicable sacredness and spiritual dimension of life. What followed is the emergence of a vacuous uniculture of materialism and consumerism. Post-modernism is seemingly spiritually empty. To satisfy some unconscious longing for meaning, many people have resorted to new forms of sectarianism and religiosity. This is observed in the reactive resurgence in different parts of the world of various types of religious fundamentalism and false spiritualism. The current mix of arrogance, rejection of the spiritual, and resurgence of fundamentalism evokes the lesson of an old Chinese saying: “懲於羹而吹壺兮：One blows salad to cool it after one has been hurt hastily tasting hot soup.”<sup>3</sup>

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<sup>3</sup> 楚辞; Chuci, *Songs of the South* by屈原:Qu-Yuan (d.278BC), vol.4, 九章; Jiuzhang-惜诵; Xisong.

Today it seems wise to reaffirm the place of time honored religious thinking in modern life and to consider what faith in a higher Consciousness gives to humankind and what it does not provide. It is doubtful that the ethos of modernity has the power to provide a moral and spiritual basis for the radical changes that are necessary for serious protection of the environment and ecological integrity of the planet. Therefore high value has to be placed again in the mystery and sacredness of Nature.

There need not be a divide between believers and non-believers in a Higher Consciousness when it comes to nature. To think otherwise is misplaced faith as the following sections suggest.

### **1.1 Nothing in this world can be “explained” as truth.**

If you see an ice cube floating in a glass of water and ask your friend, the scientist:

“Why does ice float on water?”

Your friend might answer:

“The specific gravity of ice is less than that of water.”

Does this answer mean anything? Your friend did not say anything new. So, you may ask again:

“Why is the specific gravity of ice smaller than that of water?”

Your friend might answer:

“In ice, the bonding between the hydrogen atoms is arranged in such a way that the ice become bulkier than water for equivalent amounts of water molecules.”

Then you may again ask:

“Why is the bond between hydrogen atoms of such a nature?”

The answer to this question may include an explanation of the orbits of electrons surrounding hydrogen nuclei. Questions and answers may continue to follow in succession, seemingly endlessly.

The ultimate question must be:

“Why does the world exist?”

We see here the impossibility that any living person can give the ultimate answer to the infinite “why?” But, we do know that if ice were composed in such a way that it should sink in water, all the ice floating on the sea would have sunk to the bottom of the ocean and consequently, earth would have been too cold to support human life as we know it.

Similar things can be said about the position of the earth in the solar system. Why the earth orbits around the sun in a position so fortuitous to favor life, no one can answer. It seems it just happens to be so.

### **1.2 God is not responsible.**

If you seek what is common to all religions in relation to understanding God’s power, it is likely you will see that believers tend to attribute their fortunes and misfortunes to God. Profound thinking on the nature of God, however, reveals that God cannot be “responsible” for what occurs in human life. Plato understood this when he wrote the famous words *theos anaitios*, which means “God is not responsible.”<sup>4</sup>

Unless people understand that whatever happens to them in daily life is not attributable to Providence and that they alone are responsible for fortune and misfortune, the relationship between God and humankind is socially unsettling. For example, the failure of individuals and society to accept responsibility for what occurs on earth leads to a morbid or passive sense of fatalism. In ancient China, emperors found that such thinking resulted in little motivation to work. These believers understood, unlike Plato, that no matter what they did, the outcome of any effort was predetermined by fate governed by Heaven (God).

This problem is recurrent and ubiquitous in the world and has existed throughout history. An amusing example is offered by the French philosopher, Denis Diderot, in his famous novel: Jacques

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<sup>4</sup> Plato, *The Republic*, (X, 617E).

the Fatalist and his Master. In the narrative, Jacques recounts the belief that fortune is “written on high.” Yet he continues to pursue his own interests and cleverly makes his own decisions according to the particular set of ethics his philosophy generates. He is oblivious to imminent danger in all of his pursuits. In Japan, people used to think that if they disturbed Nature too much, they would be punished by God. In general, the notion of God was synonymous with Nature.

Today religion -- monotheistic or pantheistic, based on revelation or on the teachings of wise philosophers – can instill in human minds capacities for understanding the sacred and for humility towards the beauty and the richness of the universe. Such humility is a prerequisite for accepting responsibility for treating one’s environment with respect.

### **1.3 I believe because it is absurd**

In summarizing the role of religion in society, one is led to conclude that human beings should not be so swept away by apparent advances in science and technology as to believe they are the masters of Nature. The more human beings think they know about Nature and Life, the more they must recognize how little they know. Nature is to be respected, but masters rarely respect their servants.

The notion that God knows and performs all things, yet is not responsible for anything is quite illogical. It cannot be scientifically explained. That is why one cannot know God but can only have faith and seek to understand God indirectly. Such an idea was expressed by the early Christian father Tertullian who is quoted having said: *credo quia absurdum*, translated as “I believe because it is absurd.”<sup>5</sup>

All contradicting propositions are logically absurd. When a proposition is logical, it is established and tested according to axioms of human reason. If logic is applied to the relationship between the human being and God, it will evaporate at some level in incongruity. Human thinking cannot prove metaphysics or explain knowledge that comes connaturally through revelation and inspiration. This idea is concretized in Saint Anselm’s proposition: “God can in no way be disproved so therefore His existence is certain”<sup>6</sup>. To be in “no way disproved” is a double negation. What we can affirm about God, however, is that His existence transcends human vision. Any one who reports seeing God has not seen God. The double negation is not disprovable. It cannot mean affirmation.

Therefore, God can never be said either to exist or not to exist. In this case, there are only two possibilities to choose from in making one’s decision to believe or not to believe in God. One is to believe like Tertullian, who accepts the illogical knowledge of God, and the other, not to believe, yet to respect believers because there is no way to disprove the existence of the God—whose nature transcends the capacities of perception in the logical world circumscribed by the limits of human intelligence. Such considerations render religion meaningful both to believers and non-believers. Thus all humanity can live with a sense of wonder and awe before the great mystery that enshrouds Nature.

## **2 The role of philosophy**

The ancient Chinese philosophy elaborated in Lao-Zi’s writings starts with the sentence: “道可道非常道 : The Tao that can be told is not the eternal Tao”<sup>7</sup>. The meaning of this statement is difficult to grasp, but if one interprets it to imply that Tao or the “way” is not definable, this phrase brings to light the essence of philosophy. Although the book of Lao-Zi became the central text of Taoism, the writings in *Lao-Zi* are not sermons or exhortations to believe in Tao. Rather the book describes the essence of the metaphysics of nature. An even older Chinese text interpreting I-Ching, that is Ji Ci

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<sup>5</sup> Tertullian (Tertullien), Originally : «credibile est quia ineptum est ». *La Chair du Christ*, Tome 1 (Les éditions du Cerf, Paris, 1975) 228 and 338.

<sup>6</sup> Anselm, *Proslogion*; Chapter 2, That God Really Exists, Chapter 3, That God Cannot be Thought Not to Exist.

<sup>7</sup> *Tao Te Ching*, Translated by Stephan Mitchell, New York: HarperCollins Publisher, 1988.

Sheng Zhuan, (繫辭上傳), believed to be written by Confucius, suggests this idea as well. It contains the following sentence: "Metaphysics means the Tao and Physics means the container of things."<sup>8</sup> So it may be understood that Tao is the core of philosophy which is unfathomable to the human intellect.

Aristotle suggests in *Metaphysics* "that this science (philosophy) is the study that speculates about first principles and causes" and philosophy is "divine science because God is the sole or chief possessor of this sort of knowledge. Accordingly, although all other sciences are more necessary than this one (philosophy), none is more excellent"<sup>9</sup>. He further explains that "it is the function of the philosopher, the student of the whole reality in its essential nature, to investigate also the principles of syllogistic reasoning"<sup>10</sup>. He explains that the syllogism, the logic, is based on axioms as the foundation of the proof of any propositions and the "starting point" of all the axioms is the axiom that denies that the same thing can be and not be (the law of contradiction). However, when the argument questions the validity of this axiom itself, there is no way of demonstrating the proof of the answer because there is no foundation for reference.

Jacques Maritain substantiates the writings of the ancient philosophers. He reaffirms that while there is nothing in the intellect which is not originally derived from sensory experience, it is the intellect which extricates from "sense experiences and raises to the white heat of immaterial visibility, objects which the senses cannot uncover in things which the intellect sees, --that is the mystery of abstractive intuition."<sup>11</sup> And, in those objects that it sees, the intellect approaches, although it cannot demonstrate, the transcendent objects which are not contained in the world of sensory experience. It is a way of thinking and knowing but not of empirically demonstrating. It provides markers, not truths. But these instruments and markers are essential to give meaning to life.

'Organon' is defined by the *Oxford English Dictionary* as "an instrument of thought or knowledge, a means of reasoning, discovery, etc.; especially a system of rules or principles of demonstration or investigation." The "organon" is also the collective title of Aristotle's treatises on logic. These tools for thinking and acquiring knowledge are the basic instruments used by other disciplines in their quest for knowledge and understanding. Aside from providing the necessary instruments for getting and organizing knowledge philosophy has no direct utility in modern life, while the other disciplines are useful in the sense that they are building stores of scientific knowledge.

In the modern world, everything that has utility has value and in this sense money is probably the most useful object. Making increasing amounts of it can be gained by studying business and economics. Aristotle's organon facilitates these intellectual pursuits the end of which is to enrich the entrepreneur.

In order to come to their essence, philosophical analysis of the instruments of thought or knowledge involves what seems to be illogical. This enquiry leads to the question whether or not there are contradictions in Nature. Aristotle found that this quest for truth drew close to the realm of God. In philosophy, there is no final truth or answer to the question, each question leads to another in infinite regression. What philosophy does may be stated as *Cogito ad Infinitum*, I think without an end, unless the philosopher decides to stop the questioning at some chosen point before attaining what is unattainable and indemonstrable given the limitations of the human intellect. Although the process is infinite, it is not futile. On every stage of infinite regress some knowledge is gained and partial answers are suggested. For Aristotle the process stops as it approaches the realm of God.

If one should think he or she has found and understood the essential premise of derivative premises,

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<sup>8</sup> One of the commentaries on the I-Ching, called Ten Wings attributed to Confucius.

<sup>9</sup> Aristotle, *Metaphysics*, Book I, 982b10-983a10 .

<sup>10</sup> Ibid, 1005b1-b10.

<sup>11</sup> Jacques Maritain, *The Range of Reason*, [Ch. 1 "Science and Philosophy,"] 1952, see <http://www2.nd.edu/Departments//Maritain/etext/range.utm>.

the solution cannot be valid: it is only illusion. For those whose goal it is to pursue objects that have utility, philosophy may be a waste of time. However, if one seeks the essence of life, other knowledge with use value can never totally satisfy the curious and contemplative soul.

### 3 The Role of Science

Science is the art of using systems of rules or principles of demonstration, i.e. the organon to derive concepts and build theories that are useful to human life. Examples include words that describe technologies used in building computers, deriving medicines, conceiving vehicles, and so forth. The disciplines of mathematics, physics, chemistry, economics, and law are shaped by ideas built with the organon.

The essence of logic is to prove the validity of a proposition in reference to certain axioms or premises. The validity of a proposition depends on the ability to demonstrate what is scientifically known and the premises of the demonstration must be scientifically known.<sup>12</sup> A proposition is proved false if there is a contradiction in the basic premise, in other words if *reductio ad absurdum* is shown. Anything found to be false is not permitted in the world of science where everything must be logical. In everyday life what concerns people can be limited to what comes from clever use of the science and technology.

People for the sake of the environment need to awaken to recognize as sheer nonsense, the idea that everything can be explained by science and subjected to the power of new techniques. Humankind can ill afford to lose sense of the intrinsic value, beauty and sacredness of Nature. To be remembered is the fact that Nature was not created by human technology or instrumental rationality.

Science, however, has major contributions to make. It teaches knowledge that is indispensable to ascertain how people should live and prosper. . Knowledge of energy is one of the most important insights derived from science. All living organisms must use energy to function. Having adequate supplies of energy is the key issue for human survival. The science of energy also reveals that the use of energy is always accompanied by an irreversible degradation of the state of nature, according to the law of entropy. This scientific knowledge informs humanity that sustaining life in balance with Nature requires using energy with utmost care and frugality.

### Summary of Part I

The above considerations on the role of religion, philosophy and science may well be understood in reference to the Medieval Islamic Philosophical texts. Take for example the following verse by the Toledan poet, Al-Waqqashi which is sited in the famous narrative “Hayy Ibn Yaqzan: Alive, Son of Awake,” by the 12<sup>th</sup> century philosopher Ibn Tufayl:<sup>13</sup>

Afflicted I am, because all that mortals know  
Are two things and no more;  
A truth whose acquisition is impossible,  
And a falsehood whose acquisition is of no use.

Every day social behaviors are carried out and assessed by reference to some essential basis or value. When seeking the reason for a particular behavior, inevitably this quest leads to an endless pursuit for the reason of the reason in infinite regression. In short we seek the “absolute” upon which our judgments are based. The human intellect is incapable of demonstrating the ultimate

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<sup>12</sup> Aristotle, *Posterior Analytics* I.2.

<sup>13</sup> Ibn Sina (Avicenna) wrote a narrative with the same title, *Hayy ibn Yaqzan*, the stories are different but the philosophy they sought seems to be the same, the role of God, Philosophers and Scientists in life. See, *Medieval Political Philosophy: A Sourcebook*, Ed. By Ralph Lerner and Muhsin Mahdi, The Free Press of Glencoe, Collier-Macmillan Limited, Canada (1963), Part One. Also, Avicenna and the Visionary Recital, Henry Corbin, Translated (from French) by Willard R. Trask, Bollingen Series LSVI Pantheon Books (1960), Part I-3.

answer since it cannot escape its earthbound nature.

There are three ways to confront this situation, or *aporia* as it is called in Greek.

1. Religion seeks the absolute answer in God. One simply has faith and no further question is pursued. Faith need not be demonstrated but reality shows that responsibility for all social behaviors exists in humanity itself.
2. Philosophy searches the place of the absolute by thinking without a premise. Philosophers know that thinking without a premise itself is a premise, so that philosophy must delve into a world of paradox. This situation is inevitable if one seeks an answer to the *aporia* without resort to God. It shows that “utility” is not the *telos* (purpose) of life nor does it provide us with a sense of meaning in life.
3. Science abandons seeking an answer to the *aporia*. It is based on the premise that allows no contradiction in its proof of any scientific evidence or theory. It demonstrates rules of nature of particular relevance to the subject of this article, that modest use of energy is imperative for sustainable life of humankind.

## Part II Human nature

In order to find out the most effective direction toward which the actions needed to be taken by political actors and institutions, it is indispensable to have a clear image of the nature of humankind who plays the drama within the arena shown in Part I. For this purpose, let us see what one can discover from history, the kind of motivations that drove people to change norms of social behavior.

In ancient China (BC4-3), there were two opposing schools of opinion on human nature. One is represented by 孟子 : Meng-Zi who taught that humankind is born good natured and any misconduct was due to poor training and education in the formative years<sup>14</sup>. He claimed that education can protect the person’s inherent good nature. His equivalent among leading Western Enlightenment political thinkers was Jean Jacques Rousseau.

The other school was led by 荀子 : Xun-Zi. In a section of his book, entitled *Xun-Zi*, he offers in specific terms that human beings are born bad natured. By the words “bad natured,” he means that people are selfish and greedy. He states that “People give private profit first priority because altruism and all non-profit behavior are false or hypocritical.”<sup>15</sup> Western enlightenment thinkers including Thomas Hobbes, John Locke and Adam Smith would tend to agree with him.

Meng-Zi’s theory that people are by nature good is more popular than Xun-Zi’s theory. While this may be simply explained as wishful thinking, it is probably generally true, judging from ratios of people who conform to social norms to those who do not. Moreover there is ample evidence that people are often willing to sacrifice themselves for the good of others.

There is a third school both in the East and West who saw the human being, as neither good nor bad. Gao-Zi who was contemporary with Meng-Zi and Xun-Zi, is known by the saying “Human nature is neither good nor evil, just as water can flow in either direction”.<sup>16</sup> His Western counterpart is Maritain who saw the human nature is torn between two poles: the material pole which he calls the “individual” and the spiritual pole which he calls the “person.” The Individual is rooted in the material being, or the ego. According to Maritain, they are fragments of species caught in a web of cosmic and social forces and bound by their laws. In the modern market society, the virtuous

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<sup>14</sup> *Meng -Zi*; 性善論 (xing shan lun), vol.3, chapt.6.

<sup>15</sup> *Xun-Zi*, 性惡論 (xing e lun). vol, 17, chapt.23.

<sup>16</sup> Reference 14, vol. 11, chapt. 2



individual is paradoxically aggressive, selfish, greedy and competitive.<sup>17</sup> These attributes make the world economy flourish, while nature groans.

From the perspective of the environment, the individual and the person vie for influence on social attitudes and economic behavior. Since everyone is both an individual and a person and is pulled between the poles of selfishness and selflessness, it may be understandable how a few people, comfortable in their selfish individualism, can draw many more people into behaviors which are environmentally destructive.

Take for example factories which emit polluting wastes. If the owner of one factory starts freely bilging pollutants into the atmosphere and into a river and makes a profit from this careless behavior, the owners of other factories, even naturally responsible ones, will follow suit. Not to do so can mean loss of their market shares as well as profits. In this way, the good will of the person is overcome by the intentions and actions of a few insensitive and ignorant individuals.

Extrapolating from the teachings of Meng-Zi, the degradation of environment that comes with economic growth and affluent living can be eliminated by good social education. If one shares the view of Xun-Zi, the protection of the environment would be straight forward. Xun-Zi observing that human kind gives priority to making profits, would advise the Government to advocate policies which guarantee that actions for environmental protection are profitable. Taking the view that human kind vacillates between the poles of selfish and unselfish behavior, responding to their instincts as individuals or persons, the holistic tact to environmental policy making is also efficacious. Continuing from the example above, in order to prevent the instincts of the free riding selfish factory owner from setting an environmentally destructive course, policy measures must remove incentives that appeal to the "individual" and at the same time feed the "person" with arguments and exhortations pleasing to its spiritual and caring nature and poetic longings. To do this environmental policies must also draw on philosophical and religious thinking.

Such a way of regulating human behavior addresses the deficiencies of Adam Smith's theory of laissez faire. This theory assumes that the public good is always maximized by individuals seeking profit. Smith claims that such private vices automatically result in the common good through the functioning of the "invisible hand" in the market place<sup>18</sup>. Where environmental protection is concerned, this invisible hand cannot act in the interest of the common good. This is because the environmentally destructive by-products of the production processes are public goods and as such are not captured in supply curves of producers. Thus, despite the apparent success of the invisible hand in the free market society, the destruction of nature through over consumption of resources and pollution has always persisted.

## Summary of Part II

Total free run of activities of profit seeking human nature, the laissez faire principle, guided by the "invisible hand" will lead to the temporal prosperity of humankind, as long as the exploitation of nature is possible. However, for the purpose of the protection of environment, setting the limit to the allowance of energy usage, national and international, is imperative. The laissez faire under the guidance of the "visible hand" is necessary.

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<sup>17</sup> Joseph Ernst, Leo Ward, *The Social and Political Philosophy of Jacques Maritain*, Selected Readings, Notre Dame, IN: University of Notre Dame Press, 1972 (published first in 1955)] 4-7.

<sup>18</sup> Adam Smith, *The Wealth of Nations*, Book IV, Chapter 2, Of restraints upon the importation from foreign countries of such goods as can be produced at home.

## **Part III**

### **Role of the political system**

This part examines approaches to the protection of the environment for the sake of human survival. It considers aspects of the social structure, including central governments, local governments and civil societies, to determine what these can contribute to arresting continued environmental degradation and it considers how the sources of knowledge visited above can inform this work.

Political systems are analogous to machines whose function is to take in resources and transform them into goods for the market. The political system, like the desalination plant described at the end of this paper, is complex. It includes interdependent parts and a framework in which it operates. The framework can be the territoriality of a sovereign state or as broad as the planet if we are considering universal international organizations.

The interdependent parts are the institutions and the actors, interrelating through their multiple functions. Key functions of the system relevant to environmental policy making include socialization of the citizens. This task includes education and transmission of social values. Other key functions are the communication of ideas, interest articulation, policy formation and implementation, and assessment of the outcomes of the policies adopted. The actors involved in environment policy making discussed below are the national government, the local government, and civil society.

At the national level, environmental policies compete with other objectives of state policies. To get on the national agenda requires the ability to compete effectively against sectoral interests for national attention. In order to affect policies changes in favor of the environment, proponents of policy change must convince prevailing powers of the urgency of the issues to be addressed.

Macro policies are adopted at the national level. Their adoption is the end of a long process that often begins at the local level. And it is at the local level that they are implanted. In this part, the example of the importance of local politics is offered by the role of the prefecture in Japan.

Civil society is a composite of non governmental institutions including well organized and not so well organized interest groups and citizen movements. Civil society articulates the concerns and interests which are to be pursued by the government. It is the activism and convictions of civil society that will have a decided impact on the policy outcomes of the political process. In this paper the importance of the media in the formation of public opinion is considered as an example of problems that must be addressed on this level.

#### **1 Actions expected from the central government**

In free market democracies a major obstacle to the adoption of effective policies to protect the environment is that elected leaders are all too apt to pander to the demands of sectoral interests. These concerns are often uninformed and short sighted. The powerful modern media also tends to pander to sectoral or special interests to enrich themselves. The long term well being of society based on a "macroscopic view," is therefore sacrificed for the sake of short term "microscopic interests." It will take a great deal of social consciousness raising by civil society to motivate modern governments to adopt a different vision of the good life—one driven not by the market and accumulation of wealth and power but the desire to see humanity flourish sustainably in harmony with the preservation of the environment.

Arthur Cecil Pigou, a pioneer in welfare economics and the creator of the concept of economic externalities, wrote that it is the duty of government to think not only of the welfare of present citizens but also that of their unborn descendants.<sup>19</sup> This consciousness was necessary to correct the market, and he proposed to do by imposing taxes to offset the negative social effects of

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<sup>19</sup> Arthur Cecil Pigou, *The Economics of Welfare*, 4 th Ed. 1932. Part 1, Chapter 2 Section 7.

economic activities.

Politicians in Japan, when elected to office, commonly make the following pledge: "I will do my best to fulfill the 'One Hundred Year's Plan of the Country'." They realize that this long term plan for the well being of the nation does not necessarily respond to the immediate demands of the public. They also consider that they risk popularity and future votes by adopting long term policies to prevent environmental catastrophe that conflict with short term economic interests. This situation presents a difficult choice for politicians in all democratic societies. Aristotle would advise them to risk their careers for the sake of good governance and human survival.

Pollution taxes and other "Pigovian" taxes to protect the environment are currently discussed among economists. They, however, often serve two masters, the needs to prevent pollution and to maintain economic growth. This divided servitude is futile and suggests a lack of serious determination to protect the environment. It often results in solution which favors the politician's proclivities to protect their political careers by pandering to the uninformed and short term concerns of sectoral interests. If the government official is committed to the "plan for one hundred years," taxes to correct the negative externalities of economic and social activities must be set at levels that arrest wasteful consumption of energy and its concomitant emissions of pollutants. Just what these levels should be is difficult to estimate.

This difficulty is such that many law-makers find it politically expedient to impose direct controls on obvious polluters, and be done with it. However, well-known environmental economist William Baumol, proposes that taxation is still the best option, and that to find the appropriate level requires careful observation of the effects achieved at each level and to make modifications necessary until desired results are achieved.<sup>20</sup> To reach environmentally sustainable levels of energy utilization, for example, undoubtedly the prices of any form of energy must be raised many times their present levels.<sup>21</sup>

If taxes were to be raised dramatically to achieve desired environmental results, extraordinary structural adjustments will have to be made to the market economy. The consequence of such dramatic tax increases may or may not mean a spectacular slow down of the market based economy. But it could mean an increase in employment as it may encourage more environmentally friendly small businesses to emerge.

Small businesses are responsible for more employment today than large scale corporations with their economies of scale. Small businesses tend to be more labor intensive since they cannot afford the large capital investments in machinery.

But presently, economic growth patterns depend on extravagant consumption of fossil fuels. The grounds on which large corporations and the global economy seems to flourish is not "sound." It is in a state of precariousness, as if it were built on sand that would soon blow away. Combined, the crises of growing and competitive demand for fossil fuels, their foreseeable exhaustion, and global climate change should awaken society to realize that perhaps for their own survival and certainly for the survival of their descendents great adjustments are necessary.

In a state of total war, a whole country is engaged in the struggle for victory. Under such conditions people willingly sacrifice private gain for the sake of the nation. Today, scientists warn that society is in imminent danger of environmental calamity. This is equivalent to a call to arms. Every one in society is called on to engage in the immense effort to prevent this catastrophe. Perhaps part of this effort is to give priority to the philosophy of Aristotle on the "good society" and on what constitutes

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<sup>20</sup> William J. Baumol, *On Taxation and the Control of Externalities*, The American Economic Review, vol. 62 (1977), No.2, 319.

<sup>21</sup> P.H.Shingu, "Sustainable Development: how it is impossible and possible". Paper for ISA Convention 2005, [[http://en.enekan.jp/archives/2005/05/sustainable\\_dev\\_1.html](http://en.enekan.jp/archives/2005/05/sustainable_dev_1.html)]

good government. In so doing they should consider John Stuart Mills prescription for the steady state. Lives devoted to what Aristotle and similarly, Mills call "contemplation" instead of to material well being is life built on the rock that underpins happiness.<sup>22</sup>

Rulers are also advised to keep in mind the following warning offered in the Chinese Classic text Great Learning: 小人閒居爲不善、無所不至. It states: "The common person, when left free with nothing to do, begins to do evil things and may end up doing every wrong thing imaginable<sup>23</sup>". The same idea was written by Adam Smith in *The Wealth of Nations* : "a single week's thoughtlessness and dissipation is often sufficient to undo a poor workman for ever, and to drive him through despair to committing the most enormous crimes"<sup>24</sup> Given the present environmental crisis, a responsible government would not encourage citizens to have more free time and more amenities for frivolity, but would set goals for its citizens that encouraged hard work and the opportunity for satisfaction in fulfilling their duties to society. The "war" against environmental degradation is a noble cause around which to mobilize society, certainly more honorable than wars fought over access to oil wells.

## **2 Action Expected from the local government**

Nature and the environment are best understood by the residents in their localities. The policies of national government can often be indiscriminate and may contradict more effective measures taken at the local level. For example, apparently barren sand dunes to the eyes of outsiders, may be paradises for numerous small animals and insects known only to the local residents. How to protect these dunes is a matter of local interest and national plans to protect the sea coast might not be as effective and even work against the interests of this local ecosystem.

The role and responsibilities of local governments should be similar to that of the lords or Daimyos of Japan in the 17<sup>th</sup>-19<sup>th</sup> centuries Edo era. The Daimyos had absolute power over their prefectures but they were all bound by customary ethics to hand over to the next generation of Daimyos the local environment, its woods, rivers, and cultivated lands, in the same preserved condition it had been handed down to them by their predecessors. This imperative evolved from realization that violations of nature jeopardized the harvesting of crops and timber in adequate supply to meet the needs of the populations of each prefecture.

Nowadays, people living in local prefectures are under the mesmeric influence of the 'way of living' in mega-cities. Maintaining the mega-cities' ways of life at local levels causes considerable wasteful use of energy. Keeping utilities functioning for small populations is only possible if the cost of energy can be kept at its present low level. However, this waste is accompanied by serious deterioration in the environment. Substantial increases in the cost of energy will oblige local governments to return to more traditional ways of living that will ensure protection of their local environments.

## **3 Action expected from the private society (NGO).**

Driving everyday activities are the microscopic purposes of individuals seeking personal benefits in their lives. Quite often personal decisions are based on information obtained from the news media. These media, driven by profit making, need a popular following, and thus do not complicate simplistic communications to the public by digging deeply into the serious issues that underlie the news. If, for instance, the price of gas goes up, the media will certainly offer some analysis of the reasons why this has happened and may accuse the government of lacking the foresight that could have forestalled the problem. It is natural for everyone in society to want to see low prices for everything they need. If, however, the price of energy should be deliberately increased to very high levels by the government in the long term interest of society, this price level should also be

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<sup>22</sup> Mill, *Principles of Political Economy*, 129.

<sup>23</sup> 大学(Daxue); *Great Learning*, Chapter 6-2.

<sup>24</sup> Adam Smith, *The Wealth of Nations*, Book V, Chapter 1, Part 3, Article III, Of the Expense of the Institutions for the Instruction of People of all Ages

explained in the media. This kind of explanation is rarely offered. It is one of the functions of citizen's interest groups or NGO's to make society aware of this danger and to pressure the media to be fully honest in their reporting.

Civil society must be wary not to get carried away by the opinions given by broadcasters in the popular news media. Significant problems are conveyed by the words development, profit, and efficiency, which are frequently used by the media as templates for the kind of success people like to hear about. Such success signals rising affluence. Few if any people working for the media examine the social and natural environmental costs of rising indicators representing development, profit, and efficiency. It is the role of civil society to take away the veil that conceals the total effects on society development, profit, and efficiency are bringing about. They should point to the following considerations:

Development: In the northern end of Kyoto there was once a marsh that was called by the local children the "Muddy Paddy." Every spring children and sometimes adults gathered in that place to fish. Children believed that the marsh was "bottomless" and they had to cross it with utmost care not to step off the path that was shown them by their elders. Staying on the path, they would not fall into the muddy depths of the marsh before they could get to the place where they should fish.

That marshy land has now been drained and in its place are soccer fields, tennis courts, and an automobile driving school. These developments were intended to yield "happiness" for citizens. Similarly, in Goethe's *Faust*, Faust had to get rid of the old couple who lived in the cottage in the area where Faust wanted to "develop" property for the happiness of the general public by asking the devil to burn down the cottage from which the couple did not want to move.<sup>25</sup>

These examples illustrate that it is not possible to develop something without destroying something else. But praise for any development should be accompanied by some assurance that the new development is of greater overall benefit to people in the short and long term than would have been the case had the property not been destroyed to make way for progress.

According to conventional wisdom, filling in the marsh and burning the cottage was development of a positive nature. But, the modern tendency is to underestimate the intrinsic value of nature such as the marsh and overvalue the development of the soccer field. By using the word development one conveys the idea of progressing to something better than what existed before. In the future, someone might try to reverse the process by turning the soccer field back into the muddy marsh. Unfortunately, nature, once destroyed, is practically impossible to restore to its original state. This is what the second law of thermodynamics (the increase of entropy) tells humanity. According to this law any change is irreversible, so we have to take extreme care when tampering with nature for the sake of utility.

Profit: It is perhaps unnecessary to refer the well known book by Lester C. Thurow entitled *The Zero-Sum Society*, because common sense knows that the profit gained by some will bring loss to others in one form or another. One should be wary of those who affirm that with economic growth every one gains, as the liberal school of economics holds.

It is not possible for economic growth to continue endlessly. Moreover, increasing economic activity is not possible without greater consumption of energy, which necessarily means deterioration of the environment. So, from the holistic point of view, profit can never exist without serious consequential opportunity costs for society.

Efficiency: Engineers are always talking about improving efficiency as if it were the whole purpose of engineering. Becoming somewhat philosophical, one observes that meaningful consideration of

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<sup>25</sup> Johann Wolfgang von Goethe; *Faust, Part 2, Act Five, Scene 2-3*.

efficiency requires clarity about the purpose of the system to be rendered more efficient. Adam Smith wrote that through division of labor, iron pins could be produced more efficiently than if one person were to do it alone. With division of labor, costs would be reduced and the demand for pins would be met<sup>26</sup>. In this case what happens to the iron smith who was trained in the craft of producing the pins themselves? There is an opportunity cost to be reckoned with here.

Today, in Japan, beer production is dominated by a few companies and mass produced beer can be purchased fairly cheaply in every small cranny of the country. In Germany, by contrast, almost every small town has its local brewery and tastes of the beer tend to vary for each brewery. The prices of the beer are set high enough to permit local brewers to keep their factories running and be able to pass them down to the next generation. Both systems are efficient but the meaning of efficiency for each country in regard to beer production is quite different.

### **Summary of Part III**

#### ***The duty of first priority for national governments:***

All governments should adopt policies aimed to serve the long term well being of their citizens even if these policies go against the more popular demands for policies that promote short term gains in wealth and more goods and services. To reach environmentally sustainable levels of energy utilization, undoubtedly the prices of any form of energy must be raised many times their present levels, the "visible hand" that limit the range of social activities must be introduced.

#### ***The duty of first priority for local governments:***

Local governments must strive to preserve their natural environments in order to hand them down to ensuing generations in the good state they have been inherited from the previous generation. Local governments are admonished not to undertake projects based on the premise that the supply of low cost energy will continue to be plentiful in years to come.

#### ***The duty of first priority for civil society:***

Everyone should be vigilant and take time to consider the greater good of society, currently as well as in the future. One should not be swept up by the "spirit of the times" that dictates a utilitarian ideology of materialism prioritizing consumption, competition, and immediate satisfaction. In the interest of one's own well being and ultimately the survival of the human species, everyone should support leaders who promote environmentally responsible macroscopic policies even if these are presently unpopular and work against the current of majority thinking.

## **Part IV**

### **An example of technological effort**

The German physicist Clausius<sup>27</sup> who coined the term "entropy" wrote: "Since it is not possible to create energy regardless of how much progress is made in science, human beings are directed to live within limits drawn by the amount of energy coming from the sun". Clausius's statement is based on the first law of thermodynamics relating to conservation of energy. Hence if one takes environmental protection seriously, measures for large scale energy production using solar-cells must be promoted at all costs. Large scale here refers to the amount of energy production comparable to that produced by all the fossil fuel burning power plants and the nuclear reactors presently in operation in the world. The following paragraphs describe how this amount might be reasonably determined according to present economic evaluation methodology.

In simple terms, energy which comes from the sun during daylight hours roughly amounts to one kilowatt per square meter. This means that one million kilowatts of energy, equivalent to the capacity of one large scale power plant using either fossil fuel or atomic energy, is coming from the sun for every one square kilometer wide area on earth, which is roughly the area equal to one golf

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<sup>26</sup> Adam Smith, *The Wealth of Nations*, Book I, Chapter 1, Of the division of labour.

<sup>27</sup> Translated by the authors from R.Clausius: Ueber die Energievorraethe der Natur und Ihre Verwerthung zum Nutzen der Menschheit. Verlag von Max Cohen & Sohn, (1885): 22.

course.

If a solar-cell with 13% efficiency is used for 8 daylight hours each day of sunlight; and assuming that on cloudy days, no solar energy is produced and that for every sunny day there is a cloudy day, [50% of the total day time], the effective amount of the sun's energy collectable by solar-cells and converted into electricity amounts to roughly 2% of the total sun's radiation. Then, to obtain the equivalent of the amount of electricity produced by one full scale conventional oil or nuclear power plant, one would need 50 solar-cell power systems each covering a square kilometer, or the area equivalent of 50 golf courses.

According to statistics provided on the Japan Golf Course Association's website, there are now 2400 golf courses in Japan. Assuming the above estimates, if solar-cell facilities were to blanket the area of these 2400 golf courses, the electricity they would generate would be equivalent to 50 full size conventional power plants. The amount to be produced is approximately equal to that produced by the total number of operating nuclear reactors in Japan. Since these nuclear plants produce more than 30% of the total electricity supplied in Japan, these estimates demonstrate that solar energy can produce most of the electricity consumed in Japan if a large scale effort to provide solar-cells is made, i.e. this would mean that the present capacity would have to be increased more than one thousand fold. There are no technological obstacles that would thwart such an undertaking.

One of the reasons energy production through solar power has not been seriously pursued is that solar-cells do not provide as steady and stable an electricity flow as compared with that produced by atomic or fossil fuel powered plants. However, once a sufficient amount of energy is produced by solar power, technological innovation will provide ways to modify and store excess solar produced electricity.

An example of a plan for a large scale solar-cell facility is given in Figure 1. This facility is used for fresh water production by desalinating sea water. It is roughly estimated that a plant with a capacity to produce 100,000 tons of fresh water per day can be powered by a square kilometer wide solar-cell system. It should be noted that the cost for this solar-cell power plant is estimated to be recovered in ten years at the energy equivalent of oil priced at 50 dollars per barrel.

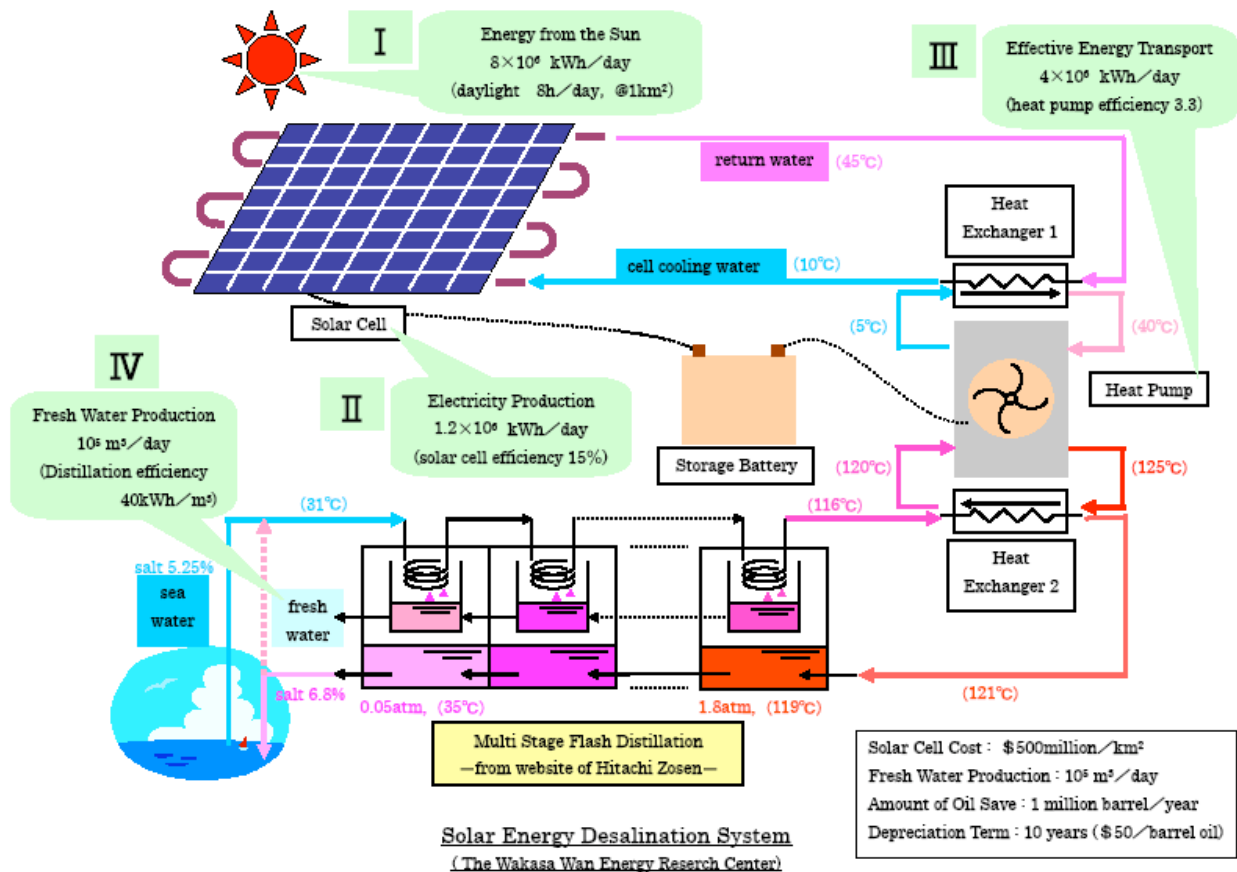


Figure 1: Design of a fresh water supply system for desalination of sea water using solar-energy, showing how solar cells covering an area of a square kilometer can supply the energy needed to produce 100 thousand tons per day of fresh water from the sea, fuel free. (Illustration is due to Tatsuo Shigeta of Wkasa Wan Energy Resarch Center).

**Concluding remarks:  
We have to wash our ears with the sounds of a stream**

Here is a legendary Chinese story. When a hermit sage 許由 : Xu-You heard the Emperor 堯 : Yao uttering in mocking pretense: "I will resign and let Xu to come to the throne." Xu went to the stream to wash his ears. These words sullied by fallacious use had to be flushed from his ears by the pleasant sounds of running water. Another sage 巢父 : Chao Fu came to that stream to let his cow drink and went home without permitting her to lap up the water because he thought the stream was contaminated by the polluted words cleansed from Xu's ears. This story has inspired many artists in China and Japan.

As a parable the story offers a moral for this article. Development, profit, and efficiency are words expressing principal values against which government success is measured. As criteria they are used irresponsibly and misleadingly to justify activities which bring private economic gain at the cost of environmental degradation. Thus these words are as bogus as those uttered by the Emperor Yao which offended the ears of Xu. One must carefully consider under what conditions these objectives are worth entertaining and pursuing, while weighing their long-term environmental consequences and the intrinsic net value they bring to society. One must determine what benefits they will bring to humankind in one hundred years.



Purging one's ears of the sounds of the words development, profit, and efficiency, falsely, irresponsibly, and superficially used, is a prerequisite for safeguarding nature and the environment and for discovering the true meaning of life. This discovery offers humankind the possibilities for a truly happy and satisfying existence, a life approaching harmony with Ataraxia, Tao, or Nirvana.



Figure 2 許由巢父圖: Xu-You washing his ears after he had heard dishonest words, by Kano-Eitoku, 16<sup>th</sup> century. Tokyo National Museum<sup>28</sup> Humanity is advised to remember Xu, when they hear about the promises of development, profit, and efficiency.<sup>29</sup>

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<sup>28</sup> <http://bunka.nii.ac.jp/SearchDetail.do?heritageId=13914>

<sup>29</sup> 史記正義六十二; *Shiji Zhangy* (a commentary to the Historical Record by Sima Qian ) vol.62.