Buddhist Perspective of Recent Advances in Science and Technology

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Introduction

THE 20th century was a century of monumental advances in science and technology. In particular, exponential development in science and technology was achieved during the half century World War II. Advances in specific fields such as information technology, life science, and space science are currently progressing the quickest and are enabling unprecedented advances that were not fathomable at the beginning or the middle of the 20th century. These advances are in almost exact accordance with ideas and concepts drawn from science fiction novels and cartoons. The rate at which these science and technological transformations are occurring is exciting, but at the same time alarming. Progress in science and technology has enabled the human civilization to travel to space in only a few decades after the Wright brothers had first flown over the sky at the beginning of the 20th century. Further, we are now in such an advanced stage of development that plans are even being architected to remodel potential life existence on the planet Mars to become a second Earth. What might life look like in the middle of the 21st century and 22nd century if science and technology continues to develop at the present rate? Forecasting the future is extremely difficult to do. Particularly since fifty years ago people were not able to predict the advancement of the present age due to advances in science and technology. And, the advancement of science and technology are accelerating too fast to predict the future.

On the other hand, many problems associated with rapid advancement that should be contemplated are just now beginning to come to light. One of the major concerns is whether living organisms on the planet, including human beings, can successfully survive and keep pace with the swift advances of science and technology. Can life on the planet

Earth contend with such expeditious advancement? Much of the unusual behavior, *i.e.* deterioration of human principles and ethics, increase in mental illnesses and escalation in crime may be attributable to the extremely quick advance of science and technology. One of the hypotheses of this paper is that there is a direct correlation between recent 'abnormal' human behavior and the rapid advancement of science and technology. The purpose of this study is to compare some recent features of science and technology with the nature of human life from a Buddhist perspective. We hope that the examination of the relationship between the two will disclose insight into the ideal or preferable way to utilize science and technology for a sustainable society.

Differences between Human Beings and Other Living Organisms

Here we would like to examine the features of all living organisms in relation to human induced problems. All living organisms on the planet can be said to have evolved in accordance with the ecological term *natural selection* by refining respective life cycles in accordance with subtle changes in the environment. Life forms from the Animal kingdom such as lions and cows have not physiologically changed for hundreds and thousands of years. This is due to the fact that all living organisms are generally conservative life forms that do not require immediate change to improve their current status in the ecosystem. All living organisms can be said to have evolved to maximize there capacity to survive. In a sense, most living organisms other than humans are invariable and enduring because they do not have the dimensions to physically redesign their respective life styles or surrounding environments.

On the other hand, what about the human life form? Historically, it is certain that humans have not physiologically evolved, or dramatically altered life styles in the past either. For example, childhood play and life styles in Japan were not substantially different between people born in the 1900's and the 1950's. Meals and baths were generally boiled and heated from firewood, and, of course, laundry machines, cleaners and refrigerators were scarce around the 1950's. Naturally, televisions, telephones and other electronic devices we take for granted today were also limited during the same period. During the Jomon period of Japan (~3000 years ago), life styles did not change for as many as 500 to 1000 years. However, life styles in Japan from the 1970's began to change rapidly through the introduction of new advances in science and technology. In the 1970's working businessmen could not even afford to buy

a television with one month's salary. Today, even university students have their own personal television and telephone which would have been unthinkable in the 1970's. Personal computers and calculators began to spread rapidly in the 1970's also. Today, we are in an era when personal computers and calculators of the 1970's are akin to children toys.

In Japan, it is common to reflect on the 1970's in retrospect as an era when modern products of science and technology first began to advance exponentially. This is due to the fact that most modern home appliances, with the exception of mobile phones, emerged in the 1970's. Thus, although human life styles changed relatively slowly prior to the 1970's, we now see change almost annually. Prior to the 1970's, societal change from science and technology occurred at a much slower pace. The slower change of human society was in accordance with natural changes in ecology and the environment. Today, we clearly see a paradigm shift between the speed at which human beings are technologically advancing and the rate at which the natural world is deteriorating. This rapid change is particularly evident in the physical environment where humans have altered the landscape of the planet. In other words, the advancement of science and technology has not physiologically altered the human organism per say, but has altered the physical environment on a planetary level.

The threshold of environmental change from the emergence of science and technology in the 1970's can also be attributed to the introduction of personal products into people's homes. In Japan, environmental problems were region or site specific in the 1970's. For example, specific localized problems such as the Ashio Copper Mine Pollution effect, Mad Hatter's mercury and lead poisoning disease and the Itai-itai (ouch-ouch) cadmium poisoning disease, etc. were incidents where advanced technology during the time period led to harmful and fatal conclusions. The industrial advancement during this period in relevant regions affected the local populations' oceans, rivers, atmosphere (air) and agriculture through chemical and food additives. Thus, the 1970's can be viewed as the precursor to global scale environmental concerns that begin to take shape in the 1980's—the emergence of global scale problems.

Coincidentally, 1970's can also be viewed in retrospect as a time when we begin to see the deterioration of human moral values, principles and overall decline in the human spirit. In Japan, this was a period when 'abnormal' criminal behavior began to emerge. For example, one such incident was when an abandoned infant baby corpse was discovered in a coin-locker. At the time, this type of behavior was unthinkable

particularly since it was the mother who was the perpetrator. This particular event in Japan is often viewed as the beginning of an age of moral decline in society; a time when we begin to see the deterioration of maternal instincts. This type of behavior can be called 'abnormal' because it deviates from the general standard of common sense and criminal motive. Since then similar 'abnormal' behavior becomes more frequent in society and can be said to increase exponentially to the heinous crimes that are common today. One such heinous incident is the increasingly frequent indiscriminant murder of innocent people where a child perpetrator confesses to specific parricide or wanting to murder anybody for no apparent reason.

These examples clearly show the decline of human ethical and moral values. We can even go so far as to say that some children today may lack the neural circuitry of moral and ethical feelings; in general people today seem to lack the essential human consciousness for the well being of other people. Is it possible that the rapid advancement of science and technology are to blame for the decline in ethical and moral standards? Does the human hand in altering the environment cause 'abnormal' discourse between the interactions of people?

Essence of Science and Technology

Prior to the modern age, the time span of 100 to 200 years, even 1000 to 2000 years did not feel or seem like a very long time. However, in the present age 10 years past is considered a very long time. For example, a personal computer will be almost useless or technologically inferior in just a few years. Most homes today in developed countries have access to electrical, water and natural gas services to maintain appliances, heat bathes and cook food. Our lives are overflowing with modern science and technological products such as telephones, laundry machines, televisions, stereos and motorized transportation. Today, a facsimile machine and internet connected computer are common household items, and almost all people step out of the house with mobile phones. In Japan, this modern and convenient life style of the present age can find its roots in the 1970's, just a little over 30 years ago. Aside from tangible advancements in modern living, what has really changed for people and society? It can be said that the *environment* in which people live has changed; people are now surrounded by the products of science and technology. In other words, human beings haven't necessarily changed or evolved, but the material-environment in which we live has. Our *tools* in life have rapidly evolved around us. A quick example of this can be

described in the way children now communicate with one another. In the past, a child would call his/her friend at home whereupon the parent might answer the phone. The child calling his/her friend would identify him/herself cordially, describe the purpose of calling and ask to speak to their friend. The parent would then have a brief conversation with the child and eventually call their own child to the phone whereupon the children would talk. In this example, children are positively exposed to interaction with adults and are required to maintain a certain level of courtesy. Adversely, children today have the means to communicate directly with their friends via mobile phones and internet access. This communication process cancels out the interaction with adults, not to mention interpersonal interaction all together in the case of e-mail and text-messaging. How does the rapid evolution of human devices affect the human consciousness and interaction? People have changed the methods and procedures in which tasks are performed using new *tools*, but have not necessarily adjusted or altered the essential human consciousness to conform to the new era of technology. In other words, our life styles have changed but the characteristics of being human remains unaccountably the same.

Let us examine the practical essence of *products* created by science and technology that can be divided into four features as follows,

1. Products are tangible and visible. In other words, the products are made of visible material and have structure.
2. Products generally allow tasks to be performed easily. In other words, products allow an effortless or unchallenging life. Essentially, reducing work for people.
3. Products increase the speed and efficiency in which tasks are performed. In short, advances in science and technology reduce the time to accomplish work.
4. Products can be operated according to a person's control. In other words, advanced tools cater to the human desire to perform without complaint or disagreement; operations of a task are in accordance to the person's purpose and needs.

Let us now evaluate each category in detail. The fact that products of science and technology are (1) tangible is likely the easiest to comprehend. Each technological product, *i.e.* televisions, motor vehicles, computers, etc. are palpable items that we can see, feel and buy! In general, most products are easy to understand and functionally operate. Further, products that are visible are effectively appealing to the human senses and people (we) are generally vulnerable and charmed by the visual

nature of new products.

Products of science and technology also (2) reduce our often burdensome and strenuous work. People are habitually attracted to easy, uncomplicated and elementary tasks. Most of us would prefer to reduce any laborious work. For example, a tractor was designed to cultivate fields more efficiently, while elevators and escalators decrease our labor of moving up vertical planes or stairs. A computer reduces peoples thinking and brain functioning by conducting instantaneous calculations repeated a thousand times faster and more accurately. Obviously, this type of functionality in a product is very attractive to people. Modern technology also allows us to carry multiple items and loads conveniently. Technology that reduces laborious work is applicable to everyone and even helps physically challenged people function competitively.

Reducing the time it takes to do anything (3) is also very appealing to people. The faster a job can be concluded, the more time we have to do other things, preferably leisure activities. The concept of finishing tasks quickly often overlaps with reducing work or making tasks easier, as mentioned above. For example, trains and airplanes can travel long distances in several hours that might take months by walking. Thus, arriving at our destination faster is generally thought of as a good thing. Another example is email. In the past we wrote letters, and then we began to send facsimiles, now with a click of a button we can instantaneously chat and send email. By reducing the time it takes to complete a task, we are able to utilize the time gained to do other things. However, the paradox is that as much as we would like to gain time for leisure activities we often find ourselves performing more tasks! Our daily lives are continuously filled with new tasks and deadlines to achieve—work increases the faster we finish. Even though science and technology has increased our ability to perform more tasks, the reality is that our capacity physiologically and psychologically are still very limited. In other words, human beings have not evolved at the same rate as science and technology.

The final feature of products is (4) the ability to perform and control objectives according to the users wish. In other words, even though we sometimes can not move people's heart in the direction we hope, we can always move and operate technological products the way we please. Good examples of this are cars and washing machines. If we turn the steering wheel of a car to the right, the car travels to the right, to the left and the car veers to the left. And, a laundry machine starts washing clothes the way we program it too with the push of a button. Neither the car nor the washing machine will reply to the user that it doesn't want to

go in a particular direction or wash clothes because it is too tired today. The clear difference between products and living organisms is that living entities have preference and will to make decisions. On the other hand, people can decide when they want to task a product and when they want to finish the task without complaint.

There is no question that the creation of science and technology products has allowed people to achieve tasks easier, faster and with better control. Although we have presented some of the advancements under a dimmer light, it goes without saying that not all progress and development are careless or bad. It can even be said that many more positive and beneficial results have emerged from the advancement of science and technology, such as technological advancements for physically challenged people. We can also reaffirm that good ethical behavior and moral standards have emerged though the development and advancement of science and technology. However, it is vital that people critically gauge the effects from fast developing technology, and always evaluate the ultimate purpose and goal of introducing new concepts which should be for the happiness of all humankind and living organisms on the planet. We must always question ourselves as to what the ultimate purpose of life might be.

Buddhist Perspective of Humanity

How does Eastern philosophy and Buddhist thought in general view the essence of the human existence? Here we would like to examine the features of science and technology from the perspective of Eastern philosophy. The objective is to describe the Buddhist view of what it means to be human in relation to the four features of science and technology advancements described above.

Eastern philosophy, particularly Buddhism describes the four features of humanity as follows, (1) intangible or invisible features are important. In Buddhism, intangibles such as the mind, life, trust and kindness are some examples of invisible human elements that are highly valued. Buddhism actually appraises the mind more than the physical body as described by Nichiren Daishonin, “More valuable than treasures in a storehouse are the treasures of the body, and the treasures of the heart are the most valuable of all.”[1] In other words, more valuable than tangible items, tools or products are the ultimate values of the human heart and spirit.

Eastern philosophy also teaches that (2) struggles and challenges are good for people; do not seek an easy life! People often quote, “It is good

to buy hardships if you can" or "No pain, no gain." In Buddhism it is said that, "Evil passions of beings are themselves enlightenment (Bonno-Soku-Bodai),"[2] or "Life and death of beings are themselves nirvana (Shoji-Soku-Nehan)."[3] These particular references suggest that it is possible to become happy or attain enlightenment through the experience of worry, suffering and life and death. People tend to live life to the fullest due to the reality of old age, sickness and death. In other words, it is said that the more we are able to overcome hardships and struggle in our youth, the more we are able to enjoy and appreciate life towards the end near inevitable death. Thus, in a sense the struggles we endure through life, particularly when young, are golden treasures and experiences for the remainder of our lives.

Eastern philosophy also teaches that (3) it takes time for humans to physically and mentally mature or grow. It often takes more than ten years for the human body to physiologically grow. It takes even longer for the human mind to mature. For example, in the Analects of Confucius "Rongo" it is said, "The master (Confucius) said that at fifteen years old I aimed to study; at thirty years old I supported myself; at forty years old I became not to be perplexed; at fifty years old I understood the Mandate of Heaven; at sixty years old I was able to hear what other persons said, at seventy years old I obey what my mind wishes, and know the limits of my ability."[4] This example suggests that it takes a very long time for the human personality and character to grow, *e.g.* 30 years to become independent and 40 years to establish an immovable self. In Buddhism, training, practice or exercises are also valued. It is said that enlightenment can be achieved through practice which implies that in order to become happy and polish our character it is necessary to allocate enough time to complete the process—happiness cannot be achieved in a short, quick time frame. Thus, the maturity of the physical body, the development of wisdom and the sophistication of the human character all require ample time.

The final feature of human life in relation to the features of science and technology is that (4) life does not always move in the direction we wish. Our lives are complex and our interactions with various people and events are not always what we wish. All stages of our lives, from babies to children to parents, and all people are faced with the same dilemma that not all processes conform to our exact desire. Even pets that are trained for many years do not always move as instructed and trained. In short, to be alive is to exist in a complex and passionate world that is not under the control of anyone. Ironically, the process of trying to solve problems and sufferings in our daily lives is an effort to

live as we wish. Nichiren Daishonin wrote, "not to expect good times, but take the bad times for granted."[5] The quotation from this letter suggests that it is unique and rare that a person's life goes in the direction or way that one wishes. From the above example we can clearly see that the advancements of science and technology do not always conform, and in some instances go completely opposite of Buddhist philosophy for the way to live a happy life.

What does Science and Technology Change?

As mentioned earlier, Buddhism values things that can not be seen or are intangible that take time to nurture and grow through struggle and hardships, all essential for a long and prosperous life journey. Buddhism often views life as a process in which experiences do not necessarily go as planned—this is the essence of being human. However, the emergence of science and technology into the sphere of the human consciousness has altered and changed the way we pursue happiness. From a Buddhist perspective, the fast pace of development has the potential to alter the dynamics of what it means to be human.

Let us now examine how science and technology changes the spirited human existence. When it comes to raising children, the parents are often obligated to raise a child to the best of their ability, and it is quite natural for children to appreciate and be thankfully benign towards the parents. Buddhism values the compassion towards parents, and so the crime of killing ones parents is a substantial act. Raising and loving children to become good adults is a very difficult and challenging task for parents. The process requires daily effort for many years and is only possible through love. Obviously, a desire of the parents is to reduce the strenuous aspects of raising children. Science and technology have made the process of rearing children easier, faster and more efficient in many ways. How does the introduction of science and technology change the dimensions of the parent-children relationship? The struggle of raising children allows parents to appreciate their children more, and visa versa. If the desire of raising children becomes easier and less of a struggle, the value of children to parents becomes less and less. And, if the child does not grow up in the manor in which the parents approve, then naturally anger and confusion become strong. This is one example of how the desires to make tasks in life easier and faster have trickled into modern society and are even affecting our ability to raise children.

One the other hand, what about the perspective of the child? The love of parents towards their children is often non-tangible or easily misinter-

preted. If children do not feel the affectionate love from the parents, they begin to feel that they may no longer need parents at all. And, although children are economically attached to the parents, children cannot understand this concept without substantial time for mental maturity. When the children and the parents begin to loose love and appreciation towards one another, both entities begin to act dysfunctional and could eventual cause children-parent related domestic issues. Thus, the concept of science and technology making our lives easier, faster and in accordance with our desires may have begun to alter many facets of our daily lives indirectly.

In the past many children and parents learned vital skills at home through interaction with each other that are slowly beginning to disappear today. For example, parents used to teach children how to cook, wash clothes, and heat a bath. This was part of growing up. Today, both children and parents can cook, clean and take a bath with a push of a button; there is no need for interaction. People no longer need to know "how" food is cooked, clothes are washed or baths are heated as long as the task is accomplished. However, there are a multitude of tasks that we should learn from our parents, such as how to burn firewood for cooking and bathes by allowing just the right amount of air and fuel. The interaction between parents and children allows for past experience and wisdom to be past down through human contact. Today, we can easily walk to the local convenient store and drive through a fast-food service to eat food. We can also push the button of a microwave oven to eat deliciously warm food. Although many children and parents still actively interact with one another, we can say that it is becoming less common in recent years. Basically, aside from the economical reliance to a parent, a child can generally survive today without the supervision of a parent.

Schools are another example of how the dynamics of human interaction have changed. In schools today a child can gain accurate, unlimited knowledge very easily from a computer accessed to the internet. Children can basically access information without having to deal with the nuisance of interacting with an adult, not to mention the fact that the information is more robust and non-biased in most cases. Further, students can answer their own questions without having to ask an irritated teacher who is underpaid and not engaged in the teaching process! Thus, the teachers' role in the school begins to change. The transmission of information becomes possible without the need for a persons oral skills or person-to-person interaction. This is just one example.

It is easily understandable how we have evolved to favor the products of science and technology more than human interaction since machines

and appliances have allowed us to finish tasks sooner, easier and without complaint. We may even see a future where learning and education are no longer part of human interaction, but realized through alternative technological means at home or in schools. In short, the intangible and invisible essence of human values such as parents love and the human interaction at home, and the teacher's love and trust towards students may be lost in the future. We must be careful as to how we utilize the emerging new tools of the future.

Conclusion

The features of the science and technology have gradually infiltrated our minds and people's current way of life. The ideal ways of the interpersonal relationships of the past may have begun to change by the recent explosion of advances in science and technology. In conclusion, we would like to describe a few important points that should be considered when thinking about the application of science and technology.

Firstly, products of science and technology should always be limited as means and tools for human civilization. Unfortunately, the "tool" has become the purpose for living where people are being controlled by the direction in which science and technology are moving. Our lives are controlled by our desires for new tools. Our civilization is beginning to make decisions based on the direction technology is heading, not based on the direction for the happiness of all humankind. In other words, people are being controlled by "tools" and "products," and influenced on moving in directions based on the functionality of the tool. Moreover, information and wisdom for living a successful and fruitful life that were passed from one generation to the next are now just easily accessible knowledge from the past.

Second, it goes without saying that we are now in the process of conducting one of the largest field experiments of human existence. The grand human and social experiment is to see how human civilization will be affected by the rapid advancement of science and technology. Unfortunately, this is an experiment that cannot be re-designed or conducted over and over again. We only have one opportunity to make this experiment work correctly. The current experiment is only 30–40 years old and we have not even performed an inevitable generational exchange. Although the older generation of today understands the history of recent advancements, children today have no experience of the inconveniences of the past and thus nothing to gauge against. In other words, children today have no practical experience of the potential posi-

tive and negative effects of rapid advancements in science and technology. Thus, we are now entering the final stages of the experiment where the next generation of children will design society and determine the future for ages to come. There is a chance that this experiment without proper control and humanism, will roll out of control towards the unfortunate collapse of civilization.

Lastly, it is critical that we consider the consequences for the human civilization from the rapid advancement of science and technology. We must begin to parse out the positive and negative consequences, the possibilities and the realities, and what is best and worst for humans and the planet Earth. We must step back from the thinking and concern of only developing newer and faster concepts. In order to change this way of thought, we must consider the humanistic aspects of our developments. The development of science and technology should be the means and ideal way to elevate the human spirit, develop compassion and strengthen human interaction and dialogue. This should be the vision of science and technology. It is becoming increasingly critical for people to get to know one another better to make this humanistic vision of science and technology a reality. Currently, the random development of science and technology are blossoming without the essential human interaction. At the current rate, the grand human experiment may reach hazardous levels of failure. In our opinion, Buddhist and Eastern philosophy should have an important role in the experiment to nurture and guide society towards a more humanistic science and technological advancement.

References

[1] "*Nichiren-Daishonin-Goshozenshuu*," p 1173, Soka-Gakkai, 1952, Tokyo. *The Writings of Nichiren Daishonin*, "The Three Kinds of Treasure," p 851, 1999, Soka Gakkai, Tokyo.

[2] Yamamoto S. (1992) "Contribution of Buddhism to Environmental Thoughts," *The Journal of Oriental Studies*, vol. 8, pp 144–173. "The evil passions of beings are themselves enlightenment. (Bonno-soku-bodai)" means that evil passions are inseparable from Buddhahood. That is, evil passions and Buddhahood are considered to be two sides of the same coin.

[3] "Life and death of beings are themselves nirvana (Shoji-soku-nehan)." From the standpoint of the Lotus Sutra, birth and death are two integral phases of eternal life. The sufferings of birth, death and nirvana are inseparable.

[4] http://www.mars.dti.ne.jp/itot/rongo-1-2.htm

[5] "*Nichiren-Daishonin-Goshozenshuu*," pp 1190–1191, Soka-Gakkai, 1952, Tokyo. *The Writings of Nichiren Daishonin*, "On Persecutions Befalling the Sage," p 998, 1999, Soka Gakkai, Tokyo.