Science, Technologies, Policies and Futures

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I am honored to have the opportunity to speak with a group of fellow futurists who are actively shaping the futures of humanity and beyond. I will listen to your ideas attentively today.

Futures Studies. I have been in futures studies for a very long time--since I taught what has been said to be the first officially-approved university course about the futures, at the Virginia Tech in 1967. I have been director of the Hawaii Research Center for Futures Studies in the Department of Political Science of the University of Hawaii since the Center was created by the Hawaii State Legislature in 1971. The creation of the futures center followed the highly successful futures citizen-based activity called "Hawaii 2000" in 1970. One of the invited outside observers of that activity was Lee Hahn Been, who did many wonderful things in Korea, not least of which was the introduction of futures studies into the country.

During the 1980s and 90s, I also had the opportunity of talking with futurists and ordinary people in over thirty countries around the world about their hopes and fears for the future while I was president of the World Futures Studies Federation. My travels took me to South Korea, of course, as well as to North Korea.

As a futurist, there is nothing that I don't need to keep my eye on! It is necessary for me to know a little bit about a lot of things, though perhaps not very much from the point of view of any specialist. One of the things I have watched most closely over the years is how changes in communication technologies change individual human behavior, and how changed individual human behavior changes society.

Technology and Social Change. The following chart captures, at a very high level of generality, how humans have come to dominate nature and each other by inventing and diffusing communication technologies:

Social change and changes in communication technologies

Years Ago	*Era*	*Communication Technology*	*Scope*
250,000	Homosapiens	Pre-speech	Band
40,000	Hunting & Gathering	Speech	Tribe
5,000	Agricultural	Writing	Region
400	Industrial	Printing	Empire
100	Information	Electronic	Globe

Each new mode of communication technology allowed us to think more systematically and thus to have greater influence over ever-wider areas of time and space. As a consequence, humanity--fast approaching 7 billion of us--now totally dominates and influences all once-natural processes of the entire globe, and beyond.

I spent six years of my life as a newly-minted PhD teaching political science at Rikkyo University in Tokyo, Japan, during the early 1960s. I went to Japan because I wanted to know why Japan had transformed from an isolated, agrarian, feudal society into a dominating world power so quickly--much faster than any other nation. I learned that there was a specific relationship between the values associated with nature, work, learning, and technology that was needed for any society to transform from feudal agrarianism to industrial nationalism. And Japan had the Right Stuff--or, perhaps, the Wrong Stuff, depending on how you feel about imperialism and "development".

It was this insight about the inter-relationship between values and technologies that led me to help invent futures studies shortly thereafter.

But the transformation of Korea from a feudal society into an industrial power and then into a leader among the information societies of the world has been even more spectacular. So now you stand at the top of the world, with the winds of history blowing through your hair, apprehensive but proud, wondering what's next, and how you might play a major role in shaping not only your futures but also the futures of the world.

Electronic Communication Technologies. There is absolutely no doubt that electronic communications technologies--in which you excel--have played a major role in the recent transformation, and that you are poised to move rapidly and positively forward into the next era by riding the swelling crest of that same wave. You seem firmly convinced--and why should you not be?--that the future will be based on the perfection of existing and emerging communication technologies:

Deregulation, media and content convergence, and cross-media convergence, worldwide;

Including the merger of education with entertainment with marketing;

Infinite bandwidth and access via mobile Internet Two
(and Three and Four);

Quantum computation;

The Ubiquitous Society in all of its hopeful and frightening manifestations, from continuous health, happiness and safety monitoring and provisions, to "intelligent government," hyperOrwellian surveillance, and global cyberwars and terrorism;

Diverse cultures of virtual realities;

Teleprojected, four dimensional, multiplayer, life-sized, interactive artificial environments

Robotics, artificial intelligence, and numerous problematic ethical and legal relations between humans and artilects;

and the overall maturing and expansion of the Information Society in so many more ways.

However, I think one of the clearest lessons from the early stages of the Internet and mobile connectivity is that the monopoly of content production that has been a feature of the late industrial/early information society is crumbling rapidly. Long ago, Alvin Toffler predicted that the distinction between producers and consumers would vanish in a "third wave society", and that we would all become prosumers. YouTube, Facebook, Second Life, and other sites of User Creative Content are early and only pale indicators of what "prosumerism" might mean to content providers such as many of you

here. Your days may be numbered indeed. You may continue to play an important role in the future personally because of your exceptional talent and access to media, but it may not be as central a role professionally as it is now.

What's Next? Some of you know that I have been arguing for some time that one strong contender for the "society" that will follow the "Information Society" is the "Dream Society of Icons and Aesthetic Experience":

Years Ago	*Era*	*Communication Technology*	*Scope*
250,000	Homosapiens	Pre-speech	Band
40,000	Hunting & Gathering	Speech	Tribe
5,000	Agricultural	Writing	Region
400	Industrial	Printing	Empire
100	Information	Electronic	Globe
Soon	**Dream**	**Interactive Multi-sensory**	**Solar System**

Why do I say that? Already in some parts of the world, many people are discovering that the way to become rich and famous is to produce neither food nor consumer goods nor information. Let others do that (since we do need to eat, consume, and think in a Dream Society). The way to gain prominence now is to produce dreams--to be a professional athlete, or actor, or singer, or dancer--or better yet, a master story-teller via movies, videos, animation, and interactive games. Hollywood, Bollywood, Mickey Mouse, and Hello Kitty are all early examples of that.

Korea as a Dream Society. A few years ago, someone in Korea also discovered the secret, and convinced decision-makers that Korea should begin developing and exporting dreams via its own pop-culture industries: movies, soap operas, K-pop, and especially electronic games. Korea has been so successful at this that I claim that Korea is rapidly becoming the first official "Dream Society", and a leading producer of entrancing dreams globally.

But beware. If we are not careful, this meeting may resemble a conference of buggy manufacturers 100 years ago discussing improvements in buggies, dirt roads,

watering-troughs, bits, bridles, horses, and horse manure disposal, while some folks not at the conference were fooling around with steam engines, electric motors, and internal combustion engines for transportation. We can still be great buggy manufacturers, producing very fine buggies for those who want them, but we may no longer be a dominant economic and cultural force in Korea, or the world, if we do so.

Teleportation. One example might be teleportation--the transfer of something from one place to another at the speed of light, with or without the destruction of the thing at the first place. Though only in it infancy, and with many challenges ahead, actual or analog teleportation of goods may become possible in the 21st century.

Among the many unknowns are the energy requirements of mature teleportation systems. If it is feasible and efficient, teleportation could drastically alter our manufacturing, communication, and transportation systems.

The teleportation of lifeforms seems unlikely any time soon. But I may be too conservative in saying so.

Are you among the leaders in researching and developing teleportation systems?

It was only a hundred years ago or so that people even came to know of the "electron", and even more recently that people learned how to manipulate the electron for purposes of human communication. Without the revolution in physics of the early 20th century, there would be no electronic communication revolution today.

Biological communication. Some people feel that biology is a major driver of the waves of the futures. Of course, the biological revolution requires very powerful advanced digital communication and imaging technologies. The human genome project and all subsequent advances would never have been possible without the prior computer revolution.

I believe the first organization that learns how to utilize cell and molecular signaling for human communication purposes will move humanity away from electrons and digits and towards even more powerful and ubiquitous communication technologies that work with and through living things, and are alive themselves.

Moreover, as the Sri Lankan futurist, Susantha Goonalitake, wrote some time ago, matter and life--physics and biology—are rapidly merging into one.

I hope you are already researching that possibility.

Other Futures. I must remind you that a high tech future, whether electronically or biologically driven, is by no means guaranteed. It remains my preferred future, as I expect it is yours. But it is being challenged by other trends and events that anyone too focused on high technology futures may fail to appreciate sufficiently.

Consider these facts:

Global population growth remains a major challenge for the very survival of life on this planet.

And yet population decline in Korea and many other countries in Asia, Europe and North America remains an equally daunting, though opposite, challenge.

The era of cheap energy, in the form of oil, is rapidly coming to an end. Demand is outstripping supply, and the supply is finite with no comparable renewable sources in sight to replace oil.

The world's supply of food--largely dependent on plenty of cheap oil--is dangerously low.

Fresh water is scarce almost everywhere.

Global climate change, including sea level rise, is real. Its impacts range from divertingly annoying but manageable to catastrophic.

We must not "solve" our energy problem by making our environmental problems worse!

After many decades of "development," the gap between rich and poor has not narrowed. In many parts of the world the once numerous middle class has dwindled sharply. Some have become temporarily rich but many more have become desperately poor.

Yet, the global economy is teetering on the brink of collapse because of its increasing over-reliance on extremely complex debt instruments. New forms of debt might solve immediate problems but they create much bigger problems in the future. And that postponed future may be now.

> Science and its handmaiden, technology, are held in increasing disrespect in many parts of the world where ancient religious and other cultural beliefs are rising. Funding for basic scientific R&D is declining. Bright young people prefer to get rich by studying business, law, or cultural studies rather than trying to solve world problems through science and engineering.
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> Because of ideological fads and crushing national debts, few governments are able to address, much less solve, these challenges, and nothing approaching democratic global governance is even being seriously considered. Humanity is left rudderless in the gathering storm.

Unless these and many related challenges are quickly and honestly addressed there will be no Dream Society in the future--and perhaps no Information or Industrial Society either. We may all have to become farmers and hunters again.

Korea as a global futures leader. Korea is better able to face this future and chart a positive path through it than are most other places. First of all, compared to almost anywhere, Koreans have a stunning historical record of overcoming adversities quickly and well. Koreans are hardworking, honest, and caring. They want to do what is right and fair.

More Koreans also are coming to see the value of creativity and imagination, as well. My Korean students at the University of Hawaii have always been among the best prepared and the hardest working. But recently they have also become the most imaginative and daring.

If Korea's educational and political systems can come quickly to recognize the necessity of both hardworking and imaginative young people and leaders, I am sure Korea will be a world leader towards a new future, whatever future that might be.

I have a specific suggestion.

For a short period during the 1970s, when energy and environmental issues were for the first time coming to the fore, I worked for two years with the educational television station, TV Ontario (Ontario Educational Community Authority), in Toronto. I helped them produce television programs dealing with the nationwide "Conserver Society" project sponsored by the national government and coordinated by the national Science Council of Canada. For a few years, most agencies at all levels of government, many researchers and academics, and most media outlets produced very impressive

documents and programs intended to transform Canada from a "Consumer Society" to a "Conserver Society."

The project was unfortunately killed during the heady days of the 1980s when North America and the world went on a three decade-long wasting and spending spree, just ended.

I think the time is ripe for Korea to take the lead now in doing the research and producing the media content that can help Korea and the world move towards what now might better be termed a "Survival Society".

While I very much hope that our dreams of a high tech Dream Society will be come true, we will be irresponsible if we do not also devote equal time, talent, and money to assessing the contours of a Survival Society as well.

I challenge you to accept that mission!