Ubiquitous, Dream, Transformational, and Other Futures

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Thank you for letting me share a few ideas with you about the concept of a ubiquitous society and of ubiquitous media within it. It concerns an idea that I have been researching and promoting as "the future" for a very long time. It is therefore absolutely delightful for me finally to be in, or on the very threshold, of that future finally, after all these years of anticipating it. And of course I would expect Korea to be a world leader in bringing that wonderful future into reality.

I first encountered the idea of what would become the ubiquitous society when I read an article by the famous scientist, science fiction writer, and futurist, Arthur C. Clarke, titled the "Mind of the Machine" in *Playboy* in December, 1968. He said that computers would get smaller and smaller, and eventually "fade away into the woodwork", meaning they would become omnipresent--invisible and ubiquitous.

By the 1980s, what Clarke said was becoming very obviously true, and I discussed the idea, but did not use the term, of ubiquitous computing, in many places, including a paper titled, "I want my ITV" (meaning "Interactive TV") that I presented at a conference of the World Futures Studies Federation in Barcelona, Spain in 1990.

However, as you well know, it apparently was Mark Weiser, a researcher at PARC of IBM, who is the father of the specific term "ubiquitous computing" in the 1990s. Very importantly, he also distinguished between "Virtual Reality" which people were talking about at the time, and "Embodied Virtuality", which is another term he used to characterize ubiquitous computing.

A graduate student of mine at the University of Hawaii, Jenifer Winter, also wrote her PhD dissertation on the social implications of ubiquitous computing in 2001. Using a modified Delphi technique, she discovered that most people basically liked the idea of ubiquitous computing, but were very concerned about the security issues--especially the ability of governments and businesses to spy on individuals. They were concerned about the end of privacy as a concept and possibility. I spoke with Dr. Winter a week or so ago, and she says that since 9/11 and the enactment of the PATRIOT Act in the US, and then

more recently the Military Commissions Act, the things her respondents feared have increasingly become frightening reality.

In addition to pioneering work done in Japan and now here in Korea both of which you all know about very well, and more recently in Europe where the idea of a Ubiquitous Society is increasingly being discussed, especially in Finland and other Scandinavian countries, there have been a number of similar projects in the US that use different names, such as Affective Computing, or the Oxygen Project, both at MIT.

Affective computing focuses on the development of computers and other sensors that feel and respond to peoples emotions, while the Oxygen project is more specifically a U-Society concern, seeing computers as being as omnipresent and essential to humans as is oxygen. This is also similar to Project Aura at Carnegie Mellon University that sees computers as hidden and surrounding, like an "aura" around, or "halo" over, each person's head. The University of Washington has a project on Invisible Computing and IBM has used the term Pervasive Computing.

One of the more imaginative ideas that I am sure you all are familiar with is the *Yaoyorozu* project in Japan. *Yaoyorozu* is a classical Japanese word for "eight million" and is mainly known now in the phrase *yaoyorozu no kami-gami* which literally means "eight million gods", but implies that god is not a single all powerful person away in heaven somewhere--like an old UNIAC computer--but everywhere around you in rocks, trees, rivers, fields, and other places.

I personally prefer all of those terms to that of the ubiquitous society.

Strictly speaking, the term "ubiquitous society" is meaningless. Ubiquitous means "everywhere around you" and society already IS ubiquitous--society is the artificial world that is all around all of us, from which we can never escape. So the word "ubiquitous" should always modify something else, like "computers" or "network" or "information". It makes sense to speak of "ubiquitous computers" or "ubiquitous networks", or "ubiquitous information". But it makes no sense at all to speak of a "ubiquitous society" without some kind an intervening noun. Nonetheless that is the phrase you are using, so it can't be helped.

But let me make four substantive comments about the idea of a ubiquitous society and the role of current and future media with in it:

First, one of the more important things that disturbs me about current discussions of a U-Society is that the role of biology, biotech, genetic engineering, and the rest are omitted from all discussions that I have seen. Maybe I have missed it, or maybe consideration of biology is not taking place. If it is not, then this may be a big mistake. I know that biologically-embedded biometrics are understood to be a part of the ubiquitous society, but by focusing only on <u>electronic</u> communication technology, and failing to also understand <u>biology</u> as a kind of communication/information technology, whose

importance is likely to grow enormously in the future, we may be missing the chance to do something very innovative and important.

The basis of ICT in the 21st century and the most important technologies of the 21st century overall are probably not going to be based on electronics alone. They are more likely to be based on biology, alone and in combination with electronics and nanotechnology. The information of life is the most important information of all, and I am mystified, given the completion of the human genome project six years ago and given Korea's well-known interest and leadership in genetic engineering, that--as far as I can tell--there is no connection being made or proposed between biology, nanotechnology, and electronics when considering the ubiquitous society.

The communication that goes on between molecules, neurons, cells, and other basic biological components can and almost certainly will be used for mediated human communication purposes at some point, and I think Korea could be the place where that research is first and most seriously undertaken, and then is wedded with electronic communication and nanotechnology to produce a quantum leap in truly ubiquitous communication technologies.

This is not a new idea. One of the best early proponents was Susantha Goonatilake, a futurist from Sri Lanka who had been discussing this for a decade before putting it all together in his 1999 book called *Merged Evolution: Long-Term Implications of Biotechnology and Information Technology*. Goonatilake sees the coming merger of biology and electronics (and of cyborgs and AI, and their environments, and indeed of life and nonlife) into a true "information society". I very much agree.

More recently, the American futurist, Ray Kurzweil, has written an extremely popular and influential book titled *The Singularity*, in which he clearly points out that the merger Goonatilake foresees is happening now. It certainly has been the focus of much of my research and writing for the past thirty years.

So my second main point of concern is not simply that information technology and media will ubiquitously surround humans. Even though that is what I see predicted in most U-Society discussions, it is far too timid a perspective. Rather, the main point I believe is that humans, and their technologies, and the environments of both, are <u>all three merging into the same thing</u>. Humans, as humans, are losing their monopoly on intelligence, while new forms of artificial life and artificial intelligence are emerging, eventually perhaps to supercede humanity, while the once-"natural" environments of Earth morph into entirely artificial environments that must be envisioned, designed, created and managed first by humans and then by our post-human successors.

I call this future a Transformational Society, and if this is the future, and I think it might be so, then it seems to be a much more comprehensive concept than just that of the U-society alone, I believe. And while some people find this future very frightening, I find it very exhilarating. I strongly urge each of you to come to grips with the more

comprehensive perspective of a Transformational Future of which the U-society concept is an important part.

To be clear, discussions of the U-Society I am familiar with correctly see that micro and nano-scale computers may become ubiquitous in the environment of humans. What these discussions do not mention is (1) that that process is simply one part of the rapid transformation of both the once-natural environment and the human-built environment into an entirely artificial environment while at the same time, (2) homosapiens (and all once-natural life forms) merge, through natural evolutionary process as well as conscious genetic engineering, into that new artificial environment so that it will be impossible to perceive any one of them (humans, posthumans, artilects, the natural environment, and the artificial environment) without also seeing all the others at the same time.

My third point is that well before this truly ubiquitous Transformational Society emerges, the distinction between the producer and the consumer of media content may also vanish. Most traditional producers of media content at the present time--writers; book, newspaper, and magazine publishers; movie producers and distributors; musicians, music writers and distributors; radio and TV talent, owners, and producers; video and electronic game producers, and the like--are already struggling, largely unsuccessfully, to keep financial and usage control of their creations. It may be absolutely impossible for them to do so in a genuinely ubiquitous society.

Many years ago, most notably in his 1980 book, *The Third Wave*, the American futurist, Alvin Toffler, coined the term "prosumer" to describe the growing number of people who, even at that time, were both producers and consumers of goods and services. The Internet has vastly increased their number in all areas of life, while the proliferation of blogs, ultra-small entirely digital video cameras (often in mobile phones), and increasingly cheap and sophisticated audio and video editing software all are clearly threatening the economic and ideological control which governments and media conglomerates once had over media content. I suspect the struggle between artists, hackers, "owners", and government censors may be rampant in a ubiquitous society.

In many ways, what I am describing here are aspects of what my colleague at the University of Hawaii, Yongseok Seo, and myself call "A dream society of icons and aesthetic experience." By now, everyone in the world is aware of the Korean Wave of popular culture that has washed repeatedly over Asia and now also is washing over America and Europe.

Mr. Seo and myself have studied the Korean Wave, and we believe it exists and is so successful because you understand that the era of the so-called "information society" is over and that a new form of society and economy, that we call the dream society of icons and aesthetic experience, is emerging. What startled us was to learn that the Korean Wave emerged not by accident, but as a consequence of farsighted government policy.

Of course many aspects of the dream society have already existed for a long time in the United States--the global dominance of Hollywood movies and American television are

clear examples. Japan also contributed to the emergence of a dream society by its production of *manga, anime*, and video games that are popular everywhere in the world. But it took the genius of certain Korean leaders to recognize that popular culture in general can and should be a major, and eventually THE major, basis of future economies and of societies based upon them. I congratulate you for your foresight.

A ubiquitous society is an important initial part of a dream society, but by its very ubiquity, it places a challenge before all of you because, as I have said, it will be extremely difficult for you to control and derive sole profits from the production and distribution of media content even in the early stages of a U-Society, well before it becomes a full-blown Transformational Society.

And, as I have said, with the emergence of a true Transformational Society, all old bets are off. With the Transformational Society, we will enter a new stage of human biological and social evolution with challenges and opportunities never seen before.

The fourth and final point I want to make is that, in spite of what I have just said, none of this is inevitable. The U-society and the Transformational Society are simply aspects of one *possible* future. There are many more.

For example, I am very much concerned that the impacts of global warming, sea-level rise, and the effective "end of oil" may soon force humans to drop their focus on the wonders of ubiquitous electronics, and to work with all their might to survive and thrive in a world that has become very dependent on basic human labor once again.

Or, from another perspective entirely, I believe that our global neoliberal economic system is built on such a fragile and growing base of national, corporate, and consumer debt that the slightest tremor might bring the entire global financial house of cards tumbling down, engulfing the world in a prolonged depression.

And if both of these occur at the same time--global depression and novel and overwhelming environmental and resource challenges--we can just kiss the dreams of a ubiquitous society goodbye--or, rather, as I said before, society, which is ubiquitous in any case, will now have to turn its attention of very basic matters of survival again.

And there are other futures that might prevent or postpone the coming of a U-society, including an endless war of fundamentalists from the West against fundamentalists from the Middle East and elsewhere.

Of course, I hope that none of these alternative futures come about. But it would be very prudent of us to attend to them while we also envision and work for the U-Society and the even more exciting Transformational Society of which I believe the U-Society is but one though important part.

Thank you.