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Keynote Lecture; at the 30 years of Nephrology of Seoul National University College of Medicine

'The History and the Role of Medicine and Nephrology in East Asia and its Commitment at 21st Century' 3:15–4:00

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### Summary

Our human species from its emergence, has been fighting against starvation and death. Indigenous knowledge of disease has accumulated, shared and eventually disseminated over generations. Although scientific basis of hygiene, sanitation, and vaccination came and implemented in mid and late 19th century, most of our contemporary knowledge in medical science and technologies are based on various discoveries of 20th Century. Nobel Prize, most prestigious science prize, began in 1901. Thus if one follows the list of early laureates in medicine and physiology, you could notice what were the major issues and impacts of the work of laureates around that time; discoveries of major killer infectious diseases and the mysteries of our life. We benefit greatly from these and other giants.

The life expectancy at birth 100 years ago in many advanced nations, was mere 40–45 years. Now it is more common to see the life expectancy of 70–80 years. Human population began to rise rapidly in the last 100 years; 200 million 2000 years ago, to 500 million 500 years ago to 1.6 billion 100 years ago and now exceeding 6.5 billion. During the last 60 years, major advances took place in science and technology; in medicine, for example; penicillin, polio vaccine, organ transplantation, dialysis, CT and MRA, cancer chemotherapy and many others.

But the change in our life and the way of living have been most extraordinary in the last 20 years; the end of Cold War and introduction of Internet or the beginning of digital age. The last two decades can be called 'GLOBALIZATION' characterized in three words, 'HOT, FLAT and CROWDED' (Thomas Friedman). The two major underlying factors are increased human population and digitalization of knowledge leading to various major global issues, eg, climate crisis, demands for energy, foods, water, and other natural resources, urbanization, sharing knowledge, financial crisis, thus more and more inter-connected ONE world.

There are many regions people suffer from lack of basic needs of health, eg,

clean drinking water, various infectious diseases some of which are preventable through vaccination. Meanwhile, in many affluent and developing countries, major disease burden shifted to chronic diseases, many are closely related our modern life–style of urbanization, eg, obesity, diabetes, hypertension..

Science continues to advance as shown as recombinant protein drugs, decoding human genome, epigenetics, stem cells, fMRA, and various new technologies. Yet, social determinants have become major issues and factors impacting on health and disease, thus health and medical policies. Further, global health issues has become more on our collective challenges in part as the matter of political, economic, and social as well as ethics, inequity, and human security within each community, nation, and the inter–connected ONE world.

While we preserve our legacy and unique social values, we must develop and modify our educational programs with a larger vision, in nurturing future physicians and health professionals, sharing our common values engaging multi–stakeholders sharing our common values toward more and more ‘Flattening Global ONE World.’

### **SPEECH TEXT begins here!**

Dear colleagues and friends of the kidney

It is a great honor and privilege to speak to you at this special anniversary of Nephrology of the College of Medicine of Seoul National University, one of premier programs of the nation, of the region and of the world.

Today’s title is a bit broad to discuss and other speakers will discuss other topics such as its history, ISN, APSN. Thus, I will focus more on its historical context and relevance, and on the challenges we face today, tomorrow, and beyond.

The world is facing one of the deepest recessions in our history while globalization, whether you like it or not, continues to move forward with ever–widening connectedness. We could summarize the state of the world in three words, ‘HOT, FLAT AND CROWDED’ as Thomas Friedman put it in his recent book.

These are the results of OUR PROGRESS AND ACHIEVEMENT OF MANKIND over many centuries. We live longer, are healthier, and consume per capita, ever more energy, food, water, and other resources.

Let us review some of facts of our health.

**Slide 1:** The world population rose from 2–300 million 2,000 years ago, to 500 million in year 1,500, thus the doubling of population took 1500 years. Then, it rose more

and more rapidly to 1.6 billion around the time of year 1900, that is 100 years ago (our population increased 3 times in 400 years).

Then, our population rose to 6.7 billion now; it increased 4 times in the past 100 years, and will rise to 9 billion by year 2050. The speed of increase per decade has begun declining since 1990, but the absolute number continues to rise.

How about life expectancy at birth?

**Slide 2:** 2,000 years ago, in most civilized country that time, for example, Rome, it is estimated to be around 25 years; many will not survive beyond the age of 5.

100 years ago, life expectancy at birth in many affluent nations in Europe and US, and Japan, was only 40–45 years; and it rose from 80 years of age over the last 100 years for many those who live in affluent societies, yet many others have been left far behind.

**Slide 3:** While we live longer, we complain of obesity, diabetes, high blood pressure, thus chronic diseases linked to our modern urban life style, have become the major disease burden in affluent countries as well as so-called developing countries.

Nonetheless, in our daily life, we love fast foods, wasting and dumping tons of food each day for our convenience, eating even when we are not really hungry, three times a day, just a habit we simply think 'normal'.

On the other hand, 10s of millions of children, women, and men in many parts of the world, die each year simply of starvation, poor nutrition, and lack of decent drinking water.

As in any creature on Earth, survival has been a fundamental issue for human race, thus we came a long history thriving against starvation and family safety, fighting for food, water, infectious diseases and many other risks that surround us.

Through various experiences and observations, indigenous knowledge over few millennia, shared among family, then to community, gradually to wider dissemination over generations through oral communication and some kinds of stories over generations, then in writing on stones and papers, documentation, and printing. These advances allowed experiences and knowledge acquired over centuries, spread widely and across many, many generations. This is our foundation of knowledge.

**Slide 4:** Some of major discoveries in modern time medical sciences and public health are many, and such include;

1. Edward Jenner's small pox vaccination, using cowpox, of very late 1798, just 200 years ago, and the method was so dramatic, it spread to many parts of the world quickly over next 100 years; in 1879 年, 医師の池錫永(チ・ソギョン) tried

in Korea, small pox vaccination, a beginning of 'modern' medical practice. Now, small pox was announced by WHO, 'Eradicated' in 1979, but may yet return as a tool of terrorism.

2. Cholera outbreak in London of mid-19th century, laid the foundation of hygiene, sanitation and water system,
3. Analytical and synthetic chemistry technologies allowed identification of the nature and synthesis of aspirin, though the effect was known since the time of Hipocrates; Bayer commercialized it, patented in 1900.
4. Many others of these times, are in the list of Nobel laureates, the Prize which began 1901, the first year of the 20th century

**Slide 5:**

In medicine and physiology, earlier Nobel Laureates were those who made major discoveries in the broad field of infectious diseases in clinical medicine;

**Slide 6:** And many those who uncovered the mysteries of life in basic sciences were in the list of Nobel Laureates in physiology and medicine.

In physics and chemistry, Laureates also made remarkable breakthrough discoveries and inventions, which dramatically changed our way of thinking and of our daily life.

Thus, when we look back, we can say that the 20th century was most dramatic, amazing, and yet most tragic in its magnitude, Century of human civilization, thus

**Slide 7:** We could sum the 20th Century is characterized by following major unique facts;

1. Rapid acceleration of accumulation of scientific knowledge with advances in technology and engineering, which changed dramatically the way we live and work; transportation, rail to air and automobile, telecommunications and urbanization and many others
2. 3 World Wars, WW1 and 2 and Cold War, which furthered advances in science, technology and engineering; remarkable progress in biomedical and life sciences.
3. explosion of human population with healthier and longer life

Just imagine, First man-made flight by the Wright brothers was 1903, just 100 year ago, their initial flight was over 10 seconds over some 100 meters. Now we travel to almost anywhere within 24 hours or so. This rapid deployment of such small, yet

important success was possible because of huge investment by the governments, on wars and new and superior weapons. Fighter airplanes flew all over Europe just 10 years later, then bombers; and now we fly on commercial airlines all over the world. Even men flew to the Moon 40 years ago in 1969. What a speed of Progress.

Just consider that Einstein's equation  $E=mc^2$  was in 1905, and 40 year later, atomic bomb was developed thru Manhattan Project in 1945, and now we are talking about nuclear energy as low carbon energy source. This was also possible by huge investments on scientific discovery to develop superior weapons.

But where to dispose nuclear wastes? How about safety, not mere technical, but attacks by terrorist groups?

Last week, UN SG Honorable Ban-Ki-Moon, delivered a moving message at Hiroshima, 'Hope for Peace'. This goal may not be reached in our generation, but hopefully sometime in not-so-distant future. We must start somewhere, but the earlier the better, for sure.

### **Slide 8:**

Then, what are the major challenges for us all for this new Century? They are;

1. Further Explosion of Human population
2. Energy, food, water, environs, natural resources, biodiversity- or sustainability of human civilization.
3. Extreme Poverty and great disparity between those who have AND those who have not, the foundation of human security.

### **Powerpoint- Part 2 begins here**

And now /we live in Interconnected World of GLOBALIZATION. What are behind such a rapid change?

INCUNABULA. This Latin word means PRINTED BOOKS by Gutenberg of mid-15th century to year 1501, a span of about 50 years. There are about 30,000 of them, but they changed the way of life and social hierarchy built before.

Implication is that dissemination of information to a larger public sphere, allow more people to challenge the authority. The printing technology was the foundation of religious revolution, challenging the authority of the Church which governed Europe for many centuries, and it led to renaissance and modern science.

These later consequences were not expected at all by Gutenberg himself who printed Bibles so that many educated people outside the Church could read the teaching of the Bible,

This shows how great the impact of dissemination of information, which allowed enabling a great number of people of the society to seek facts and truth, to question and challenge the establishments and the authority based on previous paradigm, and eventually leading to social change, which we call PROGRESS.

In this regard, a few years around 1990 was a critical time for all of us.

In 1989, Tiananmen Square incidence in Beijing, fall of Berlin Wall– beginning of the end of Cold War–, and for Japan, highest Nikkei stock exchange rate in its history, that fell by 50% next year, the burst of bubble economy of Japan; we feel it now in Global world after Lehman's shock in Wall Street, the financial center of the world.

The previous year, 1988, Seoul hosted a very successful Olympic Games.

With the end of Cold War in 1991, the world got into global market economy; financial crisis in many parts of the world ensued (1992– Nordic countries, 1997 in Southeast Asia, including Korea) and the rich became richer, new rich appeared.

But almost at the same time the MAJOR REVOLUTION came to our world, ie, Internet.

Table top, then laptop computers appeared from early 80s, widening its market through 80s and 90s, but not widely connected until mid 1990s.

We began to become connected thru Internet in Mid-90s: world wide web or www came in 1991, followed by many absolutely new types of businesses and services emerged, like Yahoo, Amazon, Netscape, e-Bay, all founded in 1994, Windows95 of MicroSoft, and gradually, but rather MORE dramatically, the world has become more and more connected or the World began to become FLAT.

When did you start using mobile phone? Internet? Emails? For majority of people, it was in the past 10 years or so.

Apple was the first to deliver table-top computer, but almost bankrupt in 1997 with only a few months of cash flow to go; iMac came, then iTune and its iPod and iPhone, it is again a top brand company of the world. Why? Steven Jobs was the man. Apple's founder, once fired, was invited back in 1997.

Now he delivers iPad. He has been pressing for CHANGE, eg, computing machines, music/record industry, mobile phone business, now newspaper and publishing houses. BIG CHANGES.

Google was founded in 1998 by two young graduate students, Larry Page and Sergei Brin. Now so many people in the world see and use Google almost everyday and everywhere.

These extraordinary examples show that individuals can have a major impact in this connected new world with such a SHORT PERIOD of time in such a GLOBAL SCALE, which underlie the emergence of word ‘Human Capital’ rather than ‘Human resource,’ a major paradigm change.

Through this connected world, many issues became apparent to the wider public, eg, rapidly rising energy use and worsening global warming and climate crisis, shortage of water, food, and natural resources, loss of biodiversity, and many others, BUT they are induced by human activities.

Then came economic downturn following financial crisis in 2008.

I tell you here that the Internet is ‘INCUNABULA’ of our time, which ENABLEs and EMPOWERs ever greater, now world public, ignoring physical boundaries including national borders, thus threatens the establishments of old paradigm. The modern incunabula has become wireless, mobile, modular.

Moreover, Internet allows bilateral and multilateral, written and even visual message delivery anytime, anywhere, anyone in the world, great impacts upon conventional media and press, and question and challenge the authorities, be it government, politics, business, press, academia. Examples include Wikipedia and various new businesses arisen based on Internet most recently YouTube, FaceBook, Ustream, iPad.

Extreme poverty and wider North–South disparity or huge gaps between those who have and those who have–not in a nation or in the world; Crisis of human identity and security, and inequity is everywhere. These facts underlie in various conflicts, frustration and often violence. Human fighting continues.

The wide public of the world has become keenly aware of human misery and suffering of the extreme poverty and inequity within and among the nations and the regions of the connected world, visually and even live.

Nobel Peace Prizes of 2006 and 2007, illustrate the processes and possible solutions for steps forward of the major issues of the globalization.

Nobel Peace Prize of 2007 went to IPCC and Mr Al Gore. The IPCC, chaired by Professor Pachauri, has been working hard since mid–1980s, and produced and provided, for some time, science–based policy recommendations on global warming and climate change, but such efforts have been not widely recognized. The effort by Al Gore utilizing effective visual images and story–telling has made the climate crisis issues widely recognizable, thus, to a politically viable agenda.

Nobel Peace Prize of 2006 went to Grameen Bank and Prof Yunus who

created microfinance to impoverished women in a very poor country, Bangladesh, to enable them to become independent, a hallmark of social enterprise or social entrepreneurship. The microfinance is now operational in more than 60 countries.

Climate change and global warming impact more severely on poor people, and reduced crop production, water shortage, melting glaciers and ices in polar areas and high mountains. Malaria may spread to currently mild climate zones.

This Food and Feed, or how to cultivate and supply foods to feed is the core of the often forgotten theme of Millennium Development Goals MDG-1, poor nutrition, often associated with poverty and diseases. Recent sudden rise in crop prices further threatens these disadvantaged people and the stability and security of human society.

These are very delicate and complex global issues, as you have seen, for example, in COP 15 in Copenhagen for Climate Change last December. Economy and its prospect, of course, create a major basis of differences, understandably, in the opinion and stance of each nation and political leadership.

From Here, I would like to focus my discussion more on Global Health, our own field.

When you see the Millennium Development Goals, four out of eight goals are closely related to HEALTH;

Goal 1 in Hunger and Nutrition,

Goal 4, is Maternal Death,

Goal 5 is Child mortality, and

Goal 6 is HIV/AIDS, Malaria, and tuberculosis.

It seems we are quite behind to reach these goals by year 2015 as we promised in year 2000 at the UN.

As we live in One Interconnected world, almost all countries and regions of the world depend upon each other and affected each other's economy, social stability, trades of goods, foods and water, energy and may other commodities; economy and development.

#### NATIONAL AND INTERNATIONAL

Many affluent nations provide aids to poor and developing countries, or ODA, through own national programs and projects and also through various international organizations. Typical examples of the latter are UN and its agencies, International Monetary Funds, World Bank.



These national and international conventional activities are, by its very nature, typically ‘TOP-DOWN’ and it is often known for their bureaucracy and inefficiency and unable to deliver to the very end.

Moreover, in year 2000, G8 Summit in Okinawa launched Global Fund to fight against HIV/AIDS, Malaria, and Tuberculosis, supported by G8 governments. The initiative has been supported by various large donors, like Gates Foundation and corporate, an examples of Public-Private Partnership (PPP). GAVI and many other PPP emerged.

Since the financial crisis of 2008, and changing status of the world economy and growth, G20 took over G8 on many global issues, though primary focus of G20 will remain economy and development. Republic of Korean will host G20 this November.

#### CIVIL SOCIETY MOVEMENTS AND MULTI-STAKEHOLDERS’ ENGAGEMENT.

New and distinct activities have arisen in a most remarkably manner in the last decade. It is the civil society movements with numerous NGOs and, more recently, social entrepreneurs. More than half of NGOs of the world are led by women. One interpretation is that women may have more than men, empathy on human sufferings, thus engage. Large NGOs such as Oxfam could often provide and coordinate Government ODA.

#### PHILANTHROPY

Another emerging movement is typically represented by the Gates Foundation. More philanthropies and foundations are addressing their focuses on poverty, global health, and Development.

Often being more effective because of their business background and their own funds, their engagements to global health and other global issues, catalyze the top-down national and international aids programs and bottom-up NGO movements, more effectively move a step forward toward common and shared objectives.

#### PRIVATE SECTOR

Another movement underlies the fact that intangible assets becoming the major portion of corporate values, thus pressing corporate social responsibility (CSR) to a new dimension. Stated in another way, corporate is valued not only by its shareholders, but by the stakeholders in the global community of the world.

If you think strategically, it may not be a donation/charity by private sector,

but good CSRs are good social business. It is a strategic investment to the future and branding of the company. Through providing expertise to not-for-profit making demands, such activities could be regarded as branding and PR of the company as trustworthy global partners and enable them to capture future growing market.

Many companies active in global health includes Sumitomo Chemical company, which produces 'BedNet', very innovative product which lasts for 5 years, the most effective preventive means against Malaria mosquito bites, creating three factories in Tanzania with more than 6,000 workers. This is a 'not profit over cost' model thus is social business and not charity. But just consider, many world leaders know and mention in high setting meetings where global political, corporate leaders gather, like WEF, UN General Assembly, the name of Sumitomo mentioned because of BedNet. What an effective PR, free of charge, to such a high profile audience.

Takeda Pharmaceuticals donates 1 million US\$ each year to Global Fund for 10 years. All those involved in the mission of Global Fund, high profile political and business and civil society leaders as well as many international agencies, now recognize this company name. What an effective global PR it would be.

There are many excellent examples of many companies which exercise various social business models which help them to go beyond ordinary PR and branding, thus will help their business for the growing market in 5-10 years time span, a strategic investment.

YES, I believe, that a word 'Global Health' must be seen as 'Health and Development', because health and healthy growth of children, family and community, thus nation, IS THE FOUNDATION FOR DEVELOPMENT, Thus, this is a part of strategic investment for the private sector targeting future customers and markets.

Because health is the foundation of development, investment for 'global health' is critical for economic growth, job creation, human security, thus of security of community, nation, region, thus, even for the security of affluent donor nations of the world.

It is difficult time understandably for many affluent countries to give more for ODA, because of economic downturn, rising food price and food stocks. Nonetheless, major risks and potential risks continue to exist such as major regional conflicts such as Sudan, Gaza and Israel, Afghanistan and Pakistan, Iran, and Iraq, and of course, Northern half of Korean Peninsula.

UNIVERSITIES AND HUMAN CAPITAL DEVELOPMENT

Then, Human resource development is the key to the future. In this regards, university plays a critical role to nurture future leaders.

**Slide 9:** Here, I would like to make a brief comment on Dr Gozo Sato, before I go on the role of University. It is because today is the last of day of the annexation of Korea by Japanese government which began in 1910, 100 years ago, though it ended in 1945, 65 years ago.

Dr Sato came to Korea in 1907, as a medical doctor to work first in a hospital in Pyongyang. Soon he was impressed by many Korean bright youth, even very poor, who wanted to become a medical doctor. He allowed many to learn with him, and when medical colleges are being built, he was pushing hard to accept many Korean students based on merits. He decided to stay in Korea then, and indeed stayed until the end of 1945, when he lived and worked in Seoul as head of Korean medical college (almost half were Korean students, sometime even girls), Director General of Medical Education of the government.

What he has done will be studied more thoroughly, and there are several studies and records can be seen, which endorse his significant contributions for medical education in the first half of 20th century here. During the hard transition time of August of 1945, he stayed a few more months to complete his transition process with Korean government officers. Apparently, many of his former students worked together to provide Dr Sato, shelters to take him safely to Busan and send him off to Japan.

Dr Sato was not known much in both Korea and Japan, but I was shown a copy of his short autobiography several years ago when I was in Seoul. Dr Sato was urged to write this autobiography on the occasion of his family celebration of his 60th birthday. A copy was shown to me by a very distinguished Korean scholar and medical doctor, Dr 朱, who was Dr Sato's students in Dr Sato's final years (thus he is now late 80s); he showed me this booklet as his very valuable treasure.

Upon my return to Tokyo, I tried to search for his family and finally find his grandson who lived his first 14 years in Seoul with his grandfather. We went back to Seoul two years ago and visited the Museum just across the main Hospital, the original medical college. Dr 朱 and his two classmates told us many, many stories of this great teacher with true admiration. Tears came to my eyes as I listened to their stories and fond memories of their teacher, 'Sensei,'

Apparently, Dr Sato was very much liked and respected by many in both countries during hard times, as a calm, gentle and thoughtful human being, but firm on

his principle on humanity, even against the then his superiors.

The future of two neighbors, Korea and Japan, that share and came a long way over 1,400 hundreds of years, share many histories, cultures, legacies, memories, some fond and some regrettable; Past should never be forgotten and must be remembered because they are parts of us, but need reconciliation and forgiveness, always to create a better future for future generation. That is always a part of human history, but we must learn from it.

By commenting on Dr Gozo Sato, I would like to re-emphasize the importance of the role of true 'good' teachers who practice what he or she teaches to his/her students with compassion and wisdom.

### **Back to Powerpoint- part2**

Let me go back again to the Globalization, and NOW on university.

Many leading universities of the world have become more and more open to the world assuming to become cores of global community. Many leading universities are developing various programs and curricula attracting faculty and students of the world, to study and work on global issues such as global health, poverty, development, ie, common social good. Many future leaders will live, work and study even for short periods of time in poor nations and become more engaged in global challenges as future leaders in every sector of the global community.

Many leading universities are now focusing undergraduate students to be exposed, seeing and feeling of global scenes, providing various programs so that many undergraduate spend a semester or even a year abroad, particularly in many developing and underdeveloped places and countries. Through such exposures, they sense their 'self' and identity, their own country and heritage, the magnitude of issues in other parts of the world and often find their each own sense of mission for their life, thus may choose graduate studies fitting to their own missions.

Such will become a key element for the future leaders of the Global World. Indeed, we begin to see many young students and leaders engaging in BOP (bottom of pyramid) and various social enterprises or social entrepreneurship. Many successful social enterprises have been created by these young men and women who will become new global leaders.

Such social enterprises include, D-Light, Acumen-Fund, KickStart International, to name a few, and many, many more are coming.

In essence, I emphasize the critical importance of 'Brian-Circulation' in this

global world, thus more and more young generation will build global networks across national boundaries.

It is us, mentors, teachers and role models-to-be of current generation, who inspire the young, by showing them what you have done and do, let them feel the rest of the world, and let them each find his and her Aspirations.

They have great potentials and it is our duty to nurture them to prepare and open their eyes to the world and to the heritage. In the ever flattening world, they are the ones who face critical and major global challenges to tackle, together with their peers across national boundaries.

I recognize these global challenges are huge and very, very difficult even to get even a small step forward. Various plans are in progress to build networks of universities and research institutions of the world utilizing connectivity as a powerful tool, but exchange and flow of human capital and resources must be a vital component of the program.

In this speech, I hoped to share with you the pressing global issues and the major responsibilities each and all of us carry and share in common even though we carry each own responsibilities to our society in our busy daily life. Just not to forget who we are and what our responsibilities to the future generation.

Thank you and I am ever grateful to you all for inviting me to this occasion.

4,300 words

THE END OF THE SPEECH

