

Einstein – Peace Now!
Visions and Ideas

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The Future of Our World¹⁾

Ahmed Zewail

Over the last century, our world has experienced at times a “beautiful age” with promises of peace and prosperity, but then some imposing forces changed the entire landscape. History reminds us of recurrences, and the current state of the world is not so different that we may ask – what political and economic forces cause such disorder in a world seeking prosperity through globalization and revolutionary advances in technology? Here we will address the need for a rational world vision that must take into account developments in the population of the have-nots and dialogues of cultures. It is a vision of economic, political, religious, and cultural dimensions in world affairs. Only with such a vision can we shape a bright future for our world.

Excellencies, Ladies and Gentlemen

It is a great honor to give this year's U Thant Distinguished Lecture at the United Nations University in Tokyo. I applaud the purpose of the lectureship named in honor of Mr. U Thant, the Secretary-General of the United Nations from 1961 to 1971 and the man who had the vision to establish this University. I would like to take this opportunity to thank the UNU Rector, Professor van Ginkel, the Director of the Institute of Advanced Studies, Professor Zakri, and the President of the Science Council of Japan, Professor Yoshikawa, for making this event possible with thoughtfulness and style. I also wish

- 1) 5th U Thant Distinguished Lecture Series, United Nations University, Tokyo, April 15, 2003. 1st Lecture given by Prime Minister of Malaysia, Mahathir Mohamad; 2nd by President of the Republic of South Africa, Thabo Mbeki; 3rd by President of the United States, William J. Clinton; 4th by Nobel Peace Prize Winner, Norman E. Borlaug.

to acknowledge the Ambassador of Egypt Dr. Mahmoud Karem for his warm welcome.

Last year the lecturer in this series, President Bill Clinton, spoke about globalization and our shared future, and the year before Prime Minister Dr. Mahathir Mohamad spoke about globalization, global community, and the UN. Both speakers were concerned about the new emerging world and opportunities for prosperity and global unity. Today I would like to share with you my thoughts about the future of a turbulent world in the present state of economic and political disorder.

The title of my lecture has several implications that I should clarify. It gives the impression that I know the future or the science of futurology. I do not, and in fact I am aware of many predictions made in the past that turned out to be incorrect. What I have in mind is to paint a future that benefits from our history and our rational thinking; a future shaped by *Homo Sapiens* – the species with the greatest brain power on Earth. For this future, I shall present what I envisage for a world of peace and prosperity and how we can achieve our goals with justice and fairness. But first, let me take you inside a time machine to “travel in time” and see what history will tell us.

The Beautiful Age

Nearly a century ago, the world of 1870 to 1914 had an optimistic outlook. The French called the decades before WWI, which broke out in 1914, “The Beautiful Age – La Belle Époque”. The world was experiencing the same upbeat spirit of the global community that Mr. Clinton and Dr. Mohamad spoke about here in our present world. Peace and prosperity were on the horizon. The material standard of living was on the rise, democratization was on the rise, continents were being connected by railroads, steam ships, automobiles, airplanes, the telegraph, and the telephone. Man conquered the last uncharted territory of world maps, the North Pole in 1909, the South Pole in 1911, and the United States became the land of promise for millions. Achievements in the sciences, literature, and peace were honored by the awarding of the first Nobel Prize in 1901. (The Nobel Peace Prize centennial publication has indeed given the reasons for calling this period the Beautiful Age.) At that time, the principal

force was the force of science and technology that was creating a better life for humankind.

What went wrong then? Great powers were hungry to conquer lands and resources in Africa, Asia, and the Pacific. Control over raw materials and markets and strategic positioning in the world were the driving forces. The power gained by industrialized nations gave them a thirst for the right to rule, and in some cases oppress, those who did not have power. People from other parts of the world could only acquire a Western level of advancement by learning to think like Westerners, and missionaries often defined civilization as a combination of Western religion and science.

The Great Powers formed alliances and Europe was experiencing nationalism. Germany, Austria–Hungary and Italy formed the Triple Alliance, and France, Russia and Britain formed the Triple Entente. The empires of Russia and Austria-Hungary competed for influence over the Balkans following the disintegration of the Ottoman Empire, “Europe’s dying man”. The First World War began, and the rest is history.

The World of Today

Today, one hundred years later, the analogy may be telling of the dynamics in our present world. In the recent era of globalization (1991–2000), the world looked beautiful again, coming together by the force of global economy and global political ties. The policy of apartheid in South Africa was abandoned, Nelson Mandela was released from prison, and was elected President in 1994. Even the Gulf War of 1991 – strategic to the control of oil resources – appeared to have a moral dimension, namely the return of Kuwait to its people. The solution to the Palestinian–Israeli conflict was on a hopeful track with the signing of the Oslo Accord in 1993. European economic and political cooperation took on a new dimension with the creation of the European Union, and Japan and other so-called Asian Tigers took a major role in world economic developments. United Germany gave the world a new hope for unity and the end of an era – the world of 1946–1963. This world of the Cold War and nuclear armament appeared to have changed into a world of globalization in the 1990s.

Science and technology were again the real forces for achieving the new world status. Information technology brought the world to village-type communities. Advances in the new knowledge of lasers, semiconductors, biotechnology, and the like have transformed our lives with revolutionary improvements in communication and health, and we even began to dream about a future on other planets.

This is not to say that the world now is perfect. Conflicts are still raging in parts of Africa and HIV/AIDS continues to take the lives of large numbers of people in the sub-Saharan countries. Human rights violations and occupation by force continue in the world of globalization. As I speak today, the Iraqi war is taking the lives of innocent people, and the Palestinians are still under occupation. In Europe, there was the horrific ethnic cleansing in the Balkans and the conflict between the Catholics and Protestants in Northern Ireland continues to this day.

Notwithstanding these conflicts and disorders, the nations of the world on the whole are aiming for a united globe through understanding and cooperation – the role of the UN – and through economic developments – the role of globalization. The desire to achieve more peace and stability through global cooperation is articulated, for example, in the Millennium Development Goals (MDGs), a decree endorsed by all member states of the United Nations in September 2000 with the objectives of attacking global problems such as poverty, diseases, and education for all people, from Nairobi to New York. Through cooperation, many agreements and accords have been reached: the disarmament agreement between the United States and Russia known as START (Strategic Arms Reduction Treaty); the peace agreement for a NATO and Russian partnership; the agreement for the banning of landmines; the UN International War Crimes Tribunal; and global conferences to address problems such as the environment, water resources, and AIDS.

World Disorder and Superpower

What then is causing the current disorder? In my view there is a short-term cause and a long-term problem. The September 11, 2001 horrific attack on the United States has caused an impulsive impact on the only superpower in the world. The country has been insulat-

ed from external wars throughout its history, geographically distanced by the Atlantic and Pacific Oceans. Moreover, the political system, which is greatly influenced by strong lobbying and capitalistic media, at times has created a gulf between the United States and other countries. The United States is a unique country and the diversity in its population has resulted in an amalgamated culture – a melting pot. But this new culture is not necessarily knowledgeable about the original cultures of its people. The United States also knows it is especially unique and possesses the ultimate power – that of science and technology – and this power makes it a ruling force over world economy, markets, and military status.

America is still in a state of shock and disbelief, and the response in the country varies from moderate to fanatic. Sadly, the September 11th attack may have coincided with extreme religious and political agendas. With this confusion and confluence, now is the time that America needs visionary leadership the most. A vision of unity is in the best interests of all. The United States has a responsibility to lead the globe into becoming a united world. The world still remembers the Marshall Plan and the Peace Corps as examples of uniting initiatives. America cannot afford to alienate people around the world, and it must apply the same standards of fairness at home and abroad. We must all look for the real sources that kindle terrorism and not try to camouflage the real reasons behind it. In the long run, the key is not to ignore the have-nots, not to ignore the frustrated part of the world, politically and economically, and to recognize that poverty and hopelessness are the primary sources of terrorism and the disruption of world order.

The World of the Have-Nots

In our present world, the distribution of wealth is skewed. Only 20% of the population enjoy the benefit of life in the developed world, and the gap between the haves and have-nots continues to increase. According to the World Bank, out of the 6 billion people on Earth, 4.8 billion live in developing countries, 3 billion live on less than \$2 a day, and 1.2 billion live on less than \$1 a day – an amount that defines the absolute poverty standard. About 1.5 billion people have no access to clean water, with health consequences like water-

borne disease, and about 2 billion people are still waiting to benefit from the power of the industrial revolution. The per capita gross domestic product (GDP) in some developed Western countries is \$35,000, compared with about \$1,000 per year in many developing countries, and significantly less in underdeveloped countries.

This difference in living standards by a factor of 100 or so between the haves and have-nots ultimately creates dissatisfaction, violence, and racial and ethnic conflict. Evidence of such dissatisfaction already exists and we have only to look at the borders of developed and developing or underdeveloped countries; for example, between the United States and Mexico and between Eastern and Western Europe, or between the rich and the poor in any nation. Of similar effect is the frustration caused by double standards in international disputes and in the support of undemocratic or even corrupt regimes for the sake of national economic or political gains.

Some believe that globalization is the solution to problems such as the economic gap, the population explosion, and social disorder. Globalization, in principle, is a hopeful ideal that aspires to help nations prosper and advance through participation in the world market. In practice, however, globalization is better tailored to the prospects of the able and the strong, and, although of value to human competition and progress, it serves only that fraction of the world's population who are able to exploit the market and the available resources.

Nations must be ready to enter through this gate of globalization and such entry has its requirements. Among these requirements are the following: computer and internet literacy, a minimal level of bureaucracy, accessibility to sources of knowledge and information, the entrepreneurial spirit, efficiency in management, and the clear and just applications of the law. With a new system of education and the development of a science base we can hope for an effective globalization. These cannot be achieved without partnership.

World Partnership and World Science

It is clear that world order requires a new and comprehensive partnership between the developed and developing worlds. In my view, science and education are the real glue for binding different cultures

and for achieving progress and prosperity. Science is the only fundamental and international language of the world. The developed world is developed because of its scientific and technological power. In this century, knowledge-based societies will capture the lion's share of the world economy and prestige. But, how can the developing world reach such a high state of achievement in science and use the benefits for the betterment of the have-nots? And what will the benefits be to the developed countries?

In the past five years, the scientific community worldwide has published about 3.5 million research papers. Europe's share is 37 per cent. The share of the United States is 34 percent. The Asia/Pacific share is 22 per cent. Other places, representing 70 to 80 per cent of the world's population living largely in the developing world, contributed less than 7 per cent of these scientific articles. Put in a different way, as Mr. Kofi Annan pointed out recently, "Ninety-five per cent of the new science in the world is created in countries comprising only one-fifth of the world's population. And much of that science – in the realm of health, for example – neglects the problems that afflict most of the world's people."

What difference does this disparity in academic output make? Should only universities and research centers be concerned? I do not think so. Consider this interesting correlation. The United States' contribution to the world's annual economic output is between 30 and 40 percent, comparable to its share of scientific output on a global scale. Europe's annual economic output registers a similar percentage and, like the United States, its economic output tracks its contribution to its output of scientific and technological contributions. It is unlikely that this correlation is coincidental.

If we are aware of these trends and understand the problems that stand in the way of progress, why do we have such difficulties building scientific capacity in the developing world and putting science to work to improve its economic well-being? First, the developing world must get its house in order. A renaissance in thinking is needed – we need to pay more attention to education and we should invest more in science and technology. The objective is to provide a new work force equipped with 21st century tools of education and skills and with a belief in ethics and team work. We also need to lower the bureaucratic political barriers that stand in the way of success and to

rule by laws that allow for the freedom of thought. Women must participate as full partners in our pursuit of knowledge.

The developing world possesses very capable scientists and continues to contribute outstanding scientists unwittingly to the developed world as part of the brain-drain phenomenon. At Caltech, for instance, my own research group is more than 50% Asian. But major reforms of the system are badly needed. Clearly, this may not be possible on a grand scale in a short time, but the foundation must be established properly and in a timely manner. Empty slogans, or waiting for the developed world to solve the problems, or blaming people of the developed world with conspiracy theories will not provide the means. Yes, international politics play a role, but people's will is a stronger force, provided the force is coherent and not dispersed by internal politics.

The developed world must also carry important responsibilities for its share in partnership, in building the scientific and human capacity in the developing world. First and foremost it must reform its international aid programs, investing less money on military hardware and instruction and more on scientific training and partnerships. Some of the money spent on fighter planes, not to mention the recent war, could fund research programs all over developing countries, helping in what must be the ultimate goal – global education and prosperity through developments. Politics, moreover, should be drained from international aid programs to ensure money is available for productive initiatives that could help boost science and technology in the developing world.

What will rich countries receive in return for the help they give the have-nots? First, there is the moral dimension. The psychological value derived from being a generous global neighbor should not be underestimated. Even on a personal level, most of us do try to help each other, and all major religions encourage and legitimize helping the needy. It is also important to realize that the prosperity of the developed world is in part due to natural and human resources from the developing world, and their markets.

Second, the developed world should acknowledge the importance of reciprocation over time. Islamic civilization gave a great deal to Europe, especially during the Dark Ages. The Arab and Islamic civilizations were major contributors to the European Renaissance. The Islamic civilization rose to become the foremost economic power in

the world, at which time it also reached the highest level in the sciences. Today the Muslim world needs help and there is nothing wrong with the United States, Europe, Japan, and other developed nations lending a hand as a modest gesture to the changing fortunes of history.

Third, there is a practical, self-centered consideration based on the time-tested importance of having an adequate insurance policy. In the United States, I pay a great deal for insurance to protect my family against the high cost of medical care, to protect our house against fire and theft, and to protect our cars against accidents. Similarly, the developed world needs to invest in an insurance policy to help it live in a safer and more secure world, but it better be a genuine and good policy!

The choice for the haves is clear. They have to be involved. The choice for the have-nots is also clear. They have to first get their house in order, and build the confidence for a transition to a developed-world status. The transition is possible. In a meeting with Prime Minister Mahathir Mohamad on a recent visit to Malaysia, I learned of the critical role of the new education system implemented during the nation's rapid transition from a labor-intensive economy dependent on cheap labor to a knowledge-based economy poised on the doorstep of the developed world. It is a transition that has been fueled by the belief in building the proper base for modern technology.

The 21st Century – Future Frontiers

Technology in the 21st century is knowledge-based, and unskilled cheap labor, which may have worked for developing countries in the past, will not work in this century. How can the developing world embrace economy-transforming technologies like microcomputing, genetic engineering and biotechnology, information technologies, and femto and nano-technologies without a strong foundation in science? Does the developing world always have to wait decades before participating in global science and technology? Can nations become a part of the modern world without losing their cultural and religious identities? The new century promises unlimited opportunities in science and technology and I believe that the developing world

can and should be a partner in or a part of that development. I would like to mention today the new frontiers encompassing three scales in our universe and which I recently outlined:

Our matter – the scale of the very small. We are on our way to being able to manipulate matter at its smallest, most fundamental limits both in time, on the femtosecond scale, and in length, on the nanoscale. Just think about these new scales of time and space in the world of the very small. If your heart beats once a second, now we can see the beats of atoms in a femtosecond, in a millionth of a billionth of a second – a femtosecond is to a minute as a minute is to the age of the universe. Similarly, we can study matter on the nanometer scale and resolve the atoms in their structures – the size of the atom to the size of the earth is like the size of the earth to the whole universe. The opportunity is huge for acquiring new knowledge and for creating new forms of “our matter”. The manipulation of matter to produce new sources of energy (photovoltaic/photosynthetic, etc.) should become a major undertaking. The interface of matter’s micro- and nanonetworks, designed to produce artificial intelligence, to our life organs, such as the brain, will be another frontier that could alter the boundaries and meaning of species.

Our universe – the scale of the very big. In this century, we may have colonies on the moon, and we may have our second homes on other planets and maybe even in other solar systems. Just think of the scales of the world of the very big. Our universe is about 12 billion years old, and at the speed of light (300,000 km/s), our universe’s limit of distance is 100 billion trillion kilometers – certainly enough space for the six billion people on earth today, even multiplying by ten or by one million in the future! The opportunities involving outer space and information technology are unlimited. On our planet, any information one needs will be provided through the so-called “virtual walls” and education and intelligence in all societies will have to be redefined.

Our life – the scale in between. In the first year of this century, the sequencing of the human genome was completed. We now have the genetic map that describes every human on planet Earth. Just think, three billion letters have been deciphered and read into our book of life. The history of biology has changed from the classification of living organisms (Darwin’s theory), to the world of cells (Leeuwenhoek–Hooke microscope), to now the molecular world (Watson and

Crick's DNA) with revolutionary ideas in genetic engineering and biotechnology. Soon we might see a nanoscale motor entering the cell to do work. Medicine and human health will certainly enter a new age.

It seems to me that indeed opportunities are unlimited and with education, skill, and the brain power of people around the globe, we should be able to benefit and share in the wealth of new discoveries and technological advances. But, we must first learn how to live together on one globe.

Confluence of Civilizations

The developed and developing nations, aside from their economic and political ties, have to participate in a dialogue among civilizations and a dialogue among cultures. Some intellectuals have introduced concepts such as the “clash of civilizations,” as termed by Samuel Huntington, and the “end of history,” as expressed by Francis Fukuyama. Both authors argue their cases with conviction, nonetheless, these ideas are controversial and debatable.

As a scientist, I find no “fundamental physics” in these concepts. In other words, it is not a fundamental principle of civilizations that they be in a state of clash with each other. Neither is it a fundamental principle to end history with one system over all other ideologies. I argue that the current world disorder results in part from ignorance about civilizations – unawareness or selective memory of the past and lack of perspective for the future – and in part from the economic misery and political injustices (domestic and/or international) experienced by the have-nots.

According to the dictionary, civilization means an *advanced state* of human society in which a high level of culture, science, industry, and government has been reached. Individually, we are civilized when we reach the advanced state of being able to communicate with and respect those of different customs, cultures, and religions. Collectively, we speak of globalization as a means for bringing about prosperity in the world, yet globalization cannot be a practical concept if there are clashes of civilizations. Historically, there are many examples of civilizations that have coexisted without significant clashes.

I have written about these issues and it is perhaps useful to distill the main points here. The central argument in the thesis of the clash of civilization is that in this post – Cold War era, the most important distinctions among peoples are not ideological, political, or economic – they are cultural. Hence people define themselves in terms of ancestry, religion, language, history, values, customs, and institutions. According to this thesis the world becomes divided into eight major civilizations: Western, Orthodox, Chinese, Japanese, Muslim, Hindu, Latin American, and African.

I have several difficulties with this analysis, and perhaps the following questions and commentary may clarify my position. First, *what is the basis for these divisions of civilizations?* People belong to different cultures, nations have experienced (and continue to experience) different cultures, and nations on the same continent may be influenced by different civilizations. In my own case, from birth to the present time, I can identify myself as Egyptian, Arab, Muslim, African, Asian, Middle Eastern, Mediterranean, and American. Looking closely at just one of these civilizations, I note that the Egyptian people belong to a dynamic civilization with a multicultural heritage: Pharaonic, Coptic, Arabic, Islamic, not to mention the Persian, Hellenistic, Roman, and Ottoman influences.

Second, *is it fundamental that differences in cultures necessarily produce clashes?* In this thesis, it is contended that if the United States loses its European heritage (English language, Christian religion, and Protestant ethics), its future will be endangered. I reach the opposite conclusion. From a personal point of view, I did not speak English when I came to the United States, I am not a Christian, and I was not taught Protestant ethics. Yet I integrated into my new, American culture while preserving my native culture(s) and I believe that the confluence of my “Eastern” and “Western” cultures is without a clash. From a broader perspective, America’s strength has traditionally risen from its “melting pot” culture; the country has been enriched and continues to be enriched by multiethnicity and the different cultures of its inhabitants.

Turning to international relations, cultures and civilizations can be at their peak of achievement and yet coexist in harmony and even complement each other. The United States, Japan, and European nations are examples of this beneficial coexistence created by building economic and cultural bridges. Another example comes from a

country that many would have doubted had the potential for creating ethnic and religious harmony: Malaysia with its inhomogeneous population of Malays (53%), Chinese (26%), and Indians (8%) with different religions – Muslim (60%), Buddhist (19%), Christian (9%) and Hindu (6%). Neither religion nor culture seems to hinder its progress, and certainly Malaysia is an economic success story, demonstrating the civility of living harmoniously together with a variety of cultures.

Finally, *what about the dynamics of cultures?* Cultures are not static; they all change with time, and the degree of change is governed largely by forces of politics, economics, and religions. Let us consider my home country. Egypt's civilization was developed very early in human history and it dominated the world for millennia, but lately the nation has become a developing one. This does not mean that Egypt has lost its civilization, but it does mean that, like others, it has changed with time, due to many internal and external forces – the current state is not due to a genetic factor or fundamental cultural values. Cultural changes may impede progress within a nation, but not necessarily through clashes with others, or permanently.

What we have to consider seriously are the political and economic interactions within a culture and between the various cultures of the world. The people of North and South Korea are of similar culture, but the notable disparity in progress between the two countries is due to economic and political factors; the same can be said of East and West Germany before reunification. It is easy to divide the world into “us” and “them”, and slogans such as the clash of civilizations or the conflict of religions certainly make it very difficult to unite the nations of the world – we need dialogues, not conflicts or clashes!

Epilogue

I would like to close with a message. The world at the beginning of the 21st century is divided, not only politically but also between hope and hopelessness. On one hand, progress can be seen in the human life – life expectancy has increased by ten years over the past three decades, infant mortality has fallen by 40%, and adult illiteracy has been reduced by half. On the other hand, every day 30,000 children die of preventable diseases, some 60 countries grow poor-

er, the spread of HIV/AIDS has become the most deadly epidemic in human history according to the UN, and the crisis of global water is becoming real as we witness in Iraq today and most probably in future conflicts on the whole planet. It is not naive to think of a better world and to achieve that goal through courage, justice, and liberty.

Judging from history, the shape of the future is made by leaders who have the capacity to turn it into an epoch of hope for peace and prosperity or into one of divisiveness and disorder. It is unlikely that those who do not know about history will make history. Leaders of the world should use the benefits of knowledge to shape a hopeful future for our children and grandchildren, for posterity. This can only be achieved by understanding the need for justice in the world and by promoting dialogues and cooperation among countries and peoples of the world, the world community. That is why it is vital to maintain a financially strong and independent UN. Despite the complexity in world affairs, undermining the UN as a viable institution for world education and peace will be a tragedy of enormous consequences. Even the superpower, the United States, whose population is only 5% of that of the total on planet Earth, cannot be the world's judge, jury, and executioner.

To shape our future in the age of globalization we need to develop a new perspective – one encompassing the economic, political, religious, and cultural dimensions of world affairs. Miss Kalpana Chawla, an Indian-born naturalized American who lost her life in the space shuttle Columbia disaster on February 1st of this year (2003) said, “When you are in space and look at the stars and the galaxy, you feel that you are not just from any particular piece of land, but from the solar system.” She was viewing the world from the heavens and she had a universal perspective. A true statesman or stateswoman will see our world with a universal perspective that is unifying for humanity. And then wars may become wars on global poverty, disease, and despair, and for a sustainable world future.

References

- [1] Øivind Stenersen, Ivar Libaek, Asle Sveen, *The Nobel Peace Prize*, Cappelen Forlag AS, Oslo (2001).
- [2] *The Economist*, February 8, 2003 (for Ms. Kalpana Chawla); *The World in 2003* (for Kofi Annan's MDGS); April 5, 2003 (for Malaysia's Report).
- [3] Kofi Annan, *Science*, Volume 299, page 1485 (2003).
- [4] Ahmed Zewail, *Science for the Have-Nots*, *Nature*, (London 2001), Vol. 410, p. 741.
- [5] Ahmed Zewail, *Dialogue of Civilizations*, SSQ2/Journal, Routledge Press, Paris, France (2002); Address at UNESCO, April 20, 2002.
- [6] Ahmed Zewail, *Voyage through time – Walks of Life to the Nobel Prize*, American University in Cairo Press (2002); Reprinted in 12 languages and editions.

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