

THE NEW WORLD DIS-ORDER – CAN SCIENCE AID THE HAVE-NOTS?

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On our planet, every human being carries the same genetic material and the same four-letter genetic alphabet. Accordingly, there is no basic genetic superiority that is defined by race, ethnicity, or religion. We do not expect, based on genetics, that a human being of American or French origin should be superior to a human from Africa or Latin America. Moreover, it has been repeatedly proven that men and women from the so-called developing or underdeveloped countries can achieve at the highest level, usually in developed countries, when the appropriate atmosphere for excelling is made possible. Naturally, for any given population, there exists a distribution of abilities, capabilities and creativity.

In our world, the distribution of wealth is skewed, creating classes among populations and regions on the globe. Only 20% of the population enjoys the benefit of life in the “developed world”, and the gap between the “haves” and “have-nots” continues to increase, threatening a stable and peaceful coexistence. According to the World Bank, out of the 6 billion people on Earth, 4.8 billion are living in developing countries; 3 billion live on less than \$2 a day and 1.2 billion live on less than \$1 a day, which defines the absolute poverty standard; 1.5 billion people do not have access to clean water, with health consequences of waterborne diseases, and about 2 billion people are still waiting to benefit from the power of the industrial revolution.

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The per capita GDP² has reached, in some western, developed countries, \$35,000, compared with about \$1,000 per year in many developing countries and significantly less in underdeveloped populations. This factor of 40-100 times the difference in living standards will ultimately create dissatisfaction, violence and racial conflict. Evidence of such dissatisfaction already exists and we only have to look at the borders of developed-developing/underdeveloped countries (for example, in America and Europe) or at the borders between the rich and poor within a nation.

Some believe that the “new world order” and “globalization” are the solution to problems such as population explosion,³ the economic gap and social disorder. This conclusion is questionable. Despite the hoped-for new world order between superpowers, the globe still experiences notable examples of conflict, violence and violations of human rights. The world order is strongly linked to political interest and national self-interest, and in the process many developing countries continue to suffer and their development is threatened. Globalization, in principle, is a hopeful ideal that aspires to help nations prosper and advance through participation in the world market. Unfortunately, globalization is better tailored to the prospects of the able and the strong, and, although of value to human competition and progress, it serves the fraction of the world’s population that is able to exploit the market and the available resources.

Moreover, nations have to be ready to enter through the gate of globalization and such entry has requirements. Thomas Friedman, in his book “The Lexus and the Olive Tree”, lists the following eight questions in trying to assess the economic power and potential of a country: “How wired is your country? How fast is your country? Is your country harvesting its knowledge? How much does your country weigh? Does your country dare to be open? How good is your country at making friends? Does your country’s management ‘get it’? and How good is your country’s brand?” These

² Per capita gross domestic product (GDP) in U. S. dollars is the total unduplicated output of economic goods and services produced within a country as measured in monetary terms according to the U. N. System: Angola (528), Canada (19,439), China (777), Hong Kong (24,581), Egypt (1,211), Israel (17,041), North Korea (430), South Korea (6,956), Switzerland (35,910), U. S. A. (31,059), and Yemen (354). From U. N. Statistics Division.

³ Overpopulation of the world, and its anticipated disasters, is not a new problem. It has been a concern for many millennia, from the time of the Babylonians and Egyptians to this day. Joel Cohen, in his book “How Many People Can the Earth Support?” provides a scholarly overview of the global population problem.

“eight habits of highly effective countries”, according to Friedman, are the attributes countries need to succeed in the new era of globalization. The picture in mind is that countries are becoming like global companies, with the aim of being prosperous (in a timely manner). Organization and management and the technical know-how are essentials for a country to prosper; location, history, natural resources or even military might are no longer decisive!

Before attempting to address solutions, it is important to examine the origin of the problem by looking at the “anatomy of the gap”. In my view, there are four forces which contribute to the barriers to achieving developed-world status:

Illiteracy: In many countries, especially those in the Southern Hemisphere, the illiteracy rate reaches 40-50% among the general population. Even worse, in some countries, the illiteracy rate among women is above 70%. These rates reflect the failure of educational systems, and are linked to the alarming increase in unemployment. One cannot expect to seriously participate in the world market with this state of unpreparedness. In the west, illiteracy on this scale has been essentially eliminated, and nowadays often means a lack of expertise with computers, not the inability to read and write! Of course, some now developed countries had high illiteracy rates when they began their development, but we must recall that scientific know-how was possessed by a significant portion of the population.

Incoherent Policy for Science & Technology: The lack of a solid science & technology base in the world of have-nots is not always due to poor capital or human resources. Instead, in many cases, it is due to a lack of appreciation for the critical role of science & technology, an incoherent methodology for establishing a science & technology base, and an absence of a coherent policy addressing national needs, human and capital resources (even in some developed countries, we are witnessing the consequences of the latter). Some countries believe that science and technology are only for rich nations. Others consider scientific progress to be a luxury, not a basic need, that it is only necessary to pursue after the country has solved other demanding problems. Some rich, but developing, countries believe that the base for science and technology can be built through purchases of technology from developed countries. These beliefs translate into poor, or at most, modest advances and in almost all cases the success is based on individuals, not institutional teamwork. These complex problems are made worse by the fact that there are many slogans, reports and showcase efforts which do not address the real issues and are intended for local consumption.

Restrictions on Human Thought. Real progress requires the participation of knowledgeable people working together to address key problems and possible solutions. In the west, this participation involves senior and junior people and their different areas of expertise in exchanges of human thought and knowledge. The result is a planned recommendation, designed to help different sectors of the society. In many developing countries, although this practice is true on paper, it is usually not followed in reality. The reasons are many, including hierarchical dominance, strong seniority systems and the centralization of power; all limit people's ability to speak freely. Although western democracies are not the only successful models for government, a lack of democratic participation suppresses collective human thought and limits "due process of the law", which unfairly stifles human potential.

Fanatical Mix-ups of State Laws and Religious Beliefs. Confusion and chaos result from the misuse of the fundamental message of religion, namely the ethical, moral and humanistic ingredients in the life of many, a significant fraction of world population. For example, in Islam the message is clear, fully expressed in the Holy Quran to Muslims, who are close to one billion in global population. The Quran makes fundamental statements about human existence and integrity, on everything from science and knowledge to birth and death. "READ" is the first word in the first verse of the direct Revelation to The Prophet [Sura Alaq 96:1] and there are numerous verses regarding the importance of knowledge, science and learning; Muslims position scientists along with the prophets in the respect they are due. The Quran also emphasizes the critical role that humans must play in the struggle to achieve and develop, stating, "Verily! Allah will not change the good condition of the people as long as they do not change their state of goodness themselves." [Sura Al Ra'd 13:11]. All societies and religions experience some fanaticism, but the current disparity in the world economy, with the dominance of the west, and the new role of invading media and politics trigger real fear for the possible loss of religious and cultural values. This situation, with increased unemployment, results in rigidity towards progress and the release of frustration in different ways. The west is seen by many as responsible for some of the mix-up, first because there is inconsistency in political actions by the west, and second because of the gap between the rich and the poor; between billionaires and the homeless.

What is needed to solve these problems? The answer to this question is non-trivial because of the many cultural and political considerations that are part of the total picture. Nevertheless, I believe that the four issues iden-

tified above point to the essentials for progress, which are summarized in the following: (1) *Building the human resources*, taking into account the necessary elimination of illiteracy, the active participation of women in society, and the need for a reformation of education; (2) *Rethinking the national constitution*, which must allow for freedom of thought, minimization of bureaucracy, development of a merit system, and a credible (enforceable) legal code; (3) *Building the Science Base*. This last essential of progress is critical to development and to globalization and it is important to examine this point further.

There is a trilogy which represents the heart of any healthy scientific structure: *First, the Science Base*. The backbone of the science base is the investment in the special education among the gifted, the existence of centers of excellence for scientists to blossom, and the opportunity for using the knowledge to impact the industrial and economical markets of the country and hopefully the world. In order to optimize the impact, this plan must go hand-in-hand with that for the general education at state schools and universities. This base must exist, even in a minimal way, to ensure a proper and ethical way of conducting research in a culture of science which demands cooperation as a *team effort* and as a search for the truth. The acquisition of confidence and pride in intellectual successes will lead to a more literate society. *Second, the Development of Technology*. The science base forms the foundation for the development of technologies on both the national and international level. Using the scientific approach, a country will be able to address its needs and channel its resources into success in technologies that are important to, for example, food production, health, management, information, and, hopefully, participation in the world market. *Third, the Science Culture*. Developing countries possess rich cultures of their own in literature, entertainment, sports and history. But, many do not have a "science culture". The science culture enhances a country's ability to follow and discuss complex problems rationally, and based on facts, while involving many voices in an organized, collective manner – scientific thinking becomes essential to the fabric of the society. Because science is not as visible as entertainment, the knowledge of what is new, from modern developments in nutrition to emerging possibilities in the world market, becomes marginalized. With a stronger scientific base, it is possible to enhance the science culture, foster a rational approach, and educate the public about potential developments and benefits.

The above trilogy represents a major obstacle to the have-nots, as many feel that such a structure is only for those countries which are already

developed. Some even believe in conspiracy theories – that the developed world will not help developing countries and that they try to control the flow of knowledge. The former is a chicken/egg argument because developed countries were developing before they achieved their current status. The recent examples for success in the world market in countries such as developing China and India and others are because of the developed educational system and technological skills in certain sectors – India is becoming one of the world leaders in software technology and “Made in China” goods are now all over the globe. As for the conspiracy theory, I personally do not give significant weight to it, preferring to believe that nations “interact” in the best of their mutual interests. If the gap is too large, the interest becomes marginalized, but if the gap narrows, the flow of information (including science and technology) becomes easier, even if the two nations involved “do not really have an affinity to each other.”

What is needed is acceptance of responsibility in a collaboration between developing and developed countries. I see two sets of responsibilities in what I term a “proposal for partnership”. The proposal highlights the following three points for each of them.

Responsibilities of Developing Countries:

(1) *Restructuring Education and Science.* The force of expatriates in developed countries should be organized and used for help in a serious manner. Expatriates can help the exchange between developed-developing cultures and assist in bringing modern methods of education and research. This will not be successful without the genuine participation of local experts.

(2) *Creation of Centers of Excellence.* These centers should be limited to a few areas in order to build confidence and recognition and should not be just exercises in public relations. They are important not only for research and development, but also in preparing a new population of experts in advancing technologies. They would also help reduce the brain drain many developing countries experience.

(3) *Commitment of National Resources.* These resources are needed to support research and development in a selective way, following well-established criteria that are based on merit and distinction. To guide national policy, government at the highest level should create an overseeing “Board for Science & Technology”, formed from national and international experts. Without serious commitment to such an effort, progress will remain limited.

Some developing countries have made admirable progress in these areas, and the results from, e.g., India, South Korea, and Taiwan reflect healthy educational reforms and excellence in some science and technology sectors. In Egypt, the University of Science and Technology (UST) is an experiment, initiated with the hope of establishing a center of excellence that will satisfy the criteria of the above trilogy: nurturing the science base, developing technologies important to the region and the world, and fostering the science culture. So far we have had success in structuring an academic foundation and, with the commitment of President M. Hosni Mubarak, we now have a 300-acre parcel available to build a campus on the outskirts of Cairo. We are awaiting the approval of a new law which will position UST as a non-profit, non-governmental organization. This will be a unique experiment where both developing and developed countries can participate, helping a region rich in human capital and potential but in need of peace and prosperity. By the time UST reaches its final stage, it should have satellites benefiting other countries in the area.

Responsibilities of Developed Countries:

(1) *Focusing of Aid Programs.* Usually an aid package from developed to developing countries is distributed among many projects. Although some of these projects are badly needed, the number of projects involved and the lack of follow-up (not to mention some corruption) means that the aid does not result in big successes. More direct involvement and focus are needed, especially to help Centers of Excellence achieve their mission, and with criteria already established in developed countries.

(2) *Minimization of Politics in Aid.* The use of an aid program to help specific regimes or groups in the developing world is a big mistake, as history has shown that it is in the best interests of the developed world to help *the people* of developing countries. Accordingly, an aid program should be visionary in addressing real problems and should provide for long-term investment in the development program.

(3) *Partnership in Success.* There are two ways to aid developing countries. Developed nations can either give money that simply maintains the economic and political stability or they can become a partner and provide expertise and a follow-up plan. This serious involvement would be of great help in achieving success in many different sectors. I believe that real success *can* be achieved provided there exists a sincere desire and serious commitment to a partnership, which is in the best interests of both parties.

What is the return to rich countries for helping poor countries? And what payoff do rich countries get for helping poor countries get richer? These two questions were asked by Joel Cohen in his book mentioned before. At the level of a human individual, there are religious and philosophical reasons which make the rich give to the poor – morality and self-protection motivate us to help humankind. For countries, mutual aid provides (besides the issue of morality): insurance for peaceful coexistence and cooperation for preservation of the globe. If we believe that the world is becoming a village because of information technology, then in a village we must provide social security for the unprivileged, otherwise we may trigger revolution. If the population is not in harmony, grievances will be felt throughout the village and in different ways.

Healthy and sustainable human life requires the participation of all members of the globe. Ozone depletion, for example, is a problem that the developed world cannot handle alone – the use of propellants with chloro-fluorocarbons (CFCs) is not only by the haves. Transmission of diseases, global resources, and the Greenhouse Effect are global issues and both the haves and have-nots must address solutions and consequences. Finally, there is the growing world economy. The market (and resources) of developing countries is a source of wealth to developed countries and it is wise to cultivate a harmonious relationship for mutual aid and mutual economic growth. I heard of a recent phrase, “Give us the technology and we will give you the market!”, used to describe the US-China relationship.

A powerful example of visionary aid is the Marshall Plan given by the United States to Europe after World War II. Recognizing the mistake made in Europe after W.W.I, the U. S. decided in 1947 to help rebuild the damaged infrastructure and to become a partner in the economical (and political) developments. Western Europe is stable today and continues to prosper – likewise its major trading partner, the United States of America. The U. S. spent close to 2% of its GNP on the Marshall Plan for the years 1948-51. As pointed out by Cohen, a similar percentage of the \$6.6 trillion of the 1994 U. S. GNP will amount to \$130 billion, almost ten times the \$15 billion a year currently spent for all non-military foreign aid and more than 280 times the \$352 million the U. S. gave for all overseas population programs in 1991. The commitment and generosity of the Marshall Plan resulted in a spectacular success story. The world needs a rational commitment to aid and aid partnerships.

It is in the best interest of the developed world to help developing countries become self-sufficient and a part of the new world order and market.

Some developed countries are recognizing the importance of partnership, especially with neighbors, and attempts are made to create new ways of support and exchanges for the know-how. Examples include the United States and Mexico and Western and Eastern Europe. The rise of Spain's economic status is in part due to the partnership within Western Europe.

In the next 25 years, 2 billion human beings will be added to the planet, with 97% of those 2 billion people living in the developing world. This uneven population explosion, with its impact on world resources, the environment and regional conflicts, threatens our existence and calls for serious and active involvement. The consequence when developing countries acquire an "underdeveloped status" is ugly, not only because of the human costs and sufferings, but also because of the impact on world peace and stability. It is equally in the best interests of developing countries to address these issues seriously, not through slogans, but with a commitment of both will and resources in order to achieve real progress and to take a place on the map of the developed world.

We may picture the current situation by likening it to a "Ship in a Flood". Underdeveloped countries are near to sinking under the deluge; developing countries are trying to make it onto the ship; and developed countries sailing, *but* in a flood of the unprivileged. The choices are clear: The sailing ship must seriously attempt to help those who are trying to make it. Those trying to make it should not regard the ship without a willingness to put forth their own effort, and without wasting their energy on conspiracy theories – being on the ship is more important! Meanwhile, everyone must make every attempt to rescue those at the bottom. To be part of a civilized planet, every human must matter. The notion of "us" and "them" is not visionary and we must speak of global problems and solutions. At the heart are poverty, illiteracy, and human freedom.