



ERUDITIO

*“A multidisciplinary forum focused
on the social consequences and policy
implications of all forms of knowledge on
a global basis”*

VOLUME 1, ISSUE 4

MARCH-APRIL 2014

ISSN 2227-9679

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Eruditio Vision

The vision of the Journal complements and enhances the World Academy's focus on global perspectives in the generation of knowledge from all fields of legitimate inquiry. The Journal also mirrors the World Academy's specific focus and mandate which is to consider the social consequences and policy implications of knowledge in the broadest sense. The vision of the Journal encompasses major challenges facing global society and seeks to examine these issues from an interdisciplinary, multi-method and value guided perspective.

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Copyright Information:

Publisher:

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Published under Open Access Policy Guidelines. For more details see Editorial Policy on the Inside Back Cover.

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Editorial

This issue of *Eruditio* contains challenging and possibly controversial themes. Nonetheless, overall, these contributions challenge the frontiers of thinking in different spheres of global relevance.

The issue of global peace and security is one of the most important on the agenda of the World Academy. This is a complex subject in the sense that security is frequently prefixed by the term “national” and thus national security seems to detach itself from global security. In [“Security Reflections: A Holistic Approach Without Nuclear Weapons”](#), **Jonathan Granoff** has provided us with a short but incisive anecdote to the parochial edge of security discourse. His article brings in a concise and clear manner, the importance of global and collective initiatives in advancing the agenda of global peace and security. In doing this, he is giving great clarity to the emerging notion of collective security with traction.

Garry Jacobs’ contribution [“Ways of Knowing: Life Beyond Chaos”](#) was inspired by a WAAS seminar on scientific complexity. His understanding of the problem of uncertainty in cognition generated by scientific complexity underlines the important challenge to the evolution of human consciousness and the techniques of understanding not only the self, but the self in the universe. In doing so he confronts the problems of the limits of reliance exclusively on the mind which has a marked tendency to affirm one perspective to the exclusion of others, to reject what it previously embraced, and not arrive at an all-embracing perspective that can reconcile apparent opposites. In effect, the author calls for efforts to develop more synthetic and integrated ways of knowing which have the capacity to overcome the limitations of reductionism and systems thinking. Ultimately, he is suggesting a profoundly important challenge that requires a major shift of emphasis and perspective in how we think. His approach is sympathetic to intuitive insight and the techniques that we can develop to explore this important way of knowing how to discover solutions to pressing problems that we perceive as uncertainty.

David Krieger’s article [“Hubris Versus Wisdom”](#) revisits a central theme of the WAAS agenda namely, global security and the abolition of nuclear weapons. He draws out attention to the fact that activism has generated substantial reductions in nuclear warheads around the world. A reduction from 70,000 to just over 17,000 is itself a major accomplishment. The number is still too many, as he notes. He further draws our attention to the importance of understanding the mindset that finds strength and value in nuclear weapons in the concept of hubris and the mindset that seeks to eliminate them from the planet which reflects the wisdom tradition. The mindset vested in retaining nuclear weapons systems captures the hubris of arrogance, an arrogant belief in the supremacy of raw power, and the illusion that these weapons can be controlled by hubris and ensure the safety of humanity. Indeed, a central weakness of hubris is the fragility of its psychological and scientific foundations. It is hubris that may ultimately lead us to self-destruction and it is wisdom that may ultimately save us. The author draws attention to three global wisdom figures, Albert Camus, Mohandas Gandhi,

and Albert Einstein. It was Camus who pointed out that our scientific advances here took us to “the greatest level of savagery.” It was Gandhi who noted, when informed of the bomb’s use that non-violence was not simply an ethical mandate but a fundamental moral standard if humanity is to survive the nuclear age. Einstein, a spiritual father of the World Academy, suggested we need new modes of thinking to avert unparalleled catastrophe.

There is an urgent challenge to displace nuclear hubris with the wisdom of human solidarity. Humanity must be mobilized because the movement toward complete abolition is moving at a snail’s pace. He concludes his piece with a poem he composed called “**A Few Simple Truths**”. Truth is worthy of repetition and I hereby quote those truths:

Life is the universe’s most precious creation.

There is only one place we know of where life exists.

Children, all children, deserve a full and fair chance.

The bomb threatens all life.

War is legitimized murder with collateral damage.

Construction requires more than a hammer.

The rising of the oceans cannot be contained by money.

Love is the only currency that truly matters.

One true human brings beauty to the earth.

In “[Being in Superposition: Modern Subjectivity, and the New Collectivity](#)”, **Ljudmila Popovich** grapples with the classical philosophical person and personality over time problem. Here she adds another dimension, not simply the time artifact, but the space-time artifact. In this case she focuses on the importance of place on feminine identity and the ideal instrument to explore this is the woman in the position of a migrant, meaning that the migrant woman has an identity that is also shaped by special characteristics of exile. The superposition idea is an innovative but highly complex method of observation. It is a set “of the self as a set of positions and relations. Dynamic, relational, multi-positional and diversified individuality.” From this vantage point the observer gets a profoundly more interesting and complex understanding of a multi-dimensional, evolving personality configuration. The author’s essay is provocative and seeks to establish some important insights conditioned by time and space in the nature of human subjectivity.

Richard Hames is a profound social critic. In “[To Touch Eternity](#)”, he has given us deep insights on some of the most vital and important questions on science, value and essentially the future of humanity. It is a short paper but insightful enough to be seriously contemplated by the reader.

In [“Need for a New Economic Theory”](#), **Orio Giarini** has given us a clarified walkthrough of the central conceptions of economics that seem to imprison us today. He then brings in the notion that the forms of wealth or value production are in flux. He identifies the importance of the growth of services as a new foundation of economic value. He notes that this perspective introduces uncertainty and probability as the new rules of the game. However, this simply requires a strong need to redefine economic value in order to understand what scientifically reproduces the wealth of nations.

Edy Korthals Altes, in [“Quo Vadis? Cultural Reorientation – Our Shared Journey”](#), states his provocative postulation at the beginning of his article. He challenges us with his proposition that the spiritual renewal of humanity is long overdue. He has seen that deliberation of the enlightenment, which produced the autonomous man, also produced a creature who seems to have inflated himself. This self-inflation has come at the cost of spiritual deficit. We now confront new crises in which the spiritual dimension of human identity is increasingly lost as money and greed overtake any recognition of deeper and transcendent spiritual values. He underscores the misconceptions that this view produces and wants to get us back to values infused with spirit that are universally relevant. He has a focus on such concepts as interconnectedness, vulnerability, yearning, and awe. From these considerations, he thinks we can emerge with a common platform that might more closely patch together the practical world of science and the transcendent world of religion. He concludes by stressing that at the back of his analysis is the centrality of the most inclusive conception of love, and that “God, goodness, and love, both received and given, give meaning to life.”

Graeme Maxton, in [“Privacy is not Dead, It’s Just Resting”](#), rightly notes that our right to privacy is under assault. The assault is not only led by governance, but also by major corporate personalities. Currently we are in the shadow of the Snowden whistleblower disclosures. These disclosures reflect staggering intrusions in the mega collection of data about individuals. Even foreign leaders are not immune from this. Reports from the U.S. government indicate that these NSA intrusions into private communications violate the American Constitution. He has given a broad but incisive description of a multitude of other ways in which the privacy of the individual may be compromised. A great deal of this is not well known or if known, understood. The author has provided us with a useful introduction to these challenges regarding the common sense right to privacy.

Robert W. Fuller, in [“Something America and China Can Do Together”](#), writes with unassuming but profoundly challenging message. In this article, he looks at the position of America and China as the starting point for his meditation on profoundly important future directions of global, social organization. He sees in the Chinese tradition some timeless Confucius values and he sees in the American intellectual tradition the deeper values tied to the idea of universal dignity. It is this concept that may move us past the imperfections of democracy to a deeper system of values rooted in dignitarian governance. This is a short but profoundly challenging thesis, and one that the editors hope will generate continuing discussions in the World Academy.

One of our contemporary conflicts about basic values is the distinction between one's liberty and the abuse of liberty namely, license. This is at the back of the issue raised in this article by **Graeme Maxton** and **Octavian Ksenzhek** on the "[Limits to Nature](#)" about the autonomous Homo economicus and the idea that this player's autonomy is limitless. This theme is explored in terms of the limits of nature itself and the challenge of knowing the limit and knowing the cost of going beyond the limit.

David Peat has provided us with a short essay on "[Creativity and Education](#)". He views creativity as a process that is unconstrained by boundaries and limitations. He reminds us of the creativity of childhood and then underscores the problem as we advance our blocks and further blocks which may constrain creativity. He then explores the challenges important to education about how we can create environments that nurture creativity rather than block or repress it. He does not think that there can be a conscious cultivation of creativity. I am uncertain about this. I suspect as a prior President of our Academy has suggested, that human beings can engage in the processes of free fantasy and thereby unlock the inner processes that generate creativity.

Michael Marien's "[Book Reviews](#)" have provided a comprehensive and extensive review of major contributions to enrich our understanding of the state of globalization. The first set of reviews focuses on the annual publication by Lester Brown and produced through the World Watch Institute. The focus is on contributions to a better understanding of the problems and prospects of sustainable development. Among the important contributions highlighted is the important chapter by Carl Folke of the Royal Swedish Academy of Sciences dealing with the sustainability metric. Folke summarizes the nine global boundaries of critical boundary processes. These indicate the proposed boundary, the current status and pre-industrial value of the boundaries implicated in climate change, biodiversity, the nitrogen cycle, the phosphorus cycle, the ozone, ocean acidification, fresh water use, changes in land use, and atmospheric aerosol loading. These are important and insightful issues. Other contributions include the strategies of getting to true sustainability, the management of emergencies, and more. Further reviews include summaries from Ideas to Fix the World which include Muhammad Yunus focusing on human capital. Attention is drawn to Will Kymlicka who notes the challenge of staggering inequality. References to Stiglitz, Chang, and Ocampo focus on transforming how the global economy works. Other contributions include understanding the global balance of power, the role of democracy, as well as responses to the economic crisis, and making development possible. Marien also reviews abstracts from a multitude of OECD publications. All of these entries should be of interest to the Fellows of our Academy and should facilitate our own thinking about a new global paradigm.

Winston P. Nagan

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Editor-in-Chief, *Eruditio*

Security Reflections: A Holistic Approach Without Nuclear Weapons

Jonathan Granoff

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Abstract

Today's global threats require a cooperative response. The ongoing cycle of fear – wherein armaments spread insecurity and insecurity generates more armaments – is incompatible with the requisite cooperative environment needed to address the 21st century crises of climate change, sustainable development (as identified by the Millennium Development Goals), and nuclear disarmament. Such cooperation, furthermore, will engender cooperation on other critically important issues such as terrorism, cyber security, pandemics, and financial stability and make efforts to address these challenges more likely to succeed. Today's unprecedented interdependence necessitates a new definition of security. No longer can we afford to practice the old model of real politik, based on a ruthless Hobbesian view of the human condition. National security can no longer be achieved through competition with other nation-states, and particularly not through increased amounts of military spending. Cooperation is no longer an admirable human trait: it is imperative for our very global survival.

There are present dangers to our biological and social environments which no one nation, or a small group of nations, no matter how powerful, can adequately address alone. These threats are global in nature and require cooperation rather than competition as the appropriate response. Maintenance of the implicit threat posed by the existence of the horrific destructive power of nuclear arsenals is incompatible with this cooperative environment which must be created for an increasingly interdependent world.

It is time to emerge from a dark cycle based on fear wherein armaments spread insecurity and insecurity generates more armaments. The nuclear arsenals are the most destructive example of this paradigm. By cooperatively addressing the crises identified by the world summits of the 1990s, and the more recently recognized challenges of climate change, we can create a new cycle of life wherein trust, confidence and cooperation can reinforce disarmament which will in turn strengthen trust, confidence and cooperation.

The United Nations Security Council marked the end of the Cold War by holding its first ever summit meeting which issued a declaration laying the ground work for the new global security agenda:

“The absence of war and military conflicts amongst states does not in itself ensure international peace and security. The non-military sources of instability in

the economic, social, humanitarian and ecological fields have become threats to peace and security.” (UN Document S/PV.3046, United National Security Council Declaration, January 31, 1992, P.143.)

An integrated post-Cold War human security agenda can be identified as emerging from the United Nations-administered world conferences of the 1990s.* These conferences set forth agendas, embodied in political commitments reached by consensus amongst member-states which effectively set forth programs to address our global crises. The security of all nations, including superpowers, has become collectively jeopardized. The United Nations system, which must be strengthened, provides us a global political identity and means for such coordinated action.† This agenda has been largely articulated in the Millennium Development Goals. The MDGs lack only a coherent incorporation of a new definition of security.

That new definition must be focused on obtaining global public goods of the highest value such as a stable climate, healthy oceans and rainforests, and the elimination of both poverty and nuclear weapons. Failure to work cooperatively to achieve these necessary objectives will ensure insecurity and enormous human suffering. Working together on these objectives will make cooperation on other critically important issues such as effectively containing terrorism, cyber security, controlling pandemics, and financial stability much more likely to succeed.

Never before have we required such new ways of thinking; never before have we faced such threats to our survival and found the means to address them.

Changing the cyclic patterns that lead to competition in military prowess as the predominant route to “security” is imperative if we are to overcome present tangible, scientifically verifiable threats to the planet’s life support systems.

The interlocking sets of problems are manageable and very realistic good advice can be found in the commitments made at the summits and world conferences during the 1990s. They were not so long ago. The 9/11 world has not changed their core insights and we can learn a great deal by looking at them carefully. (See Appendix A)

These world conferences addressed the increasing disparity of wealth between the developed and underdeveloped worlds, highlighted by the fact that tens of thousands of children die each day from malnutrition and preventable diseases, and over 1.3 billion people live with uncertainty as to whether they will have enough calories in the next few days to survive. These conferences addressed the global aspects of our environmental crisis highlighted by the fact that a hydro fluorocarbon molecule emanating from a refrigerant in Chile recognizes no national boundaries in its destruction of the fragile ozone layer that protects us all. The inter-relatedness between such issues as environmental protection and the well-being of children, unemployment and crime, population growth and the rights of women became apparent. We began there to recognize that so many threats to our security are global: organized crime,

* See the excellent descriptive material of the World Summits set forth in the year end briefing paper, “The World Conferences, Developing Priorities for the 21st Century”, ISBN: 92-1-100631-7, UN Publications, information current as of March 1997.

† Eighty per cent of the work of the UN system is devoted to helping developing countries build the capacity to help themselves. This includes promoting and protecting democracy and human rights; saving children from starvation and disease; providing relief assistance to refugees and disaster victims; countering global crime, drugs and disease; and assisting countries devastated by war and the long-term threat of land mines.

The budget for the UN’s core functions – the Secretariat operations in New York, Geneva, Nairobi, Vienna and five Regional Commissions – is \$1.3 billion a year. This is about 4 per cent of New York City’s annual budget – and nearly a billion dollars less than the yearly cost of Tokyo’s Fire Department.

trafficking of children and drugs, the AIDS epidemic, protecting biological diversity, ozone depletion, malnutrition, illiteracy, inadequate housing, unemployment, racism, ethnic and religious strife, violence against women, massive violations of human rights, the extraordinary expenditures in conventional weapons, the threats posed by weapons of mass destruction, deforestation, soil erosion, global warming, the widening gap between rich and poor and the threats posed by the provincialism of religious fanaticism. The world conferences provided a forum where civil society partnered with governments and governments cooperated with one another in addressing our collective threats.

“Cooperation is no longer merely admirable as a human trait; it is imperative for our very survival— our family values must be awakened.”

Each conference marked the culmination of months of consultations among member states, non-governmental representatives and UN experts who reviewed vast amounts of information and shared knowledge and experience. Each conference forged agreements on specific issues and commitments from member states. This process is unprecedented in world history. All of these world summits addressed problems which are beyond the capacity of any individual state to solve. Cooperation is no longer merely admirable as a human trait; it is imperative for our very survival – our family values must be awakened.*

The old model of real politique in which world politics is understood solely as struggles for superior power amongst nations reflects an outmoded Hobbesian view of the human

* Ambassador Douglas Roche, O.C., 8923 Strathearn Drive, Edmonton, Alberta T6C 4C8 Canada (tel. 403-466-8072) (fax: 403-469-4732) (Email: djroche@gpu.srv.ualberta.ca) (Internet Home Page: www.ualberta.ca/~djroche), former Canadian Ambassador for Disarmament co-authored with Robert Muller *Safe Passage for Humanity* and recently *The Ultimate Evil*. He said in “An Agenda for the ‘People’s Millennium Assembly’”: “It is interesting that the Report of the Commission on Global Governance, after its opening chapter describing the post-Cold War world, turned immediately to an elaboration of “Values for the Global Neighborhood.”

“We believe that all humanity could uphold the core values of respect for life, liberty, justice and equity, mutual respect, caring, and integrity. These provide a foundation for transforming a global neighbourhood based on economic exchange and improved communications into a universal moral community in which people are bound together by more than proximity, interest, or identity. They all derive in one way or another from the principle, which is in accord with religious teachings around the world, that people should treat others as they would themselves wish to be treated.”

The Commission urged the international community to unite in support of a global ethic of common rights and shared responsibilities. This would “provide the moral foundation for constructing a more effective system of global governance” and close the present gap between governments and citizens. A global civic ethic also requires democratic and accountable institutions and the rule of law.

Discussions on ethics frequently tend to become esoteric, not to mention divisive. But a new global ethic can be expressed sharply, succinctly and irrefutably, as the 1993 Parliament of the World’s Religions did:

“Every human being must be treated humanely!”

This repeated the dramatic appeal contained in the 1955 Manifesto issued by a group of scientists led by Bertrand Russell and Albert Einstein who, having worked on the development of the atomic bomb, called for its abolition:

*“We appeal, as human being, to human beings:
Remember your humanity, and forget the rest.”*

Through the UN and its systems, we possess, for the first time in the history of the world, a catalogue of information about how our planet works, and treaties to protect the rights of individuals and the environment itself. Both people and governments are learning that they must cooperate for many purposes: to maintain peace and order, expand economic activity, tackle pollution, halt or minimize climate change, combat disease, curb the proliferation of weapons, prevent desertification, preserve genetic and species diversity, deter terrorists, ward off famines, etc.

All this has prepared us for the formulation of a new global ethic. By a global ethic, I do not mean a global ideology or a single unified religion and certainly not the domination of one religion over others. Rather, I mean a fundamental consensus on binding values, irrevocable standards and personal attitudes. This ethic is the expression of a vision of peoples living peacefully together, of national and ethnic groupings of people sharing responsibility for the well-being of the Earth.

The expression of a new global ethic of sharing and stewardship might seem, to some, overly ambitious in a world still torn by the effects of long histories of greed and dominance. Yet agreement on common values for common survival is the most pressing challenge facing the international community.

condition and is no longer realistic. The interrelationships of communication, transportation, international trade have released irreversible forces of transnational integration highlighting the transnational nature of the problems which must be solved co-operatively. The spread of democracy, the growing recognition of economic interdependence, the decreasing appeal of war, and the rise of supra national institutions in civil society, business and political life to regulate world affairs are clearly positive trends. Most significant is the growing recognition that the well-being of nations is not necessarily secured by increasing amounts of military spending; international cooperation is required to safeguard the interest of the planet as a whole. If humanity is to survive in this period of global interdependence and if global security is to be achieved, national policies should be enlivened by a vision of collective security and cooperation. This is the new realism – interdependence – which we all face now.

“The well-being of nations is not necessarily secured by increasing amounts of military spending.”

international cooperation is required to safeguard the interest of the planet as a whole. If humanity is to survive in this period of global interdependence and if global security is to be achieved, national policies should be enlivened by a vision of collective security and cooperation. This is the new realism – interdependence – which we all face now.

The conferences set forth a workable cooperative integrated human security agenda. The funds to fulfill the agenda have been given to wars and military deployments. This is not a new problem. The Advisory Board on Sustainable Development criticized countries that put weapons ahead of human needs:

“The greatest financial waste is in military expenditure and this is dissipating resources needed for sustainable development. Agents from rich developed countries continue to promote arms sales to developing countries, and one such agent has even recently persuaded several African countries to reverse earlier decisions to switch expenditures to education.” (UN Document E/CN.17/1995/25, Report of the High Level Advisory Board on Sustainable Development, February 16, 1995, p. 25)

The world’s governments spend more than 1.3 trillion dollars a year to support military forces of more than 27 million soldiers. Analysis of the policies of a progressive country like the US can begin with the history of promotion of arms exports compared to the promotion of exports of environmental technologies.*

The developing countries spend approximately over 200 billion dollars on arms expenditures, while some 1.3 billion people are so poor they cannot meet their basic needs for food and shelter. Poverty grows as fast as populations.

Some of the poorest countries spend more on their military than on their citizens’ education and health: e.g., Angola, Ethiopia, Mozambique, Myanmar, Pakistan, Somalia, and Yemen. The Human Development Report suggests that 12% of the amount spent on military hardware would provide primary healthcare and safe drinking water for all; 4% would provide universal primary education and educate women to the same level as men; 8% would provide family planning services to all willing couples and stabilize world population by 2015. The ugliest part of this dynamic is that the sellers of these arms are the most developed countries which need the cash the least. The sales are dripping with blood.

* A Tale of Two Markets: Trade in Arms and Environmental Technologies (call Commission at 202-234-9382 for copy).

The nuclear arsenals and their implicit threat of excessive violence to maintain global governance are no longer reasonable amongst parties which must work together.* “By global governance, we mean the way in which we manage global affairs, how we relate to each other, how we take decisions that bear on our common future.” (*Our Global Neighborhood: The Basic Vision* (Main Themes Booklet), p. 7.)

There are two icons of the modern age. One is the mushroom cloud, which emphasizes our collective threat of death and destruction through the abuse of the gift of scientific power. Like a mushroom it grows from decaying matter – in this instance the fear and the quest for world dominance. The other icon is the picture of the planet taken from outer space – one glorious living integrated organism. The image of this beautiful living biosphere highlights our interdependence and calls us to a new level of cooperation. Our choices could not be clearer.

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* Security is being redefined to encompass cooperation, disarmament, the environment, and social development. No one can doubt that there is presently excessive dependence on armaments and threat or use of force. The final declaration of the Social Summit in Copenhagen specifically adopted this analysis (“The Copenhagen Declaration and Programme of Action”, Section 70). Previously, 150 states adopted the following accurate description of security by consensus in the final document of the International Conference on the Relationship Between Disarmament and Development,” paragraph 14 (UN, A/ Conf.130/39, September 11, 1987):

“Security is an overriding priority of all nations. It is also fundamental for both disarmament and development. Security consists of not only military, but also political, economic, social, humanitarian and human rights and ecological aspects. Enhanced security can, on the one hand, create conditions conducive to disarmament and, on the other, provide the environment and confidence for the successful pursuit of development. The development process, by overcoming non-military threats to security and contributing to a more stable and sustainable international system, can enhance security and thereby promote arms reduction and disarmament. Disarmament would enhance security both directly and indirectly. A process of disarmament that provides for undiminished security at progressively lower levels of armaments could allow additional resources to be devoted to addressing non-military challenges to security, and thus result in enhanced overall security.”

Appendix A

1. The World Summit for Children in New York in 1990 issued a convention on the Rights of the Child and set goals for reducing deaths, malnutrition, disease and disability among the children of the developing world. (UN Document A/45/625, *World Summit for Children*, New York, September 1990). Already 89 countries have reached the end decade target of over 90% immunization coverage, and the achievement of the goal of the eradication of polio by the year 2000 is in sight. There has been a dramatic improvement in the management of diarrhea saving the lives of at least a million children annually. The program for iodine deficiency control has led to over 1.5 billion more people consuming iodized salt in 1995 than in 1990, and as a result, 12 million infants are protected from mental retardation each year. The population without access to safe drinking water has fallen by about one third helping in excess of over a billion people.
2. The World Conference on Environment and Development (Earth Summit) in Rio in 1992 produced a Biodiversity Convention, a Global Warming Convention, a Statement on Forest Principles, a Declaration on Environment and Development, and Agenda 21. The last is a blueprint for the sustainable development of the planet into the 21st century. (An interpretive guide to Agenda 21, *The Global Partnership for Environment and Development*, is available. UN Sales No.E.93.I.9.). The imperative of a rule of law governing sustainable development and a business environment will obviously need an enormous shift in the attitude of our leaders. The interdependence of the world's economic system bodes well that cooperative efforts could bear fruit rapidly when the political will is harnessed. In the same way as a village must cooperate to protect its commons, we will need far higher levels of international cooperation to address the problems of ozone depletion, global warming, and water pollution which continue to grow in seriousness. Nevertheless, Agenda 21 remains the only globally accepted comprehensive outline to respond to our planetary crisis.
3. The World Conference on Human Rights in Vienna in 1993 adopted a Declaration and Programme of Action, including the establishment of the office of UN High Commissioner for Human Rights, designed to strengthen human rights around the world. The Vienna Declaration set forth the universality, indivisibility, and interdependence of civil rights, cultural, economic, political and social rights as the birthright of all human beings and the first responsibility of governments. It clarified the essential relationship between development, democracy and the promotion of human rights. Despite sensitivity regarding respect for national sovereignty principles, it was agreed that within the framework of the purposes and principles of the UN charter, the promotion and protection of human rights are a legitimate international community concern. (UN Document A/CONF. 157/24, *The Vienna Declaration and Programme of Action*, Vienna, June 25, 1993). The emergence of an international criminal court can be indirectly attributed to the institutional momentum generated by this conference.
4. The International Conference on Population and Development in Cairo in 1994 shifted the previous emphasis on demography and population control to sustainable

development and the recognition of the need for comprehensive reproductive health-care and reproductive rights. Its declaration emphasized the empowerment of women, appreciation for pluralism values and religious beliefs, reaffirmation of the central role of the family, and the needs of adolescents. (“Declaration of International Conference on Population and Development,” UN Document A/CONF. 171/13, Cairo, September 13, 1995.)

5. The World Summit for Social Development in Copenhagen in 1994 brought together 117 heads of state to issue a political Declaration and Programme of Action to alleviate and reduce poverty (including the eradication of absolute poverty), expand productive employment, and enhance social integration. In many ways, the social summit is the centerpiece of the global conferences of the 1990s. The Summit Declaration set forth 10 commitments each followed by specific recommendations for action at national and international levels. They include, in part: the eradication of poverty in the world with policies addressing the root causes of poverty giving special attention to the needs of women and children and other vulnerable and disadvantaged; the promotion of full employment and social integration by fostering social stability and justice based on non-discrimination, tolerance and the protection of human rights; the achievement of equality and equity between women and men; the promotion of universal and equitable access to quality education and healthcare; the acceleration of the economic, social and human resource development of Africa and the least developed countries through the promotion of democratic institutions and addressing problems such as external debt, economic reform, food security and commodity diversification.
6. The Conference on Climate Change in Berlin in 1995 started a process to limit and reduce emission of greenhouse gases within specified time frames, such as 2005, 2010 and 2020. (UN Department of Public Information, Press Release HR/888, April 12, 1995.)
7. The Fourth World Conference on Women in Beijing in September 1995 produced a comprehensive plan, the “Beijing Declaration and Platform for Action,” for the international community to promote the status of women to the ultimate benefit of society as a whole. Twelve critical areas of concern are dealt with in depth: poverty, education, health, violence against women, armed conflict, economic structures, power sharing and decision-making, mechanisms to promote the advancement of women, human rights, the media, the environment, and the girl child. It redefined women’s rights as human rights, asserting women’s rights to “have control over and decide freely and responsibly on matters related to their sexuality, including sexual and reproductive health, free of coercion, discrimination, and violence.” The United States launched a six year, \$1.6 billion initiative to fight domestic violence and even established a White House Council on Women to plan for the effective implementation in the United States of the platform for action with full participation of NGOs. It was the largest conference ever convened by the UN, with 5,000 delegates from 189 States and the European Union. In addition, an independent NGO Forum attracted 30,000 participants.
8. The City Summit (Habitat II) produced a Declaration on Sustainable Human Settlements and brought together many of the themes of the previous world summits.

Recognizing that inadequate living conditions are a primary cause of social conflict, an agreement was reached on specific commitments such as adequate shelter for all, financing human settlements, international cooperation and review of progress in the future. Reports were received from over 500 mayors and key municipal leaders constituting the World Assembly of Cities and Local Authorities. It also convened NGO groups in forums which included the World Business Forum, the Foundations Forum, the Academies of Sciences and Engineering Forum, the Professionals and Researchers Forum, the Parliamentarians Forum, the Labor Unions Forum, the Forum on Human Solidarity and even the Wisdom Keepers Forum. By the year 2010, it was predicted that over half of the world's population will be living in cities and that there will be at least 20 mega cities. We are ill prepared to deal with the social repercussions of such a dramatic global transformation but the conference Secretary General, Wally N'dow, put it simply, "The resources exist to put a roof over the head and bring safe water and sanitation for less than \$100 per person to every man, woman and child on the planet." This is the new reality of security.

Ways of Knowing: Life Beyond Chaos

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Abstract

The ways of knowing we employ determine the nature of knowledge we arrive at. Our capacity for knowledge depends on our conception of what knowledge is and the faculties we employ to seek it. The early advances of modern science resulted from efforts to overcome the limitations of the physical senses by a conception that sense data does not adequately reflect reality and from development of instruments capable of extending beyond the reach of our physical senses. The capacity of the physical mind to divide reality into its component parts, to concentrate on each of the parts and analyze its properties led to remarkable scientific advances during the 18th and 19th centuries. The capacity of mind to aggregate apparently independent objects and view them as constituent elements of a wider totality gave rise to systems thinking and important discoveries during the 20th century. Empiricism, reductionism and systems thinking are all based on a conception of reality that regards life and consciousness as artifacts or, at best, secondary emergent properties of material mechanisms. The problems of knowledge and life confronting humanity today result from exclusive reliance on the mind's capacity for division and aggregation. This article calls for efforts to develop more synthetic and integrated ways of knowing which possess the capacity to build on the strengths and overcome the weaknesses of reductionism and systems thinking. Doing so will enable us to discover solutions to pressing problems and vast unutilized opportunities concealed by what we presently perceive as threatening uncertainty.

One need not be a student of Chaos Theory to know how complicated and complex life can be. We are surrounded by evidence of it all the time. The sudden collapse of the international financial system in 2008 shook the world economy and undermined confidence in the entire edifice of economic science. Recent debate over theories and predictions of climate change has reinforced the age-old conception of the unpredictability of weather – a synonym for the fickleness of Nature – and the inherent uncertainty of life. The safety systems at Fukushima broke down in spite of sophisticated backup mechanisms thought invulnerable to any eventuality. Recent social unrest and political turbulence in Egypt, Turkey, Brazil and Ukraine point to serious deficiencies in our understanding of social systems and human behavior. Anticipating and managing human expectations seem to be far beyond the grasp of contemporary social science. These incidents are examples of complex social systems that have long defied analysis by conventional scientific concepts and tools.

Black swans, tipping points and butterfly effects are only the tip of the iceberg. The real complexity of life expresses everywhere, though often masked by aggregate statistics

that reduce variation to averages, normal curves and trend lines. During the 20th century, the divorce rate in the USA (per 1000 married women) rose five-fold. A simple trend becomes more complex when we begin to examine the multiple factors responsible for the increase. Partially it is the result of measurable physical factors, such as longevity, rising levels of household income, smaller family size, more working women, greater physical and social mobility, improved health and the discovery of Viagra. But it also reflects changes in social and psychological behavior – greater social equality, use of internet chat rooms, rising expectations, changing attitudes for and by women, ideas about love and romance. And when we zero in on specific cases, explanations may range anywhere from a husband's job loss or Alzheimer's disease to his wife's love affair or recent business trip to the Philippines. To describe the issue as complex may destroy simple stereotypes but it actually tells us very little.

*"As science evolves,
our ways of thinking
and knowing are
evolving as well."*

Given the overwhelming evidence about the complexity of life, it is remarkable that science has made such enormous progress in recent centuries based on simplistic assumptions regarding the nature of reality. The assumption that reality can be explained in terms of closed systems and linear models may be practically useful to the scientist, but grossly err when they are mistaken for an accurate description of reality. Advances in the Science of Complexity offer new concepts and tools that promise to unravel some of the mysteries associated with complex systems and the uncertainty associated with non-linear phenomena. Dynamic systems theory, self-organization, autopoiesis, emergence, networks, organismic theory and similar concepts are altering our understanding of both natural and social phenomena. But even more importantly, they are also altering our understanding of the impact of our mental processes and ways of knowing on our perception of reality. As science evolves, our ways of thinking and knowing are evolving as well. The emergence of new sciences is making us more conscious of the habitual forms of thinking that have defined and circumscribed the development of science over centuries – mental habits which have been reinforced by prevailing conceptions of reality, inculcated by belief systems, consciously buttressed by the education system and unconsciously transmitted by culture.

It is also becoming increasingly apparent that these habitual forms of thinking are not obligatory. Great scientific discoveries of the past few centuries have often resulted from mental processes which transcend the normal mental processes commonly associated with science today. The capacity for insight and intuition associated with great scientific discoveries and other works of genius may turn out to be the exercise of different ways of knowing based on less developed capacities of mind. The capacity to discover unity in apparently disparate and unconnected phenomena; to perceive the whole that is greater than the sum of its parts; to discover the truth in opposite viewpoints; to reconcile contradictions; and to perceive deeper levels of causality that escape conventional thinking has contributed to outstanding advances of knowledge.¹

Science seeks reliable knowledge. The word 'knowledge' is derived from the Latin *scire* "to know" and the Greek *skhizein* "to split, rend, cleave". Human beings have different ways of knowing reality – physically through sense perceptions, emotionally through feelings and empathy, and mentally through rational analysis of data and facts, through formulation of

thoughts, ideas, theories and imaginative experience. Modern science relies on the mind's capacity for analysis as its primary instrument for knowing. Earlier civilizations relied on other ways of knowing, such as the intuitive perceptions of Vedanta and Taoism. It is somewhat ironic that, as Karl Popper observed and many great scientists have testified, the greatest discoveries of modern science have occurred by a process that far more closely resembles intuitive ways of knowing than conventional rational analysis. Therefore, it is worthwhile inquiring into the gradual change in mental processes associated with the recent emergence of new knowledge and new sciences and to reflect on what conscious efforts can be made to transcend the limitation of existing patterns of thought in the quest for ways of knowing that more adequately reflect the complex realities of the world we live in.

1. Appearances can be Deceptive – Empiricism

Modern science arose in the West as a quest for knowledge free from the dogma of established church doctrine and the distorted appearances of reality presented by our senses. To the senses the Earth is flat and motionless. Copernicus' formulation of the heliocentric theory of the solar system challenged existing Church dogma regarding the central position of the Earth in the universe. It also challenged the direct evidence of the senses that the Sun rotates around Earth, a stationary planet. From time immemorial people have noted that a stick dipped in water appears bent or broken and a rapidly spinning windmill appears as a solid disk. The Milky Way was thought to be a cloud in the heavens until Galileo's telescope suggested it may consist of a multitude of stars packed closely together at a great distance from earth. Long before scientists discovered that what appears as solid matter is actually a mass of rapidly moving wave-particles, the scientific method developed as a means to eliminate the distortions arising from sensory appearances as well as the expectations, biases and prejudices of the observer. More significantly, the rise of modern science was based on the premise that sensory information may provide a distorted picture of reality. It affirmed a different mode of knowing in which the observer steps back and detaches himself from sense impressions and subjects them to systematic analysis before arriving at conclusions.

The illusion of the senses was also known to social thinkers long before the birth of social science. Sun Tzu's ancient treatise on *The Art of War* counsels military leaders that "All war is based on deception. Hence when we are able to attack, we must seem unable..."² The Allied command applied this advice with extraordinary success during the D-Day invasion of Normandy by creating diversionary attacks elsewhere along the coast of France. Mindful of Machiavelli's advice to employ deceit in the relations with other princes, Hitler impressed Neville Chamberlain on his visit to Berlin in 1938 so much so that the British Prime Minister came back convinced Germany did not want war. Stalin's gracious behavior made an equally benign impression on Roosevelt at Yalta in 1945. In economics, the distortion of sense data prompted former Federal Reserve Bank Chairman Alan Greenspan to assert that the economy was on a sound financial footing just shortly before the 2008 crash. In business, financial data on the performance of Enron deceived investors, bankers and employees into concluding that the company was soaring to new heights just months before it crashed into bankruptcy.

Although science has adopted a healthy skepticism regarding the reality presented by the senses, this has not prevented it from striving to ground its observations and conclusions on the realities presented by the senses. Instead it has taught scientists to discriminate between

sense impressions and the conclusions to be drawn by mental analysis. Modern science is still predicated on the sole reality of that which is represented by the senses and their instrumental extensions. This habit of mind of depending on the concrete reality of physical sense data imposes limits on the freedom of the thought mind to interpret sensory evidence or conceive of possible explanations. The notions that matter is energy in motion, that space and time are relative, and that light possesses properties of both a particle and a wave are inconceivable in conception to minds fully rooted in the senses. The sense mind observes facts, one at a time, as disparate existences with their own identity. Stepping back from the sense mind that perceives data to the thinking mind that analyzes them and conceives of pure ideas, we are compelled to agree with mathematicians and philosophers that knowledge based on abstract thought has its own reality independent of our senses and our perception of physical phenomenon.

These higher ways of knowing employ the mind's capacity for analysis, comparison and coordination. Mind applies this power to find relationships between pieces of data to evaluate facts and organize them as information. It applies the same power to coordinate two or more facts to one another based on their similar or contrasting characteristics to arrive at a thought and to coordinate two or more thoughts with one another to derive an idea that relates them. Copernicus shared the belief in a mathematically perfect universe. His calculations based on data regarding the relative position of the planets over time confirmed the idea that they revolved around the sun rather than the earth. This discovery, in direct contradiction to the data of the physical senses, revived the ancient distrust of sense perceptions and the search for intellectually coherent concepts or laws of nature. It resulted in a subtle shift in the concept of knowledge from observation of physical sense data to mental concepts about the objects of sense data.

Even when we go beyond the limitations and distortions of sense data, our view of reality is still powerfully influenced by the logic of the physical – mind's first training ground – in its effort to comprehend reality. That logic arises from the apparently discrete existence, solidity and distinctness of material objects, which appear to be separate and independent, are never in two places at once or two things at the same time, and cannot be given away and retained simultaneously. This mode of logic leads inevitably to our mind's propensity to know things by their differences, categorization, comparison and contrast. This faculty is of great practical utility, but as we have discovered, what our physical mind holds true of finite material objects is just an appearance. According to Quantum Theory, nothing is solid, nothing is separate and independent of its environment, even dense physical objects exist in constant relationship with things around them and even in outer space. And when it comes to non-material forms such as emotions and ideas, the logic of the physical mind breaks down completely. We can simultaneously think and feel many things relating to the here and now or somewhere else and some other moment in the past, present or future. We can share our thoughts and feelings without losing them; indeed, we grow by the process of giving. Each thought, feeling, idea and value forms an inextricable element of a complex, ever-changing web of associations, experiences, expectations and aspirations.

2. Divide and Conquer – Reductionism

In retrospect we find that the detachment of knowing from strict subordination to sense

impressions was merely the first step in the rise of modern science. Science progressed with increasing rapidity during the 18th and 19th centuries by the emergence of a triad of dominant conceptions regarding the nature of reality – physicalism, reductionism and mechanism. The atomistic conception of matter prevalent until the end of the 19th century was of separate, independent particles quite distinct from one another and from the various forms of energy with which they interact. This perspective was a natural consequence of the reductionist view of reality that dominated science at that time. Reductionism is based on the premise that the whole is nothing more than the sum of its parts, that it can be fully understood based on the properties of its smallest constituent parts, and that causality is from the part to the whole. The reductionist perspective led to an emphasis on chemical and electrical explanations for life and the germ theory of disease. It gave rise to conceptions of the body as combinations of genes, cells, organs and systems and of health as the proper functioning of each component cell, organ and system. It led to the decoding of the DNA molecule and efforts to explain the entire range of physical characteristics and abnormalities in terms of the molecular structure of the genome. Its ultimate goal was to reduce all biology to chemistry and physics.

In the social sciences, reductionism gave rise to the concept of society as a composite of innumerable independent members, organizations, systems and activities, each subject to minute analysis as a separate reality – political, economic, social, cultural or psychological. In political science, it was synchronous with the dramatic shift toward individualism and the rights of the individual citizen in the centuries following the Renaissance. In economics, it served as the basis for the emerging social philosophy of capitalism based on the central place of competitive individual behavior in the wealth of nations. In epistemology it led to a conception of knowledge as an amalgamation of data, facts, information, and ideas derived from many discrete, independent fields.

The shift in focus from the search for general, cosmic theories of change to the study of change at the micro level in every field led to a gradual specialization of disciplines, similar to the division of labor in industry. This process, which Stephen Toulmin calls *disciplinary abstraction*, required the scientist to conceive of knowledge in narrow, separative terms, rather than as an integrated whole and to abstract the special field from its wider context. The compartmentalization of disciplines has narrowed the range of questions and the methods of inquiry, making the entire body of science an aggregation rather than an integration of knowledge and, by their exclusivity, has ultimately eliminated from its purview fundamental issues of cosmic inter-relatedness.³

The capacity of mind to divide and analyze is prodigious and inexhaustible. Liberated from the constraints imposed by philosophy and religion, reductionism became the ruling principle of experimental science and reigned supreme for several centuries. And with good reason, for it led to remarkable advances in our understanding of the physical universe – the discovery of universal laws of Newtonian mechanics, the decomposition of all material substances into molecules and atoms, the categorization of the elements in terms of their atomic structure, the classification of living species by phylus and genus, the discovery of the cell and the analysis of its constituent parts, the decoding of the human genome by molecular sequencing of DNA, and countless other invaluable insights into the world we live in. It also gave rise to the gradual proliferation of specialized fields of knowledge from a handful of classical disciplines into the countless divisions and sub-disciplines prevalent today. Each

has contributed to the advance of knowledge, but becomes an obstacle to further knowledge when its partial perspective is mistaken for a complete representation of the reality it seeks to know.

“Reductionism arises from one of the most characteristic tendencies of the human mind – its powers of division and exclusive concentration.”

Reductionism is not merely a philosophical outlook. It arises from one of the most characteristic tendencies of the human mind – its powers of division and exclusive concentration. The ordinary thinking mind seeks to know by division. It strives to define unique and mutually exclusive concepts to distinguish and differentiate one thing from another so that they can be precisely defined, compared and contrasted. It has an inherent tendency to atomize reality by division into smaller and smaller parts, to concentrate on each of these parts and regard each part as if it exists as a thing in itself separate from everything else, and to regard each part as a separate whole in itself. Mind perceives form by identifying the boundaries that set it off from its environment. It conceives ideas by assigning exclusive, fixed meanings to words. It tries to clamp everything into rigidly fixed forms and apparently unchanging external factors, such as the ideal conditions of perfect competition on which the economic theory of supply and demand is based. It tries to ignore, dismiss or reject as anomalies all that contradict or are logically incompatible with its conclusions on the premise that the opposite of every apparent truth must be false. If only reality were so simple!

The tendency to divide gives rise to a conception of reality in terms of sets of mutually exclusive polar opposites – true-false, animate-inanimate, conscious-unconscious, progressive-regressive, good-evil, right-wrong. The capacity of the mind for exclusive concentration inevitably leads to the perception of extreme and mutually exclusive contradictions – liberal-conservative, Capitalism-Communism, Darwinian and Lamarckian, Keynesianism-neoliberalism. It gives rise to the logical conclusion that two things cannot occupy the same space at the same time or be in two different places at the same time, that markets should not be regulated because economy and politics are independent fields of activity. Within economics it led to the perception that financial markets should be regarded as separate and independent of the real economy and that markets should be left to function independently, regardless of their impact on society and human welfare.

3. The Great Divorce – Materialism

The problem of knowing is seriously complicated by the fact that we human beings are ourselves a part of the reality we seek to know. Can a part ever know the whole? Can a cell or an organ – even a brain – have the knowledge of the whole body or the whole of life of which the body is a part? Can a mind that consists of mechanical-electrical-chemical events ever know itself and the true nature of consciousness other than that which is founded on electro-chemistry?

Cartesian dualism presented an early solution to this dilemma by applying the divisive capacity of mind to divide reality itself into two neat, mutually-exclusive realms – Mind and Matter. By separating mind and matter, Descartes abolished the holistic view of man as a part

of Nature. He affirmed the view of an inanimate material world inhabited by machine-like forms of life, and fully explicable in terms of mathematical formulae, whereas he regarded the rational human mind as non-material, non-mechanical, and capable of perceiving the mathematical order of a mechanical universe. Newton and Galileo affirmed a dualistic reality consisting of two independent components – a physical reality that could be observed by the senses and a non-material, non-objective reality, responsible for the phenomenon of life, mind and consciousness. They accepted the premise of methodological naturalism that the physical reality was the legitimate field for scientific inquiry, leaving the non-material dimensions to religion and philosophy.

But the tendency of mind for exclusive concentration did not stop with division. It persisted on its course until it affirmed one aspect of reality as the sole reality and interpreted all other aspects in terms of this one. Thus, science soon eclipsed philosophy and religion, proclaiming itself as the sole means for knowledge of reality, as philosophy and religion had each affirmed their exclusive legitimacy during earlier periods. It went still further. Over time, the dramatic achievements of experimental science emboldened some of its proponents to insist that all phenomena could be explained strictly in terms of one side of the dividing line, reducing even mind and psychological experience to purely material terms, and thereby giving rise to the exclusive doctrine of materialism. The tendency toward exclusive concentration led inevitably to the collapse of all reality into a single dimension – the physical. While String Theory has postulated 10 or more dimensions of reality, of which only three are visible, it has no hesitation in eradicating the stark experiential differences between inorganic matter and animate life, subconscious life and conscious mentality.

Methodological naturalism, which focused inquiry on physical phenomenon as that which was most accessible to observation, measurement and rational analysis, gradually gave place to philosophical naturalism, which affirmed that only physical phenomena are real. As understanding of the nature of the physical universe grew, materialism extended the scope of physical reality to include physical energy, forces and the curvature of space as well. Human mental and emotional consciousness were reduced to chemical and electrical events, effectively denying reality to the most cherished of human endowments, conscious experience, rational thought, free will, idealism, love, joy, beauty, truth and spiritual experience. The dichotomy between mind and matter was eliminated by concluding that mind too is nothing but a mechanical device governed by mathematical principles. By logical extension, the nullification of consciousness by reduction to solely material principles leads inevitably to a nullification of the observer, the person, the knower and the knowledge observed. According to this view, the sensation of being a conscious individual reposes on the foundation of chemistry and electricity and is as suspect as any other impression born of the senses without any sure foundation for its existence. Ironically, this view comes to closely resemble the Buddhist conception of the void or the theory of illusionism proclaimed by the 8th century Indian philosopher Shankara.⁴ But whereas Shankara's philosophy affirmed the sole reality of consciousness and denied the reality of the material world, the conclusions of modern science undermine the reality of consciousness, mind, the scientist and of science itself. How can electrical impulses and chemical events know or affirm anything other than themselves? According to this scientific version of illusionism, the dividing mind somehow creates an illusion of a separate 'I' that has experiences 'as if' it were conscious and separate from that experience. This leads ultimately to the conclusion that the consciousness of the scientist, the

act of knowing and the body of scientific knowledge are mere artifacts with no firm ground in reality – for as far as we know, molecules and electrical currents are not conscious – and that science is nothing but a machine observing itself. Conscious decisions, free will and purposeful behavior are an illusion.

4. The Universe as Machine – Mechanism

The abolition of purposeful behavior in living beings naturally led to the third plank of the triad – mechanical necessity – the notion that all processes in nature share the characteristics of the machine, and all effects are the result of prior physical causes. Newton's laws of motion confirmed the view of a mechanistic universe. Kepler's laws of planetary motion, the laws of thermodynamics, the ideal law of gases and Harvey's discovery of the circulation of the blood were other steps in a series of discoveries that promised to fully explicate the mechanical workings of universal Nature. Mechanism is the natural counterpart of a world-view founded on reductionism and materialism. In combination they have led to remarkable advances in physics, chemistry, biology, pharmacology, genetics and industrial technology.

Darwin's theory of natural selection was later interpreted to prove that the proliferation of species could be explained wholly in mechanistic terms. Although Darwin did not postulate the precise mechanism responsible for evolution, in the 20th century Neo-Darwinians affirmed that a purely mechanical interaction of Necessity and Chance – inherited genes combined with random gene mutations mechanically sorted through biological competition – constituted a fully satisfactory mechanical explanation for evolution, without attributing any purposefulness to life or Nature or evolution itself. This mechanistic view conveniently omits dealing with the most important aspect of the theory, the universal drive of living beings for survival, a property unknown to inanimate objects. According to Rupert Sheldrake, Neo-Darwinians insisted that all creativity was in the final analysis a matter of random mutations and the blind forces of natural selection: an interplay of chance and necessity.⁵ In the 1990s, this triad fueled the massive international effort to decode the human genome based on the expectation that doing so would provide the key to unraveling the origin of all human physical and psychological characteristics and to developing cures for a wide spectrum of diseases. So far, these expectations have been largely disappointed.⁶

The mechanistic view of reality also guided development of the social sciences. In economics, a simplistic interpretation of Adam Smith's 'invisible hand' promised to impartially generate maximum benefit for all citizens. The mechanistic view reduced economic behavior to an equilibrium between supply and demand in the marketplace, marginal utility, law of cost, a balancing act between inflation and employment, investment and savings, and other 'natural laws' as the governing principle of all economic phenomenon.⁷ At the micro level, apparently conscious individual choices were subject to the same mechanical Necessity as those governing atoms and molecules. This view was clearly set forth by Carl Menger of the Austrian School in *Principles of Economics* (1871) when he wrote: "Economic theory is related to the practical activities of economizing men in much the same way that chemistry is related to the operations of the practical chemist. Although reference to freedom of the human will may well be legitimate as an objection to the complete predictability of economic activity, it can never have force as a denial of the conformity to definite laws of phenomena that condition the outcome of the economic activity of men and are entirely independent of the human will." If only modern economics had lived up to Menger's claims!

The triad's phenomenal achievements led some to conclude that science was on the verge of an all-encompassing Theory of Everything. The failure of the triad to explain the differences between plants, animals and mentally self-conscious human beings and to achieve advances in the social sciences commensurate with those in the physical sciences was for a period eclipsed by the enormous benefits and pride generated by its achievements.

Science has made strides in overcoming the limitation of the senses by fashioning ever more powerful instruments to extend the reach of human perception into the distant past, the far reaches of the macrocosm and the infinitesimal microcosm. In the final analysis, it is not the limitation of instruments that stands in the way of scientific progress, but rather the barrier posed by the rigid assumptions implicit in this worldview. These assumptions have never been proven and are rarely even debated, but they have served as a formidable barrier to rational consideration of ideas and evidence supporting alternative perspectives. For long, the dogma of the triad prevented us from seeing blatant truths that were right before our eyes all the time. For all our pride in the power of rationality, the normal functioning of mind circles within very narrow orbits of previously established convictions and is designed to reinforce that which we already believe to be true. Mind understands its own analysis.⁸

Mind is also a relentless seeker. It was perhaps inevitable that once the reductionist mindset gained supremacy, it would be compelled to follow the course set by its initial premises to their logical conclusion. Thus, mind's capacity to divide and fragment reality by a power of exclusive concentration has taken us to the borders where the infinitesimal shades off into an apparent nothingness. This pursuit has generated products and processes of unparalleled utility and, in some cases, unparalleled potential for destruction. The further the quest has gone, the more difficult it has become to speak with confidence about the true nature of reality – even of the most commonplace material things. And the pursuit of reductionism in the social and psychological realms has yielded even more nebulous results.

With each further step, our uncertainty increases, to the point where it has become a predominant philosophical underpinning of modern science. Has science really discovered that the ultimate knowledge is that which we cannot know? Or does this uncertainty arise from a limitation imposed by physical nature on the precision of our instruments? Or could it be the result of the limitation self-imposed by our insistence on outmoded conceptions, unproven premises and partial approaches to greater knowledge? The Julian calendar in vogue for fifteen centuries was remarkably accurate considering that it was based on an erroneous premise of a geocentric universe. The small latitude of error it admitted could be attributed to the limitations of our instruments or the inherent uncertainty of Nature. But after the establishment of the heliocentric view, it became clear that the underlying premise of the Julian calendar was fundamentally flawed. The source of the flaw turned out to be mind's excessive reliance on the direct evidence of the senses which mistook the apparent motion of the Sun for a fact. Copernicus exposed and countered this sense impression by the evidence of the analytical thinking mind through the non-material instrumentation of abstract mathematics. Similarly, significant scientific discoveries and new theoretical perspectives in the 20th century have arisen to challenge the triad of the enlightenment with a new conceptual framework predicated on a complementary power of the human mind – its power for inclusive comprehension.

5. Aggregation, Comprehension and Complexity

Mind's capacity for division leads to exclusive concentration. Its complementary capacity to combine smaller wholes into larger aggregates leads to another perspective on reality that is inclusive and comprehensive. Comprehension and concentration are complementary faculties. Concentration is to focus on a common center. It divides the whole into parts and narrows the field of vision to the smallest perceptible details of its component elements, blotting out perception of the interactions and relationships between the parts and the environmental context and interdependencies within which the parts and the wholes exist. Comprehension is to bring together, to unite. Mind's capacity for comprehension works in the opposite fashion. It widens the view from each part or whole to the larger wholes of which they are constituent parts and the environmental context in which they exist.

As a reaction to the inadequacies of the classical triad based on exclusive concentration, during the 20th century an alternative perspective emerged based on the mind's power for inclusive comprehension. While the reductionist approach was to divide and subdivide reality *ad infinitum*, the new approach sought to examine phenomenon in their context and relationship to everything else, to view each thing as an element of a larger whole that exists by virtue of its relationships with other things or with the wholes within which they exist. The holistic perspective can be traced back to Aristotle's dictum that the whole is greater than the sum of its parts. It was the basis for the unifying thought of the German naturalist Alexander von Humboldt in the 18th and 19th centuries. But the change in perspective from the part to the whole, from discrete objects to contextual relationships, from analysis of the parts to synthesis, gained widespread credence in scientific circles only after Heisenberg and Bohr in their Quantum Field Theory described matter in terms of energy fields forming an inseparable web of relationships, rather than small discrete particles.⁹ The new perspective focused attention on patterns, feedback loops, interconnected systems, self-organization and networks of relationships. It eventually gave rise to whole new disciplines based on a contextual mode of thinking – Systems Theory, Cybernetics, Organismic Biology, Ecology, Gestalt Psychology, Complexity Theory, the science of Networks and Chaos Theory – all of them based on the holistic premise that reality is an indivisible whole.



In retrospect, this shift in focus appears obvious, indeed, self-evident. It is reminiscent of the reversible perception test depicting an image that can be viewed either as an old or a young woman, but not both simultaneously. Each living thing exists only in a wider environmental context and its relationship with everything around it governs its functioning. A seed either sprouts, remains dormant or decays depending on the moisture levels and nutrient content of the soil in which it is planted, the ambient temperature, the CO₂ level, the availability of sunlight in the atmosphere and the presence of myriad other organisms that either foster or feed on it.

The development of systems thinking presented a serious challenge to reductionism. It also displaced the simplistic, mechanistic metaphor of the machine with a more complex, sophisticated conception of organization. Physical phenomena came to be viewed in terms of flows of energy, fields of force and self-regulating feedback loops, rather than merely

mechanical actions of one object on another. Biological phenomena came to be viewed as complex self-regulating, self-balancing systems utilizing feedback as an essential mechanism to maintain homeostasis. The discovery of complex patterns concealed in apparently random phenomena such as weather and turbulent flows led to the realization that the appearance of chaos may result from non-linear patterns that actually represent highly complex forms of organization. In genetics, reductionism led to the postulate that everything in biology – and even psychology – may be reduced to genes, because the genome is the only repository of transmissible information.

6. Emerging Challenges to the Triad

After a triumphant beginning in the 1950s, the attempt of molecular biology to reduce the entire functioning of organisms to the molecular level has proven increasingly problematic. Recent findings in biology challenge both the reductionist and mechanistic notions of life.¹⁰ The reduction of Mendelian genes to DNA has been subject to serious challenges. It is now known that the human genome accounts for only about 5% of the DNA.¹¹ A growing body of experimental evidence confirms that genetic activity is powerfully influenced by environmental factors both within and external to the body, giving new meaning to the premise of Lamarck which had been discarded by neo-Darwinists long ago. A new discipline of Systems Biology has emerged, an inter-disciplinary field of study that focuses on complex interactions within biological systems, using a more holistic approach (holism instead of the more traditional reductionism) to biological and biomedical research. During the past decade, this approach has been widely applied in the biosciences in a variety of contexts. One of the objectives is to model and discover emergent properties, properties of cells, tissues and organisms functioning as a system whose theoretical description is only possible using techniques which fall under the remit of Systems Biology. These typically involve metabolic networks or cell signaling networks. One recent expression of it is the formulation of a tissue organization field theory of cancer in place of the notion that cancer is the result of multiple mutations of a single cell.¹²

Systems ecology has emerged as another interdisciplinary field with a holistic approach to the study of ecological systems, especially ecosystems. It is based on the premise that ecosystems are complex systems exhibiting emergent properties. Systems ecology focuses on interactions and transactions within and between biological and ecological systems, and is especially concerned with the way the functioning of ecosystems can be influenced by human interventions.

The phenomenal successes applying the triad perspective in the physical sciences have exerted a powerful influence on the development of the social sciences as well. A systems approach to the social sciences is now addressing some of the inadequacies of reductionism in study of human beings and their interactions. Human beings are social animals. They do not survive, develop, thrive or evolve socially, culturally and psychologically in the absence of community. Society itself is clearly more than the sum of its parts. It is a highly complex multi-level, multi-dimensional web of interconnections encompassing individuals, families, organizations, communities, states and humanity as a whole knit together by myriad physical connections, social institutions, cultural traditions, shared information, values, ideas and ways of thinking. A more holistic perspective has recently arisen in reaction to the fragmentation

of the fields of human life to challenge the notion that economy, politics, society, culture and psychology can be conceived and studied as watertight compartments. It has led to the rise of interdisciplinary and multi-disciplinary forms of research and instruction.

The systems approach also seems to offer some promise of addressing the absence of unifying concepts, principles and theories in the social sciences. While all the physical sciences are based on a consistent framework of laws of Physics and Chemistry, no common basis has emerged linking or unifying the disparate concepts and principles of different fields of social science. Indeed, even within social science disciplines, a severe disconnect exists between different fields, such as the link between micro and macroeconomics or between behavioral, motivational and physiological perspectives in psychology. Systems theory provides a way to view different fields of social activity from a common perspective – to view individuals, activities, pathways, formal and informal connections and organizations as component elements of a highly complex, multi-tiered social network of relationships. Common systems principles such as nodes, connections, feedback loops, homeostatic mechanisms, environmental factors seem equally applicable to the functioning of social, political and economic activities. Experience with development and globalization over the past six decades has been aided by comparative analysis of institutions and social systems within different countries and between the national and international sphere.

7. Breaking the Third Leg

Systems theory has replaced the simple metaphor of the machine as a closed system operating independently of the world around with the more sophisticated concept of physical organization as an open system in relation with its environment. The quest for simple social laws such as the equilibrium between supply and demand has given way to complex mathematical models. In Economics, it has led to the study of markets as complex systems and the search for hidden, non-linear patterns in their apparently chaotic fluctuations, which could be used to anticipate future results. Computer algorithms have come to dominate transactions on financial markets so much that they pose a severe threat to the real economy which they are intended to serve. A mechanistic approach to society – no matter how sophisticated – has proven inadequate to either explain or anticipate human behavior, as illustrated by the sudden collapse of the Berlin Wall, the 2008 financial crisis, Occupy Wall Street, the Arab Spring and countless other events in recent memory. The systems perspective represents a considerable advance over earlier conceptions in social science. But like reductionism, it too has thus far failed to adequately account for the characteristics that distinguish physical, biological and social systems.

The problem of emergent properties had vexed reductionist science from its inception. For though reductionism has proven useful for explaining the underlying physical and chemical principles and structures on which living organisms are based, it can only speculate on the causal factors responsible for the emergence of higher order properties and characteristics. Organic chemistry has deciphered the chemical code of all living tissues, but it is unable to adequately explain the capacity of life for sensation, reproduction or adaptive behavior. Systems theory introduced the concept of emergent properties to describe the capacity of higher order systems to exhibit new properties. But naming a phenomenon and explaining it are two different things. Emergence is a name rather than an explanation.

How does systems theory account for the differences between organizations and organism? It tends to regard organism as a very complex form of organization consisting of many interrelated subsystems aligned with one another. Ironically, the very power of the systems approach has also given a fresh lease of life to the third leg of the triad mechanism. Rather, the greater subtlety and sophistication with which systems theory deals with differences between inorganic and organic forms of organization have given new impetus to efforts to fully account for the properties of living organisms as essentially identical in constitution, though differing in complexity from purely physical systems. As in the past, many scientists who balked at a purely reductionistic and mechanistic approach have been too fascinated by the power of a new perspective to see what it omits. By this means, reductionism has itself been reduced to an error of perception, while complex mechanism is exalted with characteristics which at least superficially resemble intelligence, conscious choice and goal-oriented behavior. Rather than unpacking the factors that distinguish physical, biological and social systems, systems theory has tended to collapse and recompress animate and conscious behavior into physical mechanisms. Thus, materialism has acquired a fresh lease of life and a new incarnation in disguise.

8. Reconciling Contradictions

After centuries of dormancy, the Cartesian problem of consciousness has reappeared in an unexpected and more formidable incarnation and revived long dormant ideas and disputes which materialism had laid to rest or brushed under the carpet centuries earlier. Just when neo-Darwinian theory was thought to have solved the problem of biological creation without the need to postulate an intelligent creator, the problem of consciousness resurfaced in theoretical Physics. By far the most disconcerting and potentially threatening contribution of Quantum Theory relates to the impact of the observer on the behavior of subatomic particles. As the reconceptualization of matter in terms of quantum energy fields deposed reductionism, the impact of consciousness on matter revives age-old questions regarding the nature of mind, which Descartes had divorced from Nature and materialism had reduced to a chemical-electrical process of the brain.

The capacity of mind to formulate resourceful explanations to reconcile the contradictions between theory and experience is not in question. As Sri Aurobindo explains it, "All human thought, all mental man's experience moves between a constant affirmation and negation; there is for his mind no truth of idea, no result of experience that cannot be affirmed, none that cannot be negated.... thinking mind is in its very nature an ignorant dealer in possibilities.... sounding and testing each in turn.... Our nature starts from facts and actualities which it takes for real; it is pushed beyond them into a pursuit of uncertain possibilities and led eventually to question all that it took as real."¹³ In recent times this capacity has been applied to negate the existence of the conscious individual and free will as illusion. The impact of chemistry on human psychology is an established fact. But equally well established is the impact of psychology on biology. Our thoughts powerfully affect the chemistry and physiology of our bodies, as amply demonstrated by mounting evidence of the Placebo Effect. We reduce all thought to a particular coincidence of chemical reactions and dismiss the notion of conscious choice and will entirely. The impact of consciousness on matter and life demands that we seek beyond mere material systems for more adequate explanations.

Mind has a marked tendency to affirm one perspective or truth to the exclusion of others and cling to it as long as possible against assault from all contradictory viewpoints. When finally it relinquishes hold on the old and embraces the new, it has an equally marked tendency to reject what it earlier embraced and exclude all that is inconsistent with the new viewpoint or to maintain old and new in separate watertight compartments that never meet and interact. Thus it arrives at alternative and incompatible perspectives and is unable to reconcile them, as testified by the century old struggle to reconcile Relativity and Quantum theory. Today we see the same tendency permeating the debate throughout all fields of science between simplification by reductionism and complexity. Both have made and continue to make contributions to the growth of knowledge. Neither has any likelihood of achieving completeness. For the conflict itself is an indication that we have not yet arrived at a final, all-embracing perspective in which the apparent opposites can be reconciled.

“All progress in thought seeks a reconciliation between apparently unconnected phenomena.”

All progress in thought seeks a reconciliation between apparently unconnected phenomena. Thus, Newton reconciled the contradictions between motion and rest by demonstrating that the same laws govern celestial motions and phenomena on Earth. Maxwell unified the apparently disparate phenomena of electricity and magnetism as electromagnetism. Einstein unified acceleration and gravity, space and time. Continuing Einstein’s work on unified theory, WAAS Fellow Abdus Salam unified electromagnetic and weak forces. Today, there is an urgent need to reconnect disparate fields of thought in the social sciences – economics, politics, society and psychology. But beyond these, there is a need to reconcile the truths of reductionism and the truths of holism within a wider theory of knowledge.

“Systems theory attempts to embrace the totality of phenomena and study the mutual interactions between its parts, but totality is not reconciliation.”

The inability to resolve the apparently irreconcilable discord between the reductionist and systems perspective suggests we are using two faculties of mind at the same level which are themselves irreconcilable at that level. Mind as we commonly use it seems incapable of concentrating on the details of the part, while simultaneously embracing the wider wholes to which it belongs. Exclusive concentration and all-inclusive concentration appear to be incompatible modes of thought, at least in practice. It is equally unlikely that either the mind’s capacity to divide or its capacity to aggregate will be sufficient to bring about that reconciliation. Reductionism seeks reconciliation by searching for a common denominator, ultimately reducing everything to its infinitesimal component parts, but analysis of the atom and the molecule will never be sufficient to explain the properties of matter, life or mind any more than analysis of the letters on a page can explain the meaning of its text. Systems theory attempts to embrace the totality of phenomena and study the mutual interactions between its parts, but totality is not reconciliation. It embraces all but does not reveal the true nature of their interrelationships or underlying unity. Even at the merest physical level, the phenomenon of non-locality defies both reductionism and holism. The sense of identity, belonging

and bonding we feel as members of a family, community, nation or common humanity cannot be fully known by dissecting our individual behavior or by charting the maze of interactions between us. That which unites us is deeper than the actions which express our interrelationships.

Intuitively many thinkers perceive that something essential is missing from both the reductionist and systems perspectives – something more real and essential than fundamental particles or even the sum of all the parts – something living, vibrant, aspiring, conscious. Perhaps it is beyond the capacity of division and aggregation to know or express it, but it is not beyond our consciousness to experience and know for certain that it is true. When our conceptions fail to fully account for our experience, it is wise to question the sufficiency of our conceptions rather than deny the validity of experience which is a more direct and complete way of knowing. Intuitively we know we are not merely bundle of parts, an assembled mechanism or a complex system, regardless of how particulate, mechanical or systematic some aspects of our functioning may appear. We intuitively perceive that our emotions are far more than mere chemical reactions, our experience more than just complex electrical circuitry, and our thoughts more than mere synaptic events. Our abstract mental rendering of mental, emotional and physical experiences according to limited conceptions falsifies their reality, reducing love to a chemical hormone, joy to an electrical impulse and consciousness to the action of a glorified bio-computer chip.

A holistic, inclusive approach to knowledge has proven so fruitful to new discovery that there is a natural tendency to repeat the error of reductionism in the opposite direction by embracing wholesale a holistic philosophy to the exclusion of other ways of knowing. Both perspectives have been generative of new insights and knowledge. They present a constant tension between the part and the whole, between a mechanistic, reductionist, atomistic perspective and a holistic, organismic, ecological, systemic viewpoint. But when we try to reconcile the truths of both we find they present contradictory and irreconcilable views of reality. Can two diametrically opposite philosophies of knowledge both be valid? If not, are we compelled to choose one over the other? Or is it possible that their truths can be harmonized by a third perspective which not merely accommodates and draws upon both but reconciles their differences? This is precisely the point to which Physics has been brought in its efforts to reconcile Quantum Theory and Relativity Theory from different perspectives, each seeking to affirm the validity of its own premises.

9. Contradictions are Complements

The solution is not to dispense with rationality, but to broaden it; not to reject the insights arising from reductionism and holism, but to go beyond them to something that harmonizes and reconciles. We need a fuller conception. In doing so, what must be avoided is the inevitable tendency to deny reality to what does not match our conceptions, to deny validity to experimental data and personal experience that contradict our limited mental powers of conception, as past generations have denied with sincere conviction so many truths that to us now appear to be commonplace and self-evident. Instead of compressing and collapsing reality to fit within the four walls of narrow, rigid mental definitions and conceptions, we must challenge those conceptions to relinquish their dogmatic assertions and broaden to embrace the greater breadth and complexity of our experience.

But what if no solution exists at that level? What if the problem is not with our theories, but rather with the mental faculty we insist on using to perceive reality? What if the answer lies in discovering and systematically developing higher ways of knowing which have been the source of the greatest discoveries in both science and spirituality? The achievements of both the genius and the seer throughout the ages affirm that there are. If that is the case, then the greatest pursuit of science would not be for a final Theory of Everything, but rather a quest to more fully understand both the powers of mind and the limitations of our mental faculties as we now employ them. Then the ultimate quest of science would be for a truer conception and capacity for knowing.

Is there a mode of consciousness capable of reconciling these contradictory mental powers? Is there another faculty of knowing by which we can better understand our own experiences without giving way to wild speculations or making the error of mistaking sense experience for reality? We need to draw upon another power of mind – its capacity for integration.

Some insight into what might be necessary may derive from a fresh consideration of the human organism that affirms the truths but transcends the constraints imposed by reductionism, materialism, mechanism and even holism. For in human experience we find a perfect integration of multiple viewpoints of reality. We see the contribution of each of the constituent parts – DNA, cellular organelles, organs, glands, chemical compounds and structural components. At the same time we are aware of the essential contribution of systems which consist of varied component parts functioning in harmonious relationship with one another – respiratory, circulatory, digestive, nervous, muscular, lymphatic. The parts and the systems functioning interdependently and neither can be fully understood independent of the other. But neither the sum of the parts by themselves nor the totality of the parts and systems is sufficient to fully represent the complex integration between them. The smallest change in one part or system can have repercussions throughout the whole organism.

This mutual interdependence or integration is a characteristic of living organisms that distinguishes them from mechanical material systems. All depend on the functioning of each. Each depends on the functioning of all the others. Together they exhibit the properties of an All which is more and other than the properties of any and all of them – sensation, metabolism, reproduction, adaptation, growth, development and evolution. These properties are the characteristic attributes of all living organisms. Living organisms are seamlessly integrated wholes that are more than the sum of their parts and their systems and cannot be assembled from their components.

Moreover, in addition to the physical dimension defined by its material component parts and the living dimension represented by its integrated systems, the human organism possesses a third dimension, conscious mentality. Conscious mentality is a characteristic of a living being with the capacity for sensation, perception, emotion, thought, will, decision, discrimination, judgment, ideation, imagination, aspiration and joy – capacities unlike anything exhibited by things and systems. Reductionism relies on the mind's capacity for division to explain consciousness strictly in terms of chemical and electrical events. Systems theory relies on the mind's capacity to view totalities to explain life and consciousness in terms of feedback loops and emergent properties. Neither is adequate to describe or explain more than their rudimentary attributes. But by what capacity of mentality shall we seek to explain

consciousness, which is neither a thing nor a mechanism and which is the basis for human mentality itself? As the properties of physical things are not wholly intelligible by a process of mental division and the properties of living systems are not wholly intelligible by a process of mental aggregation, conscious mentality is not fully explicable by either or both.

The solution must lie in some powers of conscious mentality that transcend the limits of division and aggregation. All ages and all traditions, both scientific and spiritual, refer to the power of insight and intuition, without actually explaining what they are. Great scientists have affirmed these powers as the source of their greatest discoveries without being able to explain what they are or by what process they act. A study of genius suggests that at least some of their characteristics can be reproduced by consciously striving to transcend the limitations of mind's capacity for exclusive concentration on the parts and inclusive embracing of the totality. For want of clearer terms, this higher mental faculty may be denoted as the capacity to reconcile contradictions, synthesize apparently disparate or unconnected phenomena and integrate different parts, levels, dimensions and aspects of reality to perceive it as a complex living whole. As Niels Bohr expressed it, "It is the hallmark of any deep truth that its negation is also a deep truth."¹⁴ Or as Sri Aurobindo explained it, what appear to a limited perspective as contradictions reveal to a wider vision as complementary aspects of reality.¹⁵

10. Toward a Science of Society

The need for developing higher ways of knowing is clearly illustrated in the field of social science where the failure of reductionism and the limitations of systems theory are most apparent. It is highly significant that after nearly two centuries of development, human endeavor has arrived at a multitude of autonomous social science disciplines but nothing that may be termed a true science of society. It is as if political science, economics, anthropology, sociology, psychology and, one might add, business management were each studying a separate aspect of reality independent of one another. In fact there is no such thing as the political or economic individual or the political or economic part of society. Society is an integral reality. All aspects of human activity exist or function in relation to every other. There are individual human beings and the societies which they constitute. As every perceptive historian knows, it is impossible to study political institutions independent from economic institutions and productive systems, social values and customs, cultural norms and patterns of behavior, psychological aspirations and attitudes of the people who participate in those political institutions. The same is equally true of the other social sciences. Economy is inseparable from policy, custom, values and aspirations. Law, governance, business, communication, transportation, education and other activities are inseparable from one another.

Yet in spite of this obvious fact, the social sciences continue to function as if they were largely independent from one another compensated only by a modicum of inter-disciplinarity. This separation is justified as a practical necessity by the extreme difficulty of studying society as a living, conscious whole. If expediency were the sole or real justification, one would expect that each of the social sciences bases itself on the same common principles of a science of society and then applies those principles to one field of human activity or the other. In fact there is little evidence of anything resembling a science of society or a consensus regarding the basic principles governing all human activity. Although growth, development

and evolution are processes or attributes of all fields of social activity, there is no consensus regarding the principles that govern these processes.

Systems theory comes closest to attempting a unification of the social sciences by examining the common properties of social systems in different fields of social activity. But its attempt to explain complex social systems in purely mechanical terms is far from adequate. Social systems are alive and they are conscious. They not only function repetitively through self-regulation; they continuously innovate, develop and evolve. Moreover, systems theory ignores the most salient and striking feature of human social systems, the role of the conscious individual. For society is not merely an assembly of parts linked together by systems. It is a grouping of unique individuals with some common characteristics but also with the capacity for unique individual choice. History confirms that the conscious choices of a single person can alter the whole society or change the whole world, as Alexander, Napoleon, Lincoln, Gandhi, Churchill, Gorbachev, Copernicus, Newton, Darwin, Einstein, Edison, Tesla, Ford, Jobs, da Vinci, Shakespeare and countless others have changed it in the past by the power of an idea, an aspiration or an action. The conscious individual remains an inexplicable mystery to both physical and social science. The individual is not merely a complex impersonal system, and therefore unpredictable. The emergence of conscious personality out of impersonal mechanism defies the premises of both reductionism and holism. There may be lower level phenomena that imitate it in one respect or another, but none even approximately accounts for it. To state that conscious life is an emergent property of inanimate matter or an example of the self-organizing properties of complex systems is merely a description that explains nothing.

The relationship between the individual and society defies explanation solely in terms of division and aggregation, reductionism and holism. The individual and the society form inseparable, interrelated aspects of a single whole. The individual draws upon the society as the source of knowledge, ideas, values, attitudes, feelings, skills, habits, customs and beliefs and combines them in unique ways to constitute and develop its own attributes. So too, the society draws upon its individual members to make new discoveries, formulate original perceptions, affirm new and higher values, aspire for higher goals, evolve new skills, invent new technologies and innovate new and more effective forms of social organization. Neither can be understood separately from the other. Neither exists without the other. Both form aspects of an integrated whole and can only be effectively understood by approaching them with a faculty capable of insight into their individual uniqueness, common attributes, and more essential unity with one another. *Knowledge of the parts is true within limits, as is knowledge of the whole, but neither is complete without knowledge of the essence which integrates them. Consciousness is that essence.*

The introduction of conscious intention poses monumental consequences. While the determinates of results in the physical sciences always move from the past to the future, the presence of consciousness introduces a radically new factor. It makes possible the introduction of determinates driven by anticipation of future possibilities. According to Newton's First Law of Motion, inanimate objects remain at constant velocity unless acted upon by an external force directed at it some time in the past; whereas conscious beings can be set in motion by internal forces in pursuit of a future goal. More than a half century ago former World Academy President Harlan Cleveland recognized the profound significance of this

truth when he formulated the phrase 'revolution of rising expectations' to describe the influence of the future on the rapid development of countries in the Far East. Consciousness broadens the time frame to encompass the force of the future on the present and the past. As a moment's reflection will make self-evident, our ever-changing perceptions regarding the future account for much of the uncertainty associated with human behavior. In recognition of this fact, Roberto Poli argues convincingly that "the future can be used to reshape the human and social sciences."¹⁶ A true science of society must necessarily take into account the powerful influence of aspiration and anticipation on human affairs.

"The first necessity is to recognize that the limitations of present knowledge are the result of the limitations of the mental faculties we employ and that the solution lies not in endless, repetitive exercise of those faculties, but rather in efforts to transcend them by developing more powerful ways of knowing."

The founding of a real science of society would have to be based on knowledge of this integral relationship between the individual and the collective, between past consequences and future aspirations, between material substance, living organism and conscious individuality. It would also have to be founded on the common processes that govern survival, growth, development and evolution in all spheres of social existence. While its expressions vary, all social activity is based on the release of human energy which is directed to become purposeful force, organized into productive power and expressed through skilled action to achieve results. The processes governing the release, direction, organization and skilled expression of those energies are common to all fields of activity.¹⁷

The founding of a unified science of society depends on the development of higher ways of knowing, which great minds of the past have achieved in moments of inspiration. But there is no reason to think that this capacity must remain an attribute of rare genius. A careful study of the mental processes of the exceptional may reveal capacities latent and capable of development in all of us.¹⁸ There was a time not many centuries ago when even the capacity to read and write was taken as a sign of superior intelligence. Those with the capacity to recite classical texts have been lauded for their genius. Many scientists of the past are revered for having exercised a capacity for careful classification and analysis which is commonplace today. Complex systems-thinking is far more prevalent than it was a few decades ago. Therefore, there is no reason to conclude that capacities for synthesis and integration are beyond our common reach.

The first necessity is to recognize that the limitations of present knowledge are the result of the limitations of the mental faculties we employ and that the solution lies not in endless, repetitive exercise of those faculties, but rather in efforts to transcend them by developing more powerful ways of knowing. Division deals with complexity by searching for irreducible, independent, individual elements and classifying them according to their similarities and differences, while disregarding their relationships and interactions. Aggregation combines and coordinates myriad parts in search of the greater whole to which all parts belong and traces

the observable common pathways and material processes by which they relate with one another, while ignoring the living and conscious dimensions that are unique, unifying characteristic of the whole, or mistaking them for mechanical processes in the material dimension. Integration seeks the unifying principles and essence by which the individual differences and aggregate relationships of the totality are organically united as expressions of an indivisible living organism. Integration embraces all three dimensions – individuality, commonality and essential unity.¹⁹ Unification of the social sciences involves recognizing that both the aggregate society and the unique individuals of which it is composed are constituents of a single, organic, living, conscious, integral reality that grows, develops and evolves in all its aspects, fields, activities, and dimensions based on common principles and processes.

11. Necessity, Uncertainty & Infinity

Humanity has made remarkable progress in its quest for knowledge and the application of that knowledge for its own advancement. By knowledge we mean knowledge of existence. Such knowledge, in the measure it is comprehensive and complete, must necessarily bring with it the capacity for application to fulfill the aspirations of humanity, including its quest for peace, security, prosperity, welfare and well-being. The progress we have made and the problems we currently face reflect the extent and limits to current knowledge.

The evolution of science and mentality has resulted in a progressive revelation of phenomena once regarded as inexplicable mysteries of Nature. Reductionism by mind's power of division has delved into the nature of the infinitesimal particles, atoms, elements, molecules, cells and myriad living beings that constitute the components of life in the universe. The holistic vision made possible by mind's power for aggregation and inclusiveness has revealed the complex interactions and relationships between these components that characterize the nature of physical, biological and social systems.

Yet each new discovery in knowledge has cast a new shadow of doubt. More than a century after the formulation of the standard model in Physics, our understanding of the true nature of material energy and substance seems less certain than ever before. More than 150 years after Darwin's *Origin of Species* the precise role and interaction between Nature and Nurture, heredity and environment are less clear than it was a century ago. The very process of our knowing seems to lead to a greater awareness of our ignorance. The successful quest of reductionism to discover immutable laws of Nature has brought us to the boundaries where necessity and certainty shade off into uncertainty and chaos. Indeed, Chaos theory urges us to accept with a sense of resignation that uncertainty is an essential property of reality and an ineluctable characteristic of all knowledge. Mind's quest for ultimate knowledge leads to the conclusion that perpetual ignorance is the only certainty. Uncertainty is the ultimate truth.

But what, after all, is uncertainty if not the flip side of infinity. The doctrine of uncertainty which compels us to accept that nothing can be known for sure simultaneously invites us to accept that anything is possible. On the other side of uncertainty lies "the unstructured potential from which all social creativity continuously throws up new opportunities."²⁰ Looking back on the advances of human civilization over the past few millennia, we are struck not so much by the uncertainty of our historic advance as by the inconceivable creativity, inventiveness and unfolding of previously unimagined possibilities. Life in the Middle Ages was a comparatively uncreative period in which all essential truths were thought to be known but

nothing much changed, except by infinitesimal incremental steps. Life today is a period of unparalleled creativity and inventiveness where the only thing we can be sure of is that things will be different tomorrow and that the pace of change will continue to accelerate. Although we may disparage the tendency toward sameness associated with globalization, looking back on the multiplication of people, languages, cultures, religions, nations, institutions, organizations, technologies, ideas, concepts, fields of study and ways of life that constitute our present humanity, one of the most striking facts is the seemingly unlimited diversity that has emerged from our common origin as a species.

Where does that diversity come from? Where is it headed? We are entering a period of greater diversity than ever before in human history. The movement of diversification is now shifting from the level of collective to the level of the individual. No longer are we merely inventing distinct and distinguishing social forms. We are now fostering as never before the emergence and development of individuals with their own unique, individualized characteristics, as if the unseen goal were for humanity to manifest infinite variability in the midst of unifying commonality. The spread of democratic freedom, education, access to information, human rights and tolerance for differences is unprecedented and rapidly increasing.

It seems natural that a world of ever increasing diversity would become less and less intelligible according to an approach to knowledge predicated on the fixity, certainty and predictability of nature. It is equally understandable that a world of ever increasing complexity should appear less and less certain to an approach to knowledge derived from a charting of the relationships and interactions between an ever expanding network of nodes. From one perspective, the Internet has become the symbol of the increasing uncertainty bordering on chaos. From another perspective, the Internet has become a symbol of the unlimited aspiration for creativity, inventiveness and initiative that society has made possible by unleashing the emergent power of individuality.

Uncertainty and Infinity are complementary aspects of reality. The problems humanity suffers from today are problems of surfeit, not insufficiency. We possess the knowledge, capacity and resources to meet the needs and fulfill the aspirations of everyone. But we are imprisoned by outmoded concepts based on limited ways of knowing. We still believe in the economics of scarcity and competition, politics based on balance of power, the sociology of conformity, the value of money and technology. We still ignore the inalienable rights, ultimate value and unlimited creative potential of being human. A new way of knowing is urgently needed to convert the challenges that confine and threaten us into opportunities for unlimited development. The solution for every problem lies in new ways of knowing.

The old school of scientific thought regarded infinity as a philosophical or theoretical concept which could never actually exist. Humanity's future affirms *infinity* as a practical concept striving ever more intensely and eagerly to express itself. To comprehend the future toward which we are moving, we need to complement mind's powers for division and aggregation with other powers capable of reconciling contradictions, integrating the physical, social, psychological and spiritual dimensions of reality, comprehending and perceiving the practical evolution of the Infinite.

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Notes

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Hubris Versus Wisdom

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Abstract

The world has shed over 50,000 nuclear weapons since the mid-1980s, but some 17,000 nuclear weapons still remain, primarily in the arsenals of the United States and Russia. This is far more than a sufficient number of these weapons of mass annihilation to end civilization and cause the extinction of most forms of complex life on the planet. This article explores the tension between hubris and wisdom in relation to nuclear weapons and the human future. Hubris says that these terrible weapons are subject to human control, while wisdom says that humans are fallible creatures, subject to error, miscalculation and irrationality. Examples of wisdom are provided in the form of perspectives of three leading 20th century thinkers: Albert Camus, Mohandas Gandhi and Albert Einstein. The article concludes that the Nuclear Age demands that humanity conquer hubris with wisdom and achieve Nuclear Zero, the only acceptable number of nuclear weapons to assure the future of humanity and other forms of complex life.

The steadfast commitment of the people of Nagasaki and Hiroshima to nuclear weapons abolition for nearly seven decades is both admirable and honorable. Along with many millions of other thinking and caring people throughout the world, I share with you the hope and goal that Nagasaki will remain the last place on Earth where nuclear weapons are ever used in warfare.

It is evident that there is only one way to assure this goal, and that is to abolish nuclear weapons. To do so will require leadership and a massive demand from people throughout the world. As one who has worked toward this goal for more than four decades, I know that this is an extremely difficult challenge, but I also know that we are making progress.

In 1986, there were over 70,000 nuclear weapons in the world. Today there are just over 17,000. It is progress that the world has shed some 53,000 nuclear weapons in roughly the past quarter century, but we still have far too many. To assure that there are no more Hiroshimas or Nagasakis will require achieving a world with Zero nuclear weapons.

1. Hubris Versus Wisdom

In the Nuclear Age, humankind must not be passive in the face of the threat posed by nuclear weapons. The future of humanity and all life depends upon the outcome of the ongoing struggle between hubris and wisdom.

Hubris is an ancient Greek word meaning extreme arrogance. Wisdom is cautionary good sense.

Hubris is at the heart of Greek tragedy – the arrogant belief that one's power is unassailable. Wisdom counsels that no human power is impregnable.

Hubris says some countries can hold onto nuclear weapons and rely upon them for deterrence. Wisdom says these weapons must be eliminated before they eliminate us.

Hubris says these terrible weapons are subject to human control. Wisdom says that humans are fallible creatures, subject to error.

Hubris repeats that we can control our most dangerous technologies. Wisdom says look at what happened at Chernobyl and Fukushima.

Hubris says the spread of nuclear weapons can be contained. Wisdom says that the only sure way to prevent the spread or use of nuclear weapons is to abolish those that exist.

Hubris says that political leaders will always be rational and avoid the use of nuclear weapons. Wisdom observes that all humans, including political leaders, behave irrationally at times under some circumstances.

Hubris says we can play Russian roulette with the human future. Wisdom says we have a responsibility to assure there is a human future.

Hubris says that we can control nuclear fire. Wisdom says nuclear weapons will spark wildfires of human suffering and must be eradicated forever from the planet.

2. The Necessity of Wisdom

In the Nuclear Age, wisdom is the best antidote to hubris. I want to go back in time to the horrific opening of the Nuclear Age and explore the wisdom of three men who understood clearly that the creation and use of atomic bombs changed the world. These men were Albert Camus, Mohandas Gandhi and Albert Einstein. Their responses to the use of atomic weapons were very different from that of then-President of the United States, Harry Truman, who, when he heard of the bombing of Hiroshima, is reported to have said, "This is the greatest thing in history." He also thanked God that the bomb had come to the United States and not to its enemies.

Albert Camus was a great French novelist and existentialist who, during World War II, edited the underground French Resistance newspaper, *Combat*. Twelve years after the war, in 1957, he would receive the Nobel Prize for Literature. After learning of the bombing of Hiroshima, even before the second bomb had been dropped on Nagasaki, he wrote:

"Our technical civilization has just reached its greatest level of savagery. We will have to choose, in the more or less near future, between collective suicide and the intelligent use of our scientific conquests. Before the terrifying prospects now available to humanity, we see even more clearly that peace is the only battle worth waging. This is no longer a prayer but a demand to be made by all peoples to their governments – a demand to choose definitively between hell and reason."

Camus recognized instantly that, after the atomic bomb was created and used, peace needed to be elevated to the top of our hierarchy of values and goals. It needed to be pursued actively, that is *waged*, with the same strategic thinking, discipline, commitment and courage

as for waging war. For Camus, the new circumstance of nuclear weapons in the world required *the people to wage peace and to lead their leaders*.

Gandhi was the great proponent of *satyagraha* (truth-force) and non-violence. He was leading India to independence from the British when the atomic bombs fell on Hiroshima and Nagasaki. Gandhi recalled his reaction to the bombs: "I did not move a muscle when I first heard that the atom bomb had wiped out Hiroshima. On the contrary, I said to myself, 'Unless now the world adopts nonviolence, it will spell certain suicide for humanity.' Non-violence is the only thing the atom bomb cannot destroy." For Gandhi, *the violence of the atomic bomb could only be overcome by the nonviolence of humanity*.

Albert Einstein, the great scientist and humanitarian, wrote, "The unleashed power of the atom has changed everything save our modes of thinking and thus we drift toward unparalleled catastrophe."

Einstein saw that the old ways of thinking were a trap and that people must learn to think in new ways. I believe the most important new ways of thinking that are needed are species identification and solidarity, that is, we must think like members of one race, the human race. In doing so, we will learn to settle our differences peacefully and not through violence, and we will build institutions, such as the United Nations, that will support these ways of thinking. For Einstein, the critical factor brought about by atomic weaponry was *the need for new modes of thinking if humankind is to avert "unparalleled catastrophe."*

Three great men: three powerful expressions of wisdom.

3. Ending the Nuclear Threat

The only number of nuclear weapons that makes sense is Zero and that must be our goal: a world with Zero nuclear weapons. This world is only as far away as our imaginations, our determination and our perseverance. To achieve Nuclear Zero, we must wage peace, take nonviolent actions, and change our modes of thinking to identify as members of the human species. The Nuclear Age demands that we conquer hubris with wisdom.

We must never give up on seeking the goal of a world free of nuclear weapons. We can follow wisdom and live together as humans, seeking solutions to our common problems; or we can follow the path of hubris and perish together stuck in our apathy, our ignorance and our national allegiances.

The most important next step on the journey to a peaceful and non-killing world is ending the nuclear weapons era. This can be accomplished by the negotiation of a Nuclear Weapons Convention for the phased, verifiable, irreversible and transparent elimination of nuclear weapons. Progress is being made toward this goal, but it seems unbearably slow.

Civil society and non-nuclear weapon states must bring more pressure to bear upon the existing nuclear weapon states to negotiate the elimination of their nuclear arsenals. I would also encourage countries to begin negotiations, with or without the nuclear weapons states, for a legal ban on the manufacture, possession, use or threat of use of nuclear weapons. The process must begin and it must be approached with a sense of urgency.

Having identified the problem – that nuclear weapons endanger the human species and much of complex life – we should move rapidly toward eliminating the threat. In doing so, we will free up scientific and financial resources to deal with other pressing global threats, including climate change, development of renewable energy resources, pollution of the oceans and atmosphere, scarcity of potable water, food insecurity and loss of forests, biodiversity and arable land. For the future of humanity, we must also move forward to eliminate war as a human institution.

“For the future of humanity, we must also move forward to eliminate war as a human institution.”

4. A Few Simple Truths

I will end with a short poem that I wrote earlier this year. It is titled “A Few Simple Truths.”

A FEW SIMPLE TRUTHS

*Life is the universe’s most precious creation.
There is only one place we know of where life exists.
Children, all children, deserve a full and fair chance.
The bomb threatens all life.
War is legitimized murder with collateral damage.
Construction requires more than a hammer.
The rising of the oceans cannot be contained by money.
Love is the only currency that truly matters.
One true human brings beauty to the earth.*

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Being in Superposition: Migrant Women, Modern Subjectivity, and the New Collectivity

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As soon as there is the One, there is murder, wounding, traumatism. (. . .) Self-determination as violence. – Derrida¹

In fact, it might be that what is happening to us is just another sort of “Copernican revolution” (. . .) of “social Being” (. . .). – Jean-Luc Nancy²

Abstract

Granted that one of the key features of our times is global migratory movement, this paper examines how these contemporary trends and developments affect, inform, and reconfigure modern subjectivity, which, in turn, constitutes one's individuality and identity as socio-culturally and econo-politically recognizable. More specifically, I trace and articulate the shift in and evolution of modern subjectivity through the emergence of migrant women on the global scene, whose existence among different geo-social locales and value systems I name here as being in superposition – synchronously multiple placedness in the world. Subjectivity here refers to subjective experiences and subjective consciousness as resources for individuality formation and formulation – the conception of an individual as she (re)presents herself and appears in the world. Furthermore, subjectivity refers to a subject as a being called to act(ion) as well as to a way of relating to others. Through its emphasis on migrant women's manifold realities, superposition also becomes a different way of both historicizing and envisioning the self and community. Searching not only for an alternative figuration but also for a new (con)figuration of such envisioning, superposition as a more comprehensive model is recognized, first, as the emerging property of individuality grounded in the felt history of women migrants; second, as a more comprehensive conceptual plane for understanding poetico-politics of modern subjectivity; and, third, as a set of strategies for and means of engaging being in superposition for more inclusive aesthetico-political representation and wider social equity in an empathic community.

1. Mythical Foreigners: Female Exile and the Foundational Disobedience

In her book *Strangers to Ourselves*, a poignant study of foreignness, Julia Kristeva traces the literary history of migrants and points out incisively: “It is noteworthy that the first foreigners to emerge at the dawn of our civilization are foreign women – the Danaïdes.”³ In this foundational myth of Argos, the fifty daughters of Danaus were ordered to marry the fifty sons of his brother Aegyptus. In the exilic story of these itinerant women, it is crucial to point

out that not only were the Danaïdes fleeing their native land but, particularly, the laws of that land and the enforced marriages. Their defiance of such a violent enforcement prompts their flight. Beyond Greek antiquity, we can further trace our civilization in the originary expulsion and lapse of the Judeo-Christian tradition, within which too *the mythical exile as well as the notion of otherness are found in and founded on the female disobedience*. The notion of disobedience is invoked here resonantly with Henry David Thoreau's understanding that it is, in fact, one's higher duty to be disobedient to an unjust cause and unjust government.⁴ Human condition and human history, as we know them, begin with the expulsion from Eden, for which Lilith and Eve were not given the credit as foundational mothers but were expelled as monstrous begetters of human suffering. Manifold women's exile starts from their initial, fundamental position which puts them outside the border of symbolic language which organizes social institutions and laws, governs the production of socio-cultural meaning, and renders women muted historical subjects.

While neglected and under-represented both as a mythical and a historical subject, migrant women have become the decisive markers of our contemporary times. In these times of dramatically increased international mobility and migrations, we are witnessing an unprecedented number of women on the move. The mythical reference to women as figures of socio-cultural otherness and to migrant women as unruly foreigners who unsettle multiple socio-cultural borders thus sets the historical stage for the discussion of women's migrations which tend to be enforced, violent, and driven by socio-economic necessities even today.

2. Women in Modern Migrations

Women are experiencing drastically greater possibilities for voluntary movement as well as a dire likelihood of enforced displacements. Their migrations are happening within the context of global market economy whose means for the movement of the people and capital may be highly advanced but its labor division and profit sharing run along well-entrenched lines of racial/ethnic/class/gender hierarchies. In their introduction to the collection *The Gender of Globalization*, Nandini Gunewardena and Ann Kingsolver expound on the inequities generated by neoliberal globalization and "feminization of poverty." Highlighting the observation that "current globalization builds on patterns created by centuries of colonialism and imperialism interacting with local systems of domination," they examine "how local and global constructions of gender are employed in the operations of transnational capital to exacerbate women's economic and social vulnerabilities."* Furthermore, the multi-media digital technologies are bringing greater number of people together while increasingly keeping people confined to virtuality. Many of these technological means, however, are enabling migrants to keep closer ties to their originary geo-cultural locales than ever before.

* Gunewardena, Nadine and Ann Kingsolver. Eds. *The Gender of Globalization: Women Navigating Cultural and Economic Marginalities* (Santa Fe: School for Advanced Research Press, 2007), 19, Foreword xi, 3 respectively. In light of what Gunewardena and Kingsolver recognize as "the multiple and overlapping systems of subordination and exploitation that have emerged or been reified in globalized contexts, especially in the global South" (8-9), see United Nations' 2006 publication *World Survey on the Role of Women in Development 2004: Women and International Migration*. Increased women's vulnerabilities on the global scale are also discussed most recently at the 2013 United Nations Women 68th General Assembly and its General Debate on the state of women globally and in particular in relation to the UN Millennium Development Goals. See "High-Level Dialogue on International Migration and Development: 'Making Migration Work'" of the United Nations General Assembly at <http://www.un.org/esa/population/meetings/HLD2013/main-hld2013.html?main> and "Toward Safer Work and Migration for Women" of UN Women – United Nations Entity for Gender Equality and the Empowerment of Women at <http://www.unwomen.org/en/news/stories/2013/10/report-on-women-migrants>. For an analytical study of the intersecting issues of gender, international migration and economic development in the contemporary world, see also the 2007 World Bank Research Program on International Migration and Development and its publication *The International Migration of Women* edited by Maurice Schiff and others.

I use the term “migrant” not only to cover a broader spectrum of migrant conditions such as exile, dislocation, and immigration, but also to indicate a change in the contemporary demographic movements which is marked by an overall greater mobility and greater socio-cultural and economic capacity of people to move repeatedly; to be more mobile and less settled. The term “immigrant” seems to connote a singular act of moving to a new settlement and, consequently, focusing on the processes and problematics of adjustment and assimilation; while “migrant” carries with it a sense of restlessness. Additionally, I want to distinguish a migrant’s conditions as those of somebody who experiences more dramatic socio-cultural changes such as new locations and new languages, and in that sense I want to mark a greater difference between migrants and established diasporas.

3. Being in Superposition: Multiple Placedness in the World

Granted that one of the key features of our times is global migratory movement, this paper examines how these contemporary trends and developments affect, inform, and reconfigure modern subjectivity, which, in turn, constitutes one’s individuality and identity as socio-culturally and econo-politically recognizable. More specifically, I trace and articulate the shift in and evolution of modern subjectivity through the emergence of migrant women on the global scene, whose existence among different geo-social locales and value systems I name here as being in superposition – synchronously multiple placedness in the world. Subjectivity here refers to subjective experiences and subjective consciousness as resources for individuality formation and formulation – the conception of an individual as she (re)presents herself and appears in the world. Furthermore, subjectivity refers to a subject as a being called to act(ion) as well as to a way of relating to others.

As I explore the properties of the smallest scale social entity and a mobile physical system of a migrant, I turn to the language of quantum mechanics and theoretical physics for the term superposition for its greater conceptual capacity to elucidate the possibilities of multiple positionality.* What I find conceptually productive in the term superposition is the notion that a physical system such as an electron exists partly in all its particular, theoretically possible states or configuration of its properties simultaneously; but, when measured, it gives a result corresponding to only one of the possible configurations, thus the notion of the observer not only as participant but also as a reductive force. Similarly, a migrant’s simultaneous existence among multiple social systems and multiple loci of her consciousness is reduced by traditional categories of national, political, and other forms of assumed identifications and

* For a detailed record of the influence of physics concepts on literature, see H. T. Hamann et al. Eds., *Categories – On the Beauty of Physics: Essential Physics Concepts and Their Companions in Art and Literature* (New York: Vernacular Press, 2005). Connections between our historical and imaginative representations of the self and the world and our scientific discoveries are evoked from the premise that the study of physics, whose range of inquiry spans from the invisible quantum domain to the questions of multiple universes, has to be intrinsically connected, relatable, and relevant to the study of human imaginative ranges, fictional worlds and intellectual realms. Rutherford’s splitting of the atom correlated with the splitting of the notion of the unified self, which found, in turn, its representation in the fragmented narrative forms and Virginia Woolf’s preoccupation with the atom. No realization about our place in the world and universe, both in terms of being subjects of observations as well as observers, can exist in isolation without affecting and interfering with other inquiries. Furthermore, that which is known cannot be unknown; that which is discovered, reached, and proposed as information and knowledge cannot be taken back – it enters the collective circulation of ideas and beliefs and can only be incorporated further, modified, debunked, expanded but not erased. Interdisciplinary influences are also not unidirectional – fiction and science have been mutually informative and complementary. When Brian Greene discusses theories of multiverses, he reaches out to the language of the arts and humanities for explanations of the realms which can only be relegated to the imaginative conceptions – physics as a discipline itself experienced the displacement in terms of those conceptions into the language of mathematics. John Archibald Wheeler’s lectures are known for his extensive quoting of poets and writers. In his *The Quark and the Jaguar* (New York: St. Martin’s Griffin, 1995), Murray Gell-Mann, Nobel laureate for physics and an avid linguist and connoisseur of literature who proposed the quark model and coined the term, discusses the connections he made across physics and literature and the etymology of “quark,” the elemental particle, derived from James Joyce’s novel *Finnegan’s Wake*. Moreover, two of the several types or “flavors” of quarks now known as “bottom and top” were originally called “beauty and truth” of the sub-nuclear world, which is characterized by graceful symmetries that would be to John Keats’s delight.

allegiances. This discussion situates the modern subject along the intersecting lines of race/ethnicity/class/gender and in relationship to, rather away from, the universalized, disembodied, rationalized, and lionized individuality of traditional conceptions.

Working and developing away from such traditional conceptions, sciences and arts of our times and the burgeoning of interdisciplinary studies have been informing and registering a dramatic shift in our general worldview. I align here my understanding of the migrant subject and the migrant modes of existence with Alfred North Whitehead's conceptions of process philosophy, embodied mind, and occasions of experience. Process philosophy identifies metaphysical reality with change and dynamism. It has its counterpart envisioning in the sphere of physics through Ilya Prigogine's distinction between physics of being and physics of becoming and the understanding of reality as experiential, as a process of continual (re) invention, rather than given material.* Taking off from such philosophico-scientific perspectives, the emerging modern worldview is characterized by the notions of interconnectedness, participatory universe, transformational processes and being as becoming.

4. Individualism and the Diversified Self

Expansion of our consciousness thus changes the conditions for individuation. Consequently, individualism as the key feature of our times needs to be rethought and reconfigured. In her meditation on the possibility of modern human bonding entitled *Flesh of My Flesh*, Kaja Silverman points out that insistence on uniqueness in narrowly defined individualism leads to the point at which we as unique individuals are bound to be rivals if not enemies.⁵ I ask then: How can we conceive of individualism within and along the lines of interconnectedness? How can we protect women's emerging and precarious autonomy and, thus, individual autonomy at large as we focus on creating the new global community?

Regarding the figure of a foreigner, Julia Kristeva asserts: "Whether a constraint or a choice, a psychological evolution or a political fate, this position as different being might appear to be the goal of human autonomy (. . .) and thus a major illustration of the most intrinsic, most essential part of civilization."⁶ In that sense, women migrants are the socio-cultural figures of utter difference, whose existence can be viewed as being in superposition. *Superposition is applied here for a conceptualization of the self as an evolving set of positions in relations. Dynamic, relational, multipositional and diversified individuality* thusly conceived keeps a sense of unique positional configuration, always escaping one-dimensional categorizations, while simultaneously allowing for multitude of affinities, intersecting, and solidarity.

As I explore the properties of an individual as the smallest social system, the microcosm of an individual migrant, I want to emphasize that superposition accounts not only for the complexity of the subject matter but also for the precarious roles of the observer. To measure the given subject's many discrete aspects requires the subtle skill of discretion. On the one hand, we need to recognize that we cannot simultaneously measure the subject's position (identity) and velocity (transformation) and that any definition we offer would have to have the capacity to account for the subject's continuous change and transformation. On the other

* In his seminal *Process and Reality* (Gifford Lectures Delivered in the University of Edinburgh during the Session 1927-28, 2nd Ed. Free Press, 1979), Whitehead counters reductive materialism and Cartesian dualism by showing reality to be a relational process. See Prigogine's *From Being to Becoming: Time and Complexity in the Physical Sciences* (New York: W H Freeman & Co., 1981).

hand, we need to acknowledge that we can observe the subject only by interacting and interfering with it. *As gendered and mobile self-conscious spaces, migrant women's existences, termed here as metalives, highlight multiple loci of consciousness and modes of identifications and emphasize the zones of their negotiations as existential, epistemological, and aesthetic distances of self-reflection.*

5. Gendered Psychogeography and the Ethics of Home

Migration alters and reconfigures one's psycho-geographic orientations. Once the borders are crossed, the bigger the world gets, the more concentrated the one is on the self, which is now experienced as an expansion within which we recognize home differently and integrate aspects of the new space as somehow recognizable. It is erroneous to identify home with stasis, clear-cut boundaries and identity, and fixity. It is delusive to associate home with familiarity, safety, and comfort – that which is, in fact, projected as the feeling of “being-at-home.” I invoke here the life and work of Theodor Adorno, quoting his grave irony: “it is part of morality not to be at home in one's home.”⁷ What does this imperative statement mean for women who have been exiled to private spaces and systematically confined to home, systematically contained and trained to contain themselves in the domestic domain that is to stay and stay put? How can women act upon Adorno's instructive proclamation with conviction and effectiveness? If we recall Kristeva's unruly Danaïdes, we realize that for a woman to follow Adorno's recommendation it would require an act of radical disobedience. As such, their act would not only be a matter of individual emancipation but a form of civil service that alters all-encompassing social regulations.

To get to the multiple planes of diversification and dynamization of personal space and subjectivity, it is necessary to unhinge critically the conventional bind between women and body (identification with the natural, irrational, and emotional) as well as women and space (identification with the static and the land – motherland, Mother Nature etc.). Womanhood as gendered self-space is magnified with hypersensitivity in the migrant situations. By tracing the meridians of migrant female psychogeographies,^{*} I want to point out that the most immediate impact of migration is, however, examined through the body. Experiences of different orientations and surroundings, climate, food, spatial/linguistic/legal regulations throw the body as the moving and transforming habitat into focus. The necessity to situate the subject makes the subject necessarily spatially constructed through, what Avtar Brah called, the “lived experience of locality.”⁸ The questions of the history, locale, and national allegiance come to the forefront at which all the former demarcations and orientations are destabilized, questioned, and problematized. The gendered position further complicates such orientations, and to prominence come questions and problems of how/what it means to be out of one's proper place in terms of locale, home, tradition, beliefs, and gender proper to name just a few. The meaning of one's (im)proper place is negotiated primarily on the bodily site. As an embodied system, the female self holds multiple systematically delimited spaces which need to be re-examined for potential nostalgic trappings of fallacious unification, reconstitution, and homing.

^{*} Psychogeographies is Guy Debord's term and concept for the influence spaces and spatial organizations have on the psycho-emotional and behavioral constitution of an individual.

6. The Ectopic Subject and the Exquisite Individuality

Out of the connection between spatialization of subjectivity and superposition, *I examine women migrants as the ectopic subject – the always already out of place identity* pulsing vitally somewhere not expected, not naturalized, not sought, not allowed, or not recognized. The ectopic subject is a challenge to the understanding of identity because it is there where you are looking but it is somewhere else – *as being-in-superposition it is always (not) here and (not) there*. That which we look for to identify in the ectopic subject is always in part going to avail and yield affirmation, but always also leave many other aspects unaccounted for. As being-in-superposition it is being-in-relations among multiple loci of consciousness as points among which we intuit and estimate our living, transforming ranges – our micro-ecologies.* Consciousness itself is a set of relationships between the mind and the world as the spheres of sensing, sensibility, and sensuality from which we derive and compile a sense of identity. The subjective ectopy as the complex individual out-of-placedness problematizes, furthermore, what, how, and why it means for one in relation to what, how, and why it means for another – thus subjective ectopy is an ethical question. The marginalized and mobile female positions are self-examining perspectives on collective consciousness, which should understand that the capacity to accommodate the marginal, the different, and the shifting is the measure of the flexibility, thus the survival and success of a society.

It appears that subjectivity here emerges still via a structuring effect by being viewed as an arrangement of mobile positions. However, it is not by Hegelian structuring – by negation and splitting as well as overcoming and overpowering; but, rather, by multiplication and inclusiveness (at the risk of reproducing negation here). It appears as a mobile arrangement of multiplicity without totality; totalizing via synthesis would, in fact, be reductive – reducing a person to a story, a role, a character, a case, a profile, a belonging, a political affiliation and so on. It opens up further politics of multiple positionality and posing as and associating with others along the lines of multiple appearances in the world. A displaced, disoriented individual endowed with ingenuity by necessity acknowledges that all positions could be viable directions; all positions are potential directions to a way, a way out, a way toward, a way out of no way. *This kind of exquisite individuality is a delicate, difficult subject in continual seeking marked by fine discrimination*. This phrase is intended to denote a refined capacity for critical discernment gained on migrant routes as well as to indicate an array of continually refined discrimination practices against migrants.

The subjective ectopy as the complex individual out-of-placedness opens up referential spaces for otherness and opens up socio-political spaces for another. Over-identification with a position leads to repeated performance of a persona – displacement, conversely, has the potential of expansion. Migrant subject unsettles such negotiations, and migrant female subject further complicates any simplistic settlement, emplacement, and any assimilationist and/or repatriationist project.

* The contiguous term here is Umwelt (environment) as introduced by Jakob von Uexküll. This not popularly known but tremendously influential theoretical biologist from Estonia used the term to denote subjective spatio-temporal worlds created by the unique way living beings perceive and experience their environment. I draw, additionally, on von Uexküll's understanding that recognition of an organism and meaning for an organism are generated by movement (generally it is in its movement rather than in its restive state that an animal is detected, engaged, and also attacked). Studying the way organisms perceive and react to sensory data as signs, von Uexküll argued that all the organisms should be considered living subjects. Thus laying the foundations of biosemiotics, von Uexküll sensitizes us to all the life forms as readers of signs connected in the greater web of interpreters in which we co-create our worlds and the world at large. See Jakob von Uexküll, *Theoretical Biology*. (Trans. D. L. Mackinnon. New York: Harcourt, Brace & Company, 1926) and *A Foray Into the Worlds of Animals and Humans*. (Trans. Joseph D. O'Neil. Minneapolis, London: University of Minnesota Press, 2010).

7. Settling of Subject Positions in a Social Field and the New Collectivity from Within

Among the multiple loci of consciousness in superposition arises the question of how they relate to each other and how they are connected into and within a personhood. Beliefs and values organize them and hierarchize them. Beliefs and values are reinforced and confirmed by a shared social field within which we reside; to which we contribute and with which we interact; and which recognizes us as and interpellates us as subjects. By such calling upon us, the social field is reductive and summons us to a subject position, which is, in turn, recognized as a calling in terms of legality and legitimacy, private and public, and personal and professional expectation/function. The self, however, is and remains always in excess of its roles, functions, and classifications.

“Superposition is not only a realization of the multiplicity within the self but also a gathering of one’s positions into a collectivity from within.”

As a migrant traverses and a migrant woman most often trespasses multiple social fields, they have the capacity to open up internal multiplicity and expand the spaces among the loci of consciousness so as to open up a greater inquiry into the values of assumed cultural certainties. That is why migration as an expansion is experienced as deeply unsettling in numerous ways. Adherence to the over-determined social field results in settling with comforts of and rationales for narrowly-defined belonging, but it also precludes other modes of connecting to otherness along plural lines of relating.

That is why even when we may not believe in everything a social field offers and/or enforces, as certain religions for example, we still want to hold on to the notion of culture with respect for the tradition, continuity, certainty and repetition of ritual that settle us, so that we get in return a confirmation of values that help organize us. When in migration we experience disorientation, the shifting of that which orients us locally and logically in geo-social locales (regulated by social codes) opens up the self and space activating differences within ourselves. The experience is unavoidably marked by anxiety even within benevolent circumstances. All this, of course, is possible to contemplate if our physical existence is not under direct threat. The migrant self could be experiencing trauma, suffering, terrifying uncertainty and anxiety, aimless roaming and loss, but the self thus experienced, seen, and felt is not fractured, fragmented, and evacuated but rather multiplied. It is a plenum capable of replenishing and ennobling not only the migrant but also all the geo-social locales which she occupies.*

As an opening unto oneself, *superposition is not only a realization of the multiplicity within the self but also a gathering of one’s positions into a collectivity from within*. However, opening of those multiplicities leads not only to an opening of the ways in which we experience the self as it appears in the world but also in the ways it is called to act in the world. Superposition is thus here developed into the idea of collectivizing from within as a means

* Laden with intentionality, the term “occupy” has multiple referential implications besides residing: to engage the attention or energies of; to take up (a place or extent in space); to take or fill (an extent in time); to take or hold possession or control of; to fill or perform the functions of (an office or position). The term is infused with political significance with which I want to evoke and highlight the Occupy Movement as it exemplifies in collective political practice the distinction between dwelling somewhere and taking a conscious decision to make a claim to a geo-social space under different terms and with an intention to alter one’s habitus.

to multiple politico-poetic postures (relating to another's positions with empathy and in reciprocity) that lead to opening possibilities of multivalent relating to the self and to others.

8. Female Individualism and the Neoliberal Politics

With particular claims to diversified subjectivity of women migrants, we need to take into consideration, however, Gayatri Spivak's astute critique of female individualism and the dangers of locating and pinning it down. Addressing certain entrapping tendencies of the feminist criticism, she speaks of the "mesmerizing focus on the subject – constitution of the female individualist."⁹ This paper aims to decentralize and unpin that subjectivity; it aims to interrupt such over-determined focus on the condensed subjectivity. In relation to the contemporary socio-political developments, Rosalind Gill and Christina Scharff inquire: "Could it be that neoliberalism is always already gendered, and that women are constructed as its ideal subjects?"¹⁰ The female subject is showcased today as the favorite and ideal subject of neoliberalism and its ideology of empowerment, freedom, autonomy, and choice – of the particular feminist *Bildung* (as emancipatory narrative and representation; development trajectory and image). However, the questions of freedom and choice need to be rethought as presentment of potentially fallacious alternatives as in, for example, abortion and migration.*

If the female subject is the ideal subject of neoliberalism, then the ethnic female subject appears to be one of its ideal projects – one that confirms the need for monitoring and civilizing other cultures and countries, where women's issues are used as a means and measure of judgment. Such political stance runs tremendous risks of championing women as it uses women's issues to evacuate others' politics while also hijacking and controlling women's actual political projects. Recognition of one's multiplicity, of one's internal differences turns superposition into an ethical question and leads to the recognition of the multiplicity of another allowing no fixity of position or identity. It pitches one into uncertainties and reconsideration of how we can more inclusively relate to ourselves as well as to each other from our multiple spaces. While it may be preoccupying, it is also revitalizing. Moreover, recognition of one's reductive, interfering, but also participating role as an observer in turn augments transformative preoccupation with superposition.

9. Multiplicity and the New Community

Superposition as collectivizing from within becomes a necessity for the possibility of modern community. Recognition of the multiplicity of the self saves us from a reduced, thus diminished self but also from the reductive self who cannot anymore diminish others to a calling, an appearance, a position. Activating and engaging internal differences so as to relate to others along multiple lines of identification, alignment, and association, such subjective configuration re-creates and co-creates multiple ways of calling upon each other in mutual recognition.

* Migration is only sometimes a matter of privileged choice; more often and especially for women it is a matter of various forms of enforced displacements. The choices here need to be reconsidered as potential fallacious options because they are always already posited as predetermined. The question of women's choice of abortion has been polarizing the U.S. socio-political life in its very narrow presentment of pro-life or pro-choice inducing subscription one way or the other. Choices here are, indeed, very constricting especially when one considers that the women are put in a place to "choose" to endure physical, psychological, emotional, financial, and social pain almost always alone. The whole framing of the question, the supposed choice, and presentment of the issues at stake need to be re-thought and re-formulated in order for us to reach an understanding of the issues along multiple lines of damage control and shared responsibility on the individual as well as collective level. This can be a fair choice only in so far as the social organization, institutional system, and cultural climate provide the proper conditions to support either choice.

Toward such recognition, a great impetus, energetic charge, and motivation have been coming from women who are roaming the globe. For the new, coming community, being in superposition as identification of the collectivity from within is a necessity and a precondition emerging from an intimate and immanent transformation. Registering the already present social conditions as well as the possibilities for the next stage of our personal and collective development, this paper conceives of a notion of subjectivity emerging from our increasingly multiple placedness in the world. As such, it is both a more faithful reflection of our internal and social realities and a more hopeful projection of the future of those realities in the making.

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To Touch Eternity...

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Abstract

Has humanity's progress been hijacked by a pervasive scientific rationalism that trades spirituality and communality for cold efficiency? If so, does this cultural meme promise anything more than sterile technological miracles that, while solving past problems, ambush our ability to imagine how we might avoid civilized society descending into the barbaric once again? Have we permitted economic growth, wealth creation and the financialisation of almost everything we cherish to become an all consuming obsession, superseding any higher moral purpose? This essay puts a case for curbing our sanctification of industrial economism by reinstating more compelling and empathic narratives as a keystone strategy for the future advancement and survival of the human family.

As old age beckons, many things become clear. Memories occasionally rearrange themselves in curious ways. But in most respects the fog of uncertainty lifts. Subjects considered *urgent* and *important* become profoundly entangled. Cultures, customs and events, distinct in times past, fuse into patterns so dynamic they resist further compartmentalisation.

Solitude comes too – mostly unpredictably, yet always welcome. And, above all else, empathy for others. Incredibly I find myself comforted by the thought of reincarnation in its most literal sense: the fact that while I breathe the dust of previous generations, the atoms comprising my own body, loaned by the ecosphere for a few brief moments in a span of millennia, will decay and endlessly recycle in the provision of nutrients for other creatures in generations to come. This seems to me to be the most perfect way to touch eternity.

But serene empathy can also bring dissonance. Seeing in new ways and stepping lightly into unfamiliar epistemologies have led me to one discomforting conclusion. The future story of our species is held captive by a form of scientific rationalism in which visions for a better world are most often portrayed as a grand technopolis we are privileged to inherit. While contemporary life has deterred many from venerating archaic deities and other convenient fictions, this new technocratic utopia seduces whole societies into shifting their allegiance away from prelates, monarchs and politicians to a distributed artificial intelligence. This digital presence is held to be a redeemer of past ills and liberator of an incipient promise: nothing less than the genesis of an omnipotent Homo sapiens.

The alternative story, a gentler yet compelling narrative of compassion, inspiration and amity in which diversity and difference are virtues to be nurtured, is lost to all but a few enlightened souls – individuals who refuse to consign the joy of what it means to be human to computer programs or sterile numbers. These individuals are the true guardians of humanity.

For the most part these poets, philosophers and indigenous elders, are scorned or ignored; treated as misguided fools by those who do not possess such clarity of insight or who are alarmed at what seems like spirituality on steroids. But when fear shrouds the truth we remain deaf to these voices who warn of impending catastrophe. All but invisible, their cries are becoming fading echoes in the sanctuary of human conceit.

The West chose a technically dominated course in the immediate aftermath of World War II – tethering society's fate to a mix of industrial mechanisms and arcane financial devices that individual corporate greed and self-interest would later unravel, usurp, and use to plunder in the name of progress, freedom and democracy. Almost by default, the rest of the world is following suit – so irresistible is the Occidental promise of a consumer paradise.

Liberating for some, yet tyrannical to so many, the ideology of *industrial economism* is the epitome of scientific rationalism. Thriving on competition and adversity this ideology is bent on the wilful destruction of our most fundamental needs – affiliation, kindness, friendship, gratitude and love.

We are disinclined to admit this fracture in the human story for fear of appearing weak or foolish. Consequently this system, recently branded *disaster capitalism* by activist Naomi Klein, is entrenched within our daily routines to such an extent that we are totally blind to alternatives. Our capacity to pursue a different direction is thus drastically curtailed. It is like inviting a fish to swim without water or a bird to fly without air. So our penchant is to linger as long as we can, addicted to a desire to consume more and more stuff, and seldom concerned that the future we have set in motion and which we embrace with so much zeal will probably destroy more than it can ever hope to create.

The fact is we have spawned a civilisational apocalypse – one that continues to deliver the illusion of increasing health and well-being even as it gnaws away at our collective soul and the resources we need to prosper. Safeguarded by a relatively small number of influential individuals, corporations and financiers, all of whom extract enormous personal wealth from their activities and are therefore disinclined to change their minds, *industrial economism* is the most terrifying of legacies we are bequeathing to our youth. Why? Because nobody can grasp the full impact of its end-game. We can only guess.

What we do know is that while many human beings suffer from starvation, oppression and various forms of deprivation, from which escape seems barely possible, the rest of us live in relative luxury – enjoying a vicarious existence by embracing an assortment of diversions in the hope they will distract us from a reality we cannot bear to confront.

Let us speak the truth as if it mattered and cannot be tainted by self-interest or ignorance. The human race is on a destructive path. We are forcing changes to Earth's biophysical systems with unparalleled power and at an unprecedented rate. In spite of this it is highly unlikely there will be a single devastating tragedy that brings us to our senses. Our ruin is advancing by stealth.

"We have nobody to blame but ourselves. We chose the path and what we created is entirely of our own making."

This was not the plan. There were no predetermined intentions – no divine power perched in the heavens declaring an inevitable outcome for our species. There is no elitist-led conspiracy, not even an alien life-form manipulating events for its own evil ends. On the contrary we have nobody to blame but ourselves. We chose the path and what we created is entirely of our own making. We are our own worst enemy. The sad irony is that much of what we have created has been astonishingly enriching and beneficial.

The power of language and scientific invention, for example, opened up possibilities that are unavailable to other species. But an inherent flaw in human nature meant we were oblivious to unintended consequences. Behaving as if omnipotent, we willingly engineered a path to self-destruction and are now stumbling towards an end-game that we could still avoid.

But we are doing nothing to alter our course. In some ways we seem to be embracing our demise with the kind of insane euphoria observed during the collapse of empires.

“We have stopped caring for each other to the extent that our lives have become one prolonged saga of narcissistic preening and of proving ourselves better than our neighbours.”

Where did we go wrong? What critical decisions were so impetuously taken and why did we abide by those decisions when we saw them to be corrupt? What forces did we knowingly unleash that, with hindsight, should have been contained? Could it be that our technical knowledge has far surpassed our ability to apply it wisely, the nature of the tools we have invented, or simply a lack of foresight in how to use them to benefit humanity? Has it anything at all, do you suppose, to do with a population of seven billion people competing for limited resources in ways that assume those same resources to be infinite? If so, what should we do about that? Are the more convoluted problems the result of leadership deficiencies, religious fundamentalism, political incompetence and corruption or deep-seated tribal inequities? Or is it possibly the sheer complexity of modern life that seems to extend far beyond the bounds of our capacity to comprehend, let alone manage, with any degree of harmony or flexibility?

I suspect it is none and all of these. Human beings now dominate this planet – of that there can be no question. But we are changing our home in ways that threaten Earth’s ability to sustain us and other life forms. Furthermore we have stopped caring for each other to the extent that our lives have become one prolonged saga of narcissistic preening and of proving ourselves better than our neighbours.

Within this context there are at least three civilizational acupuncture points – together with their related activities – the impact of which we should be analysing far more seriously and with greater granularity – ultimately with a view to reinventing their essential qualities and propositions. These acupuncture points are best envisaged as universal belief systems and can be summarised quite simply as:

1. Our readiness to compete, to the death if necessary, against nature and each other
2. Our proclivity for placing economies and the pursuit of individual wealth above that of assuring ecological resilience

3. Our fascination with money and the politics of self-interest.

None of these constraints are particularly novel. Indeed they have been enshrined within our moral architectures from time immemorial. But they only began to forge a step-change spin on the civilisational worldview following the Industrial Revolution. The main causes for this extreme expansion of our world-system orthodoxies were a series of factors we can group under the collective banner of *globalisation*. In particular:

1. A sudden exponential growth in the size of the human population. This provoked a surge in the demand for goods of all kinds which then intensified and advanced the importance of *competition*. Today *competitive behaviour* is regarded as both virtuous and necessary – a key pillar of any capitalist society and an inherent part of human nature. Although the latter view does not stack up from a purely scientific perspective it is used as the militaristic rationale for why armies should be kept on a constant war footing and to justify why some of us are “better” than others.
2. Access to low cost yet easily accessible manufacturing and distribution technologies meant that more goods could be produced faster than ever before and shipped to countries half way around the world with relative ease. The new demand for goods put unprecedented pressure on small-scale local industries and regional economies, sending many of them to the wall, while dramatically increasing the amounts of energy used and waste generated. This substantially altered humanity’s ecological footprint.
3. The rise of *individualism* as a moral stance created conditions in which the desire for personal affluence, together with its achievement – whatever that takes, now warrants more consideration than ensuring public prosperity. This has had multiple unplanned consequences. Among the more detrimental impacts, two are especially relevant:
 - A shift away from customary social obligations governments accepted in caring for their citizens to a primary role of facilitating commerce and trade has effectively delegated public well-being to impromptu charitable gestures boosted sporadically by cynical populist schemes mostly aimed at keeping political parties in power. Politicians have outsourced compassion.
 - Permitting private corporations to own and control assets that are vital for human survival – including water, seeds, lakes and forests – is a laissez-faire recipe for discrimination on a massive scale. Given that the responsibility of corporations as they are currently constituted is to make money for their shareholders, it is absurd to believe these enterprises can also act altruistically on behalf of the community. Meanwhile we must deal with the strategic ambitions of multinational enterprises attempting to control every aspect of our most life-critical systems, such as the food chain.
4. The speeding up and international integration of cultural and economic activities create unparalleled levels of interdependence at every scale – from the individual, to the state, to the human family as a whole. But because the universal driving force is still primarily economic this interdependence has also hastened growing disparities between the wealthiest in our society and a poorer underclass. If these continue to morph into discriminatory practices it is possible a new form of transnational class warfare might result.

5. The ability to communicate instantly with almost anyone, anywhere, for any reason whatsoever has generated massive opportunities to collaborate and innovate. At the same time an all-pervading digital reality seems to be alienating large numbers of people who yearn for greater human contact and intimacy. We do not know what the outcome of this trend could be. In the meantime suicide rates are escalating while children as young as five have their own smartphones and Facebook pages but experience difficulties participating in normal healthy relationships.
6. The dominance and motives of the finance sector in the sum total of economic global activity have allowed financial markets to dominate industrial and agricultural markets. Because profits arise increasingly through financial channels, rather than through traditional trade and commodity production, a new financial elite comprising private equity firms and investment bankers effectively governs operations of the economy at national and international levels.

Recently, all these factors have converged and interacted in ways we could not possibly have anticipated. Or so our leaders continue to insist, thereby excusing their disgraceful lack of moral courage.

"We still cling stubbornly to the past, refusing to admit the damage we are doing to each other and to the environment, continuing to endorse the same beliefs, and taking no urgent remedial action or even to make minor adjustments to our course."

Regardless of where we sit on the continuum between technocratic optimism, like inventor Ray Kurzweill, and humanitarian pessimism, like scientist James Lovelock, it is impossible to deny that these factors, and possibly many more than these, have conspired to generate the circumstances in which we now find ourselves.

Regardless of perspective there is a far more distressing issue with which we must come to terms. It is one combining consciousness and conscience. Fallout from the toxic mix of motivations and activities listed above is rapidly poisoning life on our planet. Yet we still cling stubbornly to the past, refusing to admit the damage we are doing to each other and to the environment, continuing to endorse the same beliefs, and taking no urgent remedial action or even to make minor adjustments to our course. Furthermore, rather than trying to slow things down we are doing exactly the opposite. We are now hurtling to our annihilation.

In the year I was born there were under two billion inhabitants on this planet. By the end of this century I fully expect human numbers to have collapsed to that level once again. Unless we can learn to live with each other more productively than in the past, setting aside partisan views for the common good, conflict and starvation will overwhelm those without access to sufficient food, water, compassion and justice.

Trapped on a tiny planet catapulted way beyond the *Goldilocks principle* that generated conditions not too cold, not too hot, but "just right" for human habitation, we will be forced

to adapt to a situation never encountered by human beings. Should present trends continue it is probable that one half of all species of life on earth will be extinct in less than 100 years as a direct result of habitat destruction, pollution, invasive species, and climate change. We have no idea if we can survive such a transition, much less thrive in it.

So how should we be thinking to forestall that possibility? What can we propose, even now, to avoid crossing critical thresholds that would precipitate a planetary-scale state shift in the global ecosystem – thus extinguishing the civilizational paradigm and sending humanity back to a dark age? In order to present any kind of sensible suggestion in such matters we must examine our three initial acupuncture points to determine how we might nudge these into a more viable state.

1. Fighting Nature and Each Other

Setting aside the idea we are separate from, and superior to nature, and exchanging it for a more realistic credo, require a total transformation in how we think, plan, and act. Similarly, replacing the notion that some of us are inferior in some way and that certain cultures are therefore more advanced than others, with a more empathic view demands a paradigm shift in how we relate to each other in the first place.

Exceptionalism of this kind is irrational hubris. Such beliefs are naive – untenable in an age where science has substantiated the genetic equality of all humans as well as our dependence, along with all living creatures, on nature for our continuing existence.

Unfortunately, we have been living as if biophysical resources are infinite, and that we can do pretty much as we please with other “less advanced” cultures, for so long that we have only the faintest clue what it might look or feel like to act otherwise. Judaic, Islamic and Christian scriptures all teach us that it is our God-given right to conquer the Earth – in return for which we gang up on each other in God’s name.

But while challenging entrenched societal beliefs such as these has always been problematic, we now have one huge advantage over previous generations. Digital social media give us the ability to transcend boundaries and to connect with each other across all stratas of society in campaigning for an awakening to new values.

2. Putting Economies Before Ecologies

In the beginning was The Word. The Word meant *purpose*. Purposeful intentions directed human activity. Originally just a matter of the tribe’s physical survival, human purpose later grew to encompass more mature goals such as security, affiliation, love, self-esteem and personal accomplishments. At the same time social development traced a path ranging from communitarian obligations to the fulfilment of individual needs and self-determination. And there it seems to have stuck...

In Greek philosophy purpose is *logos*. The wisdom of knowing one’s purpose – our *ecology* – meant comprehending how everything that is important fits together in a form that benefits everyone. When the *logos* is clear, comprehensible, and shared by the community as a whole, *nomos* – the laws and rules that enable society to sustain and manage efficiently – can take its rightful place in service of the *logos*.

This sequence is important. Logos is purpose. Only when purpose has been established can nomos act in ways that optimise the purpose. At some stage in our history we forgot this and inverted the natural order. Nomos, the economics of managing the house, became an end in its own right. We lost our way. We lost our purpose. In doing so we neglected what it means to be human and empathic. Now we stand to lose far more than that. Natural resources critical for our survival are under threat.

The only solution I can envisage is one where we all take responsibility for restoring the status quo. We must lobby those in positions of authority to reinstate the natural order in which economics plays a necessary but subservient role to ecologies. We must then also determine a revitalised purpose.

3. The Politics of Self Interest

Most contemporary governments are deficient – in the sense they are no longer able to keep the promise made to their citizens concerning basic public services – including security, full employment, an adequate education and welfare for those in need of assistance, for example. The reason is pretty straightforward. Governments have forgotten their prime purpose – preferring to pander to the media and meddle in affairs in which they have no competence or legitimate role. Yet we put up with it.

Most Western-style governments have been corporatised. While key advisers drift to and fro between government departments and industry, bureaucracies have been forced to abandon their traditional impartiality, morphing instead into agencies acting on behalf of big business. This shift has allowed the wealthiest corporations to buy and exercise control over humanity's most life-critical systems. It allows companies like Monsanto and Syngenta, to monopolise and privatise the supply of seeds. And it permits a mutually beneficial relationship to be preserved between governments and defence-minded enterprises like Lockheed Martin and Northrop Grumman.

In the former case we need to understand that biodiversity and economic diversity are linked. They are key to providing a large, diverse, genetic pool that enables organisms to withstand and adapt to new conditions. To restore both we must combat the disgraceful economic and political power of agri-business. The need for governments to legislate to prevent large-scale industrial agriculture and agri-food corporations accelerating the loss of genetic diversity, eroding biodiversity and undermining global ecosystems, is paramount.

In the latter case the military industrial complex has constructed an unholy alliance in which war-planners receive the tools necessary for waging an effective war and furthering their political interests abroad, while defence contractors are the recipients of lucrative deals. This relationship must be dismantled as the first step in declaring a halt to conflict.

As I write this article tobacco giant Philip Morris is suing the Australian government to overturn public health laws aimed at reducing teenage smoking. Chevron has hired 2,000 lawyers to avoid paying Ecuador \$19 billion in damages due to the horrific oil spills they inflicted on the country. Bayer is suing Europe to overturn their ban on bee-killing pesticides at the same time as investing millions with Monsanto to defeat an effort to label GM foods in the US.

The monstrous power of large corporations has gone feral. It seems the world's largest and most profitable corporations are determined to defeat any efforts to hold them to account. By investing billions of dollars in dirty legal battles, corrupt backhand payments and lobbying campaigns, big business is taking over our democracies.

"Inaction is no longer an option."

As powerful as these companies may appear, their arrogance will be their downfall. They are ultimately at the mercy of consumers and the general public. Community action can hit these companies where it hurts their profitability. By withdrawing our patronage we also put them out of business.

4. Conclusion

I find no consolation in speaking these truths. I am especially culpable in that I have given life to so many children and grandchildren who must now cope with a situation worsening by the hour. My guilt is multiplied many times because I have foresight of this future. Mine is a terrible burden. And yet I bear it in the hope that I can play a small part in diverting the human family from its current suicidal course.

Addressing these three acupuncture points that allow current toxic belief systems to persist is crucial. Finding solutions that are socially and economically feasible will require all the ingenuity and courage we can muster. So massive are the issues facing us it may seem impossible to know where to start. In truth anywhere will do. Any thoughts, plans or actions aimed at shifting the civilizational framework of beliefs away from their current trajectory will be more acceptable than the alternative. Inaction is no longer an option.

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Need For A New Economic Theory

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1. Search for “The Wealth of Nations” – some basic points on macro-economics

There are thousands of books and articles these days, including political declarations at all levels, particularly in the “developed” countries, invoking “growth” as a basic factor to solve major economic problems such as employment, financial disequilibria, retirement and health costs, etcetera.

The big question is: which growth and how. Is there any major factor to be taken care of, in addition to key issues like economic and political stability, adequate monetary policies, social fairness, education and entrepreneurial spirit, stimulation of human capital and environmental protection?

2. Thinking of Adam Smith

At the end of the eighteenth century, Adam Smith tried to answer very similar questions.

During his times the word “economist” was not yet diffused: he was a social philosopher. And he was concerned about identifying a key event or issue, which could become the priority to promote the “Wealth of Nations”.

He answered the question on what would define the industrial revolution. The new manufacturing systems, of which he had various examples around him in Scotland (starting with the making of a pin), provided the practical evidence.

His book and his experience during the phase of industrialization became the basis for the formulation of “economics”, applicable even today. We should note then that this discipline (and its theories) is clearly derived from this historical experience.

3. ...like Galileo Galilei...

“Nonsense” was the reaction of most “social scientists” of his time (take as an example Quesnay and many others) to the central idea of industrialization. For them, the evidence was that the wealth of nations was based on agriculture. Point!

4. Macroeconomics: “desaparecido”?

There are many economists who in the last decades have admitted that macroeconomics (the general framework of economics) is somewhat deficient. The attraction of the simulation

models has somewhat obscured this issue, as well as the tentatives to absorb the issues concerning the environment and the very fortunate idea of sustainability in the existing dominant theories. But what about the “production” of the wealth of nations?

5. The Value of Services

At his time, rightly, Adam Smith underlined the priority of industrialization, which was in between agriculture (an important sector, but which of course had to improve) and services (depending on “dedicated” people, but with no recognized economic relevance).

The point is that services tend today to provide about 80% of all the “productive” activities. The higher levels of technology, in most cases, become more and more efficient every day and the tools are becoming cheaper. But they require more and more services to conceive, manufacture, distribute, finance, control etc.

Some economists (see those who were involved in the GATT discussions) tried to include in the “normal” economic theory, the evidence of the growth of services, saying that they are simply products that you don’t feel even when they fall on your feet.

In any case, today it must be recognized that good services are the basis for a good and successful “manufacturing” process at all levels.

6. Studying “supply”

Adam Smith was concerned about how to improve, via industrialization, the production process (i.e. “supply”, as it is called by the economists).

“Modern” economics has shifted, since many decades, from supply to demand (consumption). And still thinks mainly in these industrial-age economic terms (among others see the discussions between Krugman and the “mellonites”). In fact the advances in science and technology have provided the economists with the idea that supply should be elastic enough and that the key is to mobilize or manipulate demand. By the way, this argument was the background of the bitter attacks against the Club of Rome report of the 1970s on *The Limits to Growth*.

But since then, the “traditional” economic growth, in the industrialized countries, has diminished – with many ups and downs – so that 1% or 2% growth of GNP seems a great achievement in the western world, and this even in a world of extended “quantitative” easing.

So, what about reviewing the conditions of supply, of producing wealth today?

7. The Growth of Services and Economic Value

Supply today starts with fundamental research (and its serendipity: the search for discoveries not yet known). And then goes on with applied research and technology, up to a period of utilization of any system or “product” (which can be a service), and a final phase of waste treatment.

Here is where the notion of economic value is linked to the notion of risk management in time (at least part of the value is linked to the future).

Uncertainty and probability are the rules of the game (a little like going from Newtonian physics to Quantum physics). The economic value depends largely on the period of utilization, which also includes costs. At the beginning of the whole process, research is also based on managing probabilities, as well as market success, maintenance and security up to disposal costs. Value is necessarily linked to the notion of performance (in time). Entrepreneurs know this.

We are therefore pretty far from the ancient classical model of value, based on the “equilibrium” between supply and demand in a given moment in time.

There is then a strong need to redefine economic value, to better understand what produces the Wealth of Nations. Indicators have to be adapted: otherwise, why is it then that GNP improves when there are costs linked to disasters? The war in Syria is obviously not a blessing: who or what measured the actual losses of the civil war?

“There is a strong need to redefine economic value, to better understand what produces the Wealth of Nations.”

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Quo Vadis?*

Cultural Reorientation – Our Shared Journey

Four Key Words – One Direction

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Abstract

This article is an urgent plea for a cultural reorientation. The present financial-economic crisis is symptomatic of a culture which has lost its bearings. The economy reigns supreme. The present economic model is however not sustainable at a global scale.

How do we break the stranglehold of the economy on our culture? Two things: a realistic appraisal of the present predicament and a broadly shared view on a sustainable and more liveable world.

Is there in our individualistic society – with such diversity in convictions of life – a common ground for developing a shared creative vision? In the opinion of the author a common platform could be established in four keywords, to which everyone can relate. Against the backdrop of the relationship of the four keywords, some pertinent questions point towards a more realistic, sustainable economy.

‘Quo Vadis?’ is carried by the conviction that human beings are capable of charting a more promising course of action in a global world.

Yes, we can!

Together, we can!

Who would dispute that a spiritual renewal of our culture is long overdue? The profound impact of the severe economic crisis we are experiencing has led to many concerned analyses. These are often limited to the shortcomings of the market economy. But is that appropriate? Wasn't this crisis inevitable? Is it not the symptom of a culture which has lost its bearings? The contribution of science and technology to a substantial improvement and betterment of our quality of life is indisputable. The age of Enlightenment paved the road for 'responsible man', freed from abuse of power by church and monarchs. But has this 'autonomous man' overestimated himself by closing his eyes to the greater Reality from which we are inseparable?

Our culture has become imbalanced by the one-sided focus on the material plane, at the expense of non-material values. The economy reigns supreme. Economic considerations are

* This essay was translated from the original Dutch text by Caspar van Lissa (1985), MSc, grandson of the author and PhD candidate researching the role of empathy in conflict resolution at Utrecht University.

the decisive factor in most sectors of society. Just think of how materialism has dominated education and the media. In a public sector, the principle of profit is supplanted without serving the public interest. Vulgar self-enrichment has penetrated even the healthcare system. In the world of sports, corrupted by money, players are sold for millions of dollars! In the business world too, we see the devastating effects of the pursuit of immediate financial gain. Short-term thinking undermines the continuity of the enterprise.

A healthy economy is vital to society. Hence the need for a critical reflection on the pillars on which it rests. Especially now, it has become increasingly clear that the current pattern of production and consumption is not sustainable on a global scale. The current culture of greed is based on three fatal misconceptions:

- **The first:** That man has infinite material needs which must be satisfied.
- **The second:** That everything must grow; permanent growth is considered to be not only desirable but even necessary. Yet permanent material growth within the limits of our habitat on this planet is impossible.
- **The third:** A completely free market, unconstrained by rules, effective supervision or a moral/social context. This paved the way for irresponsible decision making, objectionable practices and large-scale fraud. The disastrous consequences were not confined to the financial sector. The entire economy was dragged into a deep crisis.

How can we break the stranglehold of the economy on our culture?

First, by becoming aware of the collective madness of this dance around the golden calf and then of a modern idol hypnotizing us with the lure of the dollar. For this idol, even the elite of our society go down on bended knees. People are trampled in the frenzy of this macabre dance around the Mammon, and the necessary conditions for a decent, “humane” existence for future generations are sacrificed. All this to satiate the greed of those now living! Short term thinking abounds.

“Our culture is dominated by forces that degrade people and objectify them, reduce them to Homo economicus, a number, a cash cow for unscrupulous financial experts.”

But do these symptoms of moral decay not follow from a loss of the sense of the transcendent, the loss of a greater horizon? Is this not the reason that man has lost the rudder and thus the view of his true destination? Václav Havel had already come to this conclusion in the years of his imprisonment. The philosopher Hans Jonas expressed this insight even more powerfully in his seminal work “The Imperative of Responsibility”. Jonas referred to the loss of the notion of transcendence as “perhaps the greatest mistake in history.”

This time of change demands a view of life that provides structure and coherence. After all, here lies the key to our deepest motivation. This determines our behavior, and the way we relate to people, matter, and nature itself.

People: Our culture is dominated by forces that degrade people and objectify them, reduce them to *Homo economicus*, a number, a cash cow for unscrupulous financial experts.

Have we forgotten that man is a person, imbued with inalienable dignity and fundamental rights that deserve respect?

Matter: Are we master or slave to our worldly possessions? Driven by the pursuit of more, regardless of the consequences? Or do we realize that the essence of life is found in our human relationships? Matter should serve human and social well-being.

Nature: Is nature an object of boundless exploitation? Do we recognize or respect the intrinsic value of nature? She is to be handled with care. This is an absolute requirement, since our natural environment is the fundamental condition for our continued existence. Hence the need for an economy that develops within the limits dictated by nature.

Our view of life is the source of inspiration for personal commitment to a peaceful, sustainable and truly human society. A source that will flow abundantly when one strikes a balance between concern for one's own well-being and for the common good. A source that allows people to flourish in freedom and responsibility, endowed with a spirit of empathy and independence that allows them to turn against the forces that threaten life.

Would it not be possible, in our individualistic society, with its colorful diversity of philosophies of life, to rally support for a shared creative vision that leads to a reorientation of our culture?

Can we find common ground to set course for a sustainable, more livable society? I believe that we can, as the sources for this shared vision are indeed present in science, religion and other philosophies of life. Let me make an attempt to identify the fundamentals of a common approach.

The starting point is an experience of reality that we can all identify with, regardless of differences in belief. We all live in a world that's under threat, populated with humanists, agnostics and believers alike. We must chart a new course together.

The ingredients for that joint reflection are present in four key words that everyone can relate to.

1. Keywords

1. Interconnectedness
2. Vulnerability
3. Urge to live
4. Awe

The first two, *Interconnectedness* (1) and *Vulnerability* (2), are based on hard facts. *The urge to live* (3) is vital for a human being. The fourth word, *Awe* (4), reflects a fundamental experience that is repressed in our culture, but potentially present in every human being.

It goes without saying that these keywords may be differently rooted in a humanist or agnostic compared to a monotheist. However, the values they inspire are shared by all. Some of these are responsibility, respect for life, peace, justice, solidarity, and moderation.

1. Interconnectedness

Science in particular has deepened our understanding of the fundamental *interconnectedness* of all ecosystems. Many religions too have propagated this for centuries. This insight is crucial, both for the individual and for society as a whole. It can contribute to the replacement of the sterile *egocentric culture of individualism* by a *culture of connectedness*, based on relating and caring. The global *Campaign of Compassion* works towards this end. This inspires values like justice, solidarity and the pursuit of peace. In political terms, it means caring for the poor and weak in society, social and just taxation, a humane immigration policy, etc. This notion of interconnectedness is also of particular relevance in our rapidly globalizing world. Growing awareness of connectedness can promote the development of international agreements (e.g., for raw materials, water) that take into account the legitimate interests of all countries, including the weaker partners. The increased interdependence among nations requires it.

"The current environmental crisis is largely caused by the unsustainable pattern of production and consumption of about one fifth of the world's population."

2. Vulnerability

Is it still necessary to elaborate on the vulnerability of our ecosystem after the impressive documentary *Planet Earth*? Don't the facts outlined in the reports of United Nations experts speak loudly enough? We might be headed for an environmental catastrophe in the next few decades. The current environmental crisis is largely caused by the unsustainable pattern of production and consumption of about one fifth of the world's population. Three fifths of the world is now following this globally untenable model of development at an accelerated pace. How could we close our eyes to the severity of the situation, given that the problem is further compounded by explosive population growth?

In order to repel a global catastrophe, cooperation between science, religion and other fields of life is required. Only then can the colossal forces that were developed in recent decades be controlled. Science can contribute predominantly in the field of technology. Our view of life can inspire the necessary behavioral change. This partnership is essential for a sustainable economy on a global scale. An economy respects the boundaries dictated by nature.

3. Urge to live

The urge to live is inherent in all forms of life. For human beings this implies another aspect namely the longing to live well, in a world where living is good. A world in which peace and justice are not just empty words. A world which provides future generations with the opportunity to enjoy the beauty and diversity of Mother Nature.

The current deterioration of the necessary conditions for life thwarts the realization of this deepest desire. This has stirred the primordial instinct – the will to live. This force manifests itself in the surge of creative initiatives to promote sustainability in business and other sectors, and also in numerous groups, movements and NGOs. We're in this battle for the long

haul, and the courage to persist despite adversity is crucial. That's why access to a fountain of hope is indispensable. Hope springs eternal!

The necessity of a more responsible way of man relating to matter and nature is greater than ever, hence the urgency of a thorough reconsideration of the premises of our culture of greed. This is where religions, other philosophies, and science – each in their own way – share a joint responsibility. That applies equally to all who bear responsibility in politics, economy, business, the media, and culture. They are the ones who shape the process of change.

Many religions preach a resounding call to change our way of life, to leave this misguided path. Science provides indispensable analyses and suggestions for creative new directions. Politicians and managers are faced with the challenge of paving those ways!

4. Awe

A single word, which so aptly captures the sense of rapture we experience when faced with the wonder of that which transcends us, the miracle of life in the boundless Universe. It is a word that evokes a fundamental attitude of profound respect and reverence for the source of all Being. For the religious man, it is rooted in his relation to God. The Holy Books bear witness to this living relationship. The Psalms beautifully sing its praise. But the non-believer too can identify with this fundamental principle. In the international Pugwash Movement, I have met many leading scientists who – being agnostic – were filled with awe in their contemplation of the structure and interconnectedness of the micro- and macrocosm.

“A hurried and hectic existence leaves little time for reflection on fundamental questions of life.”

The advancing scientific understanding of the precision of the laws that enable life on earth adds to the sense of awe over the origin of all Being. Indeed, progress in scientific discovery can lead to a greater sense of awe.

This fundamental principle also emerged during the installation of the major European telescope on the Spanish island of La Palma, in the presence of Queen Beatrix of the Netherlands and other European heads of state. A famous astronomer pointed out that this telescope allows us to penetrate even further into the secrets of the Universe, ‘but that everything we do here is nothing more than reflecting on the great miracle that it exists.’

The sense of *Awe* is fueled by wonder and contemplation of Being; by the primal force of nature, as well as her beauty and elegance.

In our Western culture, the vision and feeling for what transcends us are often lacking. In ‘flatland’, the horizon remains limited; there is no dimension of depth. This is where banality and greed thrive, while humanity and integrity languish.

For many, this sense of Awe is an unknown experience. The Self, elevated on a pedestal, is mainly governed by the horizontal dimensions of counting and measuring. A hurried and hectic existence leaves little time for reflection on fundamental questions of life. Moreover, thanks to science, many commodities have become essentials. When we come to understand a little of the process of life, we tend to believe that we have a handle on it.

The principle of life in itself is a great miracle that too often escapes attention. And precisely that insight might help us gain perspective on Man's place in the *Ultimate Reality*.

2. A Vision of Interdependence

Nobody can ignore these four key words, because they determine the *human condition*. Each of them in turn has the power to inspire change, but a cultural reorientation at this critical stage requires a clear vision of their interdependence. Only then, the indispensable synergy will be engaged. This vision of intimate interdependence is currently lacking. A serious shortcoming – the very fusion of all four key words can shift the balance in favor of the change that is now underway.

To clarify the above statements, I mention the mindset of some leading environmental scientists who expect total salvation based on a pragmatic approach. It is this blind spot precisely that underpins the deeper spiritual underpinnings of the environmental crisis (the fourth key word) and hinders the progress of sustainability.

On the other hand, there is a form of religiosity which leads to resignation and passivity, rather than the required engagement. Single-minded fixation on the fourth key word – and the consequent attitude of *awe* – can sometimes lead to a failure to take a stance based on the factual *Interconnectedness* (1) and *Vulnerability* (2).

Each of these four words is an important signpost. But the decisive impetus for cultural change comes from a clear view of the cohesion between these key words. Together they provide a basis for a joint reflection on the continued existence of humanity in a humane, sustainable society.

3. A Common Platform

The much needed reorientation of our culture would benefit tremendously from cooperation beyond perceived differences. The vision of the cohesion between the key words provides a starting point for people of different views of life to come together and set a new, common course.

Might that be possible for science and religion too?

Certainly, the relationship between them has historically been tense, especially when each exceeded the boundaries of their own competence by taking a stance on matters which belong to the domain of the other.

Essentially there is no need for contradiction, because each has its own domain, with its own methodology and a different objective.

Science focuses on analysis, the explanation of phenomena and the study of regularities.

Religion and philosophy focus on giving meaning, and identifying a code of life that make a society livable. They focus on insights that provide structure and cohesion to life, and promote personal development that combines freedom and responsibility.

In *The Great Partnership*, an important book by renowned British Chief Rabbi Jonathan Sacks, he provides a powerful argument for cooperation between science and religion. Both are aimed at promoting human well-being. And precisely that is what is now threatened by the irresponsible way man relates to matter, and nature. The disturbing perversion of the essence of religion by fanaticism, extremism, and violence need not deter us from collaborating with the vast majority of moderates. A radical minority might distort our perception of the essence of a religion, but can never strip it of its original meaning. The famous Swiss theologian Hans Küng rightly distinguishes between true and false religiosity. His criterion is whether the well-being of man is served. In this context, the importance of dialogue within religious denominations is further emphasized. Like the cooperation between religions and other views of life, it deserves more attention from spiritual and political leaders.

The fundamental *Interconnectedness* (1) and *Vulnerability* (2) demand effective action in the short term. Facts and trends speak an ominous language. This action is even imperative if we intend to heed the *urge to live* (3). Hence, there is an urgency for joint reflection of believers and nonbelievers, science and religion, the cultural sector, economy, and politics. Our collective survival under humane living conditions is at stake.

Religion without science is blind, but science without religion is lame. – Einstein

4. Love – The Keystone

The preceding discussion avoided the use of the big word – “Love”. This is due to the widespread misconception that a ‘soft power’ is irrelevant in a formal discussion on cultural change. Love is one of the most powerful forces known to man. It can bring the mighty to their knees, and move people to act in favor of a fellow human in need, even at the expense of personal sacrifice.

It is also Love that gives a powerful impetus to our awareness of the four key words. Certainly, reason forces us all to do so, but without love we end up in a cold, harsh society.

Love is universal. We are steeped in it in the womb. It is transmitted to future generations. Love is the keystone in the dome created by the four key words. It is the unifying force, and has left its mark on each of them.

*It is the highest form of connectedness,
the most sensitive and fragile,
fulfills our deepest yearning
and deepens the sense of awe.*

Love is central to many religions. For the Christian it is rooted in the love of God, which is embodied in Jesus Christ. The inner knowing that nothing – neither might nor power, in life or death – can separate us from that love is a constant source of inspiration, strength, independence and courage to persevere.

In our formalized society, a rediscovery of the rejuvenating power of love is essential. Not merely for the individual, but for all of us. It is about more than sustainability: Ultimately, it is love that makes society livable.

5. Discussing a Viable Route Together

For a new inspiration for our culture, a realistic assessment of the critical situation in which we find ourselves is required. Against the backdrop of the relationship between the four key words, we might ask the following questions:

“The current crisis offers a unique opportunity for the emergence of a new, sustainability-oriented economy. This requires innovative policy, not a return to the past.”

- How can we promote development towards a culture with a well-balanced relationship between matter and spirit? How can we get rid of the dominance of the economy?
- Are we ready for a revision of the purpose of the economy? Shouldn't its purpose be *the responsible use of the limited resources available to promote the general and individual well-being of present and future generations*?
- Shouldn't production, distribution and consumption of goods and services be aimed at a just and sustainable society in which the limits that nature sets are strictly adhered to? Is the economy a goal in itself, or an instrument at the service of human welfare, *within the limits made by nature*?
- How do we liberate ourselves from consumerism? A sustainable economy is impossible when it is driven by the assumption that man has infinite material needs to be satisfied. Man is more than a craving animal. He does not live by bread alone, but also by spiritual resources that inspire a full, meaningful life. Does not a highly developed society require moderation? If so, should we not limit the frenzy of material greed stimulated by intrusive advertising?
- Does the pursuit of unlimited material growth – given the limits of our habitat on Earth – not inevitably lead to a global environmental catastrophe?
- How can we safeguard job security while adapting our pattern of production and consumption?
- Should the calculation of GDP be adjusted in order to obtain a more realistic picture of the qualitative development in a society?
- How can the growing gap between rich and poor be reduced?
- How can the interests of citizens be protected in the public services?

The current crisis offers a unique opportunity for the emergence of a new, sustainability-oriented economy. This requires innovative policy, not a return to the past.

Finally, whether we will succeed to achieve the required fundamental cultural reorientation in time depends on whether a tipping point can be reached, where enough people are willing to promote it. Hence, there is importance of a well-founded view of life, which determines the way man relates to matter and nature.

The decisive factor may be the answer to the ultimate question posed to each of us:

- What have I done in my lifetime, with my abilities, in this critical phase for humanity?
- Has this been a “self-centered” existence, focused on money and blind to the distress of the world?
- Or have I tried – in a spirit of empathy – to promote a more peaceful, humane, and sustainable society?

To this question, Herman van Rompuy, the current president of the European Council, offers a profound and guiding answer in a Haiku of only nine words:

*God, goedheid, liefde
gekregen en gegeven
vullen een leven.¹*

*God, goodness and love
both received and given
give meaning to life.*

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Notes

1. Herman Van Rompuy, *Haiku* (Gent: Karakters, 2001)

Privacy is Not Dead, it is Just Resting

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“Those who would give up essential Liberty, to purchase a little temporary Safety, deserve neither Liberty nor Safety.” – Benjamin Franklin

Abstract

Our right to privacy is under assault. Companies are collecting more information about how we live and our views, often with questionable motives. At the same time, many governments are tracking their citizens more than ever before.

Privacy is not just about keeping a bank account hidden or a love affair a secret. It is about freedom. It is about the right to do what we want to do and express our thoughts, alone or with others, without being watched. It is an essential component of relationships, offering intimacy and allowing shared discussions and experiences. It is what has separated modern societies from totalitarian regimes. If what we do and where we go are tracked and recorded, we tend to change our behaviour. If what we write or say is monitored, we hold back.

Despite its importance, new technologies and laws have allowed the privacy of millions of people to be invaded. A fundamental right is evaporating. If we let the trend continue, we risk losing almost everything enlightened modern societies hold dear.

1. Don't Shout Across the Room at Parties

When Mark Zuckerberg, the founder of Facebook, said in 2010 that he thought that people wanted to be more open about sharing personal information he was suggesting that our views on personal privacy have shifted greatly in a very short time. When he and others founded Facebook just six years earlier, he said, “the question a lot of people asked was ‘why would I want to put any information on the Internet at all?’”

Today, the generation of Facebook fans and LinkedIn lovers no longer cares about the information they post. Hundreds of millions share intimate details of their lives. They shrug when Facebook and its rivals change their privacy policies to make this information more widely available, deeming their privacy irrelevant or unimportant. As Zuckerberg says, information about us has become public by default.

Yet there remains the question about who or what is driving the change and why. Is the new openness about personal information the result of fundamental changes that have taken place in our societies? Do people no longer care about their privacy? Or is the change being driven by companies wanting to profit from prying into our lives? Can we trust Facebook, Yahoo, MySpace, Bing, Google, Skype, Microsoft, Apple and others with the information we have given them and that which they have collected themselves?

That would certainly seem rash, especially after recent revelations over their close links to America's national security apparatus. The fact that these firms are so large and powerful is itself reason to worry. Because they have almost no competition, dominant companies have a tendency to exploit customers and markets, as the oil, rail-road and banking barons of the 19th century did. Today's big American technology companies don't control the electricity supplies, bank lending or transport routes, however. They control something much more powerful – information.

Using the information they hold, these firms now have the ability to track individuals and groups with similar views and ideas, whether they are in contact or not. They know who is left-leaning, who is gay, who is worried about their weight. They know who our friends are and where they are, even when we do not. They have the ability to nudge our views in directions they might find beneficial – to make us think more favourably about particular products or negatively about issues like privacy, for example. Through the use of 'sock-puppets', fake online personae used by marketing firms and government organisations, they can manipulate our opinions about news events and politics.

Recent technological developments raise other concerns. The latest generation of tablets and smartphones are able to report their location, even when they are switched off. Software makers and telephone companies can keep track of where we are and where we have been. The next generation of phones will even be able to track the type of movement being undertaken – a car journey, a walk, a train ride, for example.

More troubling still, the activities of the big technology companies, and what they do with the information they hold are almost completely unregulated. Within the US, the authorities have said that regulations would hinder commercial interests and so companies such as Facebook and Google will only face a biannual audit of their activities for the next 20 years. New regulations are being developed in Europe, India and China but they will not come into force for several years. For others, indeed for the majority of users, what these companies collect and what they do with the data are beyond the scope of national laws. This is especially troubling because these big firms have already shown very poor ethical standards.

2. Two-Facedbook and Twittish Twitter

Intel, Google and Microsoft have all been fined for anticompetitive behaviour. Apple and Skype have been repeatedly investigated and accused of it. Google was caught getting around the privacy settings on its own browser by placing tracking cookies¹ on websites. The US Federal Trade Commission (FTC) says Facebook has 'repeatedly' failed to honour its promises to keep personal information private,² has continued to make information available even after users deactivated or deleted accounts, and shared information with advertisers and developers when it had promised not to. Google collected information about internet access points and user details illegally with its Streetview car and then failed to delete the data despite repeated assurances that it would.³ Many of Apple's programs have been found to be 'harvesting user information, including entire address books' without the users' permission.⁴ Twitter has acknowledged that it has stored customers' address lists on its servers too, without them knowing. When this was discovered, instead of apologising, the company amended its privacy policy to make the practice standard.

Sergey Brin, one of Google's founders, famously once said that the perfect search engine would be 'like the mind of God'. It would be everywhere and know everything. By combining the information it collects from all the sites it operates, the company appears to be making every effort to develop this, a system that knows you better than you probably know yourself.

Google's main search engine tracks your interests and then filters the results you see, depending on your previous searches. It tracks the sites you visit. YouTube, which Google owns, tracks your taste in videos. Streetview Google Earth and Google Maps offer a picture of where you live and where you go. Picasa, Google's photo sharing website, uses facial recognition software to identify you and your friends. Gmail knows who you write to and what you say. Google Docs stores your letters, Google Calendar your plans. The company's Android operating system on your phone or tablet knows exactly where you are and where you have been. Changes to the company's privacy policy in 2012 allow it to collate all this information.

By integrating so much information, Google even has the ability to track those who are not active on its sites. As long as your friends are talking about you and posting your picture, you and your movements are being logged.

3. Not Now Google

Taking this a step further is a system called 'Google Now' which collects everything that Google knows about you and then tries to create a 'theory of you' to predict your needs. This is called 'push search'; rather than posing questions, the system tries to give you answers before you ask.

Google Now knows, for example, where you are likely to be at certain times of the day, ties this to information about where you actually are, and then tries to predict what you will do next. If you have an appointment in your Google Calendar, and usually travel by bus, it will tell you when you need to leave. If you have bought a flight ticket online, it will know this and so tell you about any air-traffic delays. If you are in the car, it will learn where you go or where you recently thought of going based on your searches. So it will make suggestions and tell you how long the journey should take, given the traffic conditions. The system also gives you updates on your favourite sports teams, which it works out from your searches.

Google Now is obviously good for advertisers, because it helps them target their messages better. Journalists report that the system is 'creepily self-aware'. Yet the question is: should Google be permitted to have a theory about any of us? Should a private company, one found guilty of collecting private data illegally, have so much information about us that it can help direct our lives? Rather than simply trying to predict what we do, the risk is that it will try to influence or determine the outcome. Rather than being helpful, it has the capacity to modify our experiences and ideas, either to the benefit of advertisers or for some social or political end.

4. The State is Watching You Too

Our privacy is not only under assault from big American technology companies. Governments are invading the privacy of citizens more than ever before, often illegally.

Millions of people are being watched, tagged and monitored by their governments, even though most are not guilty of any crime, will not be charged with any offence and, until Edward Snowden's revelations in the summer of 2013, did not even know they were being spied on. Even now, they are told that the snooping is essential to combat crime and fight terrorism.

The traditional approach to tackling crime is to wait for an offence to be committed and then use investigative techniques to catch the culprits. Its success depends partly on people being dissuaded from committing crimes, through education, instilling a sense of social responsibility and having penalties severe enough to put them off. It is the enlightened approach to crime and assumes, at its core, that good society is based on trust.

The new approach supplements the traditional model with technologies that can make investigations simpler, though these also carry costs. They make it possible for some serious crimes to be stopped before they are committed and so can save lives. They make solving some crimes easier. By using the location tracking system on mobile phones or CCTV cameras for example, the police can identify who was present when a crime was committed. By reading the emails sent between members of a suspected terrorist cell, the security services can keep an eye on what they are planning.

Inherent within this approach however, is an assumption that innocent people will not mind being watched too. For it to work, the security services need to monitor people they think might commit a crime. And sometimes they will get that wrong. They will also track people who abandon plans to commit a crime – who may do nothing illegal either. And they will inevitably track the friends of possible wrong-doers, to see if they are involved. The new approach means that many people are tracked, with their friendships and movements watched, logged and recorded without them knowing, when they are not guilty of anything.

To function, the modern approach requires every citizen to accept that they may be monitored. Everyone has to trade a possible loss of privacy for greater security. They have to accept that the details of their lives may be tracked and stored without their knowledge and for no good purpose. Moreover, they have to accept this imposition without their agreement, and under the assumption that the powers given to the police and security services to do this will not be abused.

Despite the obvious advantages, the drawbacks with this approach are many and grave. It undermines the fundamental right to a presumption of innocence. By tracking us, there is an inherent doubt, a small assumption that we may be guilty of something. The system is also easy to abuse and it's hard to track when it is. It can lead to a state that is effectively controlled by the police, where people are fearful about what they do, say and think.

Despite these disadvantages, such modern crime-fighting thinking lay behind the creation of America's Information Awareness Office (IAO) in 2002. This was established to build a database on everyone. Its goal was to create Total Information Awareness (TIA), a computer program that would collect data about all of us and then interrogate this to identify patterns of interest. Without having to apply for a search warrant, the IAO wanted to collate information from personal emails, financial transactions, medical records and social networks and so build a picture of every individual in America and ultimately everywhere else too. This was

to be used to identify suspicious activity, unhealthy relationships and threats. The original IAO program included funding to collect biometric data too, and allow people to be tracked using a network of surveillance cameras.

Less than two years after it started, the IAO was shut down by Congress because of fears that it would lead to a mass surveillance system. Yet its ideas are still with us and many of its projects have been given the funding they needed. What it set out to achieve has been created, in other ways and under a different name. The master software program has been renamed 'Stellar Wind' or simply 'The Program' and, despite legal objections on constitutional grounds from top Justice Department Officials,⁵ the massive computer needed to interrogate all the information is nearly complete.

The NSA's \$2 billion data storage facility will eventually have the capacity to process yottabytes (a quadrillion gigabytes or 10 to the power of 24 bytes or 500 quintillion pages of text) of data and, from 2014, it will be the centre-piece of a 'Global Information Grid',⁶ with the capacity to store personal information for decades.

The blandly-named Utah Data Center will intercept, decipher, analyse and store vast swaths of the world's communications. With the help of an array of listening posts and satellites, it will capture and store the contents of private emails, phone calls, and Google searches, as well as all sorts of other personal data trails – parking receipts, travel itineraries and store purchases. Because of its vast computing power and the huge number of messages that can be analysed simultaneously, which make it easier to identify patterns, the Centre will also be capable of deciphering previously encrypted material. This will give America access to an even wider range of password-protected data than now, including financial information, commercial reports, databases, stock transactions, business deals, foreign military and diplomatic secrets, legal documents and other private personal communications.

Rather than being pulled together by the government as was envisaged under the establishment of the IAO, the data needed to feed this computer will come from private companies. Google, Facebook, Twitter, Apple and all the others have collected all the information needed, and even more effectively than originally envisaged. Congress has not been able to object.

By tapping into Facebook and other social networking sites, the authorities in America and much of Europe know who our friends are, what we do and what we like. Google's data tell them our interests. Mobile phone apps show them where we are, to within a few feet. Twitter is used to identify 'communication clusters',⁷ groups of people with similar views and the opinion leaders they gather around. Twitter was especially useful in pinpointing the ring-leaders during the Occupy movement's sit-ins in late 2011 and has also been used to track Tea-Party thinking, to predict which political candidate members we will want to follow.

5. Sharing More Than You Intend

The creation of this giant computer and database is not the only developments that should bother us, however. Part of the IAO's original remit included mining the information hidden in metadata. This capability has also been developed.

Metadata is the technical name for the hidden content on our computers, the electronic DNA. Metadata lie behind all websites, videos and electronic documents. They show when

computer files were created, where they are located on a hard drive and when they were accessed or changed. They show the location and identification of the computer as well as the name of the user and the Internet Service Provider. They show the changes made to documents, revealing what the writer added and deleted. Comments made by those editing the text are also traceable. This is also true for those who use cloud computing services and for files converted into PDF format. (Metadata can be removed though.)

Metadata can be used to show, for example, that a series of pictures was taken using the same camera. If they were taken using a camera with a location detector, the metadata show the precise location of the picture. It can be proved that photos said to have been taken in New York were actually snapped in Hong Kong.

Lawyers and government agencies value metadata because they are so revealing. Metadata ‘mining technologies’ have been developed to identify the thinking behind documents and reveal the details of who contributed to them. US security agencies have developed meta-metadata analysis tools, which mine the metadata about the metadata. And, crucially, websites such as Google and Facebook, which promise to protect some of your information in their privacy policies, do not promise to protect users’ metadata. They class them as business information which they retain and store indefinitely.

Scalable Social Network Analysis (SSNA) software was originally a creation of the IAO too. The IAO’s plan was to create a program that would analyse real life social networks – families, sports teams, legislatures—for attributes that were interesting or valuable. Today, the software is used commercially to analyse data contained in email, sent on Twitter or posted on Facebook and Flickr to target advertising. It is also used commercially in the online gaming industry, and to track buyer behaviour.

For governments SSNA software is used to extract and review parts of speech and distil text. It looks at patterns and relationships hidden on social networking sites, in phone conversations and in corporate data. It is used to identify fraud, find hidden terror cells, track money launderers and seek out organised crime syndicates. It can be used to monitor people’s personal interests too, track their friendships and affiliations and understand their wants, beliefs, written thoughts and activities.

6. No ‘Reasonable Expectation of Privacy’

Such developments, while technically impressive, are also worrying. The government agencies that use them (and not just in America) freely admit that they are compromising privacy.⁸ Thanks to changes in laws since 9/11 however, most of these methods of collecting data are legal – though not all.

Technologies of more questionable legality have also been developed and used by several government agencies, including computer viruses and Trojan software deliberately used to infiltrate computers. Examples include CIPAV* and Magic Lantern.[†]

Magic Lantern tracks keystrokes and is installed via an email attachment or by exploiting the vulnerabilities in computer systems. The FBI originally wanted to activate the program

* See https://en.wikipedia.org/wiki/Computer_and_Internet_Protocol_Address_Verifier

† See [https://en.wikipedia.org/wiki/Magic_Lantern_\(software\)](https://en.wikipedia.org/wiki/Magic_Lantern_(software))

when someone started to use PGP encryption to protect their email messages, to allow them to open sealed documents.

CIPAV is a virus tool used by the FBI to gather location data. It identifies the address of a computer, the open ports, installed applications, operating system and web browser while tracking the websites visited. Its existence was exposed in 2007 during the trial of a boy who made bomb threats to his school near Seattle.⁹ His computer had been infected with the software through MySpace. Controversially, the US Circuit Court of Appeals ruled that the FBI's actions were legal as Internet users no longer have any 'reasonable expectation of privacy'.

The FBI has also developed an internet traffic 'packet sniffing' program called Carnivore. This is installed on the computers of Internet Service Providers and used to track messages in transit.

7. Micro-brother is Watching Too

Governments are not just using computers to track their citizens. According to *The Washington Post*,¹⁰ technologies and techniques honed on the battlefields of Iraq and Afghanistan are in the hands of British and American law enforcement agencies now too, allowing mass surveillance of their citizens.¹¹

In the UK, almost all towns and cities are already under 24-hour CCTV surveillance. Many cameras are fitted with facial recognition technology and microphones to listen into nearby conversations. British¹² and US authorities have also started to use unmanned aerial drones to monitor citizens and gather evidence for prosecutions. In the US, these aircraft can stay airborne for up to 15 hours, and watch from a height of up to 7,000 metres, using cameras, infra-red sensors and radar.

In England and Wales, the police have collected DNA from 6 million citizens* – more than one in eight adults, creating the largest database of its kind in the world. Samples are taken from anyone detained at a police station, even if they are not charged with a crime. Although the police wanted to retain these samples indefinitely, a ruling by the European Court of Human Rights means that samples of those convicted of non-serious crimes will only be kept for between six and twelve years. Others will be retained indefinitely.

Records of people's emails, telephone numbers dialled, online games playing, web-browsing and chat-room activities are also now stored in many Western countries for many years, by law. This includes information about text messages, Google searches and Facebook friends. Many authorities record all travel into and out of their country too, including details of itineraries, seat reservations, addresses, credit cards and phone numbers accessed.

Those wanting to avoid such intrusions will find it hard. Not being on the Internet and not having a smartphone does not mean you cannot be tracked. Your face has probably already been logged, apart from your being followed through other electronic activities such as credit card use. Thanks to automatically tagged photographs on social media sites, the FBI¹³ is now tapping this as a new source of intelligence. With the latest security cameras able to search through 36 million faces in just one mouse-click, remaining anonymous is hard. Even

* As of the end of 2012

wearing a mask, dark glasses and a wig will not help. Thanks to another part of the IAO initiative, Human Identification at a Distance (HumanID) software makes it possible to identify your gait, the way you walk, from up to 150 metres.

8. Yesterday's Idea And Tomorrow's Too

With so much snooping, it is easy to imagine an Orwellian future, with televisions spying on their viewers, microwave ovens recording dinner conversations and beds reporting the dreams of those who sleep in them. At issue is not just how much of our lives is suddenly being recorded; it is also the pace of change that matters. Thanks to technological developments and new pieces of legislation, the level and sorts of monitoring have expanded astonishingly quickly in little more than a decade while laws designed to protect us have struggled to keep up.

"Basic freedom to behave as individuals is being compromised."

The reason most people are unperturbed by these developments is that the risks attached to them still remain unclear. Moreover, we are led to believe that the changes are both necessary and useful.

Although privacy is protected under Article 8 of the European Convention on Human Rights (ECHR),* additional rules will come into force by 2016 to provide new safeguards. Companies operating in the EU will need to gain consent, which will be strictly defined, before they can use or process data about European citizens. They will only be permitted to collect the information they need and they will only be able to keep it when they need it. Moreover, any data held must be movable, so that it can be taken down from a social network site whenever a user wishes. European citizens may also be given a new right – the right to be forgotten. They will be able to see the information a company holds on them and demand that all copies be deleted.

While such regulations will undoubtedly help, and they only help those in Europe, they treat the symptoms, not the problem.

The question they fail to tackle is, why are these companies and our governments invading our privacy at all? Humankind has survived for centuries without this sort of intrusion and there is scant evidence that it is making the world any safer. It may have made the job of policing a little simpler and allowed companies to sell a few more products. But the majority of people are worse off, because their basic freedom to behave as individuals is being compromised.

It is especially hard to justify this government intrusion when the risk of terrorism is so small. The number of deaths caused by terrorist attacks in the US and Europe since 9/11 is tiny compared to those caused by heart disease, road accidents and even child-birth. Yet Western governments have built a massive network of computers to spy on their citizens, while doing little to address problems that are real and urgent – such as climate change and youth unemployment.

* Contrary to popular opinion this Convention and the Court which hears related cases are not part of the European Union (EU). The treaty came into force several years before those needed to form the EU were developed. There is a link now though, with any new member of the EU required to sign the ECHR. Even so, there are more than 20 signatories who are not members of the EU, including Turkey which was a founding signatory, and Russia.

9. Without Change, We Will Behave Differently

Of course, the right to privacy has been breached throughout history. The difference between then and now though, is that what used to be an exception is now done automatically and few people question it. Worse, much of the surveillance is done in secret, with little or no oversight by courts or elected bodies.

In *Delete – The Virtue of Forgetting in the Digital Age*, Viktor Mayer-Schönberger tells a story about a Vancouver-based psychotherapist, Andrew Feldmar.¹⁴ In 2006, Feldmar tried to cross the Canada-US border – something he had done many times before. On this occasion though, the guard searched online and found that he had written in a medical journal about taking LSD in the 1960s and so he was barred from entry.

“The invasions of privacy we have seen in the last ten years will gradually destroy our basic right to freedom unless they are stopped.”

The following year, Stacy Snyder, a Pennsylvania teaching student, posted a picture of herself at a party on MySpace.¹⁵ She was wearing a pirate’s hat and holding a plastic cup which may have contained alcohol. Classmates saw the photo and reported her for breaking college rules. As a consequence, she was denied her leaving certificate, which effectively ended her teaching career.

Many more examples illustrate that the information being collected by private companies and governments has the capacity to change our lives in ways we can barely imagine. It has the potential to change what we do, write and say. What we do will be recorded, posted and stored. What we write will be read by people other than those intended. What we say will be taped and filed.

If we cannot delete or modify these data, the information being uploaded about us risks imprisoning us in our past, never allowing us to forget. It takes away a vital and natural part of what it means to be a social person, the ability to put the past behind us at times. Without change, embarrassing pictures, angry tweets and bitter blog postings will remain in the ether forever, and with them our embarrassment.

Not being able to escape the past will make us frightened of the future too. We will worry that information we post tomorrow might be used against us later. That will make us change how we behave. As more non-digital records are scanned and uploaded, even those things we did before the Internet era have the potential to haunt us again too.

If we do not stop these trends, they will force us to organise our societies and handle our relationships differently, making us become more secretive and frightened. They will infect our ability to make judgements and act spontaneously. They will affect our ability to live our lives as we choose.

The invasions of privacy we have seen in the last ten years will gradually destroy our basic right to freedom unless they are stopped.

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Something America and China Could Do Together

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Abstract

Neither China nor America has a system of governance geared to solving 21st century problems. To discover governance models that can deal efficiently and wisely with imminent technological and global challenges, experiments could be conducted, in both countries, and in tandem, in realms such as academia, healthcare, and business. By the time efficient global governance becomes crucial to human survival, China and America could have developed and tested models of organizational governance that show us how to proceed at national, regional, and global levels.

It may be an exaggeration to say that as Chinese-American relations go, so goes the world, but it's probably not far from the mark. I'm not only thinking of China's and America's common interest in avoiding war on the Korean peninsula, but looking ahead to a time when, if the two twenty-first-century superpowers trust each other well enough to act together, the world could take an irreversible step away from the twin perils of environmental degradation and war.

At the moment, the greatest threats to China and America come not from each other, but from flaws in their own systems of governance. Chinese and Americans alike are burdened by political systems that are not keeping pace with the times.

In the spirit of trial-and-error, why couldn't the two giants conduct experiments designed to discover forms of decision-making that are better suited to deal with the technological, environmental, and political challenges that we face?

Each nation would draw on its own traditions and could borrow from the others. As many have noted, the political philosophies of Confucius, Mo Zi, and Huang Zongxi are as rich as those of the Founding Fathers.

Confucius taught that a harmonious relationship is one in which both partners take care to protect each other's dignity. To affirm dignity is to confirm belonging and grant a voice in decision-making while disallowing exclusion, paternalism, and coercion.

Dignity is a universal desire, not something liberals favor and conservatives oppose, or vice versa. So too, every faith and every political system supports equal dignity in principle, if not in practice. This suggests that instead of choosing between libertarian and egalitarian models of governance, we should seek a dignitarian synthesis that incorporates both Jeffersonian and Confucian principles.

Though he didn't call it dignitarian governance, Confucius was one of its earliest advocates. Confucianism argues that rulers should be chosen on the basis of merit, not entitlement, and that the governing class is not above the law, but rather, honor-bound to serve not their own but the people's interests.

Interpreted in today's language, good governance means honoring legitimate rank, but abjuring rankism – abuse of the power inherent in rank. Dignitarian governance – be it academic, corporate, or civic – rests on precisely that distinction. Rankism, not rank, is the source of indignity, so by barring rankism, dignity is secured.

Though many subspecies of rankism – corruption, cronyism, favoritism, predatory lending, insider trading – are unlawful, these laws are nowhere consistently enforced.

“Wherever accountability is weak, rulers may be tempted to use the power of their office not to serve others but to strengthen their own hold on power.”

Western democracies cannot ignore the fact that many of today's issues are too complex to be settled at the ballot box. “One person-one vote” style democracy may have been up to the tasks of governance in an agrarian age, perhaps even in an industrial age, but it is no match for the intricacies and perils of hi-tech, knowledge-based societies.

It can be argued that humankind has come this far only because science was in its infancy and we lacked the means to destroy life on Earth. But now, avoiding irreversible damage to the planet and to each other is too important to leave to autocrats, ideologues, or amateurs. Society pays a steep price when its leaders learn on the job, much as it does for on-the-job training in business, education, and medicine.

But there's the rub. Wherever accountability is weak, rulers may be tempted to use the power of their office not to serve others but to strengthen their own hold on power, if not to enrich themselves. Put the other way round, any model of governance that would substitute expertise for popular elections must have a solution to the age-old conundrum of holding accountable those to whom authority is entrusted. Be it the “experts”, Confucian sages, Platonic philosopher kings, or highly trained professionals, the burden of proof is on those who would make light of the warning implicit in William Buckley, Jr.'s remark: “I should sooner live in a society governed by the first two thousand names in the Boston telephone directory than in a society governed by the two thousand faculty members of Harvard University.”

Dignitarian governance offers an alternative to traditional democracy by providing accountability through layers of governing bodies comprised of a fine-tuned mix of professionals and representatives chosen by those who have a stake in the decisions of those bodies.

Take academic institutions as an example. In the university, dignitarian governance means that students, staff, faculty, alumni, administrators, and trustees all have a voice and

a share of the votes. Votes on policies affecting distinct aspects of academic life are apportioned according to the responsibility that constituencies bear for those aspects. Thus, the faculty holds a majority of votes on educational policy, students hold the majority on issues of student life, and administrators hold a majority, but not a monopoly, on budgetary issues. Trustees, in consultation with the other constituencies, periodically choose new leadership for the institution, and hold fiduciary responsibility, but they delegate day-to-day internal governance to faculty, students, and staff.

Many of the issues facing our globalized hi-tech world call for technical solutions, not political compromises. It would be naïve to suggest that effective mechanisms of accountability already exist, but it's not too soon to begin designing and testing alternatives to find ones that work. Much experimentation will be needed to learn how to apportion votes among stakeholders so as to optimize the overall quality of decision-making while ensuring accountability.

We could begin in education and healthcare, and then apply what we learn to management and business. As we gain confidence in the capacity of dignitarian models to bring more knowledge to bear on decision-making without weakening accountability, we can introduce them into civic affairs, first in municipal government and then at the state, regional, national levels and even at the global level.

Democratic governance took time to develop, and so will dignitarian governance. But we must try because the only way to create and maintain the global harmony that will protect us from self-destruction is to create forms of self-governance that ensure dignity for everyone.

Both China and America have traditions and institutions that hold vital lessons for modernizing decision-making. While it's a stretch to imagine either country undertaking fundamental reforms in the near term, it's not quite so hard to imagine them doing so in the context of a loose partnership. As for our global future, what could be more auspicious than the two current superpowers working in tandem to invent governance tailored to meet the challenges of the twenty-first century?

"The only way to create and maintain the global harmony is to create forms of self-governance that ensure dignity for everyone."

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Limits to Nature

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Abstract

We like to think that we live in a world without limits. In practice though, everything is defined by the limits it imposes on the environment in which it exists. Our societies too, are defined, and made possible, by their limits, by the rules and values we impose. Throughout history, humanity has sought to understand and modify the limits that surround it, to cross boundaries and achieve ever more. As man-made limits are changeable, and as we have learnt more about the workings of nature, we have become conceited. We have begun to believe that we can change the limits of nature too. This is an illusion. We cannot manage the limits of nature and it is probably dangerous for us even to reach them. The amount of carbon we have pushed into the atmosphere in the last century shows that we should not test the limits of nature. We have started a process and the consequences will last for centuries to come. It is essential that we stop worsening this process and prepare ourselves for the changes ahead.

1. We cannot manage the limits of nature, even if we think we can

It is easy to want to live in a world without limits. We don't want to be constrained by anything, to be held back. Like long distance runners and formula one racing car drivers, humankind is always trying to push the limits, to achieve ever more. As technology allows us to breach ever more barriers, it is easy to think that we already live in such a world.

Yet everything has limits and it is unrealistic to wish otherwise. There is a maximum speed human beings can run, even drug enhanced. There is a maximum speed that racing cars can achieve, before they take flight. We don't understand where these limits are, simply because we haven't reached them yet. One day we will reach them though, and we will understand then that these limits are hard, that they cannot be overcome.

When we talk about boundless oceans, endless horizons and infinite possibilities this is just poetic. The oceans and the horizon are not limitless at all. They are bound by the planet. While possibilities may be many, they are never infinite. Even our universe has limits. What is in our head has limits too. Our imagination is limited by everything we currently understand. It is impossible to conceive anything more.

When we reach natural limits, even the cleverest technology cannot overcome them. They are not limits that can be breached, despite what we all like to believe. We only think that

they can be overcome because we have not encountered many of them so far, and because the limits we have breached until now were man-made.

Some of the natural limits are known. Light cannot travel faster than 300,000 km per second in space. Nothing can be colder than -273.15°C. Water ice cannot be heated above 0°C under normal pressure. That is the limit of its existence as ice.

Life is, thanks to limits. Cells are limited from their environment by membranes. Plants are limited in their rate of growth by nutrients, gases, water and light. The climate is limited by the heat of the sun, the activities of the oceans and the atmosphere.

The ability of living creatures to multiply has limits too. They are limited by the availability of resources, particularly energy, and by competing with other living beings. These limits are tightly woven into food chains.

Practically, as well as philosophically, everything is defined by limits, even things that are man-made. A house is bound by walls and a roof, the limits of its physical presence. It also imposes limits on the environment around it. It limits the amount of the rain that gets in. The bricks from which it is built are limited too, defined by their dimensions. A pile of bricks is chaos. When they are built into a wall, there is structure. Bottles, gas tanks and even the hulls of ships are designed to limits too. They are made to keep one substance in and others out. Their function is to limit the influence of what lies outside.

These are not natural limits but artificial ones.

In society too, we are defined by limits. The size of our society, from prehistoric times until now, has been limited by the rules we have imposed on it, to encourage a group of people to live together in an orderly way. At first, those limits were defined by rituals and taboos. Later, they became laws.

The difference between man-made limits and natural ones is that they are changeable. They can be overcome. We can knock down walls and smash the bottles we have made. We can change the laws. But we cannot change the laws of nature.

2. We do not know what nature permits us to be

Man-made limits have made our development possible. But they have also made us think that all limits are changeable. Our technological advances over decades support this idea, that we can master and then manipulate what is around us. We can take energy from the wind, modify cells and split atoms into their tiniest components. But this understanding of the world and our ability to manipulate it have also made us foolish.

Foolish, because the discoveries we have made are really rather modest. When we take energy from the wind, we simply change what was already there. When we change the contents of cells, we copy what nature could do. We do not create new life. And when we split atoms into their tiniest parts, all we are doing is looking inside.

There is so much that we do not understand, especially when it comes to the natural world and its limits. We do not know the limits of consciousness, or even what it is. We have not explored most of the oceans or understood their importance, though they are the largest part

of the planet. We cannot predict the weather more than seven days ahead. We do not even know what substance or force makes up more than 80% of the universe – and only discovered this very recently.

We also keep changing our ideas. Our theories about the origins of life and the birth of the universe have changed completely in the last 150 years. Many of them have changed in the last 50. Despite this, we are now certain that we have the right answers, or at least most of them. Like small children who have taken a few tentative steps, we think we are able to run.

This may be natural of course. We are ambitious and, for the majority of the structures we deal with day to day, because we made them or have studied them for centuries; we mostly understand their limits. We understand the tolerances we need to work within. We know, at least generally, how far we can heat a piece of glass before it melts. We made the glass. We know too, more or less, how hard we can hit it, before it breaks. We have tested it.

The difference, between knowing precisely and knowing generally what will happen, are the tolerances. These are the boundaries to the limits. Tolerances can be big or small and they depend on a wide range of factors. They depend on how thick the glass is, for example, or what additional chemicals it contains.

When we, as humans, create complex physical systems that could cause problems if something goes wrong, we take time to understand these tolerances very carefully. This allows us to improve the design. So, we limit the chances of human error in factories by controlling them with computers. We build walls around nuclear power stations, to limit the consequences of very large waves. We limit the effects of a tear in the hull of a ship by giving it a second skin. And we limit the result of a failure in aircraft control mechanisms, by installing backup systems.

Similarly, there are tolerances in our complex social systems too, though not always by our design. These may be linguistic, religious or cultural. They may stem from our values or our political structures. In such cases, the tolerances act as buffers and warnings, to limit the consequences of a rupture. They allow wars or revolutions to be avoided, or permit them to be embraced, so that a new system is established.

In man-made systems, the tolerances are usually broad and flexible. In nature however, the tolerances are often poorly understood. As Rousseau said, “we do not know what nature permits us to be”. Nor do we know what nature permits us to do. This is particularly important when we consider very complex and interlinked natural systems, such as those that control our climate.

In nature, because tolerances are often extremely small, signals only appear when change is unavoidable. When a hurricane forms, there is nothing that anyone can do to stop its development or change its path. A process has begun. We can only watch the damage it unleashes. Similarly, melting Arctic icecaps and rising sea levels are not nature’s warning signals; they are signs that we need to change. They are the start of a transformation that we will have to witness.

In nature, the concept of time is different. For us, the impact of new political philosophy or a declining empire might last for many generations. This is a long time to us. In nature, tens of millions of years are but a moment.

We are used to simple, flexible systems that we designed and understand. Eager to gain the most for ourselves in the shortest possible time, and failing to understand the hard limits of natural system however, carries the risk that we can enter forbidden territory. If the environment wakes up and begins to defend itself, with its own peculiar means, and we continue thinking about how we can profit from the change, the consequences could be grave.

"We need to classify the environment as a global security issue, to place it above every other concern."

The changes humankind has unleashed on the planet are already unstoppable, certainly within any timeframe that we really understand. The effects of our pumping large amounts of carbon into the atmosphere have become visible within a century, a flash of earthly time. It will take many hundreds of years before the effects have passed.

3. It is tempting to reach a limit, unsafe to go beyond

It is human to want to breach limits. It is what fuels the fires of passion in explorers and pioneers. But it has also brought us a conceit. We think that we are the masters of everything around us. Our curiosity for the brink, and our willingness for conflict, adds to our belief that every battle can be won.

Nature is easily the most complicated system we know. We are part of it and cannot survive without it. It provides us with our food, energy and somewhere to live. It does this by working within limits. The acidity of the oceans and the gases in the atmosphere are *exactly* as most living creatures require. We know of no other place where this happens, or has ever happened. We know too, that an average temperature rise of even a few degrees will change all this.

We have set a process in motion that will force us to confront the limits of nature. Unlike the limits we make, these cannot be overcome, no matter how clever we are.

It is therefore essential that we stop everything we do that is bringing about this change.

4. Change is in all things sweet

How do we do that? The steps we need to take are much clearer than many of us imagine. We are making them happen, and the consequences are hard. First, we need to classify the environment as a global security issue, to place it above every other concern. We need to adopt a war-footing, in effect.

Future generations also need to be given representation in governance structures, to have a voice in all the decisions we take. Clear international targets for the reduction of greenhouse gas emissions need to be identified, and quickly, with a detailed plan and timetable for it to be achieved.

As well as reducing fossil fuel use progressively to zero, we need to stop deforestation and begin a programme of reforestation. Countries with large forested areas need to be compensated for doing this, or economically debilitating sanctions need to be applied if they refuse. We need to capture man-made methane and cut emissions from livestock.

We also need to prepare for what is to come. Many parts of the world will suffer badly from climatic extremes in the decades ahead. Everyone will need to pay more for food, water and energy. Without a response, this will bring instability. We also need to protect ecosystems, build flood defences in vulnerable areas, and develop the capacity to cope with more pests and droughts.

How much will it cost to reduce our carbon emissions and build defences against the climate change we have already unleashed, that will be with us for centuries to come? It really does not matter.

If we can print money to solve a financial crisis, we can pay whatever it takes to protect our future. Destroying our economies is better than destroying our world.

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Creativity and Education*

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Abstract

There is a call for increased creativity on the part of individuals, groups and society as a whole. For when creativity is blocked the mind becomes frustrated, even angry, violent and destructive. But why should creativity appear to be so compromised in our modern world? By contrast creativity appears to be totally natural and spontaneous in children; in their play, dressing up, make believe and even play fighting. Why then does it become impoverished as they become adults? Creativity in children is its own reward but as they enter school they find themselves rewarded for the work they do. Soon seeking approval and reward becomes their motivation and so they begin to look at the work of others for clues as to the rules of success. The paper discusses ways in which children's creativity can be fostered rather than blocked.

Creativity has become one of those “buzz” words that everyone gives lip services to. Put the word “creativity” into the title of a book and it will be a best seller. People ask: How can creativity be fostered? Is it possible to give exercises for creativity? A program? A system of education? Is creativity something that can be trained or taught?

You can certainly train people to carry out tasks in a better way, acquire new techniques and skills, and to accumulate new knowledge. But the whole essence of creativity lies in its freshness, its freedom, its newness. Creativity is often unexpected and exciting. It involves seeing things in new ways and breaking rules. Creativity may result in something radically different – e.g. Picasso/ Stravinsky, or it may involve the unfolding of an old, established form with a total freshness. e.g. Bach and the fugue.

I would argue that there can be no program, no system of training or education for creativity – whatever boundary we draw around it, something else that is totally creative will emerge in a different place. Creativity is not a skill; it is not a sort of muscle of the brain, or a technology of the mind. Creativity makes use of knowledge and skill but that is not where its roots lie.

I have always felt that creativity is perfectly natural. We should not ask how to be creative, rather we must question why we are not being creative! Creativity is the essence of life, of evolution, of consciousness, of nature and of matter. The universe itself is in a constant act of creation so, as its children, we should ask ourselves – Why, in such a creative universe, do societies and some individuals at times appear to be stupid, dull, destructive and uncreative?

* Talk given to an Ottawa group of teachers and parents interested in establishing alternative form of education on 23 Feb 1989. The talk began with a short introduction to the author's background and about the sense of wonder at nature that seems to have been with him from an early age.

– Or are we deceived? Are people really dull – or is their creativity simply being shown in other ways? Are we all, in fact, creative – and is it just that there are certain blocks which seem to frustrate us in certain areas of our lives? Do we all have the potential for creativity no matter how old we are?

1. The Child

The whole essence of the infant is creative – learning to walk, leaning to talk, word games, songs, play. Imagine creating a world of your imagination and playing with it for hours on end. Physicists I have talked to say that creating a theory is just like that – it is a play of ideas within the mind. Playing with mud, your food, with fabrics, with paints – this is totally natural to the child and something that Picasso could do this all his life. Dressing up, playing jokes, play-fighting – it's all an immense energy of the mind. It is hard to stop creativity in a young child. Creativity is an energy that constantly bubbles out of a child, even if he or she is forced to sit at a school desk for hours on end. You can't make your child creative, it simply is creative. The most difficult thing in the world is to get out of the way and let this creativity happen.

“Creativity is unconditioned; it is its own reward.”

2. Blocks

The thrill, the imagination, the play of childhood passes – although for some it never really goes. But what has happened, why does the world become so dull for some of us? Punishment and cruelty are obvious answers. And the low value that adults put on play and the high value they put on learning, knowledge, technique, seriousness and making a living.

But praise and reward can be just as serious a block as punishment. In *Science, Order and Creativity* David Bohm and I tell Desmond Morris's story of the chimps that loved to play with paint and produced some very interesting patterns of form and colour. But once the chimps were rewarded they lost interest in their paintings and began to produce the minimum acceptable. Seeking reward can be a significant block – knowing that something you or your friends are doing is valuable and then trying to repeat it. Children lose the fun of painting and begin to look at what their fellows are doing – this can be an important phase in leaning, or it can be the first step to becoming over compliant to external values and rules.

As adults we have internalized authority; we have roles, models, values that are not our own, goals that are placed upon us. All this can destroy creativity. The deadline, the writer's block, the program's goals – all can kill.

By contrast, creativity is unconditioned; it is its own reward. But external goals, rules, etc. that become internalized can destroy creativity and cripple the mind. I'd like to mention the idea of an “undetected brain damage” which is the result of pain, anger and frustration which all conspire to destroy the subtle nature of the brain and make it dull and mechanical.

When creativity is blocked the mind becomes terribly frustrated. It may become angry, violent and destructive. Or it may become dull, mechanical, depressed. Is our whole society suffering from a creativity that is frustrated?

In advocating creativity and the joy of play I am not advocating anarchy. I do not mean that there are no constraints, no rules, or morals to be placed on a creative person. Creative minds have always become engaged in a dialogue with rules and structures. But these rules are never arbitrary or mechanical, they are established by the medium itself – paint, words, sounds, physical processes, the needs of others, the health of the planet, the fabric of society. Bach chose the limitations of the fugue, Wordsworth wrote sonnets, theoretical physicists must constantly submit their creations to the court of experiment. Creativity is not anarchy, yet it is free and unconditioned in the way it engages of the rules and a particular form and in so doing transforms and enlarges their meaning and significance. Again let me emphasize that while creativity must make use of rules, techniques, skills etc.– these are not the origin of creativity, they are simply its tools.

3. Further Blocks

Our civilization praises the new, the novel, the unexpected. This can be another block. Let us ask, does creativity always have to involve the novel and different? Or can creativity be a revisitation, something that is immanent in the known, something fresh – like a new loaf of bread which looks exactly the same as every other loaf but has a fresh smell and taste about it. So we should not feel that we have to be different. Simply trying to do something different each time can be another block to creativity.

Creativity, to many people means production – I have to write a poem, I have to get down to a new novel, I have to come up with a better theory. Creativity may indeed lead to new structures and forms, to new objects in the world. But is that its deepest essence or simply the byproduct of its bubbling energy? I would suggest that creativity is a mind that is fresh, alert, sensitive. It is a mind that is not dull, mechanical, afraid, restricted. Creativity is an energy which moves through the whole body. Creativity can simply be seeing each day as new and fresh and full of potential. Creativity can exist in relationships, in the way we see nature, in the way we conduct our lives. Must creativity always mean paintings, theories, symphonies, poems and novels? Isn't it creative to teach and to learn? Again, when we think of creativity in children, we must not impose all these goals and presuppositions upon them.

“Creativity is so important to us that we find we can't leave it alone when we see it in others – we can't allow our children simply to be themselves. And so we must praise, reward, direct and intervene.”

What does the world need today? More novels, theories and paintings? They are certainly significant but I would also suggest that we need a totally different form of living, a way of facing the problems that plague our whole planet? We need teachers, politicians, parents who are highly creative. We need people whose minds are not damaged, who are alert, sensitive, who listen and watch both themselves and others.

4. Challenge

We ask how our children can be more creative. I would suggest that the first step is to allow ourselves to be creative. To allow that energy to bubble up from below. To play. To act in a way that is free and unconditioned and not directed by anything outside itself.

The hardest thing is to allow this creativity in ourselves and in others. Can we really stand back and let it happen? Not encourage it, reward it, direct it, structure it, give it goals. Can we simply leave the child alone to play, to take things in its own way?

Creativity is so important to us that we find we can't leave it alone when we see it in others – we can't allow our children simply to be themselves. And so we must praise, reward, direct and intervene. We all know a better way to do things, an easier path – and all this does is to divert the creative action from its source by introducing something external. It is so easy to “help” the child, to enlarge its world. But if we are all to play we must learn the importance of having the total freedom to be wrong, to make mistakes, to push something to its limits and then throw it away. (It's said that the test of a really good mathematician is how many bad proofs they produce!) The teacher and the parent must develop courage and creativity. There are no rules, no one can tell us when to step in or when to stand back.

Can we learn to be creative in the presence of the other? Can we learn to be creative to ourselves? Can we allow that play to take place without interference? Can we be watchful, alert and sensitive? Can we know the moment to engage with the other, to express our excitement, to share our skill and knowledge? In the end, being a parent or a teacher has to be a creative act in its own right. The creative parent allows the child that security and solitude in which to explore the universe in a creative way. The most important freedom that the parent or teacher can allow is the freedom to play and to make mistakes. But can we act as creative parents to ourselves? Can we allow ourselves the security and freedom to explore, to create and to make mistakes?

Finally let us ask:

- What do we really want to do?
- What is the most fun for us in life?
- Do we really want to do what we are doing now?
- Can we allow ourselves to play?
- What do we give the most value to in our lives?
- What is most important to us?
- Does play or fun in others make us uneasy?
- Must everything we do have an end or goal?
- Does the world truly appear fresh and new to us each morning?
- If we were given one year to live what would we do?

Question from the audience on the role of authority figures, particularly the tradition of the guru:

Answer: This, I believe, raises a difficult question – the role of the guru in the creative transformation of consciousness. Ancient and respected traditions place emphasis on giving oneself to the guru – of placing oneself in the guru’s hands and not attempting the journey on one’s own. The guru guides, admonishes, confronts, presents paradoxes and loves, so that by some charismatic power the consciousness of the student is transformed. In a sense, to give oneself to the guru seems to contradict the very notion of creativity I have proposed. The guru guides, admonishes, corrects and offers enlightenment. Is this really compatible with the ideas personal growth and internal transformation? Or is this interaction with the guru a form of dialectic in which one transcends one’s own world view through a constant engagement with the guru as “a force of nature”? These questions remain to be resolved.

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Book Reviews

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State of the World 2013: Is Sustainability Still Possible? Worldwatch Institute (Erik Assadourian and Tom Prugh, Project Directors).

Washington: Island Press, April 2013, 441p, \$22 pb. (www.sustainabilitypossible.org)

State of the World is an annual publication begun in 1984 by Lester W. Brown, founder of Worldwatch Institute and now heading the Earth Policy Institute. **SOTW 2012: Moving Toward Sustainable Prosperity** (Island Press, 2012, 241p; GFB Book of the Month, April 2012) provided 17 chapters by Worldwatch staff members and invited experts on such topics as making the Green Economy work for everyone, nine strategies to stop world population growth short of nine billion (universal access to contraceptives, education through secondary school for all, age-appropriate sex education, etc.), “degrowth” in overdeveloped countries, sustainable transport and urban development, a new global architecture for governing sustainability (on enhancing or transforming UNEP), food security, action to protect biodiversity, sustainable buildings, etc.

Four years earlier, **SOTW 2008: Innovations for a Sustainable Economy** (W. W. Norton, January 2008) offered essays on necessary conceptual reform in economics in seven areas: the Genuine Progress Indicator as replacement for the GDP measure, building a low-carbon economy, improving carbon markets, pricing water and ecosystem services, investing for sustainability, and new approaches to trade governance.

Without any reference to earlier volumes, **SOTW 2013** presents 34 essays in 441 pages—nearly twice as long as **SOTW 2012**! Bigger is not necessarily better, but this current volume amply demonstrates that there is much more to be said about the leaderless global sustainability project, and many ways to say it.

1. Engelman’s Introduction

Beyond Sustainababble, the initial introductory overview by Robert Engelman (President of the Worldwatch Institute), complains that “we live today in an age of *sustainababble*, a cacophonous profusion of uses of the word *sustainable* to mean anything.” (p.3) Through increasingly frequent vernacular use, the word has become a synonym for equally vague and unquantifiable adjective *green*, as in *green growth* or *green jobs*. More typically, use of the word lends itself to superficial corporate behavior often called *green-washing*. Phrases like sustainable design, sustainable sources, sustainable cars, and even a sustainable Olympics (UK, 2012) are common. But frequent and inappropriate use lulls us into dreamy belief that all of us are now able to go on forever, which is hardly the case.

“Simply doing ‘better’ environmentally will not stop the unraveling of ecological relationships we depend on for food and health.” (p.5) It will not stabilize the atmosphere, slow the falling of aquifers or the rising of oceans, or return Arctic ice. “In order to alter these trends, vastly larger changes are needed than we have seen so far. It is essential that we take stock, soberly and in scientifically measurable ways, of where we are headed.” (p.5)

The 34 essays are arranged in three sections: **1) The Sustainability Metric**, on what a rigorous definition of sustainability would entail (rather than reforming the global economy to “grow green,” we will be better served by thinking about biophysical boundaries and how to keep within them, while ensuring that all humans have access to the basics of a decent life); **2) Getting to True Sustainability**, on the gaps that remain between present realities and a truly sustainable future, and how to spur a sufficiently rapid transition; and **3) Open in Case of Emergency**, on responses to coming troubles and building resilience, “in view of humanity’s failures of foresight and political will to address the array of sustainability problems ahead.” (p.253)

2. The Sustainability Metric

The initial chapter, *Respecting Planetary Boundaries and Reconnecting to the Biosphere* by Carl Folke (Director of Beijer Institute of Ecological Economics, Royal Swedish Academy of Sciences, and of the Stockholm Resilience Centre) describes the Anthropocene as a new geological era in which human actions are a powerful force shaping the biosphere, and a manifestation of the great acceleration of human activity, notably since the 1950s. He summarizes nine planetary boundaries for critical biophysical processes, indicating the proposed boundary, current status, and pre-industrial value: 1) climate change (boundary of atmospheric CO₂ concentration at 350 ppm; current status is >400; pre-industrial value 280; 2) rate of biodiversity loss (boundary of 10 species per million extinct per year; current status >100; pre-industrial value 0.1-1; 3) nitrogen cycle, or amount of N₂ removed from the atmosphere for human use (boundary is 35 million tons/year; current status 121 million tons); 4) phosphorus cycle, or quantity of P flowing into the oceans per year (boundary is 11 million tons; current status is 8.5-9.5 million tons); 5) stratospheric ozone depletion (boundary of 276 Dobson units; current status is 283; pre-industrial value 290); 6) ocean acidification, or mean saturation state of aragonite in surface seawater (boundary of 2.75; current status of 2.90; pre-industrial value of 3.44); 7) global freshwater use, or consumption by humans in km³ per year (proposed boundary of 4,000; current status of 2,600; pre-industrial value of 415); 8) change in land use, or percent of global land cover converted to cropland (proposed boundary of 15%; current status of 11.7%); 9) atmospheric aerosol loading and chemical pollution (measures to be determined).

“Transgressing one or more planetary boundaries may have serious consequences for human well-being, due to the risk of crossing thresholds that can trigger non-linear, abrupt environmental change within continental- to planetary-scale systems.” (p.26)

[ALSO SEE **Bankrupting Nature: Denying Our Planetary Boundaries. A Report to the Club of Rome** by Anders Wijkman of the Stockholm Environmental Institute and Johan Rockstrom of the Stockholm Resilience Centre (Earthscan/Routledge, Nov 2012, 206p; GFB Book of the Month, January 2013), based on two scientific papers published in 2009

by Rockstrom and 28 others. *The Devolution of the Seas: The Consequences of Oceanic Destruction* by Alan B. Sielen of the Scripps Institution of Oceanography (*Foreign Affairs*, Nov-Dec 2013, 124-132), does not refer to “planetary boundaries,” but introduces an even more striking concept, arguing forcefully that “over the last several decades, human activities have so altered the basic chemistry of the seas that they are now experiencing *evolution in reverse*: a return to the barren primeval waters of hundreds of millions of years ago... (when) worms, jellyfish, and toxic fireweed ruled the deep.” (p.124; GFB emphasis)]

Defining a Safe and Just Space for Humanity by Kate Raworth (Environmental Change Institute, Oxford University) observes that airplane cockpits are equipped with an array of dials and indicators, but economic policymakers have nothing close to that for charting the course of the economy; excessive attention to GNP is like trying to fly a plane by its altimeter alone. Building on the concept of planetary boundaries, quantifying social boundaries make plain humanity’s extraordinary situation. Metrics for a “new economic dashboard” beyond GDP are discussed, with illustrative indicators of global deprivation, e.g. 13% of world population undernourished, 39% without access to improved sanitation, 30% without regular access to essential medicines, 19% lacking access to electricity, etc.

Other essays in this section discuss *Getting to One-Planet Living* (discussing humanity’s ecological footprint and resulting overshoot by 50%, and fair earth-share); *Sustaining Freshwater and Its Dependents* (current desalination plants worldwide only have the capacity to produce <0.5% of global water demand); *Sustainable Fisheries and Seas: Preventing Ecological Collapse* (on the need for international collaboration, sustainable aquaculture to diminish pressure on wild fisheries, tradable by-catch credits, etc.); *Energy as Master Resource* (on net energy analysis and energy return on energy invested or EROI); *Renewable Energy’s Natural Resource Impacts* (concluding that sustainable renewable-energy planning should be integrated, local, and global); and *Conserving Nonrenewable Resources* (noting that market scarcity could increasingly become the norm, leading to rising prices, ore grade declines, and greater environmental impacts, and pointing to ways to promote a “circular economy.”)

3. Getting to True Sustainability

Re-engineering Cultures to Create a Sustainable Civilization by co-editor Erik Assa-dourian notes that consumerism is “becoming the dominant paradigm across most cultures,” but it is not viable and must be changed to cultures of sustainability—a difficult task that is resisted by myriad interests that have a huge stake in global consumer culture; cites first attempts to pioneer cultures of sustainability such as new social enterprises, businesses getting certified as “B” or “benefit” corporations, promoting Earth’s rights as well as human rights, hundreds of ecovillages and Transition Towns, greening school curricula, and religions promoting sustainable stewardship of Creation.

Building a Sustainable and Desirable Economy-in-Society-in-Nature by Robert Costanza, Gar Alperovitz, Herman Daly, and six others compares the current laissez-faire economic model as measured by GDP, the Green Economy Model with GDP growth decoupled from carbon, and the Ecological Economics Model that focuses on sustainable human well-being and uses the Genuine Progress Indicator or other improved measures of real well-

fare. The new economic paradigm would respect ecological limits, protect capabilities for flourishing, build a sustainable macroeconomy that offers meaningful employment to all, promote broad participation in a strong democracy, use taxes as an effective tool for internalizing negative externalities and for improving income distribution (green taxes are also a form of rent capture, charging for the private use of resources created by nature), and use the LowGrow model (calibrated to the Canadian economy) for high employment, low carbon emissions, and a high quality of life.

Pathways to Sustainability: Building Political Strategies by Melissa Leach of the University of Sussex Institute of Development Studies argues that “sustainability is not primarily a technical challenge; it is fundamentally a matter of politics.” Four practical ways forward are offered: 1) deliberating goals by encouraging voice to alternative perspectives; 2) mobilizing citizens and linking up with similar movements worldwide; 3) building networks of multiple actors and institutions; 4) exploiting openings in deeply entrenched structures and regimes, thus providing political windows for new ideas and network positions. A diversity of strategies and styles will be needed, adapted to various issues and settings.

Other essays in this section consider ***Transforming the Corporation into a Driver of Sustainability*** (on reforming taxes and subsidies, introducing rules to govern financial leverage, introducing norms and standards for more responsible advertising, and measuring all major corporate externalities—both positive and negative); ***Corporate Reporting and Externalities*** (describes mandatory and voluntary forms, the proposed integrated report proposed by the International Integrated Reporting Council, the Sustainability Accounting Standards Board, and the Natural Capital Declaration proposed by 37 investment companies at the Rio+20 Conference in 2012); ***Keep Them in the Ground: Ending the Fossil Fuel Era*** (arguing that “a carbon focus is reductionist” and that the central problem is not emissions but extraction of oil, gas, and coal; a primary task is to calculate all costs and to imagine a post-fossil fuel era; a deliberate policy of keeping fossil fuels in the ground is “perfectly sensible”); ***Beyond Fossil Fuels: Assessing Energy Alternatives*** (utilizes an “alternative energy matrix” comparing 15 alternative fuels according to 10 properties, and comparing performance to fossil fuels; unfortunately, “transition away from fossil fuels does not appear at this time to involve superior substitutes” and alternative energy will require substantial up-front investments); ***Energy Efficiency in the Built Environment*** (buildings account for nearly half of all US energy consumed, and increasing efficiency can dramatically reduce emissions; the average financial return on investment for efficiency is about 20%, many nations have instituted green building codes and standards, and the Appraisal Foundation is beginning to account for the increased value imparted to a building by its energy efficiency features); ***Agriculture: Growing Food and Solutions*** (surveys ideas related to food for all, food for sustainable growth, food for health, and growing a better agroecological food system); ***Protecting the Sanctity of Native Foods*** (notes that indigenous peoples are 5% of world population, but occupy 20% of the earth’s surface and live in 80% of the world’s biodiversity hotspots; they are thus critical to ecosystem health and should be seen as major stakeholders in sustainability; the “native foods movement” continues to grow and thrive in a modern context); ***Valuing Indigenous Peoples*** (only about 1% of philanthropic dollars spent each year goes to indigenous peoples and the ecosystem services they support, including biodiversity protection; but their contribution is often ignored or marginalized, and ethnic minorities are too often evicted in the

name of “conservation”); *Crafting a New Narrative to Support Sustainability* (notes that interdisciplinary courses on “Big History” are now being taught in some 50 colleges and universities worldwide, describing the history of the cosmos, of life and civilization on our planet, and humanity’s place in the universe; often their central theme is the idea of increasing complexity); *Moving Toward a Global Moral Consensus on Environmental Action* (outlines a few of the principles fundamental to a global moral response: everyone has a right to life, liberty, and security; justice and intergenerational justice require equitable distribution of benefits and burdens; humans have an obligation to protect children from harm and to act with compassion; it is wrong to wreck the world); *Moving from Individual Change to Societal Change* discusses previous movements for major social change such as civil rights in the US, anti-apartheid in South Africa, and India’s independence movement, and the current climate change campaign of 350.org.

4. Open in Case of Emergency

Teaching for Turbulence by Michael Maniates of Allegheny College notes that there were 500 environmental studies and science (ESS) programs in US colleges and universities in 1990, growing to 1,200 programs by 2010 (90% at the undergraduate level), with a projection of 1,400 or more by 2015. However, a 2010 assessment found that too many of these programs do too much too quickly, with insufficient clarity and “multidisciplinary illiteracy.” There is a general trend toward urgency and alarm that can overwhelm students with a sense of hopelessness. Few programs address competing theories of social change or focus on social activism. Too many lists of “10 Easy Ways to Save the Planet” leave students unequipped to come to grips with their limitations. Rather than the “small and easy theory of social change,” a “curriculum for turbulence” is needed, to prepare students “to be thoughtful and anticipatory agents of change in the tumult to come.”

Governance in the Long Emergency by David W. Orr of Oberlin College warns that “we have entered a ‘long emergency’ in which a myriad of worsening ecological, social, and economic problems and dilemmas at different geographic and temporal scales are converging as a crisis of crises.” (p.279) The perfect storm that lies ahead is caused by a collision of changing climate, ecological disorder, population growth, unfair distribution of economic costs and benefits, and ethnic and religious tensions. “It is time to talk about important things. . . the challenges to be overcome are first and foremost political, not technological or economic.” (p.291) Coping with the long emergency, four models of governance are explored: highly centralized and authoritarian, a corporate-led transition focused on technological innovation and efficient and renewable energy, emergence of national and global networks abetted by the Internet and linked in global action networks, and revitalizing society as a strong democracy with deliberative institutions. We are between the proverbial rock and a hard place. There is no good case to be made for smaller governments, but we have good reason to fear an enlargement of government as both ineffective and potentially oppressive. “Given these choices, there is no good outcome that does not require something like a second democratic revolution in which we must master the art and science of governance for a new era.”

Other essays in this section address *Effective Crisis Governance* (on resilience as the capacity of a system to respond effectively, lessons from civil resistance against repressive regimes, flexible governance for rapid adaptation to new situations, and four elements of

transforming governance); ***Building an Enduring Environmental Movement*** (urging the environmental movement to evolve to “a deeper environmentalism” and a “new consciousness,” learning from religious missionary movements and forging a “missionary eco-philosophy” to build an ecocentric civilization); ***Resistance: Do the Ends Justify the Means?*** (the time has perhaps come for a massive wave of direct action resistance to accelerating rates of environmental degradation around the world; protests will be all the more effective if protracted and scrupulously nonviolent, while also disrupting business as usual); ***The Promises and Perils of Geoengineering*** (on pros and cons of solar radiation management, carbon dioxide removal, and space mirrors; calls for a middle ground for geoengineering—not as techno-fix but as a small part of an effort to steer the world to a state of rightness and fitness); ***Cuba: Lessons from a Forced Decline*** (notes that Cuban CO₂ emissions have been reduced by 25% in the past two decades, with a focus on meeting basic human needs rather than growth and consumption; humanity can thrive in a resource-constrained world if it learns from Cuba’s example); ***Climate Change and Displacements*** (looks at the impact of four years of drought in Syria, the warning by the Bangladesh government that >20 million people could be forced to move due to rising sea levels and storm surges, the potential of a one-meter sea level rise displacing 7 million people in Vietnam’s Mekong Delta, and adaptation measures to reduce vulnerability); ***Cultivating Resilience in a Dangerous World*** (qualities of resilience include diversity, redundancy, modularity, reserves, social capital, the capacity to make choices and innovation, inclusiveness, tight feedbacks that enable quick detection of change); ***Shaping Community Responses to Catastrophe*** (some 200-300 million people per year were seriously affected by natural disasters or technological accidents in the past decade; well-prepared communities anticipate and manage denial, and are poised for life-saving decisions and rapid action); ***Is It Too Late?*** (it is not yet too late, if we were to do everything right starting now and continuing for the next several decades; this is hard to do, and we will do some things wrong, so we must ask how much damage we will allow).

Comment: Making Broader Linkages

To answer the question in the book title, sustainability is still *possible*, as argued here in great detail. But whether it is *probable* is problematic.

Worldwatch provides a valuable cornucopia of authoritative, leading-edge ideas about sustainability, with an ample index. This book is arguably the best overview of sustainability issues to date, especially notable for the essays on the nine planetary boundaries and the need for a sustainability metric by Carl Folke, the concise overview of ecological economics by Robert Costanza et al., the emphasis on much-needed political strategies by Melissa Leach, new directions to improve college-level environmental studies programs by Michael Maniates, and the deep questions about governance raised by David Orr.

The major unavoidable problem is that it takes a good while to digest or even scan the 441 pages, which is not the fault of Worldwatch but, rather, reflects the many dimensions of the transition to sustainability that must be considered. Paradoxically, other important dimensions are not covered; i.e. there is only a slight overlap with **SOTW 2012: Moving Toward Sustainable Prosperity**, and with **SOTW 2008: Innovations for a Sustainable Economy**. Moreover, there are many books on sustainability that offer useful perspectives not covered by Worldwatch, e.g. **The Climate Bonus: Co-Benefits of Climate Policy** by Alison Smith

(Earthscan/Routledge, 2013; GFB Book of the Month, May 2013), which points to many “co-benefits” of low-carbon policies that can enable “a cleaner, safer and healthier world”—a strong and positive strategy that is lacking in the sustainability project.

In addition to linkages to previous **State of the World** reports and other publications from Worldwatch, and to other important books and reports not from Worldwatch, greater attention should be devoted to two broad sectors that ought to be seen as related to sustainability: the widening world of security concerns and the explosion in information and information technology.

Those who seek true sustainability should also be concerned about security, because, very simply, we can have no sustainability without security, and, in turn, no security without sustainability. Security concerns are widening far beyond military matters to now include energy security, food security, cyber-security, economic security, environmental security, and the broad umbrella term of “human security.” As noted in **The Quest for Security: Protection Without Protectionism and the Challenge of Global Governance** edited by Joseph E. Stiglitz and Mary Kaldor (Columbia University Press, April 2013; GFB Book of the Month, August 2013), globalization has increased the scale and velocity of risk, while also eroding the state’s monopoly on violence. If short-term security concerns aren’t addressed, then attention and resources are diverted from long-term sustainability concerns. However, long-term sustainability concerns, notably water shortages and flooding, are aggravating security concerns in many nations, as amply demonstrated in **Climate Change and National Security** edited by Daniel Moran (Georgetown University Press, 2011; GFB Book of the Month, March 2013), a survey of climate-related threats in 19 regions and nations. Incidentally, the relationship between security and environmental issues was identified 36 years ago by Lester R. Brown in **Redefining National Security** (Worldwatch Paper 14, October 1977, 46p), which discussed the lagging energy transition, deterioration of biological systems, the threat of climate change, global food insecurity, and economic threats to security.

A second sector that deserves attention is the ongoing information revolution. New information and communication technologies have created new means to communicate, which greatly enhance the amount of information and its availability, resulting in ever-growing information overload or infoglut. As regards the global sustainability project, the sustainability community is hugely fragmented and lacks coherence in time and space, while at the same time it is scarcely noticed amidst the flood of other serious books, reports, and articles—let alone competition with proliferating entertainments. An information strategy is thus needed that links up the global sustainability community, coordinates its new and old messages, highlights the most important concepts (e.g. planetary boundaries, co-benefits of policy), and effectively disseminates these messages in multiple ways. Simply publishing yet another book will likely have little or no impact.

And thus the hefty 441-page **State of the World 2013**, while valuable in itself, is still a small contribution to a much larger evolving effort that needs better definition and outreach. There certainly is a problem that “humanity’s failures of foresight and political will address the array of sustainability problems ahead” (p.253), but, despite myriad efforts to do so, there may also be a problem in communicating these inter-linked problems in a complex, info-saturated world.

22 Ideas to Fix the World: Conversations with the World's Foremost Thinkers. Edited by **Piotr Dutkiewicz** (Professor of Political Science and Director, Center for Governance, Carleton University, Ottawa) and **Richard Sakwa** (Professor of Russian and European Politics, University of Kent; Associate Fellow, Chatham House).

NY: New York University Press, August 2013, 466p, \$27.95.

A joint publication of the Social Science Research Council, Russia's World Public Forum, and NYU Press, based on the premise that we live in a very fragile world in crisis. "Quite simply, we live in uncertain times—in a sort of 'inter-regnum' between old and new ruling paradigms. This book is about ideas on how to cope with these global uncertainties." In turn, this means addressing multiple interconnected economic issues, and "more broadly interconnected problems of limits to development, poverty alleviation, inequality, ecological crises, regional disparities, new modes of power, the future of urbanization, strained multicultural coexistence, and the growing role of religion amid a wave of global post-secularism." Unfortunately, "we have simply not been able to transcend the barriers of our past knowledge and our accepted paradigms, as if our collective imagination were permanently stunted." However, "there are in fact many innovative ideas about how to look at our world and address its many problems; equally important, there are people who can turn these into viable policy solutions." (Dutkiewicz, pp. xi-xiii)

1. Rethink the Nature of Humanity

- **Muhammad Yunus** (Nobel Prize winner in 2006 for developing microcredit in Bangladesh) argues that a system valuing money above all else sees humans as atomized and selfish actors. Rather, "all human beings have unlimited potential, unlimited capacity, unlimited creative energy." (p.4) Poverty is a blockage of this energy, denying people to unleash their potential. Poverty is the same in Bangladesh, the US, and elsewhere, caused by the same process and the same system: the best seed of the tallest tree will only grow so big if put in a small flower pot. Poor people are bonsai people, never given the space to grow. Human beings are selfish, which comes out of self-protection, but "this has been overblown in economic interpretation." All humans are equally endowed with selflessness, completely forgotten by economists. In both developing and developed countries, we can create non-dividend *social businesses* on the basis of selflessness, to solve the problems we see around us, notably unemployment. We must design a new system that allows people to take care of themselves, where the word *unemployment* is totally unknown. We must first re-interpret the human being as both a selfish and a selfless being, and then recognize that selflessness can be expressed through business. Yunus has created more than fifty companies, including the Grameen Bank for microcredit, each designed to solve a problem.
- **Will Kymlicka** (Canada Research Chair in Political Philosophy, Queens University, Kingston) notes that a major challenge in our world of "staggering inequalities" is to convince majority groups that social relations with minorities are not a zero-sum game, and that society can benefit from rights granted to minorities. We have basically abolished slavery, delegitimized colonialism, made remarkable strides in the rights of women and children, and developed a world culture of human rights. But these fragile mac-

ro-level changes are sometimes more rhetoric than reality, the changes are very unevenly spread, and they are vulnerable to retreat. The form of globalization we have had over the past thirty years is neoliberalism, which has often been harmful and has essentially trumped any meaningful multiculturalism. For the past 200 years we've lived in a world of nation-building states, which has led to killing or expelling minorities, coercive assimilation, or stigmatization. However, one more or less irreversible change is that "minorities around the world are today more likely to be politically mobilized rather than passive in the face of injustice and exclusion." (p.30) Some countries have more or less achieved true justice between dominant groups and historical minorities, but progress is less evident for indigenous peoples, partly because the starting level of injustice has been much greater.

2. Transform how the Global Economy Works

- **Joseph Stiglitz** (University Professor of Economics, Columbia University) focuses on two areas in the defective standard paradigm of economics that need to be addressed: sustainability and inequality. To think about sustainability, we need to think about pricing public goods and externalities, as well as incorporating intergenerational issues. "As we become more interdependent, there is greater need for collective action and rules of the game that ensure mutual gains. Interdependencies create externalities, and externalities create market failures that need to be dealt with by some kind of regulatory mechanism." (p.53) But, there is no reason to have universal regulations.

"The current international monetary system is inconsistent with globalization, and we thus need a different system."

- **Ha-Joon Chang** (Faculty of Economics, University of Cambridge) argues that free-market economics has failed badly and should be discredited or even banned—yet, even in the face of crisis, it persists. However, rather than a massive overhaul of the entire global economic system, a pragmatic gradualist approach is needed that is neither sweeping nor global. Revolutions are neither guaranteed to happen nor to have the desired effects if they do happen.
- **Jose Antonio Ocampo** (Professor of Economic and Political Development, Columbia University; former UN Undersecretary-General for Economics and former Finance Minister of Colombia) rejects one-size-fits-all models of development and describes a complicated road ahead for a majority of the world's states. A true South-South system is starting to emerge, but the old center-periphery system is still dominant. Despite lots of talk about the rise of the BRICS, there is not the same sense of unity in the South as in earlier decades. The current international monetary system is inconsistent with globalization, and we thus need a different system. A multicurrency system may be even more unstable than the current system. The other alternative is a true international currency, which can be partially adopted and may be forced by circumstances. We also need to create a Global Economic Coordination Council at the UN, as proposed by the 2009 Stiglitz Commission.

3. Recognize Everyone is Responsible for the Environment

- **Paul Watson** (Founder and President, Sea Shepherd Conservation Society) views the most pressing concern right now as the diminution of biodiversity, especially in our oceans, which is extremely serious. “If the oceans die, we die.” (p.96) But for the most part they are out of sight and out of mind. “We have to understand that this is not Planet Earth; it’s Planet Ocean.” (p.96) We can absorb a lot of damage on the land, but the oceans can absorb only so much before they begin to collapse, which is happening through overfishing everything. The only positive things being done are by individuals and small organizations worldwide; “I don’t expect anything from governments. The whole nature of government is such that they cause problems. They don’t solve problems” (p.105)
- **Mike Davis** (Distinguished Professor of Creative Writing, University of California, Riverside) predicts that our children will almost certainly participate in the biological climacteric of our species, sometime between 2060 and 2090, when global population peaks at about 10 billion. Food production must almost double to feed this future humanity, but we are unlikely to sustain current levels of agriculture output to 2050, much less expanded production, due to global warming, hydrological chaos, and desertification. The revolution in plant genomics and in precision irrigation presupposes prioritizing grains over meat in the interests of smallholders; otherwise, a Big Ag revolution in the countryside will lead to further displacement of rural people, who will be dumped into cities and their squalid fringes, at a time when 40% of the global labor force is unemployed or scratches for survival in the informal sector. “It is clear that we need to become a planet of gardeners, in Patrick Geddes’s sense of constant communal tinkering to make our cities function as integral parts of nature... (and) we need to build this new Ark quickly.” (p.114) The demographic challenge is not population growth per se, but its geographical distribution and age skew. “‘Human citizenship’ (protected but flagless rights to work, migrate, and vote) must become the central democratic demand of this century.” (p.115) The true global problem is actually undermigration, which is why it is important to make transnational civic life possible. “Too many experts...uncritically accept current rates of urbanization as inevitable, when in fact they are accelerated by the massive neglect and oppression of the rural poor. Any discussion about the fate of cities must also be a debate about the future of the countryside.” (p.134)
- **Olzhas Suleimenov** (Kazakhstan representative to UNESCO; geologist, poet, and writer) views Central Asia as a model of the future social order made up of people of different religious faiths. Political elites must work to harmonize interethnic and interfaith relations. “In the course of their development, the great nations are transformed into mini-humankinds, and they minimize the danger of potential global confrontations.” (p.148) The undeniable fact is that it is happening and gaining momentum. “This new century should be called the century of interdependence, because only the realization of our universal interdependence will help humankind to survive.” (p.149)
- **Vladimir Yakunin** (Founding President, World Public Forum “Dialogue of Civilizations”; Head, Department of State Politics, Lomonosov Moscow State University; President of Russian Railways Joint Stock Company) opposes “wild capitalism” and calls

for a higher level of state regulation to temper predation, which is one of the drivers of the modern paradigm of the global world. Two key points are absolutely essential to the future paradigm: protecting the environment so that we are able to survive, and filling human life with ethical content and an appropriate attitude to self, other people, and the world at large. To change the paradigm, one must include change in social responsibility, on the part of both the state and every person.

4. Understand the Global Balance of Power

- **Immanuel Wallerstein** (former Distinguished Professor of Sociology and Head of the Fernand Braudel Center at Binghamton University; Founder of World-Systems Analysis) has viewed the relative hegemonic decline of the US for over three decades, with a “precipitate decline” since 2000, as other countries begin to act directly counter to the way the US wishes them to act. The growth of US debt is a sign of this decline. The period of 1945-1968 was the height of US hegemony, and the strongest period of economic growth in the history of the world-system. We are in a structural crisis today, which can be seen as the spirit of Davos (the elites at the World Economic Forum) vs. the spirit of Porto Alegre (the meeting place of the alter-globalization World Social Forum), which seeks a relatively democratic and egalitarian world.
- **Zygmunt Bauman** (Emeritus Professor of Sociology, University of Leeds) sees a growing separation between politics and power—between the means to enact change and the vastness of the problems that need to be addressed. We are living in a new world of *liquid modernity*, where change is the only constant and uncertainty the only certainty. Our current troubles are underpinned by the dearth of normative regulation, unending deregulation, and the overall decline of the public. The fall of the Berlin Wall ushered in an era of “interregnum,” where the inherited means of getting things done no longer work, yet new and more adequate ways have not been deployed. Unlike our ancestors, we don’t have a clear image of a destination—a model of global society, economy, politics, and jurisdiction. Instead we react to the latest trouble, experimenting, groping in the dark. “In the state of interregnum, everything may happen, whereas nothing can be undertaken with full confidence.” (p.198) This situation cannot persist, because of “natural limits to running through a minefield while doing next to nothing about disarming the mines, and, if anything, adding to their numbers.” (pp198-199)
- **Bob Deacon** (Emeritus Professor of International Social Policy, University of Sheffield; advisor to World Bank, UNICEF, and UN) notes that the ILO, going back to 1919, has tried to articulate international standards for workers. As social problems increasingly cross borders, we need to outline a set of arguments and policies to shift us from global neoliberalism to some kind of global social democracy, with systems of global taxation and global regulation. Deacon is a founding member of the Globalism and Social Policy Programme (GASPP), which promotes this vision through a set of policy briefs and a journal, *Global Social Policy*. Although quite limited, the Millennium Development

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Goals were the first global social policy, with targets for the whole world. But they didn't address issues of inequality. The ILO has taken the lead in promoting a global social protection floor.

- **Peter J. Katzenstein** (Professor of International Studies, Cornell University) describes the main trend facing our crisis-ridden world as diffusion of power among a range of actors, with the US no longer as prominent as it was 30-50 years ago. "This is the one overarching trend in the world in which we live. It makes governing and governance more challenging, interesting, and innovative. It opens many new possibilities, and it creates many new risks." (p.220) But he is "profoundly skeptical" as to whether China will be a global power. China is the most rapidly aging society in the world. Too many Chinese people remain desperately poor, and an unstable China will destabilize global capitalism.

5. Question the Role of Democracy

- **Craig Calhoun** (Director, London School of Economics and Political Science; former President, Social Science Research Council; Distinguished Visiting Professor, New York University) argues that the ongoing crisis is not simply one of capitalism, but of the modern "package" linking politics, economics, and social relations. The most worrisome aspect of the crisis is that it poses a grave threat to social reproduction (education, health care, etc.), thus "we're in for a period of disorganization and destabilization." (p.248) Within capitalism, "the extreme financialization exacerbated the undermining of the package," (p.250) in that neoliberalism has brought a kind of intensified attack on institutions. "The issue for the future is how can we reproduce and improve the institutional structures in which we live together and work together and organize our lives together. And democracy is a piece of that." (p.257) There are big obstacles to broadly social democratic kinds of solutions. What we need is a shift in attitudes about large-scale public provision, because there is no other way to meet the scale of the challenge. But the problem in achieving policy solutions in most of the world's rich countries is "a superabundance of relatively narrow, relatively ephemeral interest group organizations and a relative weakness in getting these connected to each other and sorting out common programs." (p.264) This function used to be performed by political parties, but it has declined.
- **Ivan Krastev** (Chair, Centre for Liberal Strategies, Sofia, Bulgaria) argues that the modern crisis is unique, in that public trust in both the market and political elites has been shaken simultaneously. While democracy is universally accepted as the most desired form of government, there is a growing frustration with democratic politics as we know it. A post-democratic capitalism is beginning to emerge as one of the major challenges facing democratic politics today. The market revolution of the 1980s strongly asserted the value of choice and opened up much space for innovation, but it also delegitimized the idea of a public interest. The Internet makes us much freer than before, but it also creates "echo chambers" where like-minded people constantly talk to each other. "One of the many paradoxes of globalization is that we are living in a much more interconnected but at the same time fragmented and even segregated world." (p.270) The promise is that transparency will restore trust in institutions, but this is a very unlikely scenario.

- **Fred Dallmayr** (Professor of Philosophy and Political Science, University of Notre Dame; co-chair, World Public Forum “Dialogue of Civilizations”) describes inter-civilizational dialogue as fraught with many difficulties and possible derailments, in part due to memories of colonialism and imperialism. Any future cosmopolis has to respect diversity and the fact that non-Western cultures are increasingly active in shaping the future of the world. There is an enormous number of lessons that the West can learn from China and from Russia, but such learning is foiled by an attitude of hegemonic arrogance and self-contentment. “Genuine dialogue requires not only talking but a great deal of listening.” (p.301) Before talking one needs to first cultivate the great art of deep listening.

“If we wish to change society, we need to embark on a totally new path.”

6. Respond to the Economic Crisis

- **Manuel F. Montes** (Senior Advisor, the South Centre, Geneva; former UN Chief of Development Strategies) argues that the Asian crisis of 1997 was in many ways a dress rehearsal for the current global crisis, which has led to the public sector bearing the costs for private sector missteps. The overall remedy is more stringent regulation of the financial sector that would align finance with real economic productivity and address social concerns. However, “in many cases the responses to the economic crisis have exacerbated the situation and reduced the possibility of recovery.” (p.30) The supposed emergence of the BRICS is oversold. The prospects of the global economy still depend on the rich countries getting their political and economic act together. Otherwise, the system will stagnate for ten or more years, or collapse into a state of autarchy.
- Political economists **Shimshon Bichler** (Israel) and **Jonathan Nitzan** (York University, Toronto) view the current crisis as a systemic one afflicting a fatally flawed system. “The entire edifice hangs in thin air, and everyone keeps quiet, lest it collapse.” (p.332) What has changed is the specific nature of capitalism. “While capitalism has become increasingly universal, the unified theory that once explained it has disintegrated...instead of a single study of capitalism, we now have a multitude of distinct disciplines...all trying to barricade their own turf.” (p.337) If we wish to change society, we need to embark on a totally new path: instead of studying the relations of capital to power, or capitalism as a mode of production, we must conceptualize capital as power. We need a new cosmology of the capitalist mode of power, as well as a counter-cosmology for a humane alternative.

7. Make Development Possible

- **Jomo Kwame Sundaram** (former UN Assistant Secretary-General for Economic Development) worries that decreased international inequality may be distracting us from growing intranational inequality. “The most promising future for development economics lies in critical interaction with both orthodox and heterodox economics. This implies a necessary renewal of development economics but also greater humility on the part of economists more generally, especially in understanding and informing contemporary challenges of economic development in oligopolistic market economies.” (p.376)

- **Kemal Dervis** (Vice President for global economics and development, Brookings Institution) defends the European model of social democracy which is taken for granted and underappreciated. He worries about the “tendency in many countries for the income distribution to become more unequal,” and the greater concentration of income in the top 1% of the population (the US is the most accentuated example of this). The number one priority for European social democrats is to find a way to define the European model for the globalized world of the 21st century. “What is needed are regulations and rules and norms that are regional and then become global.” (p.392) There has to be harmonization of financial regulation, and an approach to taxation that doesn’t allow capital to always move away as soon as taxes rise. We also need ways in which the international community jointly manages migration.
- **Vladimir Popov** (Professor Emeritus, New Economic School, Moscow; advisor in UN Department of Economic and Social Affairs) points to growing social inequality worldwide and the continuing under-regulation of finance. The world is unstable, but not to the point of a crisis of global capitalism. But “it will come eventually” because there is a beginning and end to every social system, and capital has a short-term planning horizon.
- **Jiemian Yang** (President, Shanghai Institutes for International Studies) envisions a “three-speed growth scenario” over the next decade, where the developed countries grow at a slow pace, the BRICS grow more robustly, and the other emerging economies grow at an accelerated speed. “China will still contribute around 30% of economic growth to the world every year in the next decade.” (p.418) Big changes are expected in the structure of the international monetary system, as the dominant status of the US dollar continues to decline. The role of the Japanese yen and the British pound will also decrease. Global economic governance is expected to become more fragmented, but it will be further “greened” by the rise of environmental and climate change issues.

8. Conclusion

Co-editor **Richard Sakwa** summarizes the contemporary crisis as one of the reproductions of social forms and ideas: 1) the reproduction of the future (in that time horizons have been shortened in the post-communist era and “the end of communist utopianism was accompanied by the denigration of all progressive visions of the future”); 2) the reproduction of capitalism (given the failure of the regulatory regime of “late capitalism”); 3) the reproduction of society (the nature and role of the welfare state, education, and health care); 4) how the institutions of global governance need to adapt to the new challenges (clearly the notion of global *government* is far-fetched at the present stage of planetary development, where pressures are rising for more effective institutions of global *governance*); 5) the “end of the future” and the crisis in the reproduction of alternatives (“a crisis of solutions”). In sum, “this book has not provided any easy ready-made remedies, but... it has pointed out how we can begin to contribute to the dialogue and understanding without which any remedy is meaningless.” (p.434).

Comment

The title of this important and stimulating volume of readable conversations is somewhat

misleading, in that many of the “22 Ideas” do not seek to “Fix” the world but more to understand its present uncertain and uneasy condition. Moreover, “the World’s Foremost Thinkers” advertised in the sub-title is a bit inflated, and better understood as seasoned experts (mostly economists) discussing some global issues, with a welcome selection of many non-Western thinkers, none of whom have any supportive comments about free-market “neoliberal” capitalism. Notably missing from the discussion is the total absence of any mention of security concerns, minimal attention to sustainability, and no mention of any of the many technology revolutions now underway for better and worse (other than a brief mention of the Internet by Ivan Krastev).

That said, several of the conversations deserve mention, notably Muhammad Yunas on the world’s poor as “bonsai people” never given space to grow, Will Kymlicka’s broad overview of minorities, Joseph Stiglitz on the two defects of standard economics, Mike Davis on population/environment issues applied to cities and neglected rural areas, Zygmunt Bauman on “liquid modernity” and our era of “interregnum,” Bob Deacon on the emergence of global social policy, and the attempt of Shimshon Bichlet and Jonathan Nitzan to rethink capitalism.

Various interviewers were recruited for these 22 conversations, several of whom were women. But no woman is among the 23 “foremost thinkers” who were interviewed. The book does suggest “how we can begin to contribute to...dialogue and understanding,” as Sakwa notes. But much more is needed, especially as concerns recognition of “the many innovative ideas about how to look at our world and address its problems,” all-too-briefly mentioned by Dutkiewicz in the introduction. Identifying and learning from all or most of these ideas, from all countries of the world and from both genders, may well be our most important task.

Organisation for Economic Co-operation and Development (50 items)

Prepared by **Oana Zabava**

Edited by **Michael Marien**

Note to WAAS: The 50 abstracts below were selected from a couple of hundred OECD publications in the June 2013-Dec 2013 period. Of special note are the following items preceded by an asterisk, which have some relevance to the “New Paradigm”:

- **Development Co-operation Report 2013: Ending Poverty** (page 102)
- **Government at a Glance 2013** (page 103)
- **World Social Science Report 2013: Changing Global Environments** (page 104)
- **How’s Life? 2013. Measuring Well-Being** (page 106; note mention at end of the Task Force on Measuring Sustainable Development)
- **Policy Instruments to Support Green Growth in Agriculture** (page 107)
- **Marine Biotechnology** (page 111)
- **Greening Household Behaviour** (page 114)
- **Providing Agri-environmental Public Goods through Collective Action** (page 115)
- **Transition to Sustainable Buildings** (page 115)

Water. Organisation for Economic Co-operation and Development. Paris: OECD, March 2014, 140p. Over 90% of the projected population growth by 2050 (3 billion > people) will be in developing countries, often in regions which already are water scarce. Issues ranging from infrastructure financing to climate change influence on water resources, as well as the importance of water in activities ranging from energy production to agriculture.

(WATER)

Investing Together: Working Effectively across Levels of Government. Organisation for Economic Co-operation and Development. Paris: OECD, Dec 2013, 165p, \$49. Public investment is not only a major strategic responsibility for governments but also a shared one: almost two-thirds of public investment is undertaken by sub-national governments, and major projects tend to involve more than one government level. Improving the efficiency and effectiveness of investment is paramount. Looks at 1) the relationships among different government actors, both vertically (across levels of government), and horizontally (across both sectors and jurisdictions); 2) how co-ordination works and why it so often does not, and 3) government capacity. Chapters cover issues such as working across levels of government to invest more effectively, co-ordinating investments across levels of government, and sub-national capacities for effective public investment. Case study summaries also included.

(GOVERNANCE *PUBLIC INVESTMENT ASSESSED)

Pensions at a Glance 2013. Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 290p, \$39. Examines pension systems in OECD and selected non-OECD countries; particularly looks at recent trends in retirement and working at older ages, evolving life expectancy, design of pension systems, pension entitlements, and private pensions. Also provides detailed country profiles.

(WORK * PENSIONS: OECD SURVEY)

****Development Co-operation Report 2013: Ending Poverty.** Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 300p, \$93 (download for free at www.oecd-ilibrary.org). The world is probably on track to achieve the Millennium Development Goal target of halving the proportion of people whose income is less than \$1.25 a day by 2015. Nonetheless, we are far from achieving the overarching MDG of eradicating extreme poverty. This report focuses on the very poor and describes the nature and dimensions of poverty today and what development co-operation – and the global partnerships it supports – can do in the fight against poverty. Chapters discuss defining and measuring extreme poverty, policies that tackle poverty (economic growth is not sufficient to eradicate all dimensions of poverty), and the new post-2015 framework for ending poverty (UN's vision, global public goods, "smart" development co-operation, momentum to end poverty). "To recapture the Millennium Declaration's vision, the new international development agenda must embody principles of solidarity, equality, dignity, and respect for nature. It will need goals that can effectively guide core aspirations, targets that are easy to monitor, and strategies for economic and social transformation." The new agenda should be applicable to all countries, but with responsibilities that vary according to a country's starting point and resources. Targets should be set nationally, but with global minimum standards and sustained support for fragile states.

New directions for ending poverty: 1) see development as a shift from poverty to power by empowering people—especially women and the chronically poor; 2) build inclusive and sustainable economies that enable the poorest to participate in and benefit from growth; “this will require a root-and-branch re-orientation and reprioritization of policies and programs—especially in agriculture, education, energy, and employment”; 3) provide systems of social protection—employment guarantees, cash transfers, pensions, child and disability allowances—to create a virtuous circle; 4) make environmental sustainability and natural resources a core priority, linked to poverty reduction and well-being; 5) invest in smallholder agriculture to tackle poverty and promote broad-based economic growth in poor and largely rural countries; 6) support the exchange of knowledge and experience on poverty reduction; 7) a new Global partnership for Effective Development Co-operation is needed to catalyze and coordinate global efforts and resources; 8) recognize that peace and the reduction of violence are the foundations of poverty eradication.

(WORLD FUTURES * DEVELOPMENT * POVERTY: NEW WAYS TO END * POST-2015 ANTI-POVERTY AGENDA)

Annual Report on the OECD Guidelines for Multinational Enterprises 2013: Responsible Business Conduct in Action. Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 80p, \$23. The OECD Guidelines for Multinational Enterprises provide businesses with a global framework for responsible conduct covering all areas of business ethics. While observance of the Guidelines by enterprises is voluntary and not legally enforceable, adhering governments are committed to promoting their observance among enterprises. Describes what adhering governments have done to live up to their commitment over the 12 months to June 2013.

(BUSINESS ETHICS * RESPONSIBLE BUSINESS: OECD GUIDELINES)

OECD Review of Fisheries 2013: Policies and Summary Statistics. Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 200p, \$68. Contains a general survey of policy developments based on material submitted by OECD member countries, information gathered by observer and enhanced engagement countries, and an overview of recent activities of the Committee of Fisheries. Includes Country Notes on the state of fisheries in OECD and observer countries.

(FISHERIES: OECD REVIEW * RESOURCES * OCEANS)

***Government at a Glance 2013.** Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 196p, \$63 (download free at www.oecd-ilibrary.org). Provides indicators that inform the analysis and international comparison of public sector performance. Indicators on government revenues, expenditures, and employment are provided, alongside output and outcome data in the sectors of education and health. Also includes indicators on governance and public management issues, such as transparency in governance, regulatory governance, new ways in delivering public services and HRM and compensation practices in the public service. Some “*key findings*”: 1) “trust in government has declined considerably, as citizens’ growing expectations have been hard to address with limited government resources”; between 2007 and 2012, confidence in national governments declined 40-45% on average; 2) a new approach to public governance is needed to meet citizen expectations with limited means at hand; “this approach should be built around creating strategic capacity,

strong institutions, effective instruments and processes, and clear measurable outcomes”; 3) public finance challenges remain, despite significant efforts to restore financial health; several OECD countries continue to face rising public debt-to-GDP ratios; 4) countries have adopted new budgetary practices and new governance institutions; 5) public employment levels tend to remain stable over the longer term: between 2001 and 2011 at just under 16% of the total labor force (a relatively small figure compared to average government spending at 45.4% of GDP in 2011, showing the important role of outsourcing); 6) further mechanisms are needed to close the public sector gender gap; 7) countries are using public procurement more strategically: many OECD members use procurement policy not only to foster value for money but to encourage innovation and sustainable growth (73% promote green procurement); 8) asset and private interest disclosure by decision makers continues to be an essential tool (however, few countries require disclosure of previous employment and liabilities); 9) to promote transparency, Open Government Data is gaining importance as a governance tool; 10) despite diminishing trust in “government,” citizens report being pleased with the services provided by the local police force, schools, and health care; 11) governments in OECD countries are increasingly concerned with delivering quality public goods and services to a wide range of citizens; many countries are introducing service delivery performance standards as regards affordability, responsiveness, reliability, and citizen satisfaction.

(GOVERNMENT TRENDS: OECD SURVEY)

The Missing Entrepreneurs: Policies for Inclusive Entrepreneurship in Europe. Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 300p, \$58. Entrepreneurship development is an important requirement for achieving smart, sustainable and inclusive growth; it is also a means to respond to new economic challenges, create jobs, and fight social and financial exclusion. Offers information and data on entrepreneurship activities in Europe, while focusing on people that are at the greatest risk of social exclusion: young people, older people, women, ethnic minorities and migrants, people with disabilities, and the unemployed. Includes 23 country profiles.

(WORK * ENTREPRENEURSHIP * JOB CREATION)

***World Social Science Report 2013: Changing Global Environments.** International Social Science Council and UNESCO. Paris: OECD and UNESCO Publishing, Nov 2013, 612p, \$122 (download at www.oecd-ilibrary.org). Gathers the thoughts and expertise of hundreds of social scientists from around the world; highlights the transformative role of the social sciences in confronting climate and broader processes of environmental change, as well as in addressing priority problems from energy and water, biodiversity and land use, urbanization, migration and education. The Preface by Irina Bokova (Director-General, UNESCO) notes “the challenge of knowledge divides in the social sciences,” and between the sciences and the social transformations needed to achieve sustainable development. “*The gap between what we are know about the interconnectedness and fragility of our planetary system and what we actually doing about it is alarming. And it is deepening.*” (p.3) This report examines the social dynamics of the Anthropocene age, in which human activity is the major force shaping the planetary system. “Environmental change must no longer be seen as peripheral.” Rather, it is connected with a multitude of other crises, risks, and vulnerabilities which confront every society. To move forward, we need a “sustainability science” that overcomes barriers

between disciplines and methods. “Ultimately, achieving sustainable development is a political challenge that involves making fundamental choices about how we understand ourselves and the world we wish to inhabit and leave to future generations... This requires moving beyond the obstacles of vested interests, the politicization of science, and entrenched habits of thought and behavior.” (p.4)

The 96 chapters by individual authors (not summarized) and descriptions of 12 ISSC projects such as global governance are organized in seven parts: 1) complexity and urgency of global environmental change (e.g., learning for sustainability, social and planetary boundaries, using the future differently by Riel Miller of UNESCO); 2) social science capacity (in the US, Latin America, Europe, Russia, Arab world, Africa, South Asia, China, and Japan); 3) consequences for society of global environmental change (e.g., migration, building resilience, land changes, impacts on children); 4) visions for change and sense-making (e.g., promises and pitfalls of the green economy, evolutionary psychology for sustainable lifestyles, education for sustainable development); 5) responsibilities and ethical challenges (e.g., ethics of energy consumption and geoengineering); 6) new approaches to governance (dealing with “wicked” problems, the need for IPCC transparency, using indigenous knowledge); 7) contributions from ISSC members, programs, and partners. [NOTE: Surely some useful ideas here, but mining them from the 612 pages is a daunting task.]

(CLIMATE CHANGE AND SOCIAL SCIENCE * SOCIAL SCIENCE IN THE ANTHROPOCENE)

Financial Education in Schools: Policy Guidance, Challenges and Case Studies. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 120p, \$35 (e-book). Addresses the challenges linked to the introduction of financial education in schools, provides practical guidance and case studies to assist policy makers, and offers a comparative analysis of existing learning frameworks for financial education in the formal school system. Chapters present 1) the OECD Council Recommendations on guidelines for financial education in schools; 2) main issues and case studies on how countries faced with similar challenges introduced financial education in the school system; and 3) a comparative analysis of existing learning frameworks.

(FINANCIAL EDUCATION * SCHOOLS)

Cancer Care: Assuring Quality to Improve Survival. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 163p, \$39 (e-book). More than 5 million new cases of cancer are diagnosed every year in OECD countries. Mortality rates are declining, but not as fast as for other big killers such as heart disease, and cancer survival rates show almost a four-fold difference across countries. Many countries are not doing as well as they could in the fight against cancer. Surveys the policy trends in cancer care over recent years and looks at survival rates to identify why some countries are doing better than others; sets out what governments should do to reduce the burden of cancer in their countries; and calls for an adequate level of resourcing and a comprehensive national cancer control plan.

(CANCER CARE: OECD SURVEY* HEALTH)

Environment at a Glance 2013: OECD Indicators. Organisation for Economic Co-operation and Development. Paris: OECD, Dec 2013, 107p. Key indicators reflect environmental

progress made since the early 1990s and thus contribute to measuring environmental performance. Organized by issues such as climate change, air pollution, biodiversity, waste, water resources, energy intensity, material intensity, growing GHG emissions, sewage treatment infrastructure, and protected land (some 11% of OECD country areas).

(ENVIRONMENT: OECD INDICATORS * SUSTAINABILITY)

Effective Carbon Prices. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 81p, \$23 (e-book). Taxes and emission trading systems are the cheapest way for societies to reduce emissions of CO₂. Estimates the costs to society of reducing CO₂ emissions in 15 countries using a broad range of policy instruments in five of the sectors that generate most emissions: 1) electricity generation, 2) road transport, 3) pulp & paper, 4) cement, and 5) household domestic energy use. Finds wide variations in the costs of abating each ton of CO₂ within and among countries, as well as in the sectors examined and across different types of policy instruments. Market-based approaches like taxes and trading systems consistently reduced CO₂ at a lower cost than other instruments. Capital subsidies and feed-in tariffs were among the most expensive ways of reducing emissions. Chapters discuss methods for estimating effective carbon prices, OECD's approach to estimate effective carbon prices, and estimated effective carbon prices.

(CARBON PRICES * ENERGY * CO₂ EMISSIONS REDUCTION: POLICIES)

Rural-Urban Partnerships: An Integrated Approach to Economic Development. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 332p, \$88 (e-book). Traditional distinctions between urban and rural areas are increasingly blurred. Topics include trends in urban and rural areas, rural-urban partnerships as a tool for economic development, benefit and risks of partnering, regional approaches, dynamics, governance, and strategy to build them. Case studies cover Australia, the Czech Republic, Finland, France, Germany, Italy, the Netherlands, Poland, Portugal, Spain, and the United States.

(DEVELOPMENT: RURAL-URBAN)

OECD Science, Technology and Industry Scoreboard 2013. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 276p, \$91. Analyses the major trends in knowledge and innovation in today's global economy. Through statistical indicators it presents a policy-oriented review of science, technology, innovation and industrial performance in OECD and major non-OECD countries. Involvement in innovation is a priority, and the Scoreboard seeks to help governments design more effective policies. Two important findings: young firms contribute more to job creation, and researchers are increasingly mobile.

(SCIENCE/TECHNOLOGY: OECD INDICATORS * INNOVATION)

*** How's Life? 2013: Measuring Well-being.** Organisation for Economic Co-operation and Development. Paris: OECD, Nov 2013, 212p, \$34 (e-book). The OECD's *Better Life Initiative* covers the 11 key dimensions that shape people's lives and well-being: income, jobs, housing, health, work-life balance, education, social connections, civic engagement and governance, environment, personal security and subjective well-being. First published in 2011, this new edition paints a comprehensive picture of well-being in the 34 OECD countries and other major economies, by looking at people's material living conditions and quality of life

across the population. Countries perform differently in the various dimensions of well-being. For instance, low-income countries in the OECD area tend to do very well in subjective well-being and work-life balance, while their level of material well-being is much lower than that of other OECD countries. Conversely, higher income countries often have more difficulties in reconciling work-life balance. Also, less educated and low-income people tend to fare worse in almost all well-being dimensions.

Overall, *“OECD countries have made considerable progress in many well-being areas over the past 20 years or so; however, this trend does not hold for jobs or for voting levels and, more importantly, hides a great diversity of patterns both among and within countries.”* Other findings: 1) the Great Recession has had large implications for both economic and non-economic well-being of households; 2) gender gaps in well-being have narrowed over recent decades, although men still score higher than women in a number of areas; women live longer than men, but suffer more often from illness; men and women are increasingly sharing tasks and roles; 3) “quality of employment and well-being in the workplace are becoming more prominent issues in many OECD countries”; 4) measuring whether well-being is likely to be sustainable over time requires an in-depth understanding of what will matter for well-being in the future; OECD proposes building on the work of the recent UNECE-Eurostat-OECD *Task Force on Measuring Sustainable Development* as a starting point (the Task Force focuses on stocks of natural, human, social, and economic capital thought to be important for sustaining well-being over time).

(SOCIETY * WELL-BEING: OECD INDICATORS * QUALITY OF LIFE MEASURES)

*** Policy Instruments to Support Green Growth in Agriculture.** Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 140p, \$35 (e-book). Presents the experience of OECD countries in developing and implementing policies, programmes and initiatives related to green growth in the agricultural sector, based primarily on material provided by governments. Discusses the overall approach that countries are taking towards establishing a green growth strategy in agriculture (including monitoring progress towards green growth in agriculture, and policies regarding R&D, energy, efficiency, waste, water, and improving the environment). While most countries have some policies in place that relate to the concept of green growth, the degree of ambition shows considerable variation. The term “green growth” is gaining support, but “the vast majority of OECD countries do not have an overall green growth strategy for their agricultural sectors.” Strategic objectives and targets that support green growth vary substantially across countries, and “very few countries have exploited the potential for green economy measures to create employment.” Calls for nations to 1) create coherent overall policy frameworks that have clear objectives, 2) define R&D priorities, and 3) adopt policy measures that are targeted and implemented at the appropriate levels.

(GREEN GROWTH IN AGRICULTURE * FOOD/AGRICULTURE)

Gender and Statebuilding in Fragile and Conflict-affected States. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 55p, \$19 (e-book). Makes the case for gender-sensitive statebuilding, based on the inherent value of gender equality as well as its contribution to better development outcomes and the achievement of peacebuild-

ing and statebuilding goals. Spells out some of the contextual challenges and operational constraints that stifle progress in this area. Distills key success factors and concrete entry points for tackling these challenges and achieving a more effective and politically informed approach to integrating gender into statebuilding.

(GENDER AND STATE BUILDING * PEACEBUILDING AND GENDER)

Supporting Investment in Knowledge Capital, Growth and Innovation. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 360p, \$78 (e-book). Knowledge-based capital (KBC) results from business investment in non-physical assets such as R&D, data, software, patents, new business models, organizational processes, firm-specific skills and designs. A two-year program of work at the OECD on New Sources of Growth and the role of Knowledge-based Capital (NSG-KBC) finds that 1) business investment in KBC is a key to future productivity growth and living standards; 2) in many countries, business investment in KBC has increased faster than – and in some countries significantly exceeds – investment in physical capital (like machinery); 3) governments must facilitate business investment in KBC to promote long-term growth and the jobs of tomorrow. Sets out policy analyses and recommendations in the fields of innovation, taxation, entrepreneurship and business development, corporate reporting, big data, competition, measurement, etc.

(KNOWLEDGE-BASED CAPITAL * INNOVATION)

OECD Skills Outlook 2013: First Results from the Survey of Adult Skills. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 456p, free e-book. Evaluates the skills of adults in 22 OECD member countries and two partner countries. Assesses key information processing skills (literacy, numeracy and problem-solving in technology-rich environments). Examines the social and economic context, the supply of key information processing skills, who has these skills at what level, the supply of and demand for these skills in the labor market, acquisition and maintenance of skills over a lifetime, and how proficiency in these skills translates into better economic and social outcomes.

(ADULT SKILLS: OECD SURVEY * WORK * EDUCATION)

***Time for the U.S. to Reskill? What the Survey of Adult Skills Says.** Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 110p, free e-book. Basic skills of literacy and numeracy are among the most fundamental attributes of human beings and their civilization. Their contribution to workforce skills have increasingly been recognized as critical to economic success, while evidence of gaps in adult basic skills and the link with economic and social outcomes has also been growing, both at national and international levels. Despite universal basic education in advanced countries, some adults have slipped through the net, leaving them with very weak literacy and numeracy. (See **OECD Skills Outlook 2013: First Results from the Survey of Adult Skills**, Oct 2013, 456p)

“Low basic skills are more common in the US than on average across countries.” One in six US adults have low literacy skills, compared to 1 in 20 in Japan. Nearly 1 in 3 US adults have weak numeracy skills, against a cross country average of 1 in 5.

Explanations for the relatively weak US performance include failings in initial schools, lack of improvement over time, and poor skills in certain groups including migrants. There

are few signs of improvement: “Today, adults in the US have similar or weaker literacy skills to their counterparts in the mid-1990s, and the average basic skills of young adults are not very different from older persons.” One-third of the 36 million low-skilled US adults are immigrants, while 35% of black and 43% of Hispanic adults have low literacy skills, compared with only 10% of whites. However, 63% of low-skilled adults are employed, more than in other countries. Proposed policies: 1) take concerted action to improve basic skills and tackle inequities; 2) strengthen initial schooling for all; 3 ensure effective and accessible education opportunities for young adults, using the strengths of the community college system; 4) link efforts to improve basic skills to employability, recognizing that good jobs open up further learning options; 5) adapt adult learning programs to better respond to the diverse challenges of different groups with different needs.

(ADULT SKILLS IN U.S. * WORK AND BASIC SKILLS * EDUCATION)

ICTs and the Health Sector: Towards Smarter Health and Wellness Models. Organisation for Economic Co-operation and Development. Paris: OECD, Oct 2013, 120p, \$34 (e-book). Applications that encourage new, ubiquitous, participatory, preventive, and personalized smart models of health care show promise. The potential of the Internet, mobile devices, services and applications to support self-management, behavioral modification and “participatory healthcare” is greater than ever before. However, a key hurdle is dealing with the exponentially accelerating accumulation of patient data – all of which must be mined, stored securely and accurately, and converted to meaningful information at the point of care.

(HEALTH TECHNOLOGY * HEALTH AND INFOTECH)

Better Regulation of Public-Private Partnerships for Transport Infrastructure. Organisation for Economic Co-operation and Development and International Transport Forum. Paris: OECD, Sep 2013, 220p, \$44 (e-book). Many governments seek to attract private finance for infrastructure through public-private partnerships. But experience with PPPs has been mixed. Some transport PPP projects have delivered major cost savings, but many more have exceeded their budgets. PPPs are prone to overestimating revenues and when projects run into financial difficulty, risks have a tendency to revert to the taxpayer. Examines the nature of risks and uncertainty associated with different types of PPP projects, and the practical consequences of transferring risks to private partners; assesses the fiscal impact of PPPs and discusses budget procedures and accounting rules to limit the public liabilities they can create.

(PUBLIC-PRIVATE PARTNERSHIPS * TRANSPORTATION)

Innovative Learning Environments. OECD Centre for Educational Research and Innovation. Paris: OECD, Sept 2013, 219p, \$37 (e-book). How to design a powerful learning environment so that learners can thrive in the 21st century? Forty in-depth case studies address the question. Contemporary learning environments should: 1) innovate the elements and dynamics of its “pedagogical core”; 2) become a “formative organization” through strong design strategies, with corresponding learning leadership, evaluation and feedback, 3) open up to partnerships to grow social and professional capital, and to sustain renewal and dynamism; and 4) promote effectiveness through application of the ILE learning principles.

(EDUCATION * LEARNING ENVIRONMENTS)

Transition Towards a Sustainable Nuclear Fuel Cycle. Organisation for Economic Co-operation and Development and Nuclear Energy Agency. Paris: OECD, Sept 2013, 67p (e-book). Future fuel cycle characteristics, feasibility and acceptability will be crucial for the continued development of nuclear energy, especially in the post-Fukushima context. Fuel cycle choices have both long- and short-term impacts, and a holistic assessment of their characteristics, cost, and associated safety issues is of paramount importance. Associates quantified impacts with foreseeable nuclear energy development in different world regions; discusses initial results in terms of uranium resource availability, fuel cycle facility deployment, and reactor types; and provides guidelines for performing future studies.

(NUCLEAR POWER * ENERGY)

Nuclear Energy Today (Second Edition). Organisation for Economic Co-operation and Development and Nuclear Energy Agency. Paris: OECD, Sept 2013, 112p (e-book). Although nuclear energy currently provides over 20% of electricity in the OECD area and does not emit any carbon dioxide during production, it continues to be seen by many as a controversial technology. Public concern remains over its safety and the management of radioactive waste, and financing such a capital-intensive technology is a complex issue. Reviews the status of nuclear energy, as well as the outcome of R&D on the nuclear fuel cycle and reactor technologies. Topics include: basic principles of nuclear energy; nuclear fuel cycle; safety; radiation and radiological protection; management of radioactive waste; nuclear law and non-proliferation; economics and financing of nuclear energy; and future of nuclear energy.

(NUCLEAR ENERGY: OECD OVERVIEW)

The Internet Economy on the Rise: Progress since the Seoul Declaration. Organisation for Economic Co-operation and Development. Paris: OECD, Sept 2013, 184p, \$49 (e-book). The Internet economy has become a new source of growth, with the potential to boost the whole economy, to foster innovation and competitiveness, to enhance user participation, and to contribute effectively to the prosperity of society as a whole. Reviews progress made since the 2008 OECD Seoul Declaration for the Future of the Internet Economy and identifies areas for future work. Seven themes are addressed: 1) high-speed infrastructure, 2) digital content and green ICTs, 3) development of smarter applications, 4) cybersecurity and privacy, 5) consumer empowerment and protection, 6) open Internet economy, and 7) global participation for development.

(COMMUNICATIONS * INTERNET ECONOMY)

Education at a Glance 2013: Highlights. Organisation for Economic Co-operation and Development. Paris: OECD, Sept 2013, 80p, free e-book. Summarizes the OECD's flagship compendium of education statistics and provides accessible data on key topics in education today, including: 1) education levels and student numbers (how far adults have studied; how early childhood education affects later student performance); 2) higher education and work (how many young people graduate from tertiary education; how easily they enter the world of work); 3) economic and social benefits of education (how education affects job prospects; what is the impact on incomes); 4) paying for education (what share of public spending goes to education, the role of private spending); 5) school environment (how many hours teachers work; how class size varies). Each indicator is presented on a two-page spread that

explains the significance of the indicator, summarizes main findings, examines key trends, and provides readers with a roadmap for finding out more; also, related charts and tables are accompanied by dynamic hyperlinks to the corresponding data in spreadsheet format.

(EDUCATION: OECD INDICATORS)

Water and Climate Change Adaptation: Policies to Navigate Uncharted Waters. Organisation for Economic Co-operation and Development. Paris: OECD, Sept 2013, 112p, \$42pb with e-book. Highlights the range of expected changes in the water cycle and the challenge of making practical, on-site adaptation decisions for water; offers policymakers a risk-based approach to better “know”, “target” and “manage” water risks; and proposes policy guidelines to prioritize action and improve the efficiency, timeliness and equity of adaptation responses. Features general trends and good practices drawn from the OECD Survey of Policies on Water and Climate Change Adaptation, and includes 34 individual country profiles. Highlights the benefits of well-designed economic instruments (e.g. insurance schemes, water trading, water pricing), and ecosystem-based approaches and ‘real options’ approaches to financing. The latter can improve the flexibility of water policy and investment, reducing the cost of adjusting to changing conditions.

(WATER MANAGEMENT)

Water Security for Better Lives. Organisation for Economic Co-operation and Development. Paris: OECD, Sept 2013, 171p, \$58 (e-book). Examines the critical issues surrounding water security (shortage, excess, inadequate quality, the resilience of freshwater systems). Sets out a three-step process to “know”, “target” and “manage” water risks: 1) appraising the risks, 2) judging the tolerability and acceptability of risks and weighing risk-risk trade-offs, and 3) calibrating appropriate responses. Provides policy analysis and guidance on the use of market-based instruments and the complex links between water security and other policy objectives, such as food security, energy security, climate mitigation and biodiversity protection.

(WATER SECURITY)

***Marine Biotechnology: Enabling Solutions for Ocean Productivity and Sustainability.** Organisation for Economic Co-operation and Development. Paris: OECD, Sept 2013, 116p, \$33 (e-book). Biodiversity in the oceans “offers manifold possibilities for development and exploitation.” Marine biotechnology has the potential to contribute to economic and social prosperity, through food production, new sources of renewable energy (i.e. algal biofuels), and products for health and well-being. Presents scientific and technological tools at the center of a renewed interest in marine biotechnology and examines how these advances are improving our understanding of marine life and facilitating access to, and study of, marine organisms and ecosystems. But a governance framework is needed to enable development of marine bioresources in a sustainable manner, and it would be most effective at the international level. New indicators are also needed to measure the impact of investment and government policies.

(OCEAN SUSTAINABILITY * MARINE BIOTECHNOLOGY)

Financing SMEs and Entrepreneurs 2013: An OECD Scoreboard. Organisation for Economic Co-operation and Development. Paris: OECD, Aug 2013, 282p, \$84 (e-book). Access

to finance is one of the most significant challenges for entrepreneurs and for the creation, survival and growth of small businesses. Better data are needed to understand the financing needs of SMEs (Small- and Medium Enterprises) and entrepreneurs and to provide the basis for informed institutional and public policy decisions. Establishes a comprehensive international framework for monitoring SME and entrepreneur access to finance over time, and presents data for a number of debt, equity and financing framework condition indicators. Includes an overview of SME financing trends and conditions across participating 25 countries, focusing in particular on the changes which occurred between 2010 and 2011, and on government policy responses intended to improve SME access to finance.

(BUSINESS FINANCING: OECD SURVEY * ENTREPRENEURSHIP AND FINANCING)

Anti-Corruption Reforms in Eastern Europe and Central Asia: Progress and Challenges, 2009-2013. Organisation for Economic Co-operation and Development. Paris: OECD, Aug 2013, 200p, \$70pb (e-book). Countries in Eastern Europe and Central Asia have introduced important anti-corruption reforms in the past several years. However, corruption remains high in the region. Identifies progress achieved in the region as well as remaining challenges that require further action by countries. Analyses three broad areas of anti-corruption work: 1) anti-corruption policies and institutions, 2) criminalization of corruption and law-enforcement, and 3) measures to prevent corruption in public administration and in the business sector. Features examples of good practice from Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan, as well as comparative cross-country data.

(CORRUPTION PREVENTION * GOVERNMENT)

Natural Gas Information 2013. International Energy Agency. Paris: OECD, Aug 2013, 655p, \$184 (e-book). Reference work on gas supply and demand, covering not only OECD countries but also the rest of the world. Contains essential information on LNG and pipeline trade, gas reserves, storage capacity and prices. Concentrates on OECD countries, showing a detailed gas supply and demand balance for each individual country and for the three OECD regions, as well as a breakdown of gas consumption by end-user. Import and export data are reported by source and destination.

(NATURAL GAS: OECD SURVEY)

Electricity Information 2013. International Energy Agency. OECD. Paris: OECD, Aug 2013, 890p, \$168 (e-book). Reviews historical and current market trends in the OECD electricity sector, including 2012 preliminary data. Provides an overview of the world electricity developments in 2011 covering electricity and heat production, input fuel mix, supply and consumption, and electricity imports and exports. Also provides a corresponding statistical overview of developments in the world and OECD electricity and heat market for 2011, as well as monthly OECD production and trade electricity data for 2012. Offers, in tabular form, detailed and comprehensive statistical coverage of the power and heat industry developments for each of the OECD member countries and for OECD and IEA regional aggregates. Topics include overall energy consumption, economic indicators, electricity and heat production by energy form and plant type, electricity imports and exports, sectoral energy and electricity

consumption, and electricity and electricity input fuels for each country and regional aggregate.

(ELECTRICITY: OECD SURVEY)

Coal Information 2013. International Energy Agency. Paris: OECD, Aug 2013, 626p, \$184 (e-book). Reviews past and current evolution of the world coal market; presents country-specific statistics for OECD member countries and selected non-OECD countries on coal production, demand, trade and prices. Discusses coal supply, the consumption stream, institutions and governments involved in market and policy analysis of the world coal market, coal resources and reserves, trade, prices CO₂ emissions, and coal for other uses, etc.

(COAL: OECD SURVEY * ENERGY)

OECD Employment Outlook 2013. Organisation for Economic Co-operation and Development. Paris: OECD, July 2013, 270p, \$78 (e-book). Looks at labor markets in the wake of the financial crisis. Chapters discuss the experience of different labor market groups since 2007; employment protection legislation; benefit systems; employment and training programs and services; re-employment, earnings and skills after job loss; impact of older worker employment on youth employment; developments in OECD countries; early retirement pensions; unemployment benefit schemes for early retirement; permanent and fixed-term contracts with a temporary employment agency; enduring jobs gaps; cyclical; and the structural rise in unemployment. Extensive statistical annex also included.

(WORK: OECD SURVEY * ECONOMY)

OECD Communications Outlook 2013. Organisation for Economic Co-operation and Development. Paris: OECD, July 2013, 320p, \$12pb with e-book. In 2011, the total number of OECD communication access paths was 2.066 million, or 166 subscriptions per 100 inhabitants. Mobile subscriptions represented 65.4% of paths, versus 64% in 2009, and traditional fixed telephony subscriptions continue to decline. Fibre broadband subscriptions grew at 16.61% year on year between 2009 and 2011. Greater use of mobile broadband access has been stimulated by the popularity of smartphones. The average subscription rate of mobile Internet access in OECD countries as a whole rose to 56.6% in June 2012, up from just 23.1% in 2009. Long-predicted trends such as the convergence of previously distinct communication services are now occurring at a fast pace across all sectors of industry, and having profound and widespread impacts on economies and societies. This welcome process presents OECD countries with new opportunities to promote innovation and competitiveness, and to address key challenge areas such as promotion of greater equity. Provides indicators for the development of different communications networks and compares performance indicators such as revenue, investment, employment, and prices for service throughout the OECD area.

(COMMUNICATION: OECD SURVEY)

Entrepreneurship at a Glance 2013. Organisation for Economic Co-operation and Development. Paris: OECD, July 2013, 108p, \$63pb. Entrepreneurship and entrepreneurs have long been recognized as important sources of innovation, and thereby also of growth and employment. The recent crisis has arguably hampered new start-ups and impeded growth in existing start-ups, as well as their ability to survive in tough market conditions. There is a need to rely on statistics on entrepreneurship that can support policy makers; such indicators

should allow for cross-country comparisons and focus on both enterprise creation and performance. Presents indicators for measuring the state of entrepreneurship, along with key facts and explanations of the policy context; data results from the OECD-Eurostat Entrepreneurship Indicators Programme (EIP). Topics include: recent developments in entrepreneurship, new enterprise creations, patterns of business start-up rates across OECD economies after the onset of the financial crisis; bankruptcies; self-employment rates; structural indicators on enterprise population; productivity by enterprise size class; enterprise birth, death and survival; enterprise growth and employment creation; the profile of the entrepreneur; etc.

(BUSINESS * ENTREPRENEURSHIP: OECD INDICATORS)

A Skills Beyond School Review of the United States. Malgorzata Kuczera and Simon Field. Paris: OECD, July 2013, 120p, e-book. Examines vocational education and training programs in the United States, including coverage of how they are changing, how they are funded, how they are linked to academic and university programs and how employers and unions are involved.

(EDUCATION * WORK * VOCATIONAL EDUCATION: U.S.)

Aid for Trade at a Glance 2013: Connecting to Value Chains. Organisation for Economic Co-operation and Development and World Trade Organisation. Paris: OECD, July 2013, 410p, \$98pb with e-book. The Aid-for-Trade Initiative is delivering tangible results in improving trade performance and bettering people's lives, notably those of women in developing countries. It also plays an important role in enabling firms in developing countries to connect with or move up value chains. Assesses what is happening, what is not, and where improvements are needed; focuses on trends in policies, programs and practices. Data results from self-assessments of 80 developing countries, 28 bilateral donors, 15 multilateral donors, and 9 providers of South-South co-operation. Views were also received from 524 supplier firms in developing countries and 173 lead firms, mostly in OECD countries. Topics cover aid's adapting to new realities, flows and financing, value chains and development path, effectiveness issues, and the future of aid-for-trade. Country fact sheets are included.

(AID-FOR-TRADE ASSESSED* DEVELOPMENT)

***Greening Household Behaviour: Overview from the 2011 Survey.** Organisation for Economic Co-operation and Development. Paris: OECD, July 2013, 308p, \$77pb with e-book. Governments of OECD countries have introduced a wide variety of measures to encourage citizens to consider environmental impacts in their purchases and practices. Developing growth strategies that promote greener lifestyles requires a good understanding of the factors that affect people's behavior towards the environment. OECD took periodic surveys of >10,000 households in 11 countries (Australia, Canada, Chile, France, Israel, Japan, Korea, the Netherlands, Spain, Sweden and Switzerland), covering five specific household behavior areas (energy use, food consumption, transport choices, waste and recycling, and water use). Calls for providing the right economic incentives for influencing household decisions. "Soft" measures such as labeling and public information campaigns also have a significant complementary role to play. Spurring desirable behavior change requires a mix of instruments.

(GREEN LIFESTYLES * HOUSEHOLD GREEN BEHAVIOR * ENERGY * FOOD * WATER * WASTE)

***Providing Agri-environmental Public Goods through Collective Action.** Organisation for Economic Co-operation and Development. Paris: OECD, June 2013, 306p, \$126pb with e-book. Agriculture is a provider of food, feed, fiber, fuel and fun (e.g. agri-tourism) and, to a certain extent, public goods like landscape and biodiversity. However, it can also have negative impacts on natural assets such as biodiversity and water quality. With the growing awareness of environmental issues, including loss of biodiversity and climate change, the provision of public goods and reduction of negative externalities stemming from agriculture have become important policy issues. Collective action should be given serious consideration as a means of addressing many agricultural and natural resource issues, and in some cases collective action should be actively promoted. Reviews the experience of various OECD member countries, as showcased by 25 cases from 13 countries (Australia, Belgium, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Spain, Sweden and the United Kingdom). Topics include: understanding agri-environmental public goods, relationship between collective action and agri-environmental public goods, farmer behavior and collective action, promotion of collective action and policy implications.

(AGRICULTURE AND THE ENVIRONMENT)

***Transition to Sustainable Buildings: Strategies and Opportunities to 2050.** International Energy Agency. Paris: OECD, June 2013, 284p, \$140pb with e-book. Buildings are the largest energy consuming sector in the world, and account for over one-third of total final energy consumption and an equally important source of CO₂ emissions. Achieving significant energy and emissions reduction in the buildings sector is a challenging but achievable policy goal. Presents detailed scenarios and strategies to 2050, and demonstrates how to reach deep energy and emissions reduction through a combination of best available technologies and intelligent public policy. Provides informative insights on: 1) cost-effective options, key technologies and opportunities in the buildings sector; 2) solutions for reducing electricity demand growth and flattening peak demand; 3) effective energy efficiency policies and lessons learned from different countries; 4) future trends and priorities for ASEAN, Brazil, China, the European Union, India, Mexico, Russia, South Africa and the United States; 5) implementing a systems approach using innovative products in a cost effective manner; and 6) the pursuit of whole-building (e.g. zero energy buildings) and advanced-component policies as a fundamental shift in the way energy is consumed.

(SUSTAINABLE BUILDINGS * ENERGY EFFICIENCY)

OECD-FAO Agricultural Outlook 2013 (19th Edition). Organisation for Economic Co-operation and Development and Food and Agriculture Organization of the United Nations. Paris: OECD, June 2013, 324p, \$98pb with e-book. Higher costs and strong demand are expected to keep commodity prices well above historical averages with a high risk of price volatility given tight stocks, a changeable policy environment and increasing weather-related production risks. China is projected to maintain its self-sufficiency in certain key food commodities while increasing its trade and integration in world agricultural markets. Provides projections to 2022 for major agricultural commodities, biofuels and fish; for the first time includes cotton and a special feature on China. Topics include biofuels, cereals, oilseeds and oilseeds products, sugar, meat, dairy, and cotton.

(AGRICULTURAL COMMODITIES TO 2022: OECD/FAO SURVEY)

Medium-Term Renewable Energy Market Report 2013: Market Trends and Projections to 2018. International Energy Agency. Paris: IEA, June 2013, 217p, \$140pb with e-book. Assesses the current state of play of renewable energy world-wide, identifies the main drivers and barriers to deployment and projects renewable energy electricity capacity and generation through 2018. Also examines the prospects for renewable energy finance and provides a global outlook for each renewable electricity technology. Topics include geothermal, hydropower, ocean power, offshore wind, onshore wind, solar photovoltaics, and solar thermal electricity.

(RENEWABLE ENERGY TO 2018)

***Education at a Glance 2013: OECD Indicators.** Organisation for Economic Co-operation and Development. Paris: OECD, June 2013, 438p, \$112pb with e-book. Presents the state of education around the world, with data on the structure, finances, and performance of education systems in more than 40 countries, including OECD members and G20 partners. Topics discuss the output of educational institutions; the impact of learning across countries; the financial and human resources invested in education; access, participation and progression in education; and the learning environment and organization of schools. In the 2013 edition, new material includes: data on the economic crisis; program orientation (general versus vocational) in secondary and tertiary education; an analysis of how work status (full-time, part-time, involuntary part-time) is related to individuals' level of education; the relationship between fields of education and tuition fees, unemployment rates and earnings premiums; etc. (ALSO SEE **Education at a Glance 2013: Highlights**, OECD, 80p).

(EDUCATION: OECD OVERVIEW)

Global Food Security: Challenges for the Food and Agricultural System. Organisation for Economic Co-operation and Development. Paris: OECD, June 2013, 160p, \$42pb and e-book. Approximately two-thirds of the world's poor live in rural areas, where farming is the principal economic activity. Government policies can raise the incomes of agricultural and rural households, and thereby improve poor people's access to food. Yet, while income growth is essential for long-term food security, it is not sufficient. Complementary policies to improve health and sanitation are required to ensure better nutrition.

(FOOD SECURITY)

***A Good Life in Old Age? Monitoring and Improving Quality in Long-term Care.** Organisation for Economic Co-operation and Development and European Union. Paris: OECD, June 2013, 265p, \$84pb and e-book. With the aging populations and growing costs, ensuring and improving the quality of long-term care (LTC) services have become an important policy priority across OECD countries. The share of those aged 80 years and over is expected to increase from 4% in 2010 to nearly 10% in 2050. In 2010 OECD countries allocated 1.6% of GDP to public spending on LTC, on average. The goal of good quality care is to maintain or, when feasible, to improve the functional and health outcomes of frail elderly, the chronically ill, and the physically disabled, whether they receive care in nursing homes, assisted living facilities, community-based or home care settings. Focuses on three aspects generally accepted as critical to quality care: 1) effectiveness and care safety, 2) patient-centeredness and responsiveness and 3) care co-ordination. Case studies feature Europe and the United States.

(LONG-TERM CARE * AGING: OECD SURVEY)

International Migration Outlook 2013. Organisation for Economic Co-operation and Development. Paris: OECD, June 2013, 420p, \$133 pb with e-book. Immigration flows are rising in OECD countries, but remain well below pre-financial crisis levels. In 2011, total permanent immigration rose overall in OECD countries from 2010, but was still below four million. Preliminary 2012 data suggest a further increase. Temporary labor migration was essentially stagnant relative to 2010, at just below two million entries. OECD countries continue to attract students from around the world, with the number of international students in 2010 up 6% from 2009. The economic crisis has had a restrictive effect on labor migration in general, but with attention focused on attracting migrants perceived as bringing benefits to the destination country, such as investors and entrepreneurs, graduating international students, and EU Blue Card migration. Covers recent development in migration movements and policies in OECD countries and some non member countries, including migration of highly-qualified and low-qualified workers (both temporary and permanent), as well as students. This edition also contains two special chapters on topical issues: fiscal impact of migration and discrimination.

(MIGRATION: OECD OVERVIEW)

Abrupt Impacts of Climate Change: Anticipating Surprises. National Research Council. *Washington: National Academies Press, Dec 2013, 222p, \$59.95pb.*
(read for free at www.nap.edu/catalog.php?record_id=18373)

Climate change is almost surely the major issue of the 21st century. It is a complex and evolving concern, and scientific understanding is constantly improving, albeit still far from certain. This report provides the latest overview of the state of knowledge and uncertainty on trends, surprises, and potential impacts.

The commendable foresight employed by these leading climate scientists on the NRC “Committee on Understanding and Monitoring Abrupt Climate Change and its Impacts” deserves attention by others. Any planner, policy-maker, or futurist should be paying close attention to the distinction between widely-assumed steady change and abrupt change, as well as to the worsening climate change issue itself. To this end, an Appendix is provided here, with abstracts of five recent and related reports: **America’s Climate Choices** from the NRC (2011), **Bankrupting Nature: Denying Our Planetary Boundaries** by Anders Wijkman and Johan Rockstrom (2012), **The Projected Timing of Climate Departure from Recent Variables** by Camilo Mora et al. (2013), an outline of the IPCC **Fifth Assessment Report** (2014), and **The Climate Casino: Risk, Uncertainty, and Economics for a Warming World** by William Nordhaus (2013).

1. Background

“Levels of CO₂ and other greenhouse gases in Earth’s atmosphere are exceeding levels recorded in the past millions of years, and thus climate is being forced beyond the range of the recent geological era. Lacking concerted action by the world’s nations, it is clear that the future climate will be warmer, sea levels will rise, global rainfall pattern will change, and ecosystems will be altered.” (NRC, p.1)

But there is still uncertainty about how we will arrive at this future state. Many projections of future conditions predict steadily changing conditions, suggesting that communities have time to gradually adapt. However, scientists have been paying increasing attention to the possibility that at least some changes will be abrupt, perhaps crossing a threshold or “tipping point” to change so quickly that there will be little time to react. Earth’s history—gathered from sources such as fossils, sediment cores, and ice cores—contains ample evidence of abrupt changes in the past. In addition to abrupt changes within the climate system, gradual climate changes can cross thresholds in both natural systems and human systems (e.g., rising sea levels surpassing sea walls, or thawing permafrost destabilizing pipelines, buildings, and roads).

“Understanding the potential risks posed by both abrupt climate changes and the abrupt impacts resulting from gradual climate change is a crucial piece in advancing the ability of society to cope with changes in the Earth system.” (p.2) This report, sponsored by the US intelligence communities, the National Oceanic and Atmospheric Administration, the National Science Foundation, and the National Academies, examines current knowledge about the likelihood and timing of 14 potential abrupt changes. It also calls for an Abrupt Change Early Warning System, and identifies gaps in scientific understanding and monitoring capabilities. *“The primary timescale of concern is years to decades. A key characteristic of these changes is that they can come faster than expected, planned, or budgeted for, forcing more reactive, rather than proactive, modes of behavior.” (p.2)*

2. Abrupt Changes Already Underway

Two changes are of immediate concern: the disappearance of late-summer Arctic sea ice and increases in species extinctions.

Rapid reduction in Arctic sea ice already qualifies as an abrupt change, due to substantial decreases in ice extent in the past several decades. “Projections from climate models suggest that ice loss will continue in the future, with the full disappearance of late-summer Arctic sea ice possible in the coming decades.” (p.3) The impacts are likely to be considerable, including disruptions in the marine food web, shifts in the habits of some marine mammals, and erosion of vulnerable coastlines. *“Changes in the extent of sea ice could cause shifts in climate and weather around the northern hemisphere.”* They will bring new legal and political challenges as navigation routes for commercial shipping open, and access to fishing, tourism, and offshore oil and gas is enabled.

“The rate of climate change now underway is probably as fast as any warming event in the past 65 million years, and it is projected that its pace over the next 30 to 80 years will continue to be faster and more intense. These rapidly changing conditions make survival difficult for many species.” (p.5) The distinct risks of climate change exacerbate other widely recognized and severe extinction pressures, especially habitat destruction, competition from invasive species, and unsustainable exploitation of species for economic gain, which have already elevated extinction rates. Loss of a species has economic impacts from loss of ecosystem services, revenue, and jobs in fishing, forestry, and ecotourism. It also has ethical implications, as the current generation’s legacy to future generations. [ALSO SEE **The Sixth**

Extinction: An Unnatural History by New Yorker staff writer Elizabeth Kolbert (NY: Henry Holt, Feb 2014, 319p), the latest global summation of this worrisome megatrend.]

3. Abrupt Changes of Unknown Probability or Unlikely in the 21st Century

Foremost is destabilization of the West Antarctic Ice Sheet, a large part of it capable of flowing rapidly into deep ocean basins, representing 3-4 meters of potential sea-level rise. "It remains possible that future rates of sea-level rise from the WAIS are underestimated, perhaps substantially." An abrupt change of the WAIS in the 21st century is plausible, with an unknown although probably low probability. The Greenland ice sheet is not expected to destabilize rapidly within this century.

Recent research shows that some abrupt changes previously considered as potential threats may be less likely to occur in this century than previously considered possible. These include disruption to the Atlantic Meridional Overturning Circulation and potential abrupt changes of high-latitude methane sources (permafrost soil carbon and ocean methane hydrates). But if they occur in the next century or beyond, "there would likely be severe impacts." Arctic carbon stores (e.g. permafrost soils and methane-containing ices) "are poised to play a significant amplifying role in the century-scale buildup of carbon dioxide and methane in the atmosphere, but are unlikely to do so abruptly, i.e., on a timescale of one or a few decades." (p.10)

4. 14 Potential Processes that may Change

A 4-page chart (pp. 14-17) summarizes a wide range of potential changes and their consequences, the current trend, the outlook before 2100 and after 2100, level of scientific understanding, and critical needs for research.

4.1. Abrupt Changes in the Ocean

- Disruption to Atlantic Meridional Overturning Circulation (**low** probability before 2100, **high** probability after 2100, **moderate** level of understanding)
- Sea Level Rise from Ocean Thermal Expansion, with storm surges more likely and severe (**low** probability by 2100, **high** probability after 2100, **high** level of understanding)
- Sea Level Rise from West Antarctic Ice Sheet (**probably low** likelihood by 2100, **unknown** likelihood after 2100, **low** level of understanding)
- Sea Level Rise from Greenland and Other Ice Sheets (**low** probability by 2100, **high** probability after 2100, **high** understanding for some aspects but **low** for others)
- Decrease in Ocean Oxygen with threats to marine life and release of nitrous oxide GHG (**moderate** probability to 2100, **high** probability after 2100, **low to moderate** understanding)

4.2. Abrupt Changes in the Atmosphere

- Changes to Patterns of Climate Variability (**moderate** probability by 2100, **high** probability after 2100, **low to moderate** understanding)

- Heat Waves Increasing in Intensity, Frequency, and Duration (**moderate** probability by 2100, **high** probability after 2100, **high** level of understanding)
- Extreme Precipitation Events Increase in Frequency and Intensity, with threats to food and water (**moderate** probability to 2100, **moderate to high** probability after 2100, **low to moderate** level of understanding)

4.3. Abrupt Changes at High Latitudes

- Increased Release of Carbon Stored in Soils and Permafrost (**low** probability to 2100, **high** probability after 2100, **moderate** level of understanding)
- Increased Release of Methane from Ocean Methane Hydrates (**low** probability to 2100, **moderate** probability after 2100, **moderate** level of understanding)
- Late-Summer Arctic Sea Ice Disappearance (**high** probability by 2100, **very high** probability after 2100, **high** level of understanding)
- Winter Arctic Sea Ice Disappearance (**low** probability by 2100, **moderate** probability after 2100, **high** level of understanding)

4.4. Abrupt Changes in Ecosystems

- Rapid State Changes in Ecosystems, Species Range Shifts, and Species Boundary Changes (**moderate** probability by 2100, **high** probability after 2100, **moderate** level of understanding)
- Increased Extinctions of Marine and Terrestrial Species (**high** probability by 2100, **very high** probability after 2100, **moderate** level of understanding)

5. The NRC Summary

“In light of the importance of actionable information about the occurrence and impacts of abrupt changes, it is the [NRC] Committee’s judgment that *action is urgently needed to improve society’s ability to anticipate climate change and impacts.*” (p.11) Surprises in the climate system are inevitable, and development of an Abrupt Change Early Warning System is recommended, part of an overall risk management strategy. The ACEWS would monitor key variables of abrupt change, engage in modeling to project future abrupt changes, and synthesize knowledge “to avoid the trap of data collection without continuing and evolving data analysis and model integration. This will require dedicated teams of researchers, improved collaborative networks, enhanced educational activities, and innovative tools for data analysis and modeling techniques.” (p.12)

Although there is still much to learn, “*to willfully ignore the threat of abrupt change could lead to more costs, loss of life, suffering, and environmental degradation. The time is here to be serious about the threat of tipping points so as to better anticipate and prepare ourselves for the inevitable surprises.*” (p.13)

Appendix: Five Related Reports

Five recent reports serve to complement and expand the NRC concern about climate change and potential abrupt changes.

1. **America's Climate Choices** by the National Research Council (National Academies Press, May 2011, 118p; GFB Book of the Month, Oct 2011) warns that climate change “poses significant risks for a broad range of human and natural systems,” and that “substantial action” is needed to limit the magnitude of climate change and to prepare to adapt to its impacts. Given the complexities of the climate system, “we can expect always to be learning more and to be facing uncertainties regarding future risks.” Of particular note is the discussion of the unique challenges of climate change (e.g. significant time lags in the climate system and in human response), and the sensible and distinctive call for “iterative risk management” as a process of ongoing assessment, action, reassessment, and response.
2. **Bankrupting Nature: Denying Our Planetary Boundaries** by Anders Wijkman (Co-President, Club of Rome) and Johan Rockstrom of the Stockholm Resilience Centre (Earthscan/Routledge, Nov 2012, 206p.; GFB Book of the Month, Jan 2013) also focuses on the “need to acknowledge the risk of surprises, tipping points, or threshold events.” But it does so with the broader concept of “planetary boundaries” involving nine biophysical processes: climate stability, ozone depletion, ocean acidification, biogeochemical loading (nitrogen and phosphorus cycles), biodiversity loss, degradation of land resources, over-exploitation of freshwater, pollution from toxic chemicals, and atmospheric aerosol loading (nitrates, sulphates, and soot particles). Humanity has already exceeded three of these boundary limits, as concerns climate, biodiversity, and excess nitrogen. Based on two scientific papers published in 2009 by Rockstrom and 28 others, the “planetary boundaries” concept is also described by Carl Folke of the Stockholm Resilience Centre in **State of the World 2013: Is Sustainability Still Possible?** (Island Press/Worldwatch Institute, April 2013, 441p; GFB Book of the Month, Oct 2013).
3. **The Prospective Timing of Climate Departure from Recent Variability** by Camilo Mora of the University of Hawaii and 13 others (Nature, 10 Oct 2013, 183-187; reported by Justin Gillis in *The New York Times*, 10 Oct 2013, A10), arguing that “if greenhouse emissions continue their steady escalation, temperatures across most of the earth will rise to levels with no recorded precedent by the middle of this century.” (NYT) Thus the coldest year in the future will be warmer than the hottest year in the past, based on temperatures recorded between 1860 and 2005. Unprecedented climates will arrive even sooner in the tropics, where climate variability is much smaller than in high latitudes, and plants and animals are accustomed to a narrow temperature range. Under continuing high emissions (the business-as-usual scenario), climate departure dates will be 2029 for Jakarta and Lagos and 2031 for Mexico City, contrasted to 2047 for New York City and 2071 in Anchorage, plus or minus a five-year margin of error. “The models show that unprecedented temperatures could be delayed by 20 to 25 years if there is a vigorous global effort to bring emissions under control.”
4. **Fifth Assessment Report: Climate Change 2013**, from the Intergovernmental Panel on Climate Change, is delivered in three parts and a synthesis, as in previous years. **Work-**

ing Group 1: The Physical Science Basis (Jan 2014, c.1500p) states that warming is unequivocal and that there is a 95% chance that most of it is human-caused (up from 90% in the previous report). Contents include projected climate change over the 21st century and beyond, an atlas of climate projections for 35 world regions, and potentially abrupt or irreversible changes. The report from WG II, **Impacts, Adaptation, and Vulnerability**, is due in March 2014. The WG III report, **Mitigation of Climate Change**, is due in April 2014. A Dec 2013 draft was leaked, and reported in the New York Times by Justin Gillis (17 Jan 2014, A8), who writes that “Nations have so dragged their feet in battling climate change that the situation has grown critical and the risk of severe economic disruption is rising...another 15 years of failure to limit carbon emissions could make the problem virtually impossible to solve with current technologies.” While the spread of technologies like solar power and wind farms might give the impression of progress, such developments are being overtaken by rising emissions, especially in China. While emissions appear to have fallen in recent years in some rich countries, that is somewhat of an illusion because many of the goods consumed in wealthy countries are now made abroad; thus the wealthy countries have outsourced their emissions. A delay in curbing emissions would likely force future generations to suck greenhouse gases out of the atmosphere—an approach that “would probably be wildly expensive compared with taking steps now to slow emissions.” The IPCC **Synthesis Report** will be published in Oct 2014.

5. **The Climate Casino: Risk, Uncertainty, and Economics for a Warming World** by Yale economist William Nordhaus (Yale University Press, 2013, 378p), explains in a non-technical manner how we are entering the Climate Casino, where “economic growth is producing unintended but perilous changes in the climate and earth systems. These changes will lead to unforeseeable and probably dangerous consequences. We’re rolling the climatic dice, the outcome will produce surprises, and some of them are likely to be perilous.” (p.3) Chapters discuss the science of global warming, projections of future climate change from the IPCC Fourth Assessment, dangerous tipping points in the climate casino (collapse of large ice sheets, feedback that triggers more warming), the fate of farming, the potential for major impacts on health, perils for the oceans (sea level rise, ocean acidification and carbonization), intensification of hurricanes, impacts on wildlife and ecosystems, adding up the damages (showing vulnerability by economic sector), adaptation and geoengineering, the costs of reducing emissions, the discounting issue of comparing present and future costs and benefits (costs are paid largely in the near term, while benefits come far in the future), balancing costs and benefits, the central role of carbon prices, national climate change policies, new technologies for a low-carbon economy, climate science and its critics, public opinion and climate change, why carbon taxes are an ideal policy for true conservatives (they can be imposed without burdensome regulations and without betting on technology winners), and overcoming obstacles to climate change policies (prisoners of nationalism, of the present, of partisanship, of economic self-interest). Concludes that clear and persistent explanations of the science must continue; the evidence will become increasingly clear as it did with smoking, and “the political winds will eventually shift.”

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