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The CADMUS Journal

The acronym of the South-East European Division of The World Academy of Art and Science – SEED – prompted us to initiate a journal devoted to seed ideas – to leadership in thought that leads to action. Cadmus (or Kadmos in Greek and Phoenician mythology) was a son of King Agenor and Queen Telephassa of Tyre, and brother of Cilix, Phoenix and Europa. Cadmus is credited with introducing the original alphabet – the Phoenician alphabet, with “the invention” of agriculture, and with founding the city of Thebes. His marriage to Harmonia represents the symbolic coupling of Eastern learning and Western love of beauty. The youngest son of Cadmus and Harmonia is Illyrius. The city of Zagreb, which is the formal seat of SEED, was once a part of Illyria, a region including what is today referred to as the Western Balkans and even more. Cadmus will be a journal for fresh thinking and new perspectives that integrates knowledge from all fields of science, arts and humanities to address real-life issues, inform policy and decision-making, and enhance our collective response to the challenges and opportunities facing the world today.

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Uncorking the Future: Transitions to a New Paradigm

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Abstract

This article explores issues discussed at three recent WAAS events regarding the process of transition to a new paradigm. The prominent institutions and policies governing the present paradigm are founded upon a bedrock of ideas and values and an abstract, reductionistic mode of analytic thinking detached from people and social reality. Escape from the present blind alley and transition to a new paradigm require adoption of a different way of thinking that is human-centered, value-based, inclusive and synthetic. The multidimensional challenges confronting humanity today are the consequence of precious opportunities missed at the end of the Cold War. At the same time the awareness and energy released by these challenges has the potential for converting current challenges into unprecedented opportunities for progress at the global level. The outcome depends on our capacity to discover the complementarity underlying apparently contradictory, opposite viewpoints. Multi-culturalism is at once the source of intense frictions and conflict and the rich genetic potential from which a new paradigm can emerge. A new paradigm requires a deeper understanding of the cultural underpinnings of democracy, a rational examination of the sacred cow of national sovereignty, and explicit recognition of the social responsibility of science for the consequences of scientific discovery and technological innovation. Leadership will play a crucial role in determining the outcome – intellectual leadership at the level of ideas, scientific leadership that exhibits consciousness responsibility, transformational leadership at the level of international institutions and nation-states.

To our normal perception, the future is like a one-way mirror. Looking forward from the present, it is impenetrable and blocks our vision of what is coming. Like a rear-view mirror, it presents a reflection of where we have come from through the lens of our prevailing ideas, beliefs and past experience. Looking backward from the future, we perceive the unfolding sequence of events as a logical consequence of causal determinates emerging out of the past that appears natural and almost inevitable. We are all blind in prospect and visionary seers in retrospect. In March 2015 WAAS and the World University Consortium conducted a brainstorming workshop at Dubrovnik to frame the outlines for a trans-disciplinary course on transformational leadership. In April 2015 the World Academy co-organized important conferences in Kiev and Baku – the fourteenth and fifteenth in the last three years – exploring

prospects for transition to a new paradigm.* These events sought to break some of the perceptual barriers posed by one-way mirror vision and to peer into the future through the cracks in its surface.

“The critical task before us today is to transform the ominous challenges confronting humanity into positive catalytic forces for rapid evolution to a new paradigm.”

1. Challenges are Opportunities

Today humanity confronts multidimensional challenges of unparalleled magnitude, complexity and consequences for current and future generations. The intensity and urgency of these challenges are magnified by rapid globalization, the accelerating pace of social change, exponential rates of technological innovation, and the increasingly extensive and intricate web of inter-linkages and interdependencies between people, institutions and aspects of life everywhere.

This is also a period of unprecedented opportunities for humanity. The momentous potential of these opportunities has been multiplied and magnified by the global spread of democracy and human rights, rising levels of education, increasing interconnectivity, soaring aspirations and other catalytic deep drivers. The consequences of these challenges and opportunities will depend entirely on the way we respond to them.

Looking backward, we sometimes observe dire challenges morphing into unanticipated opportunities. The US Civil War was ostensibly fought over the issue of whether slavery should be prohibited or permitted in new states being formed out of the westward expansion across the North American continent. But the deeper issue at stake was whether the young American union would remain a weak confederation of states or splinter into two or more independent nations. For several years permanent secession by the Southern states appeared the most likely outcome. Either way, slavery would have eventually been abolished, as it was elsewhere around the world. But had the early Confederate victories garnered the full support of European buyers eager for Southern cotton, the USA today might more closely resemble the semi-independent states of Europe that are now struggling to overcome their differences to build a strong federal European Union. Eventually the tide of military and economic might turned in favor of the North, national unity was preserved, slavery was abolished and a strong federal system replaced the weaker association of states that preceded the war. By the end of the 19th century, America had become the largest and most prosperous economy in the world. Following the two world wars, it became the most powerful nation militarily and politically

* The international conference on “The State of the World, Need for the New World Paradigm and Role of Ukraine in it,” organized by the World Academy of Art and Science, Bohdan Hawrylyshyn Charitable Foundation and World University Consortium, was held in Kiev, Ukraine, on April 25, 2015. The other conference held on April 29-30, 2015 in Baku, Azerbaijan, titled “Framework for a New Paradigm of Human Development” was organized by the World Academy of Art and Science and the Nizami Ganjavi International Center.

as well. A challenge to its very survival was converted into an opportunity for America to emerge as world leader.

In modern times the devastation of two world wars was converted into the foundations for two of the most important events in human history. First was the founding of the UN in 1945 to transform a world governed by a precarious balance of power and military might among a few imperial European empires into a world governed by a global organization of sovereign nations, rule of law and universal human rights. While it has failed to live up to its highest aspirations and proclaimed ideals, the establishment of the UN has successfully avoided onset of a third world war, created a global network of international institutions and forged a global community of nations based on shared values and goals.

The second remarkable event was the founding of the European Community and the European Union, which have successfully forged nations which had fought with one another incessantly for centuries into an entirely new type of transnational organization dedicated to promoting peace, harmony and prosperity for their culturally diverse populations. The critical task before us today is to transform the ominous challenges confronting humanity into positive catalytic forces for rapid evolution to a new paradigm.

Problems can be converted into opportunities. It is equally true that opportunities missed can become problems. The world missed an unprecedented opportunity at the end of the Cold War. It missed the opportunity to develop an inclusive, global economic system that promotes the security, welfare and well-being of all human beings. It missed the opportunity to completely abolish nuclear weapons that still pose an existential threat to humanity. It missed the opportunity to transform a competitive security paradigm consisting of exclusive and competitive military alliances into an inclusive, global cooperative security system ensuring peace and security for all nations. It missed the opportunity to fully extend the principles of rule of law and democracy to the institutions of global governance. It also missed the opportunity to convert the impending environmental challenge into a bonding agent to unite humanity against a common enemy that can only be defeated by global cooperation on an unprecedented scale.

Instead, 25 years later we find a global economy that is much larger but more unstable and uncertain in which poverty persists for billions of people, unemployment is rising to near record levels and economic inequality everywhere is returning to heights not reached since the 1920s. The number of nuclear weapons states has proliferated and the role of nuclear weapons in military doctrine is on the rise. The euphoria that followed the end of the Cold War is morphing into what has been aptly termed as “Cold Peace” in which the USA and its European allies are once again in confrontation with Russia, while the Middle East and North Africa are shaken by increasing levels of instability, and the growing assertiveness of China is raising notes of alarm in the Far East. Cultural and religious tensions and open conflict are on the rise even in the heartland of liberal Western society. Lip service is given to ecological concerns while water resources dwindle, temperatures warm and urban pollution endangers huge populations.

Why did we fail to seize the opportunity? Why couldn't we make it happen? Many explanations can be given. The persistence of old rivalries, prejudices and suspicions vitiated the expansive atmosphere following the fall of the Berlin Wall. Forgetting that the end of the Cold War was largely prompted by voluntary internal changes behind the Iron Curtain, some Western intellectuals prematurely proclaimed the final victory for capitalism and democracy and the end of history itself. The fall of the first twin tower was interpreted as ultimate triumph of the tower that remained standing but soon began to totter as it leaned toward neoliberal extremism that dismantled the regulatory environment which had stabilized and democratized capitalism during the 20th century. Political theorists mistaking the mechanical apparatus of free elections for the liberal democratic culture which constitutes its heart and soul pressed to impose that mechanism on societies that were politically, administratively, socially and culturally unprepared and ill-equipped for sudden transition. Former communist oligarchs presided over the largest theft of public property in history. Following a radical 33% fall in global defense spending after the Fall of the Berlin Wall, reactionary politicians wedded to a Cold War mentality and vested interests in the military industrial complex found ways to hike up defense spending to record levels. In spite of the movement toward unification in Europe, national governments clung to outdated concepts of sovereignty that predated the Enlightenment and the democratic revolutions of the past two centuries. Financial institutions and speculators plunged head first into the vacuum created by the new Wild West of unregulated global financial markets causing a rampage of instability that undermined economies and destroyed millions of jobs around the globe. A plutocracy of money power progressively replaced the dogma of political ideology in both East and West. The five permanent members of the UN Security Council clung possessively to the special privileges they had accorded to themselves as the victors in WWII.

“Limitation in our thinking manifests as problems in our living.”

For the past quarter century the increasingly globalized human community has drifted in a rudderless boat without compass or captain, giving literal meaning to the idea of a world in which nobody is in charge. Everywhere people sought for visionary leaders with the capacity to transform challenges into opportunities and potentialities into reality. With few exceptions they have been sorely disappointed. Politicians have found no difficulty in pointing fingers at domestic opponents or foreign conspirators. Multicultural liberal societies have descended back toward the intolerance of bygone eras. Yet these outcomes were neither necessary nor inevitable.

Many agree with the assessment of former Slovenian President Danilo Türk that international institutions have become victims of a powerful conservative tendency to maintain stability rather than evolve to keep pace with the needs of our times. That is why social evolution commonly occurs at the periphery where society is less organized and rigidly fixed in its ways. The emergence of the World Wide Web represented a momentous advance, sprouting up out of nowhere and rapidly developing into the first truly global social organization without any apparent plan or purpose. The development of new global business models, the proliferation of international civil society organizations and the very recent expansion

of on-line educational institutions are other examples of this principle. The world is more organized today than ever before, yet the central institutions that humanity looks to for global governance and rule of law appear increasingly incompetent and impotent.

2. The Intellectual Foundations of a New Paradigm

All these factors have contributed to the gross failures and missed opportunities of the post-Cold War period. But none in itself or in combination with others is sufficient to expose the root cause of these failures. For that we need to look beyond specific events, policies, institutions, vested interests and competitive nationalism to the underlying set of ruling ideas on which the current paradigm in human affairs is founded. The world we live in is an expression of the ideas we believe in. The limitation in our thinking manifests as problems in our living. The failures of our policies and institutions are founded on failures of thought and conception. As Einstein said, "We cannot solve our problems with the same thinking we used when we created them." Ideas have the Power to change the world, as Jean Monnet's dream became the living seed for the united Europe that acquired concrete reality after his death.

A new paradigm must be based on a new set of concepts and values attuned to the future we seek to uncork. It requires not only different ideas but also a new type of thinking that differs in essential ways from that which now prevails. First, the new thinking must be human-centered. That means all its premises and conclusions must be judged from the perspective of how far they serve human needs and how far they develop and unleash human potential. A blind faith in the magic of the marketplace, technology for the sake of technology, growth for growth's sake, the sanctity of national sovereignty and expediency of balance of power on which the present paradigm is founded are instances of mechanistic Newtonian thinking based on the supposed action of universal laws of social nature similar to the natural laws which have long been the pursuit of the physical sciences. But the principles governing human society are not creations of Nature or bound by immutable laws. They are creations of human beings which can be altered by conscious choice and made to function differently and better. Our task is not to discover immutable laws of social nature and adapt to them, but to formulate social principles that maximize the welfare and well-being of human beings. If faith is to play a role in the new paradigm, then it must be faith in the unlimited potential of human beings for innovation, creativity, development and evolution.

When Franklin D. Roosevelt assumed office as US President in 1933, he inherited America's worst-ever banking crisis, which had already resulted in the failure of more than 6000 banks. Millions of Americans had to line up at the banks to withdraw their hard earned savings, plunging even sound financial institutions toward bankruptcy. Conventional Economics offered no good solution to a financial panic of this intensity. FDR rejected as useless the economic theory he had learned at Harvard. Instead he went on nationwide radio and appealed directly to the American people. He understood it was the people who had created the panic by their loss of confidence in the system and it was only the people who could reverse it. He reminded Americans of the rich productive potentials of their country, the courage of their immigrant forefathers who risked all to come to the New World, and the can-do spirit of self-confidence that had made America rich. He correctly diagnosed

the real problem. “We have nothing to fear but fear itself.” And then he asked Americans to return to the banks and redeposit their savings. A change in perspective halted the panic. It was stopped by a man who understood that economics is a human science. It is this type of thinking that prompted US President John F. Kennedy to assert three decades later, “Our problems are man-made, therefore they may be solved by man. And man can be as big as he wants. No problem of human destiny is beyond human beings.”

“The new paradigm needs to conceive of an economic system that reconciles the creative energies unleashed by individual freedom provided by markets with the regulatory framework needed to provide security for all citizens, preserve social harmony and equitably distribute the collective fruits of modern society to all members.”

Second, the new thinking must be overtly and explicitly value-based. For long the social sciences have sought to mimic the code of value-neutrality and detachment achieved by the natural sciences in their observation of physical phenomenon in quest for objective knowledge for the material universe. The natural scientist is not expected to judge nature, but only to observe and understand it as it is. Karl Popper warns us against applying a similar approach to the social sciences, terming it ‘misguided naturalism’. The primary aim of the social sciences is and must not be truth *per se* but knowledge that promotes the welfare and well-being of human beings. The objective is not value neutrality that judges all phenomena as equally acceptable, but knowledge that strives to advance realization of values universally affirmed by world civilization and culture – freedom, peace, harmony, tolerance, justice, equality, integrity and truthfulness. In fact, social science has always been and must necessarily be value-based, but very often those values have been cloaked as universal laws to give them the guise of respectability of scientific truth. Democracy is not merely an amoral, mechanistic system of governance that can be installed by technical experts and function like a computer straight out of the box. True democracy is founded on a human social culture based on liberal values of freedom, tolerance and harmony that evolved in the West centuries before the right to vote and social equality became prevalent. Contemporary Economics is founded on a narrowly defined concept of efficiency that ignores the devastating costs to society of rising levels of unemployment and inequality and the ravaging environmental destruction resulting from pollution, resource depletion and climate change. Human labor is considered a dispensable, disposable resource. Rising levels of crime, drug use, social alienation and violence are dismissed as externalities. Education is accounted for as a cost rather than an investment in development of human capital. An economic system that deprives people of freedom of choice, security, opportunities for gainful employment and self-respect is unacceptable, even if it were to achieve remarkable heights of economic efficiency. As former Greek Prime Minister George Papandreou expressed at the Baku conference, “We

need to humanize global capitalism. We need to humanize our technologies to make sure they are used, not abused.” And to humanize the economic system in practice we must first humanize the values which it seeks to realize.

Third, the new thinking must be inclusive, holistic and ecological. Our problems are too complex and deeply rooted in history to be resolved by any such simplistic, reductionistic analysis. The new thinking must dispense with the expediency of dividing reality into tiny fragments and contrary viewpoints. It must be capable of embracing a more complex, sophisticated view of reality that can discover the truth and reconcile the differences between myriad points of view. The conflicts between neoliberalism and neo-Keynesianism, Russia and the West, Islam and the West, readily lend themselves to diametrically opposite worldviews, each denying validity, relevance and even a fair listening to one another. The Russian annexation of Ukraine is not justified by also conceding the folly of Ukrainian nationalists who sought to diminish the cultural rights of its huge Russian speaking minority. The failure of world powers to respect the security guarantees given to Ukraine when it agreed to abandon its arsenal of nuclear weapons does not legitimize the fact that for two decades after independence corrupt Ukrainian oligarchs enriched themselves while refusing to institute the essential reforms needed to democratize and modernize their young nation. As former Polish President Aleksander Kwasniewski reminded three former Ukrainian presidents in Baku, “Ukrainian reforms are essential for national cohesion, peace and security.” It was heartening and exhilarating to hear leading businessmen, public figures and educated youth at the Kiev conference acknowledging their nation’s errors and omissions and willing to accept their responsibility for building a transparent, multicultural, democratic society. Initiatives such as that of the Bohdan Hawrylyshyn Charitable Foundation are in the process of equipping a new generation of leaders with the intellectual capacity, values and determination to transform the nascent nation into a model for others to follow.

Fourth, the new thinking needed must be synthetic. As Roberto Poli pointed out, we seem to have lost the capacity to educate generalists capable of dealing with the complex problems confronting humanity today. We have to nurture the mental capacity to see beyond the dualities and reconcile apparent contradictions as complementarities at a higher level. Great discoveries in the natural sciences have been the result of insights that unified phenomena that had previously appeared unconnected or opposite in character. Thus, James Maxwell discovered that electricity and magnetism were two expressions of the electromagnetic force. Einstein’s equivalence principle unified acceleration and gravity. The new paradigm needs to conceive of an economic system that reconciles the creative energies unleashed by individual freedom provided by markets with the regulatory framework needed to provide security for all citizens, preserve social harmony and equitably distribute the collective fruits of modern society to all members. Similarly, the notion of national sovereignty must be reconciled with the equally legitimate claims of citizens for democratic rights, of minorities within states to preserve their distinct cultures and of humanity as a whole for an equitable sharing of the global commons. The new thinking must not merely recognize the legitimacy in opposing points of view. It must rise above the divisive perspective of competitive, nationalistic consciousness to acquire a global perspective and vision of emerging global opportunities.

3. Clash of Civilizations or Cultural Diversity

The discussion in Kiev and Baku highlighted both the immense challenges and momentous opportunities resulting from cultural diversity. Contact and conflict between diverse cultures are as old as human history itself. In retrospect we might characterize the entire process of human social evolution as a movement of innumerable isolated, distinct cultural groupings coming into contact and conflict with one another, defining themselves by their differences, expanding and transforming themselves to incorporate new ideas and values, simultaneously attracted, educated, threatened and enraged by their contrasts – a process that culturally enriched both conquerors and the conquered, those self-proclaimed as more advanced and those deemed only as passive beneficiaries.

It is virtually impossible to formulate a thought or perform a simple act without drawing on the rich cultural inheritance of ideas, words, concepts, objects, tools and technologies which constitute the collective dowry of our ancestors to all humanity. To write the answer to a simple financial problem, we utilize a system of numbers, the concept of zero and the decimal point fashioned in ancient India, the idea of money traced back to ancient Greece and the invention of paper in ancient China. Like the genetic diversity of living organisms, our rich cultural diversity is the source of unlimited creative potential. Until now we have harvested only an infinitesimal fraction of that potential.

Yet the rapid pace of globalization, massive movements of people and products, the lightning speed of human interactions have created what Alexander Likhotal aptly terms a tectonic ‘time-quake’ that threatens to divide families and communities from one another, tear nation-states apart at their seams, and convert whole regions into boiling pots of tension and violence.* In spite of our common collective inheritance, in times of trouble the first response of human beings is to shrink back into shells of isolation, to withdraw sympathies from those who are different, to find scapegoats that exonerate us from blame. Fascism has only exploited a universal human characteristic that is straining the bonds of cooperation that internally and externally unify the mature nation-states of liberal Europe today. Similarly, in times of untold opportunity our first instinct is usually to seek for our own reward and compete with one another for the fruits, even when there is more than enough to benefit all, even when we can all benefit most by cooperative effort. Human relationship and cooperation are the fundamental basis, building blocks and cement for all lasting human achievements. Yet the narrow, egoistic, selfish impulse is always ready to rear its head, claim credit and just desert for a larger share of power, wealth, resources, culture, virtue, spirituality and every other thing of value.

Nature seems to be engaged in a vast experiment of global dimensions to study the creative potential and reactive consequences of contacts between diverse cultural elements. America is its experimental melting pot, where countless generations of people from the world over have poured their different ideas, aspirations and resourcefulness into a common pool. India is another great experiment in linguistic, religious, ethnic and cultural diversity,

* Alexander Likhotal, in his oral commentary on the Future of Russia-West Relations at the Third Global Baku Forum on “Building Trust in the Emerging World-Order”, organized by the Nizami Ganjavi International Center, Baku, April 28, 2015.

which existed for millennia as a myriad assortment of politically independent princely states partially and occasionally united into empires, but united only by a common culture founded on tolerance and patience. In between these extremes of diversity we can find innumerable variations on a common theme. Looking backward we can only marvel at how much humanity has garnered from this rich diversity, which has at once been the source of the major conflicts between people, nations and civilizations in the past.

Living in a multicultural world is at once humanity's greatest challenge and its greatest opportunity. It is impossible to live without it. Were it possible for us to return all that we have borrowed from others, the wealthiest of nations would be reduced to poverty and the most enlightened to utter ignorance. We cannot seem to live harmoniously together yet it is impossible to live either physically or culturally apart.

More fundamental than the political and economic systems which it may embrace, the new paradigm must above all evolve a reconciling, synthetic formula for co-operative and mutually beneficial co-existence in an increasingly integrated, culturally diverse world. The prevailing ways of thinking only magnify and multiply the problems. We need a new way of thinking to forge a new paradigm for a multi-cultural world. Human-centered thinking can remind us that it is not our differences but our common humanity that is of central importance. Value-based thinking can reveal to us the precious cultural reservoir possessed by diverse cultures. Inclusive thinking can enable us to perceive the valid truth in viewpoints diametrically opposite to our own. Synthetic thinking can show us ways to reconcile the apparent contradictions of freedom and authority, rights and responsibilities, rationality and emotions, individualism and social unity.

4. Consciousness Responsibility of Science

At their core, paradigms are constructed from a subtle, intangible fabric of ideas, beliefs, values and perceptions that acquire perceptible shape and increasingly solid form as they are translated into institutions, policies, activities and ways of life. The 70,000 nuclear weapons armed and ready for launch during the Cold War were a tangible, concrete expression of a set of ideas and perceptions founded on an internally consistent set of arguments that now appear as utter madness and folly from the perspective of the present day. Yet a quarter century after their *raison d'être* has vanished, 10,000 nuclear warheads remain and 4000 are on active alert. Ideas have power.

One of the powerful prevailing ideas governing the current paradigm concerns the social responsibility of science. The World Academy was founded 55 years ago by eminent intellectuals deeply concerned about the threats posed by the rapid development of science and technology. Among them were individuals such as Einstein, Robert Oppenheimer, Joseph Rotblat and Bertrand Russell, who played a direct role in the creation of nuclear weapons or in the early debate regarding the morality of their use.

Modern science inherited from its predecessors the Cartesian notion of the scientist as impartial, passive, detached observer of phenomena, rather than as an active agent in the workings of Nature. Quantum theory laid to rest the scientific illusion of separation between

human beings and the world around them. Indeed the world we live in today is so directly and powerfully the product of scientific and technological development that any claim to the contrary appears otiose. Yet, the myth of scientific detachment persists. The development of birth control technologies and genetic engineering of plants and animals has fueled intense debate in recent decades.

The pace of scientific and technological advances has now become so rapid, that it is far outpacing the capacity of human civilization and culture to control its applications, anticipate its consequences or govern its processes. The Baku conference posed salient questions: What should be the responsibility of science and government for ensuring that science and technology are applied in a manner that promotes human security, welfare and well-being? Keeping in mind both the positive and negative aspects of science and technology in society, how, and by which means, do you foster the positive contributions and deter the negative ones? What role, if any, should government play?

Roberto Peccei emphasized the dual characteristics of S&T that make it so difficult to arrive at appropriate answers to these questions. S&T has been instrumental in bringing about enormous improvements in quality of life over the last two centuries. At the same time it has resulted in serious problematic developments, such as the creation of nuclear and chemical weapons. Scientific findings such as genetic engineering and human cloning raise significant ethical questions for society. Continued investment in S&T is required to address serious problems such as Ebola and climate change. At the same time unregulated development and application pose real and present dangers that tangibly impact on the lives of millions of people. Recall that in recent decades two Nobel Prizes were awarded for the development of computer algorithms that have destabilized global financial markets and destroyed untold wealth. When reflecting on the role of science and technology in our world, it is important to be aware that they have these dual characteristics.

The issue is further complicated by the fact that the ultimate outcome of scientific research is often unpredictable. The Internet eventually arose from a US defense research program funded by the US Government and the World Wide Web was invented by an engineer at CERN, whose idea of a more effective communication system consisting of a network of interactive computers using hypertext was initially rejected by his supervisors as without significant value.

Governance of the potentially disruptive impacts of science and technology on civilization and culture has become urgent and acrimonious, but has so far defied simplistic solutions. Scientists affirm that importance of freedom in their quest for knowledge of the universe, while often dissociating themselves from the worst abuses of scientific knowledge by governments, corporations or terrorist groups. The pros and cons are easy to identify. An appropriate synthesis has yet to emerge. Like economy, science is only a part of society and needs to be viewed within the wider context of its overall impact on human beings, rather than as an independent compartmentalized activity. Momir Djurovic proposed that the social sciences could play an important role as a filter influencing how the natural sciences are applied.

One essential element in a final reconciling solution must be recognition by scientists of their social responsibility for the consequences of the discoveries and inventions they generate. That responsibility does not stop with the publication of their findings. It must, as it did for the founders of WAAS, extend beyond their immediate personal activities to the wider consequences issuing from their actions. It must be a responsibility that applies not only to the actions of scientists but also a responsibility in consciousness that makes them active agents committed to ensuring the right use of the knowledge they generate.

5. Nurturing Transformational Leaders

The world needs leadership in thought to shape the contours and identify important components of the new paradigm. But conception is only the first step in the process of creation. That conception needs to be energized by the aspiration, charged by will and enlivened by emotion until it acquires a self-organizing power for self-realization. Leadership is needed at this stage to awaken hope, inspire confidence, and generate the kind of determination young Ukraine is now striving to acquire. Ultimately, the quest for a new paradigm must be a transition from thought to action. So we also need leaders with courage, capacity and experience for bold, dynamic skilled action.

Thus, we are inevitably led to ask, “Where are the dynamic, visionary, transformational leaders needed to lead the transition to a new paradigm?” The role and process of leadership were explored in a four day WAAS-WUC workshop at Dubrovnik during March 2015 discussed in the article by Janani Harish entitled “Leadership for a New Paradigm in Human Development” published in this issue of *Cadmus*.¹ The workshop was intended to serve as the foundation for development of a trans-disciplinary course on transformational leadership.

Are great leaders born or made? This is another form of the old debate about Nature and Nurture which has long been applied to entrepreneurs, artists and intellectual geniuses. In recent decades genetics and biochemistry have been used to bolster the claim of Nature. If leaders are born not made, how can we explain the fact that great leaders only seem to appear at critical moments in history? At the birth of the USA, America was blessed with a remarkable array of talent – Washington, Franklin, Hamilton, Adams, Jefferson, Madison and Monroe. Over the following two centuries, why is it that even a single American leader of comparable stature has only rarely emerged? The birth of Indian Independence was achieved by a comparable galaxy of greatness – Sri Aurobindo, Gandhi, Nehru, Patel, Rajagopalachari, Tilak, Bose and others. Churchill was a leading public figure for decades, but he rose to the status of a great leader only after leading the Allies to victory in WWII. As in most cases, the truth is both simpler and more complex. Nature generates capacity in potential. Environmental circumstances create the challenges and opportunities that stimulate the activation and emergence of potentialities dormant beneath the surface. And what is true of political leaders, entrepreneurs and geniuses is true of human beings in general. Humanity may never produce greater minds than Socrates, Leonardo and Newton, but it can certainly become much more successful in nurturing full development of the human potential in every citizen and fostering its expression. Whatever their failings, modern democracy, human rights and education have proven to be more effective instruments for activating and developing human potential.

Leaders are neither entirely made in a crucible nor sired by a quantum vacuum. A great leader is at once a child of the times and a wet nurse of the future. In 1987 someone asked Soviet President Gorbachev what was the difference between his program of Glasnost and Perestroika and the Prague Spring of 1968 initiated by the reform-minded Czech leader Alexander Dubček. Gorbachev responded, “Nineteen years!” Gorbachev was among the young Soviet leaders inspired by the six month period of peaceful liberalization in Czechoslovakia, until it was so suddenly and violently suppressed by half a million Soviet and allied troops. That movement re-emerged in 1989 as the Velvet Revolution that ended Soviet rule. Even earlier as an idealistic communist youth leader, Gorbachev had witnessed the Hungarian Uprising of 1956 and its brutal suppression. Three years before that, Soviet Premier Khrushchev shocked the USSR with his public denunciation of the atrocities committed by Stalin. As an individual, Gorbachev was a bold idealist, but his ideas and actions were molded by the aspirations of his countrymen long suppressed by Soviet terror and by his identification with the deeper aspirations of humanity-at-large to end the madness of the Cold War. In the words of his former aid Alexander Likhotal, Gorbachev helped to uncork the future rather than to invent and construct it.*

Just two days before the fall of the Berlin Wall, Gorbachev, German Chancellor Kohl and US President Bush conferred and speculated that it might be a generation or more before German unification would be possible. It became a reality less than one year later. Their intimate knowledge of circumstances and events did not enable them to pierce the thin veil that concealed the remarkable events that unfolded.

The sudden onset of radical transformations such as the end of the Cold War, reunification of Germany and the explosive growth of the World Wide Web are instances of what Nassim Nicholas Taleb refers to as black swans – very rare events with huge impact that appear highly improbable until after they occur. Such phenomena are presented as evidence that the world has become increasingly uncertain and unpredictable, like the behavior of subatomic particles according to Quantum theory. The analogy has some validity. For although the individual behavior of particles is highly unpredictable, their collective behavior conforms with remarkable precision to the laws and formulas of Quantum Mechanics. The precise place, time and sequence governing human social evolution may appear equally difficult to predict, but the direction and long term trends follow the curve of emerging human aspirations and awakening human consciousness. Uncertainty is the flip side of infinite possibility. Rather it is the appearance that possibility takes until it reveals its potential. One way mental mirrors blind us to the opportunities and fill us with dread of our own reflection.

6. The Shape of Things to Come

The world we live in today is a multidimensional paradigm built upon successive layers of political, economic, social and cultural evolution extending back into the distant past and consisting of myriad overlapping waves of development interacting, conflicting and clashing with one another in a ‘time-quake’ of civilizational tectonic plates. It is difficult enough to

* Alexander Likhotal on Mikhail Gorbachev during his lecture at the Post-Graduate Certificate Course on Effective Leadership at the Inter-University Center, Dubrovnik, Croatia held from March 31-April 3, 2015 <https://www.youtube.com/watch?v=MpljYcinTt0>

objectively reflect on the complex paradigm in which we are now so deeply and subjectively submersed that we cannot even see its boundaries and constructs. How much more difficult is it to envision the shape of reality on the other side of the one-way mirror of the future!

Whatever shape a paradigm may assume, it has little resemblance to a linear, two dimensional map or matrix diagram. Nor does the process of its unfolding or uncorking represent a unidimensional movement along a single time axis. Movement to a new paradigm may be better conceived as the multi-dimensional development of a sphere that expands on the surface, grows outward from a common center along millions of rays, adds multiple layers of depth as it expands like the geological layers created during the evolution of Earth, and integrates laterally to interlink and bond the rays into a richly woven multilayered fabric of connections and relationships. The center of the sphere consists of the deepest aspirations of humanity. The rays trace the gradual emergence to the surface of physical, social, psychological and spiritual values which represent the quintessence of wisdom regarding survival, accomplishment, growth, development and evolution. The geological layers of the sphere, like those of earth, reveal the successive stages in the historical progression of civilization from pastoral and agrarian to urban, industrial and post-industrial societies. The surface of the sphere is populated by the external mechanisms of civilization characteristic of the age in which we live and often mistaken for the real drivers when in reality they are artifacts and consequences of deeper values and forces moving beneath the surface. The entire sphere is a single, living, self-organizing, social organism throbbing with life, growing, mutating and transforming itself more and more rapidly in time.

Such a conception may capture the complexity of a paradigm, but hardly generates the kind of clarity needed for us to consciously act as catalysts for its evolution. To do that we need at least to identify some prominent markers that characterize the emerging paradigm and distinguish it from the one in which we presently live. Many of those prominent markers have become evident during the course of the fifteen WAAS conferences. Others are yet to be identified.

7. Who is in Control of our Evolution?

The Nature vs. Nurture debate acquired a new dimension at the Baku Conference when it was applied to the question of paradigm change itself. Do human beings change paradigms or do paradigms change by themselves as a result of forces and processes beyond the control of human beings to direct or control? Is it simply hubris for human beings to attempt to create a better future? Do we have the knowledge, wisdom and capacity to consciously evolve as a species? Or must we rely on a mysterious mix of Chance and Necessity to bring about a future we can neither envision nor realize by our own power? Are paradigms created or do they simply emerge? If we conclude that they are formed by a process of emergence, what have we really explained other than to apply a descriptive label to a mystery without saying anything about the process or our role in it?

Humility demands that we be fully cognizant of our ignorance and extremely modest with respect to our collective wisdom to chart a new course. Yet great leaders have always asser-

ted that the human will, not merely the laws of nature or divine providence, governs human affairs. Confronted by the overwhelming onslaught of the Nazi air raids during the Battle of Britain, Churchill did not stop to calculate the odds for and against his country. Instead he emphatically proclaimed on behalf of his nation and free people everywhere: "We shall never surrender". Instead of the much anticipated collapse of British resistance within three months, Germany was forced to retreat from the first major failure of its war plan and the momentum began to shift from Axis to Allied powers.

The historical record clearly confirms the centrality of human consciousness in determining the direction of social evolution, if not always the timing, sequence and methods by which it is realized. The abolition of slavery by Lincoln in 1865 was the bold and brilliant action of a remarkable leader. But it was also the inevitable consequence and expression of a movement of social forces that can be traced through hundreds of incremental steps from a decision of the Lord Chief Justice emancipating slaves reaching the shores of England in 1701, the abolition of slavery in Russia and China in the 1720s, in Portugal in 1761, in Pennsylvania, Vermont and other American colonies from 1775, followed by the gradual abolition of the slave trade and colonial slavery by European powers early in the 19th century. Looking backward, we see that the idealistic proclamations of early abolitionists such as William Wilburforce carried a compelling force for realization. Looking forward to the Indian Independence Movement, the American Civil Rights Movement and the end of Apartheid in South Africa, we see the once utopian ideals gradually acquiring the irresistible force of social determination. The paradigm change from slavery did not just happen by itself. It was born in the minds of visionary leaders, ignited by a fire of aspiration in the hearts of countless adherents and through many fits and starts, gradually coalesced into power to brush aside apparently immovable barriers to social progress, as it did violently in the case of the French and Russian Revolutions and peacefully in the case of Indian Independence and the collapse of European colonialism from 1947, the fall of the Berlin Wall and end of the Cold War after 1989. As Ashok Natarajan argues in "Is the World Floundering or Has She a Vision?" in this issue, human aspirations are an invisible but irresistible force for social evolution – one might even say, a force of Nature.² This perception is behind the emphatic assertion by US President Kennedy that "No problem of human destiny is beyond human beings."^{*}

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Notes

1. Janani Harish, "Leadership for a New Paradigm in Human Development," *Cadmus* 2, no.4 (2015): 88-104
2. Ashok Natarajan, "Is the World Floundering or Has She a Vision?," *Cadmus* 2, no.4 (2015): 48-56

^{*} A Strategy of Peace, was a commencement address delivered by President John F. Kennedy at the American University in Washington, D.C., on Monday, June 10, 1963.

From Reset to Reboot?

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Abstract

The Ukrainian crisis provoked a serious and dangerous deterioration of relations between Russia and the West. However the relations between Russia and the West should not be reduced to the current Ukrainian crisis. The rational interpretation requires getting rid of Cold war prejudices and facing the systemic dysfunctionality of the current international system routed in the failure to adjust it to post Cold war realities.

To “reboot” this dangerous system “freeze” it’s important to reformulate the international agenda and political frameworks to encourage transformative leadership. The new architecture should provide an integrated agenda for progress on security, energy, and economic cooperation as well as coordinated efforts to address frozen conflicts. And most urgently, joint and concerted efforts are needed to take Ukraine out of a condition of social and state breakdown, and turn it into a hub of cooperation rather than a prize drawn from East-West competition.

The Ukrainian crisis provoked a serious and dangerous deterioration of relations between Russia and the West. And a new “reset” will not help any more to improve the situation; we need a full system reboot to avert the revival of Cold War, arms race and other threats that are looming large, especially climate change, the growing shortage of fresh water, food shortages, international terrorism, cyber security, pandemics and so on.

Since there are many factors at play, it is very important now to take a sober and balanced look at the situation, to be conscious of the existence of both external and internal core reasons of the crisis.

At the global level, it is a symptom of the growing dysfunctionality of existing world order. This was triggered by a failure to adjust it to new realities after the end of the Cold War. The world has been pregnant with the new order (both leaders Bush and Gorbachev paid a lot of attention to this issue). However, these plans have been archived by the West which was carried away by the “victory euphoria” after the end of the Cold War. Pope John Paul II warned in 1992 that “the Western countries run the risk of seeing this collapse of Communism as a one-sided victory of their own economic system, and thereby failing to make necessary corrections in that system.”

Unfortunately, after 25 wasted years, his prediction did come true as the global crisis of 2008-2009 triggered the transition to a different historical period. In essence, it clearly

revealed that the world's development has reached a point where the degree of interdependence between nations is out-of-sync with the world's capacity for coordination.

This asymmetry has put in front of the world a choice between two ways of balance restoration.

The first option is to strengthen the interdependence. This was what the G20 proposed in 2009, but failed to implement.

The second option is to reduce interdependence – give way to “de-globalization”. The world's development has, unfortunately, been sliding towards the second scenario.

When peaceful change is not possible, violent transformation becomes inevitable. Russia routinely and arrogantly has started to exploit the vulnerabilities that have opened up the following mistakes and miscalculations by all sides over the past 20 years. China has done the same in its relations with Japan, as has Iran – on the nuclear issues, and the religious radicals all over the world.

And it is not surprising that at such times the “upper hand” would go not to those who play best by the rules, but to those who seize the right moment to reject the rules, impose new rules and, when needed, renounce those new rules as well.

Ukraine is clearly one of the victims of this process. Located on the border of two geopolitical entities, the country is being torn apart by “deglobalisation”. This is why there are no diplomatic “quid pro quo” solutions at hand now. All the goodwill in the world will not bring together two major geopolitical entities compelled to protect their interests in ways that must necessarily make the other feel threatened.

From the Russian perspective, NATO expansion has always been seen as treachery – a direct violation of both overt and covert agreements reached with the West at the end of the Cold War. Russia has already had to silently swallow two waves of NATO enlargement. But the possibility of NATO expansion to Ukraine – the soft underbelly of Russia's perceived security zone – especially after the 2008 NATO Bucharest Declaration practically extending invitation to Georgia and Ukraine to join the Alliance, was seen almost as a reason for a big war starting.

However, Putin is not just seeking Western concessions on Ukraine. Ukraine is, in fact, only a convenient space in which to apply a new “Russian world” strategy. Certainly, Russia has local tactical aims in Ukraine – relative autonomy for the Donetsk and Lugansk regions, reliable life support systems for Crimea and Transnistria, and a guarantee that Ukraine's political choices do not undermine Russia's security. But these are only bargaining chips in the pursuit of the real prize – recognition of Russia as the true and lawful successor to the USSR's superpower status. In Putin's eyes, only this will crown him appropriately – and extend his presidency beyond any electoral horizon.

Global forces are also clearly exacerbated by an inherent Ukrainian problem. Alexander Solzhenitsyn prophetically remarked in his memoirs, which he wrote in exile long before the

fall of the Soviet Union, that the “Ukrainian question is one of the most dangerous issues of our future... the minds on both sides are not well prepared for it.” He continued: “As it is useless to tell Ukrainians that we all descended, by birth and spiritually, from Kiev, and it is just as useless to expect Russians to recognize the fact that people beyond the Dnieper River are different. And it is the Bolsheviks who were responsible for many of the wounds and much of the discord.” The writer feared that it would be “too difficult to have a reasonable conversation.”

“Current governance and international institutions should be upgraded fast enough to harness and channel change, instead of being overwhelmed by it.”

Solzhenitsyn accurately pointed out the key problem: the conflict of identity that has been translated, after Ukraine’s independence, into two distinctly different development models – one westward looking and nationalistic-monocultural and the other eastward oriented and multicultural.

More than any other change of government in Kiev since 1991, the overthrow of Viktor Yanukovich last year brought the triumph of the nationalistic perspective, held most strongly in western Ukraine, whose leaders were determined this time to ensure the winner takes all, decoupling the country from its historic links with Russia.

Against this background, the West’s support of the Maidan, the overthrow of Yanukovich served as the trigger for Russian preemptive strike, designed from Russian perspective to prevent a much larger disaster.

The West might have even yielded on Ukrainian agenda, if Russia’s claims did not stretch beyond keeping Ukraine in its orbit. But the West understands that the surrender of Ukraine would mean a return to the post-war system that emerged in 1945 and was dismantled with the end of the Cold War and the fall of the Berlin Wall in 1989.

But we are not necessarily condemned to a new round of global confrontation. A number of things can and should be done to reverse the dangerous trends and prevent a new division of Europe and the world.

Globally the “rules of the game” must be changed to make escalation impossible. It’s important to reformulate the international agenda and political frameworks to encourage transformative leadership. The world must stop succumbing to “baby-sitter syndrome,” where the most attention always goes to wherever the most noise is coming from. Current governance and international institutions should be upgraded fast enough to harness and channel change, instead of being overwhelmed by it.

Within Europe, the crisis can be re-scaled by working out a common goal of long-term co-development. It must be acknowledged that Europe today is not the center of the world. Its problems are part of a complex global system, where all are affected by all. Perhaps, as once the United States and Canada were made part of the European process, it's time to think about turning the European process into a Eurasian one.

“Most urgently, joint and concerted efforts are needed to take Ukraine out of a condition of social and state breakdown, and turn it into a hub of cooperation rather than a prize drawn from East-West competition.”

It is time also to stop basing strategic thinking on Tom Clancy's novels. Peace is not a zero sum game. Security crisis is always rooted in perceptions and cannot be resolved by military means. War does not determine who is right – only who is left.

Put simply, setting up a public duel is a bad way to solve a crisis. The West's views of Russia today are outdated and need to be corrected. Such a correction will be nearly impossible, however, so long as Russia itself keeps believing its own propaganda and fails to define and articulate its long-term interests.

For its part, Ukraine should abandon delusions about its future. Ukraine won a historical chance of becoming a true European nation, but in order to accomplish it needs strong political will instead of populist decisions, commitment of the people and determination of political elites. Europe can be a babysitter but not a breast-feeding mother in this process.

Besides, Europe is not anxious at all to bring Ukraine into the EU at the time of mounting economic difficulties. Accepting Ukraine into NATO today would be a worst nightmare for the alliance. And no one is going to fight for Ukraine. History and geography bind it for better or worse to be a neighbor of Russia. This is not in fact limiting its political choices, but rather enhances them. As the Russian/Ukrainian saying goes, “a gentle calf sucks two cows”.

The smartest option for the country would be to focus on domestic transformation – economy, social sphere, politics and a new constitution. Donetsk and Lugansk, as well as Crimea, could be declared temporarily occupied Ukrainian territories, along with assurances that there are no plans to reclaim them by military force. A reliable defense of the new disengagement line should be organized, with international peacekeepers, to push responsibility for social and economic development where it now belongs: the separatists and the occupational forces. In parallel, cultural autonomy (language, schools, regional tax systems, etc.) should be provisioned for regions that will come back or be returned or reclaimed in the future.

But it is most important that the new architecture should provide an integrated agenda for progress on security, energy, and economic cooperation as well as coordinated efforts to address frozen conflicts. And most urgently, joint and concerted efforts are needed to take Ukraine out of a condition of social and state breakdown, and turn it into a hub of cooperation rather than a prize drawn from East-West competition.

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Leadership for a New Paradigm in Human Development

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Abstract

Everyone takes decisions and initiatives. Leaders take charge and initiate changes. Transformational leaders take responsibility for all and, guided by positive values, lead society into the future. These men and women of profound vision give expression to the subconscious aspirations of society that are striving to awaken, and act as a catalyst for their realization. Empathy, compassion, humility, emotional and social intelligence, and effective decision-making skills are characteristics of the transformational leader. Power, wealth and glory hold little value for them, they are above ego and have no thought of personal gain. They take consciousness responsibility for all, far greater than their authority warrants or requires. Espousing the collective cause, they forge ahead with great courage and conviction. Any setback or hurdle is faced with equanimity. Their original and creative thinking converts challenges into opportunities. They know that the unrealized is not unrealizable. They are able to inspire others to realize more of their potential, channelize the collective social energy and organize it into a power that accomplishes.

Transformational leadership defines accomplishment in the broadest sense. One country cannot prosper at the cost of the rest of the world, one group of people cannot be secure when there are others somewhere on the planet who are insecure. No problem is isolated from all else, and a comprehensive solution is possible only for those who have overcome dualistic thinking and can reconcile apparent opposites. Transformational leaders have such an integrated view of every issue and situation, and can usher in a new paradigm of human development that ensures peace, security and well-being for all. This article analyzes the various facets of transformational leadership.

1. The New Paradigm

Less than three hundred years ago, books were chained to the shelves in libraries because they were so precious, being few in number. There were some libraries where the readers were locked into cages themselves, to ensure that the valuable books remained safe! Learning was only for the privileged class. Today, books, readers and knowledge have been liberated in many ways. We have digitized content that can be replicated and distributed virtually, infinitely. In thirty years, we have moved from the terms Kilobyte and Megabyte, through Gigabyte and Terabyte, to newer terms whose magnitude is as difficult to appreciate as their necessity is, to visualize. This is just one of the hundreds of strands of human life that have undergone a transformation. Population has increased exponentially, globalization has

rewritten economies, environment has been overrun by humans, religion is getting mixed up with extreme fundamentalism, and technology is shrinking the globe on one hand while social and economic disparity is creating polarities. All of these various strands of human activity entangle and evolve into compound issues. In short, we live in a time of unparalleled complexity.

As the complexity intensifies at an accelerating pace, it gives rise to new and exciting opportunities. However, it also poses multidimensional challenges that necessitate a radical change of course for all. Existing ideas, policies, institutions and systems are inadequate to address the challenges. We need an effective way to deal with them, and to tap the enormous potential we already possess for promoting human security and welfare. A new paradigm in human development is needed.

The World Academy of Art and Science (WAAS) conceived of the idea of formulating a new paradigm to address critical issues facing humanity. The Academy initiated this project in 2012, by asking the question, “Is there any conceivable paradigm that can successfully address all the pressing challenges confronting humanity today in a manner that offers the prospect of achieving peace, security, welfare and well-being for all human beings everywhere?” It has identified several driving forces that have the potential to effect radical social transition of unparalleled magnitude and rapidity.

In order to manage these driving forces and radically transform the way the world is functioning, we require transformational leaders, leaders who can usher in a new paradigm. The challenges we face today are so great, the magnitude of the change needed so enormous that the status quo will not work. Old methods that worked in an earlier period may be ineffective, or worse, calamitous now. Instead of fixing the issue, they may simply cut off an odd head of the hydra. We require new ideas, new values, new systems, new organizations, and to head these organizations, transformational leadership.

Paradigm change is not a new idea. History has seen a great number of these. When the astronomer Nicolaus Copernicus said that the Sun is at the center of the solar system, and not earth as believed in the 15th century, it was a paradigm change in thought, science, and its relationship with the Church. The refusal of Rosa Parks, an African American lady, to give up her seat and move to the back of the bus in keeping with the laws of segregation in Alabama, USA, set off in motion the events that culminated in the Civil Rights movement in the country and a change in the status quo of all African Americans. Socio-political movements such as the Renaissance, Reformation and Enlightenment, the end of colonialism and the Cold War, even the personal computer and internet revolutions are paradigm changes. At each of these great junctures in the past, there has been a critical mass of leadership, to effect a radical change of course. These leaders were in tune with the aspirations of those around and equipped with the various skills required to spearhead a mass movement. New paradigms are brought in by nothing short of transformational leadership.

We most certainly need a paradigm change, at all levels – at the global level, and in every nation state, region, organization, group and individual. We need it in thought, values, education, environment, politics, economics, industry, technology, media – in all spheres of life. Before our many challenges grow out of control and overwhelm us all, we need to act.

Keeping this need in mind, the World Academy of Art and Science, along with the World University Consortium (WUC), The Mother's Service Society (India), Person-Centered Approach Institute (Italy), Dag Hammarskjöld University College of International Relations and Diplomacy (Croatia) and Inter-University Centre (Croatia), offered a post-graduate certificate course on Essence of Effective Leadership* in April 2015 at Inter-University Centre, Dubrovnik, Croatia. The course faculty consisted of WAAS Fellows, leaders in their own right, from a wide range of fields of expertise. Ivo Šlaus, Honorary President of WAAS and Director of WUC, gave the introductory lecture, noting that leadership is embedded in the motto of WAAS, "Leadership in thought that leads to action." The core ideas of the course were the need for transformational leadership and the characteristics of the leader. Transformational leadership is very necessary for the future of the world. People at all levels, in all fields of society, need to exhibit this capacity in order to contribute to the paradigm change.

"It was not the steam engine that powered locomotives, it was man's need to move out of his village or town, to newer places that was the source."

2. The Process of Accomplishment

In order to accomplish in future, a look back is essential. Human beings have always accomplished. We have accomplished at the level of survival ever since we appeared. By coming together in groups, foraging for food, sheltering from the elements and defending themselves from the wild, early humans did a remarkable job of surviving. As civilizations appeared, society evolved, creating and perfecting organizations for furthering human aspirations. Accomplishment moved from mere survival to growth and development. Trade, commerce, education, arts and science developed. Today we talk about accomplishment at the level of evolution. But regardless of the level, there is a process of social accomplishment that is common at all levels. In order to plan for the future, and prepare leadership that can bring it about, we need to fully understand this process.

The process of accomplishment is the conscious pursuit of objectives by human beings. Its seed is human aspiration. Any act is preceded by one or more persons wanting it. When early humans sought shelter and warmth, dwellings and clothes were fashioned. When they wanted to settle down instead of always moving in search of food, agriculture and animal rearing began. When needs rose in quantity and complexity, markets, trade and transportation developed. Human ingenuity kept pace with human needs. Intellectual, industrial, technological and social revolutions have all been brought about essentially by human aspiration.

Aspiration is the source of great energy. Human energy is the basis of all accomplishment. It was not the steam engine that powered locomotives, it was man's need to move out of his village or town, to newer places that was the source. As power and prestige moved away from owning land to being in trade and industry, the industrial revolution came about,

* See <http://www.worldacademy.org/courses/iuc-april-2015/effective-leadership>

the availability of coal, iron and steel was not the basis of the revolution. The shipping industry owed its development to man's ambition and quest for adventure. The advances we see in technology and communication are the result of our need for more efficiency, conveniences and entertainment.

“The well-developed individual thinks for himself, is not restricted by any of society's norms, and can envision a future that is different from and better than the present.”

Energy by itself does not accomplish. There is great energy in a raging river, but it is only when the water is dammed and channelled through sluice gates that it is turned into a force. Similarly, human aspiration releases energy, but this energy needs a right direction, to become a force. When the flowing water is passed through a turbine, it is converted into hydroelectric power. The force of human energy organized around an activity or pursuit is transformed into an effective power. This power, expressed through skills, results in action and accomplishment. Accomplishment at all levels, from the individual to the global, is defined by this process.

Leadership is a key element in this process, catalyzing and directing the accomplishment at every stage.

3. Role of the Leader in the Process

When Mahatma Gandhi landed in India after spending twenty one years in South Africa, he had a clear vision. He had already taken part in anti-apartheid protests in Africa, and effectively handled the might of the ruling class without violence. He was in tune with the subconscious aspiration of all Indians. He awoke in the collective consciousness of his people the faith that they could become free of their colonial ruler. He generated and released energy in himself and in others. He saw to it that this energy was not scattered for want of direction, or dissipated in violence. He led by example. He espoused simplicity, selflessly gave himself to the cause of the nation, and related to the masses to such an extent that tens of thousands of people left their jobs and comfortable homes to join him in the freedom struggle. India became free after over two hundred years of colonial rule, through a largely peaceful movement. This was brought about by the visionary leadership of Gandhi, and many others like him.

The transformational leader gives an impetus to the process of social accomplishment, at every stage. He awakens the aspiration in others, and generates the energy required to complete the task. Through his own vision, goals, plans and values, he gives the force a direction. He builds an organization, or uses an existing one, to channel the force, thereby transforming it into an effective power. He expresses the power effectively through skilled action. Great movements have vaporized because of the lack of strong, effective leadership. Conversely, near impossible acts have been carried out when one person or a team has shown the way.

Alexander Likhotal, President of Green Cross International and Director, WUC, underlined the importance of leadership when he quoted Napoleon's words, "An army of sheep, led by a lion, is better than an army of lions, led by a sheep." As Likhotal put it, the leader uncorks the future.

4. Leadership and Individuality

Individual Accomplishment, Growth and the Character of Life was the topic of an earlier WAAS and WUC course in August 2014. This course, now available online*, described individuality as the acme of human development. The well-developed individual thinks for himself, is not restricted by any of society's norms, and can envision a future that is different from and better than the present. For anyone to become a leader, he has to be a formed individual. One who follows the herd and dares not to question the status quo is not qualified to lead. Uncorking the future can only be done by someone not limited by the present, he has to think beyond what everyone else sees, believes and considers possible.

Had the leader of the Protestant Reformation Martin Luther gone about his work and life without questioning the prevailing thoughts, he would not have come up with even a single thesis. Had he been awed by the might of the Pope and the Catholic Church, he would have considered his 95 Theses pointless, and abandoned the idea before he reached the door of All Saints' Church in Wittenberg. Without calculating the odds against him, and with deep conviction in his ideas, Luther acted. He was strong, courageous, open minded, intelligent, responsible, farseeing, and creative – a formed individual. Leaders with well-developed individuality shape history and lead us into the future.

5. Leader as a Product of Social Forces

The leader is the mountain peak. His position rests on every rock and stone beneath, and is shaped by every current of wind and water that flows past. The social context determines the leader. Without taking away any of the talent and hard work of the tech entrepreneurs, it can be safely said that the incubatory atmosphere of Silicon Valley has played a key role in creating and nurturing many ventures. Steve Jobs, founder of Apple Inc., lived among engineers working in the integrated circuit chip and telecom industry, near Palo Alto Research Center, seeing start-ups taking off in garages nearby. He was a revolutionary product of the hippy generation sharing the prevailing aspiration to boldly change the world. The man who went on to become CEO of Apple Inc. manifested in his company and its products that creativity and originality that defined his own life, which in turn were a result of the place and period he grew up in. Social undercurrents of the times influence all people, leaders included.

Danke Gorbi, the Germans wrote on the Berlin Wall, thanking Mikhail Gorbachev on behalf of the whole world, for lifting the Iron Curtain, ending the Cold War, and defusing the nuclear warlike situation in 1989. The man who is hailed as the hero who liberated East Europe and brought world peace was, as a youth, an ardent admirer of Stalin. When Stalin was in power, he was worshipped by the masses. Gorbachev who was an idealistic youth, joined

* See <http://www.worldacademy.org/courses/course-1/individual-accomplishment-growth-and-character-life>

the Communist Party and shared the sentiment so prevalent at the time. After the death of Stalin in 1953, when Khrushchev came to power and denounced Stalin, it was a shock to all. The persecution and purges perpetuated by Stalin came to light. Following the disillusionment that resulted from that was the Hungarian Revolution in 1956. That, and the Prague Spring in 1968 headed by the Czech leader Alexander Dubček, brought to light the true state of affairs. People aspired for freedom, they wanted greater rights, to choose for themselves, to express themselves. But the Soviet tanks were sent to crush all expression of freedom, and communism in its current form appeared to Gorbachev in a new light. He had admired Dubček's reforms of liberalization in Czechoslovakia. These social and political changes that Gorbachev lived through explain the ideology and value system that he eventually adopted. When, as the President of the USSR, he initiated his policies of restructuring and openness, he was asked by a reporter what was the difference between the Prague Spring and his initiatives. Gorbachev replied, 19 years.

“One who finds exhilarating a situation that most others would find overwhelming is cut out to be a leader.”

Social movements create and shape the leader, and the leader then goes on to shape society and lead it into the future.

6. Converting Challenges into Opportunities

Božo Kovačević, former Ambassador Extraordinary and Plenipotentiary of the Republic of Croatia to Russian Federation and co-founder of Croatian Social-Liberal Party, explored in detail the various challenges and paradoxes we face. Everyone is influenced by social forces. But challenges set the leaders apart from the rest. The very response that a leader gives to an unfavourable situation is inspirational. During World War II, when the rest of Europe was lost, America still remained neutral, and the British found themselves all alone against the Nazis, Churchill told his ministers, “Gentlemen, we are alone. For myself, I find it extremely exhilarating.” One who finds exhilarating a situation that most others would find overwhelming is cut out to be a leader. Crises have made men and women rise to the occasion, and not only overcome the problem but convert them into great opportunities.

Kovačević's position that the existing leadership is unsatisfactory is echoed in the book by the American businessman Lee Iacocca, *Where Have All the Leaders Gone?* Iacocca was CEO of the American automobile manufacturer, Chrysler, a leader of amazing capacities. In 1979, Chrysler was in dire financial straits and experts unanimously wrote it off. The company brought in Iacocca in desperation. Iacocca took over as CEO, and what he saw in the company left him seeing double! The plants were plagued with problems, the less serious of which were absenteeism and disputes among employees. There was no discipline of any type. The problems seriously affected the efficiency of the company's operations and the quality of its cars. Chrysler had 100,000 unsold cars valued at \$600 million that were poorly made and deteriorating, a dissatisfied and alienated customer base, enormous overheads, and declining sales that were generating millions in losses every day. Chrysler ran out of cash—it came down to its last \$1 million at a time when daily expenses were \$50 million.

Iacocca set to work, first installing simple discipline. He fired 33 of the company's 35 vice-presidents who were not adding value to the company but doing the opposite. He removed layers of dead habits, vested interests, outmoded strategies, and inertia. He allowed long-suppressed ideas, energies and talents to rise to the surface. As a result of Iacocca's strategies, in five years, Chrysler moved from a loss of \$3.3 billion to a profit of \$3.3 billion – more money than it had earned in the previous fifty nine years in business. The company and its components were the same, but the leadership was able to inspire and bring about a paradigm change. Iacocca describes just what he did at Chrysler, when he says, "In times of great stress or adversity, it's always best to keep busy, to plough your anger and your energy into something positive."

"It is the response that is given to the problem that determines whether the conflict overpowers and defeats one, or elevates all."

Interestingly, Iacocca had earlier served as president at Ford, but he could not and did not do there what he did at Chrysler. Because the obstacles were so great and the pressure so intense, he was spurred to excel himself. This explains the appearance of great men and women, at the right place and time, during all epochal times in the past. Every freedom struggle has its leaders, every war its heroes. All revolutions – military, political, social, intellectual, artistic, religious, and now online – see the very people who are needed come to the forefront and take up positions. As if by coincidence, during times of peace and normalcy, these giants are nowhere in sight. The American independence movement saw the rise of George Washington, Benjamin Franklin and Thomas Jefferson among others. Franklin Roosevelt, Winston Churchill and Joseph Stalin came together to win World War II. Abraham Lincoln appeared to abolish slavery in the US, Nelson Mandela saw the end of Apartheid. The US has not seen a Washington or Lincoln in recent times, Britain has not had another leader of the stature of Churchill since it won the War. There is a correlation between challenging situations and the rise of leaders. Talent and potential are present in many people in all generations. But normalcy is not conducive for the expression of extraordinary capacities. Challenging times awaken the dormant capacities in the capable. They motivate and pressurize people, necessitate resourcefulness, and supply the strength needed. Outstanding leaders are those individuals who can apply the principle used in martial arts of using the momentum of the attack and turning it against the attacker, and convert a challenge into an opportunity.

Contradictions can become complements. Bohdan Hawrylyshyn, President, Foundation Vidrodenia and Founder, Bohdan Hawrylyshyn Charitable Foundation, while describing the work done in his Charitable Foundation during his lecture, emphasized the importance of knowing and respecting other cultures. The differences in cultures are a source of creativity in relations. It is only the friction that creates the spark. A voltage differential is needed for current to flow. The difference between individuals, organizations, societies and cultures provides this voltage differential. When cultures come into contact with each other, the difference is creative. It can be creative of conflicts, or it can be creative of peace and progress.

The leader uses this difference dynamically, for positive creativity. Every conflict has the potential to yield positive results. It is the response that is given to the problem that determines whether the conflict overpowers and defeats one, or elevates all. The leader gives the right response to the challenge, channels the energy that arises from the contradiction, and converts it into a complement.

7. Vision

Winston Nagan, Professor of Law, University of Florida and Director, WUC, commenced his lecture with the Socratic principle ‘Know Thyself’ that every effective leader should follow. He should have a clear idea of what he has set out to achieve, a vision. He identifies the subconscious aspirations and values seeking to emerge, identifies with and gives expression to them. Abraham Lincoln, Jean Monnet and Steve Jobs, men who lived at different periods and worked in vastly different fields all had this vision, and it was their vision that led to the successful fruition of their ideas. The ‘United’ in today’s ‘United States of America’ was Lincoln’s doing. He wanted to abolish slavery and unite the north and the south of the country that were divided over the issue. The Father of the European Union, Jean Monnet, is credited by John Kennedy to have moved Europe closer to unity in less than twenty years than it had done before in a thousand. When the hostilities of World War II had still not subsided, Monnet began to work for a united Europe. Steve Jobs of the consumer electronics company Apple Inc. developed products for which people discovered uses afterwards!

Colleagues humorously called Jobs’ persuasiveness a ‘*reality distortion field*’. His arguments seemed to defy logic, his demands were unreasonable. But every time he bent reality and managed what he set out to accomplish. At a time when the personal computer was hardly personal and was meant only for businesses, Jobs set about giving it a character. He clearly saw the power of its functionality, but sensed that people still looked upon it only as a very powerful and somewhat intimidating machine. He made it appear friendly, colourful, aesthetic and entertaining, and publicized it as a tool that could serve everyone. He created a portable digital player, the iPod, that could store hundreds of songs and be easy to use. When the public saw it, they decided that it was what they needed. Jobs had known it already! He repeated the same success several times, creating new industries, or raising the standards in existing ones. What looked to others a reality distortion field was the vision of the future to Jobs. When he needed Gorilla Glass for his smartphones, he approached glass manufacturer Corning Glass and told the CEO Wendell Weeks what he needed in six months. Corning Glass had developed that glass in the 1960s, but had quit making it since. Weeks informed Jobs that it was not possible to supply the required quantity within the time. Jobs, whose knowledge of chemistry and glass manufacturing was hardly a match for the CEO of the glass company, told Weeks, ‘Don’t be afraid. You can do it. Get your mind around it.’ To the surprise of Weeks himself, a Corning plant was converted almost overnight to make the glass, and the product delivered in less than six months! Jobs had dreamed boldly, a character of outstanding leaders, as Philip Koenig, Co-Founder & Vice-President of Praneo, a collaborative enterprise serving individuals and organizations, said in his talk on social insight and future vision. The leader goes beyond the conventional wisdom of the times and

dreams boldly. Then he does everything he can to bring his dreams to life, even any obstacle is taken as more positive energy for the dreams. He identifies with and gives expression to the unexpressed subconscious aspirations and values seeking to emerge. He knows that the unrealized is not unrealizable.

8. The Power of Values

Stories of all great men and women, successful organizations and societies have an element in common – positive values. A value is a high principle or an ideal of conduct. It is an internalized discipline. It provides an internal reference point to an individual or a group, for what is right, good and important. External challenges reveal latent capacities in us and motivate us to rise higher. Whereas a challenge is a compulsion of outer circumstances, values are voluntarily adopted.

Paradigm change does not simply imply getting somewhere else, but moving in the right direction and the right values are critical to this process. As Albert Einstein said, we cannot solve our problems with the same thinking we used when we created them. Transformational leadership for a new paradigm involves an evolutionary change in values.

One with a very high level of responsibility and self-restraint, two essential values of a transformational leader, was George Washington. Washington was indifferent to personal safety, and took responsibility for his country, its every state, and even every soldier who fought for its freedom. This needed patriotism, self-sacrifice, and an incredible store of strength. But what made him the first president of the independent country was his ability to restrain himself, even under pressing circumstances.

Abraham Lincoln said later, 'If you want to test a man's character, give him power'. Washington had the power. He led the continental army against the British in America, and had all the military power there was to be had. But when he wanted money for his army, he waited for the US Congress to sanction it. When his soldiers were hungry, cold and ill, he did not demand or take what he most urgently needed. He never once overruled the Congress or acted arbitrarily. He sought to establish a democracy in the US, where the military would serve under the elected government, and not override it. This great self-restraint that he expressed under trying conditions, even when his army was starving in winter, convinced everyone that he was a man they could trust with supreme power. After the country became free of foreign rule, the Americans did not want any more authoritarianism, even if it was only domestic. They were even reluctant to forge a central government, having got rid of a foreign monarch, they did not want another home grown one. Only one who would not misuse power would be acceptable. They had seen that the one man who could be absolutely trusted with power, regardless of the circumstances, was George Washington. So they unanimously elected him the President of USA twice, and would have done so again had he not refused the post the third time.

Physical skills direct physical energy in an organized way to generate precise movements that result in high performance and successful acts. Similarly, values harness, direct and

channel psychological energy to generate remarkable results in personal and social life. Successful individuals and organizations are marked by their values. Values motivate one to excel oneself, otherwise we would be satisfied with things as they are. When we set a high standard for ourselves, we achieve it, or at least excel ourselves in the attempt. The quality of the values and the intensity of our commitment to them determine the level of accomplishment. Transformational leaders bring about a change in values, in themselves, in others, in organizations and societies.

“The transformational leader does not hold all the reins, but empowers others.”

9. The Role of Organization

When humans and human activity are added together, the result does not follow a linear progression but grows exponentially in complexity. The whole is greater than the sum of its parts, as Aristotle said. Organization is central to human accomplishment. Not all the raging river water can produce one watt of electricity if it is not dammed, channelled through sluice gates and through the turbine. A leader, regardless of his individual capacity, depends on an organization to fulfil his vision.

As society evolves, organizations evolve too. We see a gradual change, sometimes smooth and rapid, sometimes through struggle, from autocratic to democratic, participative forms. Pierre Antoine Barraillé, Consultant and President of Praneo, in his talk about organizations called for a rise in the level of consciousness, in order to improve organizations and achieve a paradigm shift.

Ego-centric organizations consist of leaders and followers who think only of themselves, and the focus is inevitably on survival and the short term. Competition exists at all levels. A step higher is the social-centric setup where one moves from the self to thinking about those around. Collaboration replaces competition. A still higher level is global-centric, where one thinks of the long term and of the whole world. Collaboration is enhanced by compassion, and the rise in level enhances the quality of life and effectivity of all.

The person at the top of the pyramid no longer takes all the decisions, everyone takes decisions and is responsible. This participation releases great energy. As the organization model becomes decentralized and changes from the collective serving the leader to the leader serving the collective, organizations become more dynamic, innovative and creative. Leadership is distributed lower down the organization till everyone becomes a self-guided leader in some measure. In such evolutionary organizations, instances of which we already see in companies like Google Inc., the leader’s role is more to initiate and create space for others. There is a shift in the position of power.

10. The Power Equation

Of the three temptations which the devil offered Christ in the desert, wealth, power and glory, the true leader is free. Power is perhaps the most alluring of the three. Traditionally, power rested at the top of the pyramid. Teachers imparted knowledge in a one-way approach.

Rulers unilaterally decided the fate of countries. The Church dictated the rules of religion. Top-down organizations concentrated most of the power in the hands of a few. A paradigm change has to change the way power is distributed and wielded. The transformational leader does not hold all the reins, but empowers others.

A study of all great leaders shows that they never sought the top post. They followed their ideals, power gravitated towards them. Gandhi sought independence for India, he did not care for a political post. Abraham Lincoln's ambition was not the presidency of the USA. Jean Monnet initiated the process that resulted in the European Union, but he never held a high official position. Gorbachev said that if anybody within the Communist Party had objected, he would not have taken the top post. His primary goal was to revive the Soviet economy and reform its political and social structure. He was the first man in Russian history to have left the Kremlin without clinging to power. Every reform he initiated came at the cost of his own power, but he went on determinedly, till he finally declared his own office extinct, and in the process, liberated many peoples.

Mandela was a great leader who ended Apartheid in South Africa, what made him greater was the complete absence of any vindictiveness when he came to power. There was no resentment for the twenty seven years he was made to spend in prison, or anger at the unfairness of the old system. He ensured that the transition from apartheid to unity was without retribution and civil war. He ensured reconciliation and integration in society. His sentiments, "It is better to lead from behind and to put others in front, especially when you celebrate victory when nice things occur. You take the front line when there is danger," can belong only to a truly great leader.

11. Character of the Transformational Leader

The sparkling gemstone gets its sparkle from its many facets. The Leadership Course lectures and the panel discussion that followed each lecture identified different characteristics that form the many facets of transformational leadership. In order to facilitate the emergence of effective transformational leaders at all levels of society, we need to understand the character of the transformational leader, and the process that creates and nurtures leadership.

In his presentation, Alberto Zucconi, President, Person-Centered Approach Institute, Italy and Secretary General, WUC, called empathy one of the basic elements of the mind of the great leader. Leaders are people-centered, they are in touch with others. They recognize others' intrinsic worth, and respect and appreciate them. They are generous, taking pleasure in empowering and serving others. They get real satisfaction not from being in control, but in seeing the success of others. They feel love and compassion for all. Just as teachers know that they learn more by teaching, true leaders know that they grow by giving. They create other leaders. They listen to others. When Franklin Roosevelt was President of USA, the White House received between 5000 and 8000 letters a day. Members of the public felt connected to him and his wife, Eleanor Roosevelt. It was said of Roosevelt that in order to defuse a situation, whereas the previous president Herbert Hoover sent the army, Roosevelt sent his wife. The first couple were so in touch with the people. He began his radio program Fireside Chats

with the greeting, 'My friends'. One factory worker rushed home after work, explaining that he did not want to miss Roosevelt on radio. He said, "When the president takes the time to talk to me, the least I can do is listen!"

Apart from factual knowledge, effective leaders need emotional and social intelligence. They need to be able to recognize emotions, both in themselves and in others. They communicate well with others, and enjoy good relationships. They are able to get others to cooperate with them. They do not see in black and white. They are aware that there are times when the lesser evil has to be accepted in order to overcome the greater evil, a smaller good must be sacrificed for the greater good. They anticipate, prepare for and handle change. Leaders need to take risks.

Using the analogy of a captain of a ship, Donato Kiniger-Passigli, Head, Fragile States and Disaster Response Group, International Labour Office, analysed the many aspects of effective decision-making which is a key element of transformational leadership. In order to take right decisions, the leader needs to think i) strategically, and have a clear vision of what is and what needs to be done, ii) tactically, and know how the thing should be done, and iii) operationally, and execute the task. An aerial view, or a higher perspective, must be combined with a hands-on view or problem solving attitude, for effective decision-making.

Great leaders are people of immense courage. Physical courage that is required to face the enemy army is clear. It is courage of another type to break away from the norm and try out a new idea in science, art, writing or public policy. Winston Churchill said that courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen. When the powerful Church says the earth is at the center of the universe, it takes courage to think of another possibility, and profess it. When the Second World War has just concluded, it takes courage to propose a collaboration with Germany, treating it as an equal. Finland has initiated a radical change in its education. Schools will do away with different academic subjects, and teach broad trans-disciplinary topics that touch upon all subjects. Instead of geography, history, political science and economics, students will learn the topic of the European Union, and all the subjects will be covered within the context of the EU, in an integrated way. It is courage again when a country with the top international test scores breaks away from a centuries-old model and embarks on a new course.

Visionary leaders are people of great conviction. During the Space Race with the USSR, John Kennedy announced that the Americans would put a man on the moon within a decade. When he made the commitment, the technology to land on the moon was not developed, nor yet the technology to return safely to earth. The costs involved were enormous. Still, his passion fired the project and NASA was able to send Neil Armstrong to moon and back within the decade. Great leadership needs passion. When the German Luftwaffe pounded Britain during World War II, the Nazis expected the island nation to surrender in six weeks. But after three months, they gave up in spite of the fact that they heavily outnumbered Britain in aircraft and experienced pilots. They had not reckoned with the amazing psychological determination of Britain and its leader Churchill who declared, "We shall never surrender." This deep conviction appealed to the depths of the English people. He said he had nothing to

offer but blood, toil, tears and sweat, and every one of his countrymen was willing to follow him and offer the same. In the face of such passionate resistance, the opponent has no choice but to give up.

Passion is necessary, but by itself is not adequate. History recounts a large number of people who had a clear idea of what they wanted, and wanted it with great passion, but the world would have been better off without such qualities in them. Hitler, Mussolini and Stalin were a few who were clear about what they wanted... So, no matter how far and how clearly one sees, if one is looking in the wrong direction, one leads society to the past, not the future. The right direction is required. Ethics and values provide this direction. They are messengers from our subliminal greatness that direct our steps towards wholesome progress.

All of us think, or so we think. Many of our opinions are borrowed from others, social norms set the limits and we stay safely within those boundaries, even at the level of thought. But transformational leaders really think – freshly, critically and creatively. They see the patterns that repeat in societies, the trends that evolve, they see problems beforehand. And then, they also transcend thinking and act on inspiration that is based neither on past experience nor on information. Franklin Roosevelt said that the economics he learnt at Harvard was not what he relied on when he went on national radio and told the people that there was nothing to fear but fear itself, and resolved the national banking crisis.

True leaders lead by example. There is a story about an Indian woman who sought Gandhi's help to make her son stop eating too much sugar. The small boy loved sugar, and no matter how much his mother scolded him, he would not stop. She hoped that he would heed Gandhi's words if not her own, and brought him to meet the leader. Gandhi asked her to return with the boy in two weeks. The lady obediently left, and returned in the said time. Gandhi then told her son that too much sugar is not good for health, and so he should stop eating it. The boy agreed, but the puzzled mother asked Gandhi why he had asked for two weeks' time before advising the boy. Gandhi told her that two weeks back, he was eating sugar himself! The leader expects or asks nothing of the followers that he is not willing to do himself.

Harry Truman said that it is amazing what you can *accomplish* if you do not care who gets the *credit*. Of all the people involved, Gorbachev was one of the few who never took credit for the end of the Cold War! The real leader is humble. He uses the word "we" more than he uses "I". Jean Monnet was motivated by altruism when he worked to create a united Europe. He sought nothing for himself, and was quick to give others credit for anything that worked out well. At the end of World War I, out of gratitude for his work, the British wanted to knight him. When he received the insignia, he sent it back, saying he did not merit the honour. The British, not understanding his humility, believed Monnet thought he deserved a higher award, so they promoted him to Knight Commander of the British Empire! Egolessness is a sure sign of a truly great leader.

András László, Founding President and CEO, GlobalVisioning.net, began his presentation in a novel fashion, with a meditative silence, which in itself is an integral part of a great leader. There is great power in silence, self-restraint and small significant acts. Franklin

Roosevelt remained preternaturally calm in the face of crises. He seemed in touch with the infinite. He never betrayed any nervousness when one upsetting news followed another before and during the Second World War. He confronted with equanimity the internal politics among his colleagues, the latest demand from Churchill for emergency aid, and the opposition at home to American involvement in the War.

One of the problems George Washington faced as a general fighting the American War of Independence was that the different states, in spite of being on the same side, did not always cooperate. Even as late as 1818, the colonial leader of Virginia John Randolph declared, 'When I speak of my country, I mean the Commonwealth of Virginia.' Sometimes the problem of the leader is not the hostility from outside but the fragmentation within. We have successfully cut up the earth and divided it amongst ourselves, on the basis of geography, ethnicity, language, religion, income level and so on. But we see more and more trans-border issues. When the sea level rises, it rises in South America just the same as in Asia. Religious fundamentalism and ethnic strife seem to be spreading regardless of national GDPs. Deforestation in Amazon rainforests leads to mountain snow melting in Nepal and flooding in India and Pakistan. On the positive side, any new development in any lab in the world reaches the markets all over the world. Ideas rapidly spread worldwide due to advanced telecommunications. An atrocity in any corner of the world is condemned, and sometimes even telecast live, worldwide. When a British newspaper reports that fishermen and sailors in the fishing boats in Thailand are treated badly, departmental stores in America and Europe threaten to stop procuring sea food from the country unless the conditions are improved. When a Pakistani girl insists that she will continue her education in spite of the threat of terrorists, the world comes to her support, and awards her the Nobel Prize. However, we continue to insist on our separateness.

An integrated view of the world and of all life that is absent from the majority can be seen in the leaders who have shaped and influenced the future of the world. Franklin Roosevelt saw that USA was not safe if Europe was not. Gorbachev understood the link between achieving international *détente* and domestic reform. Jean Monnet saw the possibility of cooperation and mutual benefit in the midst of hostility and conflicting purposes. He tied together the French and the larger European interest in ensuring peace and future security with the German interest in achieving political and economic rehabilitation. His proposals were a shock to many, but Monnet saw that to offer Germany equality with other European nations was essential for the common welfare.

Transformational leaders overcome dualistic thinking. They reconcile apparent opposites. Lee Iacocca tells the story of an engineer who worked with him at Chrysler. The engineer was a genius, but an argumentative and outspoken genius. For him the creative process was like hand-to-hand combat. He was not deferential or polite when he gave his opinion on another's idea. But he kept Iacocca on his toes, and the consequence was always an improved car design. Iacocca saw that, for the benefit of Chrysler's car, he could not afford to let his ego get in the way with the engineer. In business, politics or any other field, if the leader receives, or allows expression for only one point of view, his own point of view, then he needs to worry about the future. Lincoln never judged men by his like or dislike for them.

If someone had quarrelled with him, but happened to be the fittest man for a position in the Cabinet, Lincoln would put him in the Cabinet just as soon as he would a friend. Churchill included in his War Cabinet, members of the opposition. He said, 'Let prewar feuds die. Let personal quarrels be forgotten' so that energy wasted previously in infighting could be channelled into winning the common war.

The true leader takes consciousness responsibility, that is, responsibility for something greater than himself, greater than the authority he has. Like Gorbachev took responsibility for humanity by ending the Cold War, regardless of what it cost him personally.

Garry Jacobs, Chief Executive Officer, WAAS and WUC, in his concluding remarks stated that a complete act meets three psychological conditions – clarity of knowledge and full mental decision; enthusiastic emotional endorsement; and skilled execution through positive attitudes. If a single element is missing – one decision, one positive attitude or one skill – the act remains incomplete. For it to achieve a result, it must meet all the minimum requirements. The complete act has the potential for instantaneous miraculousness. It harnesses the forces of life to achieve results far greater than expected. With the right decision, attitude and action, a little Dutch boy can plug a dyke with a hand and save a whole country from flooding as in the legend of Hans Brinker. A single man can remove one brick and bring down the wall between the East and West as Gorbachev did. The transformational leader is one capable of performing a complete act in every one of his endeavours.

12. Educating Transformational Leaders

Sasa Kozuharov, Deputy Chancellor of the University of Tourism and Management, Skopje, Macedonia, and Pierre Antoine Barraillé explored the field of education. It used to be joked that our education has not changed much since the middle ages. If a physician from the 12th century were to enter a hospital today, he would faint. Whereas a teacher from that period would feel at home in today's classroom. But this joke is becoming more and more obsolete every year. 2012 was called the year of the MOOC, Massive Open Online Course. Today, though some call MOOC the missed opportunity for online collaboration, education is evolving along with the advancement in technology. Still, our education is nowhere near the desired goals. 10% of primary school-age children are not enrolled in school. Here, we are talking about 61 million of the world's future citizens. Between 2012 and 2015, 4 million teachers would have been needed to achieve universal primary education. The numbers look bleaker in higher education. 38% of all secondary school-age children are out of school, and 70% of tertiary school-age youth are not in college. These statistics cover only the gaps in quantity. Quality of education is a different issue altogether.

Standardized mass education will not produce transformational leaders needed for the future. Education that inculcates original thought, creativity, positive values and a view of the whole is needed. We need to educate entrepreneurship rather than employable skills, creative thinking rather than memorization, capacities for innovation rather than skills for production. We have enough gadgets to store data and process it. What we need are people who can see, empathise, think, discover and create. Apart from the academic subjects which are

undoubtedly of importance, the system should impart wisdom, responsibility, ethics, passion tempered by reason, tolerance and compassion.

“To give expression to the subconscious aspirations of society that are striving to awaken and act as a catalyst for their realization is the essence of transformational leadership.”

Our educational institutions have served us remarkably well, they have created great men and women who have shaped history. But they need to evolve to meet our current and future needs. Those who graduate from our schools and colleges should have a clear understanding of the integration – of all living things in the ecosystem, of all academic disciplines, of all countries and economies, of all of life. This will ensure that we do not create leaders who manufacture 70,000 nuclear weapons that are guaranteed to destroy earth and perhaps the moon in addition. Instead of going to war, future generations will be able to turn contradictions into complements. Economic disparity may reduce and well-being may become more universal. Modernization will not erase culture, globalization will not cost the earth its future. In order to get there, we need a paradigm change in education.

13. Global Leadership

Just as individuals can, organizations too can play the role of a leader. International organizations that transcend the nation state have the potential to take up global leadership, as Igor Kolman, Vice-chair, Croatian Committee on European Affairs, said in his lecture. These organizations have an integrated view of world issues and are better positioned to develop complete solutions. They have a huge knowledge base and the mechanisms developed for processing them are incredible. The opportunities are endless, all that is wanting is transformational leadership that will make these organizations take the lead.

The European Union has the potential to become a model and prototype for global governance. It can transform from a confederation and administration of nation states into a united community of peoples with a shared aspiration, vision and values – a wholesome whole. NATO can transform itself into a true instrument for global cooperative security rather than a security apparatus of a block of nations. The United Nations Organization has successfully prevented a third World War, but it can become more representative and democratic, and work to eliminate war of all proportions. A global New Deal is needed, as Tibor Tóth, Chief Executive Officer, Glocal E-Cubator, Austria said in his lecture.

Ask Google “how to solve the world’s problems”, and the search engine very optimistically gives 8,22,00,000 answers in half a minute. It is very heartening, but really, how many leaders, how many leading organizations seriously ask themselves the question, or have the answer? The World Academy of Art and Science, in formulating a New Paradigm for Human Development, is taking up an extremely ambitious project to address all critical issues facing

humanity. It is asking the question on behalf of the world, “Is there a solution to all our problems?” Through several conferences, research papers, and the World University Consortium courses, the Academy is attempting to lead the world to its future.

14. Essence of Transformational Leadership

Transformational leaders help raise the consciousness of individuals and society to enable them to realize more of their potential. They are defined by the values they embody and aspire to realize. To give expression to the subconscious aspirations of society that are striving to awaken and act as a catalyst for their realization is the essence of transformational leadership.

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Employment and the Unity of Social Sciences*

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Abstract

Employment and the unity of social sciences are discussed. The paper argues that employment is the simplest and the best indicator of human-centered sustainable and secure development.

1. Introduction

The 20th century is referred as the measuring century.¹ Indeed, the conception of Gross Domestic Product (GDP) and its operational definition were introduced in the 30s by Simon Kuznets. Later, various improvements of GDP such as Human Development Index (HDI),² Environmental Performance Index (EPI),³ Happy Planet Index (HPI),⁴ Globalization Index (GI),⁵ Competitiveness Index (CI),⁶ etc. were formulated.^{7,8} It is instructive to compare this flood of measurements with the development of the Standard Units in physical sciences. It took millennia before measures such as meter, kilogram and second could be precisely defined and internationally accepted, and the system of how to improve their precision could be defined and implemented. It is also important to stress that when Kuznets introduced GDP he emphasized its shortcomings. The inadequacy of the GDP has been pointed out by Jan Tinbergen, the first Nobel laureate in economics, and also by R.F. Kennedy in one of his last speeches:⁹ “GDP counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. It counts napalm and counts nuclear warheads and armored cars for the police to fight the riots in our cities.... Yet the GDP does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile”.

Information is very important and ICT has indeed introduced another age by allowing the present wealth of information to be developed and to be used, but information is not knowledge, and knowledge is not truth, and truth is not wisdom, and wisdom is not beauty – to repeat Frank Zappa. Let us not overlook the fact that the first metal to be used 11,000 years ago was gold which was used only for decoration, for beauty.

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Lord Kelvin emphasized the importance of measurement and stressed that unless we can measure (and define), the discussion is pointless. If it is correct that measurements relevant for social sciences are rather ill-defined, is it possible to develop the social sciences, notably economics? Again, comparison with physical sciences is useful: pyramids were built and Newtonian laws were formulated before meter, kilogram and second were precisely defined. We have to address important issues with whatever information we have at our disposal.

One of the most serious problems facing humankind today is low and inadequate employment. We argue that employment data are now the best socio-economic-political indicator to assess development – much better than GDP. It looks exaggerating in a world faced by catastrophe that could be caused by wars using weapons of mass destruction (WMD) and by enormous destruction of natural capital. Ecological Footprint^{10,11} is over 50% larger than the Earth's capacity, and in two decades we will need two Earths to tackle pollution and consumption of natural resources.

The data clearly show that many countries have a huge ecological footprint which is up to five times larger than Earth's biocapacity and their Human Development Index is essentially constant. Consequently, enormous damage to Earth and huge destruction of natural capital are done without any improvement in human development.¹² Comparison of subjective wellbeing and happiness with GDP¹³ also shows that at a GDP of \$9,000/capita subjective wellbeing reaches a plateau. Higher GDP/capita does not increase happiness. *Bulletin of the Atomic Scientists* put in 1947 on its front page a Doomsday clock at 7 minutes to Midnight. When the USA and the USSR tested their H-bomb, they moved the clock to 2 minutes to Midnight, and at the end of the Cold War the clock was at 17 minutes to Midnight. Terrorism as well as the destruction of natural, human and social capitals forced the Bulletin to put on January 14, 2014 the clock at 5 minutes to Midnight. Compounded by East-West tensions and ISIL aggressiveness it is likely that the next clock will be set even closer to Midnight.

Nevertheless, emphasizing low employment as one of the most serious failures of our current econo-political system is not an exaggeration! Employment rate in many European countries is below 75% (actually 75% is the EU goal), and many countries have employment rates not much larger than 50%. In addition to low employment there is also underemployment and misemployment, mal-employment compounded by unnecessary retirement affecting a large and constantly larger percentage of population. Apparently, the social structure is wasting more than 30-40% of human capital, and it looks like we are not even concerned about it. Throughout human history human capital has played a very important role even when its physical aspects were mainly used.

Before proceeding further we have to answer two questions. First, how important is human capital? Is it just a minor fraction of the total sum of all capitals: natural capital – resources, biodiversity, agriculture, water, etc, and human-built capital – roads, buildings, money, etc.? A recent study by Sir Partha Dasgupta and collaborators has shown that human capital is dominant.¹⁴ Table 1 summarizes results presented in *The Economist* in 2012.

Table 1: Real Wealth of Nations (2008): Human, Natural and Human-made Capital

USA	=	\$ 117.8 trillion	(HC = 75%)
UK	=	\$ 13.4 trillion	(HC = 88%)
Saudi Arabia	=	\$ 4.9 trillion	(HC = 35%)
Brazil	=	\$ 7.4 trillion	(HC = 62%)
Russian Federation	=	\$ 10.3 trillion	(HC = 21%)

(1 T\$ = \$1012, values in parentheses list the percentage of the total wealth of each nation that is contributed by human capital)

Obviously, human capital is very important. The second question is how reliable are measurements of human capital? Can human capital and natural capital be expressed in dollars even if they are corrected for inflation by purchasing power parity (PPP), and what does PPP mean in a global world? The value of the human capital can be qualitatively assessed by evaluating historical progress. The very fact that contemporary world witnesses numerous improvements in all domains of human activities – science, technology, life expectancy, better international and national laws, higher GDP/capita and better quality of life – indicates (though it does not convincingly prove) that human capital is increasing. Garry Jacobs and I have argued in a previous paper that human capital is self-augmenting by a bootstrapping process.¹⁵

2. Two Cultures and Three Cultures

On May 7, 1959 in his now famous Rede lecture entitled “The Two Cultures and The Scientific Revolution,”¹⁶ C.P. Snow emphasized that science and art were becoming two different cultures. It looks like the split is getting worse nowadays: split into three cultures,¹⁷ i.e. natural sciences, social sciences, and arts and humanities. However, the separation of scholarly/scientific disciplines is barely 200 years old and the term “scientist” was coined in 1833. In 1882 another Rede lecturer M. Arnold discussed whether classical education is still relevant in an age of scientific discoveries. This was the time of a debate on the theory of evolution and physics just accomplished a fraction of its revolutions. Nobel laureate Sir Andrew Huxley recalls that when he was a student and wanted to switch from classics to physics the headmaster of the Westminster College accused him of “forsaking virtue for pleasure”.¹⁸ The view that higher education overcomes these “cultural” splits was outlined in a keynote address at the International Association of Universities meeting in Zagreb in 1982.¹⁹ Recently, the World Academy of Art and Science established the World University Consortium with the aim to contribute to the fulfillment of higher education. As formulated by WAAS Fellow and Academia Europaea Former President S. Strömholm, “University has a mission and a responsibility which goes far beyond the task of providing industry with efficient employees, marketable ideas or science-based solutions.... The mission is the production of mature, independent, critical, responsible personalities, who are not tools in the service of Church, State, party, business or trade unions. The scholars are treated with respect if they maintain their dignity and uphold their own standards against those of the world at

large, in those cases where the conflict emerges, and with contempt, and soon enough as simple goods, if they accept the rules of the outside world.”²⁰

Natural sciences proceed through unifications. Newton unified heaven and Earth – circular motions along “perfect” circles and along straight lines, Faraday and Maxwell unified electricity and magnetism and as a bonus found the speed of light and consequently, optics. Quantum physics united physics and chemistry, and it seems biology was influenced as well, as Jacques Monod describes in his 1970 book *Chance and Necessity: Essay on the Natural Philosophy of Modern Biology*.²¹ Unification in physics proceeds on and on toward a possible Theory of Everything, but as soon as we think we have accomplished describing (not necessarily understanding) “everything”, that “everything” reduces to a small fraction, i.e. less than 5% of our universe,²² possibly just one of the infinite number of universes.²³ [The fact that our universe is fine-tuned to the existence of humans led to the idea of infinitely many universes where one has laws and basic constants fine-tuned to our existence]. On the other hand methodology and pattern of thought of physics and mathematics infiltrate into many scientific/scholarly activities. Several new disciplines are emerging such as astro-archaeology, bio-archaeology, and anthropology (anthropology for quite some time was split into physical and cultural anthropology). Most Nobel prizes in economics were given for econometrics and the first one was given to a former physicist Jan Tinbergen. This tendency is quite old and as early as Spinoza’s *Ethics*. Attempts were made to use axiomatic geometrical approach to formulate social sciences.

The thought pattern of physics and mathematics is at least to some extent based on the fact that basic components of the physical universe (“elementary particles”, basic constants and laws) did not change for almost 13.7 billion years (proposal by Dirac to explain a huge ratio of strengths of the electromagnetic to gravitational forces by assuming that they change with time is experimentally proven to be incorrect). On the other hand within physics and mathematics, scientific disciplines develop which have significant implication for social sciences. Examples are: complexity theory (the property of a real world that is manifest in an inability of any formalism being adequate to capture all of its properties. It requires that we find distinctly different ways of interacting with the system. “Distinctly different” in a sense that when we make successful models, the formal systems needed to describe each distinct aspect are not derivable from each other (B. Rosen, D. Mikulecky, Merrill Flood, S. Kaufmann and Murray Gell-Mann’s *The Quark and the Jaguar: Adventures in the Simple and the Complex*)), fractals, game theory (John von Neumann and Oskar Morgenstern, 1944) and Catastrophe theory.²⁴

Einstein stressed that the most incomprehensible thing about the world is that it is comprehensible, but M. Rees at the Academia Europaea Annual Conference in Liverpool in 2008 questioned: “Are we capable of understanding the physical universe?” Eugene Wigner in his article published in 1960 stressed the unreasonable effectiveness of mathematics in the natural sciences:²⁵ “Enormous usefulness of mathematics in natural sciences borders on the mysterious and there is no rational explanation for it.” It is not surprising: that physicists were led to introduce fuzzy logic (i.e. certain to some extent), that arguing with a friend N. Bohr said, “You are not thinking, you are just being logical!”, that K. Gödel showed that

there are truths beyond proof and R. Penrose wrote that “reason destroys itself”,²⁶ that Einstein claimed that “common sense is the collection of prejudices acquired by the age of 18”, that Pascal claimed, “We know the truth not only by reason, but also by our heart. It is through the latter that we know the first principle, and reason – which has nothing to do with it – tries in vain to refute it.”²⁷ Is common sense that segment of our thought that is generated by evolution, and can we ask the unthinkable – for e.g. in the third generation warfare, where plans are prepared for unthinkable attacks? Of course, art knew it much earlier.

“Einstein stressed that the most incomprehensible thing about the world is that it is comprehensible.”

Dostoyevsky wrote in *Notes from Underground* that blind faith in reason is dangerous. “The most destructive and dangerous of all religions is the newfound faith in the power of reason and perfectibility of man.” Humans cannot live by rational thoughts alone.²⁸

3. Social Sciences

Social sciences are focused on human beings. Contrary to unchangeable “elementary particles” and physical laws, humans undergo biological and cultural evolution. Humans change and they change the world they live in, so the current geological epoch could be appropriately called Anthropocene Epoch.²⁹ Our biological evolution accelerated 100-fold in the last 5-10,000 years. Driving forces are growth of the world’s population and changes due to agriculture and all other scientific-technological developments (Success of mutation causing to digest lactose over the last 3,000 years due to genes controlling the glucose metabolism in the brain is possibly essential for the human brain growth to the size twice that of chimpanzee, our nearest cousin, and possibly suggests why humans have diabetes and chimpanzees do not). Ongoing and future developments are becoming much more pronounced, starting with a pacemaker, implants and transplantations to stem cells, cerebral organoids and regenerative medicine: flat (skin), tubes (blood vessels), hollow organs (bladders made from implanted patients’ own cells), solid (kidney, heart), and synthetic biology (design and construction of new biological devices and systems that do not exist in the natural world and adapting and improving those that exist in the natural world, e.g. sensitivity of sharks to magnetic fields) to be followed so that by 2020 nanomachines will be routinely used in medicine – entering the bloodstream to feed cells and extract waste, by 2030 mind uploading will be possible and by 2040 human body 3.0 could alter its shape and organs can be replaced by superior cyber implants. Converging technologies such as nanotechnology (manipulation with atoms), biotechnology (manipulation of genes), information technology (manipulation of bits) and cognitive neuroscience (of neurons) will be integrated.

It is doubtful whether social sciences developed 100 to 200 years ago are adequate for our times. A brief outline of some social sciences follows:

Language is one of the most important “innovations”, but grammar and linguistics developed much later. It was Panini in 5th century BC, India and Sibawayh in the Arab world in 760 AD, who developed grammar, though the first to use the word “grammar” was the school of the Library of Alexandria. Modern linguistics was developed by W. von Humboldt and notably by Noam Chomsky.

Mercantilism (16-18c) and Physiocracy (18c) are among the first schools in economics, though economic problems were addressed earlier by Aristotle, Xenophon, Kautilya, Th. Aquinas and Ibn Khaldun. Adam Smith (his *Wealth of Nations* was published in 1776), who called himself a moral philosopher, is credited as the first economist and notably the first political economist, followed by T. R. Malthus (1798 – year indicates publication of their most important work), David Ricardo (1817), John Stuart Mills (1848), Karl Marx (1867), Alfred Marshal (1890), J. M. Keynes (1936), M. Friedman (1970), Jan Tinbergen (first Nobel laureate in economics in 1969), Simon Kuznets (1971 NP), J. Schumpeter (1942), J. Stiglitz (2001), P. Krugman (2008), A. Sen (1999) and N.N. Taleb who introduced Black Swan (for studies on uncertainties D. Kahneman got the Nobel Prize in 2002).

Sociology was studied by Confucius, Plato and Ibn Khaldun, and it is quoted in the Domsday Book of AD 1086. Modern sociology started with A. Comte (1798-1857), K. Marx (1818-1883), Herbert Spencer (1820-1903), Max Weber (1864-1920) and most notably Emile Durkheim (1858-1917) who first set up the department of sociology at the University of Bordeaux in 1895.

Thales, Hippocrates as well as many scholars of ancient China, Persia and India studied what we now call psychology. Modern psychology has its roots in the works of W. Wundt in 1897 in Leipzig, with W. James, Sigmund Freud and Carl Jung, known for their work on psychoanalysis followed by E. Fromm, E. Erikson, B.F. Skinner, A. Maslow and Ch. von Ehrenfeld and later Kurt Koffka and Wolfgang Köhler, who are known for their Gestalt theories.

Anthropology is a study of humans and therefore a very wide area. It has developed into many branches particularly after the work of Franz Boas and B. Malinowski at the turn of the 20th century.

And then it comes to politics, which was referred by Aristotle as a master science. Politics is a mixture of art and science, intuition, emotion, facts and visions, leadership and collective endeavor. It seems to me that the most appropriate quote to open and to conclude the discussion of politics is from F. Schiller written in 1796: “Our century has given birth to a great epoch, but the great moment finds a stunned generation and even more stunned politicians.”³⁰ “It is absurd to believe that everything is going to change, but politics will and can remain the same.”³¹

Each technological development survives only when accepted and used by humans, therefore, engineering and technology have their matching counterpart in the social sciences. Since, as Julian Huxley stressed, humans are now in charge of evolution, understanding contemporary evolution implies understanding human behavior, i.e. “contemporary” evolution becomes part of social science: “Evolution on this planet is a history of the realization of ever new possibilities... through the new knowledge. It has defined man’s destiny and responsibility to be an agent for the rest of the world in the job of realizing its inherent potentialities as fully as possible. It is as if man had been suddenly appointed managing director of the biggest business of all, the business of evolution. What is more, he can’t refuse the job.”³² According to Aurelio Peccei, “Humankind became the basic factor of

change in this corner of the universe.”³³ And similarly, robotics, ICT and artificial intelligence are merged with psychology, sociology, economics and politics.

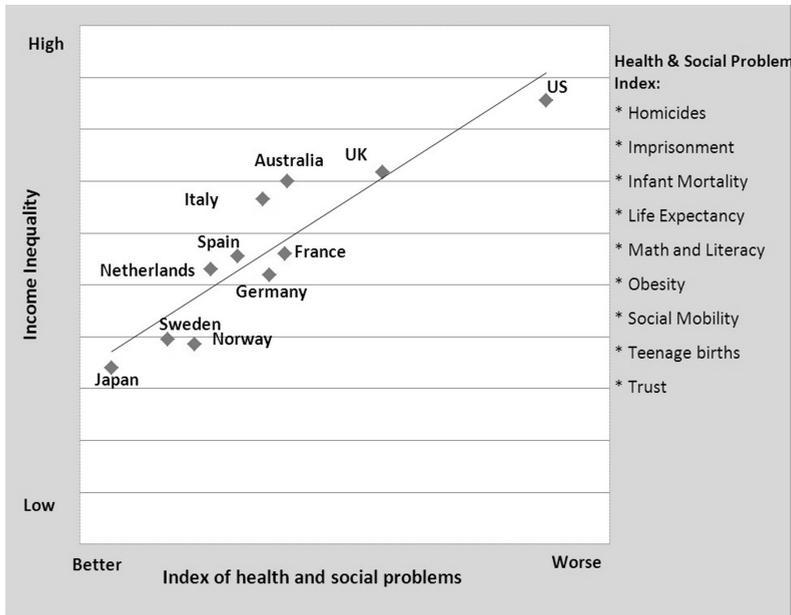
4. Paradigm Change

The concept of paradigm (*Παραδειγμα*) was used by Plato in his book *Timaeus* to mean a pattern used by God to create the universe. It was again used more than two millennia later by Th. Kuhn in his *The Structure of Scientific Revolutions*³⁴ to describe “universally accepted scientific achievements that – for a time – provide model problems and solutions for a community of practitioners.” ‘Paradigm’ means a pattern of activity and an accepted worldview. Mattei Dogan argued in 2001³⁵ that there is no paradigm in social sciences since concepts are polysemic (having a number of meanings and understandings). On the contrary Larry Laudan (1977) and M.L. Handa (1986) introduce social paradigms.³⁶

5. Employment

Full employment is desirable and possible.³⁷ Employment increases human capital and decreases income inequalities. Inequalities are negatively correlated with most socio-economic-health indicators such as life expectancy, infant mortality and crime rate, and decrease Human Development Index (HDI) (see Fig. 1³⁸ and Table 2). Taking inequality into account HDI decreases 27% for Arab States, 33% for Sub-Saharan Africa and 30% for South Asia. Loss is largest in education (57%, 32% and 50%, respectively) and in health (24%, 45%, 34%, respectively) sectors.

Fig. 1: Income Inequality vs Health and Social Problems Index³⁹



In addition inequality freezes human-made capital. Obviously, having several hundred shirts and ten cars freezes all those unused and unnecessarily consumes material resources and increases pollution.

Gandhi stated that there is enough for human needs, but not for human greed. Adding to greed are unnecessary “needs”,⁴⁰ needs enforced upon us through advertizing agencies.

Human needs include spiritual, emotional, artistic, intellectual, physical and material needs, and fulfillment of many of them requires work – often jobs by other people. If there are more jobs needed than people, then full employment is possible, even demanded. Of course, it requires that people have skills and knowledge, and that again increases the need for employment – procedure to provide skills and knowledge, i.e. process we call education. Science and technology have introduced a competitor to humans – robots and various other “agents” that do human work. We already witnessed that the percentage of people involved in agriculture dropped from over 60-70% to just few percents during less than 100 years, and we witness that many other jobs are disappearing. Actually, during their lifetime our children and grandchildren will have to change their “professions” several times.

Several developments are characterized by very different time scales. Our life expectancy is about 70-80 years (life expectancy doubled in about 100 years and is still increasing), knowledge doubles every 5-10 years and new technologies are introduced at the same rate (e.g. Moore’s law), demography will superimpose the demographic transition (i.e. decreasing fertility rate in many countries to below 2.1) until 2060 increasing global population close to ten billion producing migration and cultural problems. These clashing time scales add to already alarming destruction of natural, human and social capitals and to highly vulnerable political structures. Where does the world go from now? Theoretically possible future scenarios are: 1) static, 2) business-as-usual, 3) incremental and 4) paradigmatically changing world. Static world is impossible since the rate of change is increasing and drivers of change are imbedded in our society. Business-as-usual is not sustainable and leads to disaster. The question is whether incremental changes are sufficient or a paradigmatic change is needed, or most likely a combination of both – incremental and paradigmatic, producing essentially a paradigmatic change (Notwithstanding quantum physics and theory of relativity, classical physics remained valid in a narrowly specified domain). Insights into human needs suggest that the “jobs” will undergo major paradigmatic changes. We need and will need less and less production of material goods (they are destroying natural capital anyway, polluting the environment by enormous waste and adding little to our quality of life) and we will need more and more of knowledge (just to be a citizen of a democratic country an enormous knowledge is required unless we plan to surrender to manipulation, dictatorship and self-destruction led by stupidity), more research to understand the world we live in and more and more creative, revolutionary and out-of-the-box ideas to achieve a sustainable, human-centered secure world. As Don Giovanni says, “To drift is to be in hell, to steer is to be in heaven.” (G. B. Shaw).

Table 2: Indicators of Development

Country	HDI _r	(GNI-HDI) _r	IHDI _{los}	GINI	LS (0-10h)
r-ranking, IHDI _{los} decrease due to inequality					
Germany	5	10	6.9%	28.3	6.7
Austria	18	-5	6.6	29.2	7.5
Slovenia	21	12	5.8	31.2	6.0
Croatia	47	4	15.1	33.7	5.6
RusFed	55	0		40.1	5.4
MontN	52	24	8.0	45.3	5.5
Serbia	64	16	8.0	27.8	4.5

Socio-economic and political world changes quite rapidly now and social sciences describing specific aspects are not adequately explaining the changes. If one appreciates that social sciences deal with a society composed of humans, then a human-centered approach could lead to unity of all social sciences. Achievements of social sciences during the last century are enormous (just as physics achieved a lot during the 19th century but still two minor clouds led to quantum physics and theory of relativity), there is an increasing amount of observation, data and analyses, but we still lack a reasonable basic theory (and as Boltzmann stated, “Nothing is as useful as a good theory”). Physical theories are guided by experimental data and the imperative of beauty since we strongly believe and have evidence that Nature is beautiful. Social human-centered theories can be guided by essential characteristics of humans, also expressed in all major cultures and religions:

1. Humans have rights and responsibilities, and our basic right and responsibility are to LIVE and assure that future generations live! *Raison d’humanite*.⁴¹
2. Humans are curious – *Sapere aude* – as stressed by Aristotle in the opening words of his *Metaphysics*. We should never succumb to vanity and believe that we know everything – our knowledge and understanding are very small and inadequate.
3. Humans are social beings living on Earth. Preservation of natural capital is our duty.
4. The Golden Rule is imperative: even more strongly formulated: Love thy neighbor!
5. Humans have to be active and wisely decide when and how to be active.

Recent progress in sciences indicated Nature-Nurture Interaction (Life sciences-Socio-political-economic sciences).⁴² Comparison of identical and fraternal twins shows the heritability of politically related behavior. Gene DRD4 is implicated in the development of political affiliation. Those with a variant of DRD4 called 7R and also a large network of friends acquired during adolescence tended to be more left wing (in the USA). However, there is no particular gene for left-wing, but inclinations. Political action is the collective

expression of some primal biological motives: survival and procreation. Genes seem to assist in deciding which opinions an individual will find most attractive to cling to. It looks like there is a sort of granularity, the need to accept partial rather than universal explanations for biological phenomena. A person's gene can propel him/her more easily in one direction than another. Her/his free will may be a little freer to turn right than left, or vice versa.

It is not US vs. THEM, but rather WE and THEY.⁴³ This is the only and the best way to overcome crises, to eliminate threats and to assure prosperous, sustainable and secure development.⁴⁴ "Difference is our greatest opportunity," wrote B. Clinton echoing Hungarian King Stephen I. "People are the real wealth of nations. The basic aim of development is to enlarge human freedom and choices so that people live full and creative lives. This must benefit everybody equitably."⁴⁵

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The Double Helix of Learning and Work*

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Editors' Note

The Double Helix of Learning and Work by Orio Giarini and Mircea Malitza is a report to the Club of Rome first published by UNESCO in 2003. It advances fundamental paradigm-changing ideas in the field of education. Drawing inspiration from the double helix structure of DNA, the authors seek to strengthen the relationship between education and employment in order to bring 'The Knowledge Society' within reach. This article is a slightly abridged version of the fourth chapter of the report. The last and the next chapter will be published in the next issue of *Cadmus*.

Chapter 4

“The Knowledge Economy and Work”

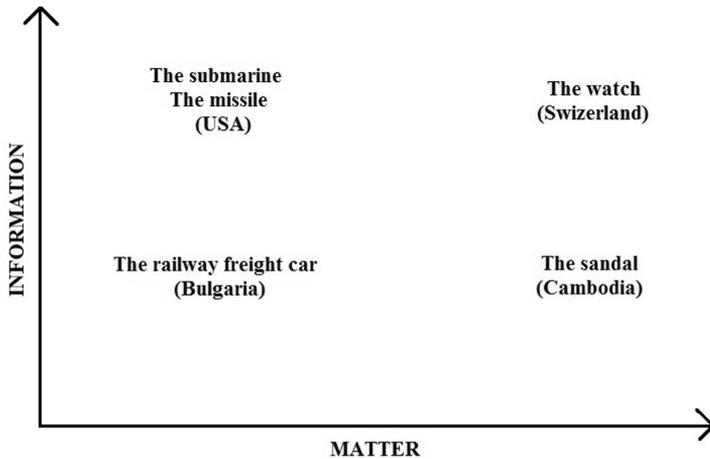
4.1. Knowledge as a Commodity

A Swiss professor at the Polytechnic University of Zürich used to draw a large rectangle divided into four smaller boxes on the blackboard. There were also two axes, one for the matter which entered the composition of the products specific to a particular country and the other for the information incorporated into those products.

According to the diagram, a submarine contains a large amount of steel, but it also has an impressive control panel. The great world powers build their military capability on products that combine large quantities of energy for propelling large payloads over very long trajectories with small quantities of energy to show the way. A watch uses little substance and energy but its fine, precise mechanism provides vital information on the flow of time. A railway freight car has massive wheels, a chassis, and wooden or metal sides, but it has neither a “brain” nor command mechanisms. A sandal made of straps holding a sole is the manual product of a worker who puts very little matter and only a grain of intelligence into his work.

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Figure 1. Relative amounts of matter and information/intelligence in the composition of products made in given countries



One could write “intelligence” rather than “information” on the left axis of this figure so as to account for the desire of humankind to create products which are new and different and which reduce human effort, *e.g.*, through automation.

There is a new trend today according to which knowledge replaces information or intelligence. The “knowledge economy”, in which we are living, assigns a new and supreme importance to knowledge.

Does this modification mark a turning point in economic thinking? One might as well cast doubt on the novelty of the concept. It is simply necessary to remember that, three hundred years ago, the Industrial Revolution occurred when people learned how to make machines. For the past two centuries, especially in the last century, industry has been science-based. Nevertheless, the novelty is great if one considers the relative weight of matter and knowledge incorporated into products.

The importance of classical factors (among which knowledge was not even mentioned) in the production of goods has obviously declined. The resource-based industry that characterized the first significant part of the history of manufacturing and shaped national strategies has lost its cogency. Japan is a major player in the steel market without having significant deposits of iron ore or of coal. Prices for natural resources fell 60 percent between the mid-1970s and the mid-1990s because modern products simply use smaller quantities of raw materials. To be capital intensive is not a condition for commercial success, since capital is widely available. Moving toward labour-intensive production is no longer a trump card in an era when skilled, and, consequently, well-remunerated labour is more important when one

has to run quasi-automated industries. In exchange, a new term has emerged in the equation of comparative advantages, something that counts more than the older factors and makes their location less relevant. As one author put it, "Today knowledge and skills now stand alone as the only source of comparative advantage" (Thurow, 1999).

"The effectiveness of knowledge is given by its movement. It does not produce anything when it lies still; it yields everything when it is intensively used."

This new commodity called knowledge, which is incorporated into the structures of all goods, can be compared to money. This comparison is suggestive of a puzzle: knowledge is like money, but it is not money: it can produce money and can be obtained for money. The universality of knowledge means that no goods can be produced and exist without knowledge. Knowledge has a relationship of mutual penetrability with goods, much like the complete interchangeability between money and goods.

The same as in the case of money, the effectiveness of knowledge is given by its movement. It does not produce anything when it lies still; it yields everything when it is intensively used. Its behaviour should be considered according to the derivative of the function or the speed of circulation. There is erudition that is valued for itself; however, it is less valuable than a certain hidden treasure. The value of money, resulting from the use of this treasure, has been recognized since biblical times. If Molière mocked the sterile exercise of avaricious hoarding, society did not repudiate the knowledge owner in the same way. A man of knowledge was considered the educational ideal.

In spite of these qualities, knowledge cannot either be appropriated or expropriated, as happens in the case of money. The brain is the safest repository of knowledge, as long as it is not expressed and circulated. The same thing happens to both knowledge and information: if circulated, it does not get depleted when it is shared, and any of its applications may provide opportunities for growth or development.

Globalization has created networks that defy time and space, allowing for the quasi-instantaneous transfer of money or pieces of knowledge (information) anywhere on the planet, no matter how far away. Information is, evidently, an indispensable support for knowledge, while knowledge is not reduced to bare information, but it contains a surplus of explanations of the facts, of understanding, of control of the natural, physical, or social processes, and of applicability and foresight. Broadly speaking, knowledge is science enriched with tacit, artistic, or logically informal norms. Knowledge is the first human activity that has reached the status of universality, most likely followed by trade and types of exchanges. Eluding restrictions or barriers, it keeps seeping into the places where attraction and demand are the greatest.

Another comparison might be made between knowledge and goods. Although it is initially stored in individual human brains, knowledge is produced in a highly interactive and

co-operative social melting pot. After it has been partially or systematically enounced, it becomes a public good that lends itself to general distribution. Everybody can drink from the “fountains of knowledge”. We assimilate knowledge in public or private schools, we explore it on the Internet using a personal computer, we discover it by reading, studying, experimenting, and judging.

What kind of public good is knowledge? Its first feature is that it is not subject to rivalry. One can have knowledge without depriving somebody else of it. Information has the same feature. But only disembodied knowledge or other objects of thought are purely exempt from rivalry. The moment knowledge is embodied or encoded in material forms, access to it may be subjected to commercial logic. It will have a cost and a price. It takes resources and time to embody knowledge in people or to apply it in products.

The second feature of knowledge as a public good should be its *non-exclusiveness*. One cannot exclude a person from the benefits of public facilities or from enjoyment of universal basic rights. But a qualification also intervenes in the case of knowledge. Owing to its power and the benefits it produces, knowledge is protected as a special form of ownership: intellectual property. Patents, licenses, and any other form of protecting property rights make knowledge partially excludible, and only those who can afford to pay its price are entitled to enjoy it.

Knowledge is therefore a public good, to some extent, but not totally and purely one. Were it to be completely excludible, companies would no longer invest as heavily in research; publishing houses would no longer print books; and costly scientific events would not take place at all. These remarks on knowledge as a public good lead to unsolved ambiguities and dilemmas, which are likely to become even more complicated in the era of the “knowledge economy”.

Nobody has ever changed mathematical theorems. This assumption of stability has applied to all statements resulting from serious research in the natural sciences or in societal phenomena. The moment there is an application leading to the production of tradable goods (e.g., pharmaceutical products), knowledge is protected by law and is capitalized like any private good. Moreover, one witnesses a phenomenon of *rapprochement* between the pure and the applied sciences. Their borderlines become blurred or fuzzy. Applied research laboratories have also begun to tackle theoretical issues, even though the results of such investigations pertain to intellectual property rather than to the public good. Those countries that understand the need to maintain a high level of research in the pure sciences have found it necessary to use clever stratagems in order to justify the funding of such research programmes. In the United States, the military have contracts with mathematicians specializing in pure geometry on the basis of a putative interest in potential applications.

Public schools operate in response to the constitutional requirement to provide education for all as a universally recognized right. The State invests public funds to produce people endowed with knowledge. Companies, however, regard that supply of trained people as a free input for their productive activities. Moreover, some states have built successful industrial

policies on the conversion of the scientific results obtained by other states into highly profitable applications. There are countries that rely, as a matter of policy, on the recruitment of foreign specialists who have been trained at a high cost in their countries of origin.

In the realm of education, there is continuing tension between the duty of the state to distribute and to transmit knowledge as a public good and the real chances that acquired knowledge will enter the circuit of private goods and protected property. Companies may occasionally be unhappy with the inadequate training that the personnel they require may have received in the public education system; therefore, they organize corporate training schemes for their own use, which are characterized by high costs and excludible knowledge.

The ever-increasing costs of public education, which, together with the health system, have become large consumers of the State budget, call for a comprehensive reconsideration of the educational process. From a different perspective, the major consumers of knowledge, especially in the public sector, are very interested in finding a workable solution. The people at large also expect a new approach. They aspire for emancipation and well-being in accordance with the new promises of human knowledge.

In the course of this century, a triad of decision-making and sponsorship is likely to emerge in the educational sector involving the government, the business community sector, and civil society. The new formula should also include parents, teachers, and young people. For the time being, this trend can only be detected in the convergence of the processes that influence current developments in schools: lifelong learning, work-related education, recurrent and alternative education, the modularization of curricula, the information and communication technologies, distance learning, and, ultimately, individual curricula and itineraries in the work/learning space.

We have to admit that most of the literature on the subject of the knowledge economy uses the term with different connotations. From a limited perspective, the knowledge industries are primarily those industries the major product of which is knowledge itself: software, biotechnology, and information technology hardware. The corresponding professions are engineers, scientists, programmers, and designers. Second, knowledge industries comprise units that are involved in managing, processing, and distributing information, such as telecommunications, banking, insurance, advertising, law, medicine, and education. They employ a broad range of professionals including managers, lawyers, bankers, and teachers.

From a broader perspective, the knowledge economy has been so described because it recognizes the primacy of the knowledge factor in the production of goods. This description applies in particular to the large industries, called by some authors "man-made brain power industries" in order to distinguish them from the classical industries, based on resources, capital, or labour. Usually, knowledge and skills are mentioned together. The synthetic (and not the analytical) skills seem to be the most important, since they are capable of putting together and capturing the synergy of all intellectual factors such as invention, design, manufacturing, services, and marketing, which are the premises of successful production.

There is considerable agreement on the role of tacit knowledge in craftsmanship. The intense familiarity of workers with the objects pertaining to their work, proper apprenticeship,

and experience are more relevant to the final result than are given rules or formal training. The winner in this case is intuitive learning by doing rather than the application of systematic recipes.

The knowledge required by any of the industries, services, or productive activities (not only by those designated as knowledge industries) can also be classified into two strands. We might wish to call one of them “Schumpeterian”, since it addresses the entrepreneurs and in view of the fact that it was Schumpeter who first talked about them. This strand is a more élitist one that operates at the level of major decisions that determine the ideal combination of the numerous ingredients going into process technologies. The other strand goes to the basic level of the shop floor, where the workers can use their knowledge-based competencies to control processes, identify errors, increase efficiency, and develop initiatives.

Seldom has education held such a central place in the minds of reformers and of society as has been the case with the emergent knowledge economy. Learning has entered the mainstream of wealth-creating factors in society and of self-fulfillment in individual lives. The knowledge economy, however, reopens the problems of equal chances, of the right to education, and of the responsibilities of society, of the State, and of companies to organize adequate educational structures. At the beginning of a new century, we see the picture of an abundance of experiments and experiences, most of them redundant and costly, lacking orientation, and hardly lending themselves to effective classification.

4.2. Innovation

The key word for the life of work in educational discourse, the supremely persistent demand and cardinal virtue, is “innovation”. The classical qualities (*i.e.*, skills, training, the work ethic, discipline, and teamwork) are not overlooked, but the ability to invent, to create, and to innovate is fundamental. The entrepreneur and the manager know that competition cannot only be confronted with lower prices and higher quality, but also with novelty. The product has to be labeled as “new”. The managerial school is not discouraged by the innovative trend.

Creation was traditionally assigned to a spark of genius or to an outburst of talent, inexplicable, non-transmittable, and inimitable, attributable only to hazard or to divine grace. Such theoreticians of management as Peter Drucker claim that innovation can be learned in the same way that one acquires knowledge and skills. They argue that, in addition to educational algorithms and the networks, there is another informal, invisible, and inexplicit way to acquire an ability to innovate, which is valid for the entire sphere of knowledge.

In order to better understand the demands of production and services, it would be edifying to examine more closely the contents and the nature of innovation. Any process, no matter how advanced, can be further improved. Incremental ameliorations of performance and efficiency occur slowly and tenaciously. The same happens in sports in which established records are constantly beaten by subsequent competitors. It is a universally valid, incremental, and cumulative method, which is used daily in professional or personal life. There are

handy means to apply it, such as a pertinent remark, the repositioning of two pieces, the identification of the cause of a frequent error, or simply driving home a nail.*

Small remedies can have major effects. It has been demonstrated that it makes sense to delegate responsibility down to the shop floor and to involve workers in the innovation circuit of production processes. Many of the innovations that have been made in this way remain anonymous. Still, they are vital and should not be neglected. Even a small reduction in costs may result in huge profits. An eloquent example is provided by the electronics industry, in which microprocessors are made under the microscope. Battles are fought for microns and nanoseconds. For years, chip technology has been reducing overall dimensions and has been increasing the hosting capacity of circuits. The constant pace of incremental improvement confirms the now famous law of Gordon Moore, according to which the available computing power quadruples every 30 months. (Moore's Law of Productive Technology was enounced two decades ago). Those who design circuits know about the tremendous effects that the conquest of a minuscule space or the reduction by an infinitesimal fraction of operating speed can produce.

Each and every industry, company, or service is involved in a process of perpetual innovation that is reflected in price, quality, aspect, advertising, functioning, and user-friendliness. Innovation also accounts for a continuous effort to build additional layers of competitive advantages. At certain points, this race may show signs of exhaustion and saturation. No matter how massive the investments, profits no longer live up to expectations. In other words, the efficiency of the incremental approach is limited.

The discovery of this phenomenon has led to the examination of another type of innovation, called "value innovation" by certain authors (Kim and Mauborgne, 1990). This approach ultimately means to get out of the competition, to forget product improvement and incremental thinking, in order to choose a different track, one on which there is nobody just yet. Value innovation is innovation that actually introduces a different product, configures another market space, attracts new clients, and opens brand new horizons. In a comparative study of several new companies, it was noticed that companies using value improvement in an attempt to match or to beat their competitors generated considerably lower profits than those based on innovation. "Rather than building advantages over their competitors, companies with huge profitable growth aimed to make competition irrelevant by providing their buyers with a quantum leap in value".

This perspective on innovation, along with the underlying economic strategy, has some qualities that are worth mentioning. First and foremost, the attitude toward competition became a real trap for the theorists of incrementalism. Competitors are no longer the obsession of a company based on value innovation; their adversaries no longer matter. The logic of the zero sum game is no longer valid. Secondly, the impulse no longer comes from outside, from a competing and imitative environment and its random events. It stems from

*"A little neglect may breed mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost" (from Benjamin Franklin, *Maxims Prefixed, to Poor Richard's Almanac* (1757), in Bartlett (1941), p. 227).

internal resources and acknowledges a shift of focus from “exogenous” to “endogenous” growth and innovation. Thirdly, the reduced degree of competition allows some strategic relations with other firms in harmony with the requirements of the early “modular society”, in which network is the prevailing element. Finally, this concept fits nicely with the knowledge economy, since it relies on specific pieces of knowledge and ideas.

This example, taken out of the economic sphere, provides an interesting analogy with the progress of the theory of negotiations and conflict resolution.

The myriad experiences in this field comprise difficult situations, protracted or recurrent, resulting from conflicts between states or economic entities, in which the basic issue is that of distributing a material asset. Distribution may apply to a territory, a strategic geographical position, mineral resources in a certain area, a sum of money, even sharing loot or profit. Such situations were studied by the two-player game theory, especially zero sum games. They resulted in an important number of conclusions, practical observations, and recommendations. Most of these concern the negotiation process, the succession and proportions of the concessions offered, the threats, the bluffs, and the promises. The result points to a formula of mutual accommodation of interests to be incorporated into an agreement or final solution that is meant to bring about the termination of the conflict. Game theory is adequate because it defines a game as a rule-based competition.

Nevertheless, the possible analogy with the game of economic competition – in which the rivals are in dispute over one and the same good, namely the market and the buyers – is most striking. The moves of everyone are incremental and experimental. They are aimed at seizing maximum advantage from a sequence of ingenious steps. It should be noted that competing companies cannot possibly become partners in any of these two cases.

The theory of negotiations and conflict resolution has registered the limits of these methods and even their failure in different types of situations, which do not involve the (re) distribution of a tangible good but rather a confrontation between two cultures in an identity conflict. There is nothing to distribute or to reconcile when it comes to two religions, two languages, two histories, two categories of customs, two mentalities, or a territory jointly inhabited by two populations that illustrate the above-mentioned differences.

Such situations are what gave birth to the “innovative” school. It aimed at achieving a new formula of conciliation, based on common interests. The trick was to make the two parties work together. It was only in the few cases in which the innovative approach was utilized that a successful outcome was obtained, leaving behind the numerous disputes that had poisoned previous relationships. An even more explicit form of that school suggests a philosophy of the common project.

In the area of negotiations, the innovative school displays even greater similarities with value innovation than in the case of the chapters on classical incrementation competition in negotiation games, or of the hardly reducible rivalry between businesses. Indeed, it was this school in its most recent and explicit form that – following a comparative study of the

conflicts in the Balkans and in the Caucasus – made a new start by leaving the old track and even overlooking the conflict itself.

The innovative solution is a project built on the clearly identified common interest of the conflicting parties. The proposed solutions pertain to the idea of civilization. They involve fewer and fewer values and beliefs, and they rely solely on the preservation instinct of the parties concerned and on their aspiration to normality. Of course, dialogue is not ruled out, but it gives way to the concept of interaction. In the final act, the initial problem is no longer even mentioned. It only contains the description of a common project in a non-controversial area and calls for constructive interaction.

All the features of economic innovation are to be noted here as well: the zero sum game is left aside; the source of the solution is endogenous, starting, as it does, from an idea related to the sphere of knowledge and intellect, and the goal is to transform former adversaries into partners. In economic matters and in political negotiations alike, the same word is used for the old competition or conflict; the common project makes it irrelevant.

This analogy points to an even greater degree of generalization so far as problem solving is concerned. Those problems that are by their nature protracted, difficult, or even unsolvable by means of current methods, require a new audacious approach: the substitution of a problem with another problem that makes the former obsolescent and irrelevant. The newly suggested problem has the virtue of opening new horizons and simultaneously meeting the expectations of those who have been caught up in contradictions and dilemmas.

Education accepts the reality of its impasse and the fact that it can only get out of it by adopting a common strategy with an adjacent field, that of work, in its attempt to find an authentic, innovative solution, to leave the never ending track of small-step reforms and piecemeal approach.

We shall see whether or not the innovation in question can be learned in schools, in institutions, or in society. Not only children learn but also adults. Today we use phrases such as: “learning companies”, “learning societies”, and “learning governments”. It is most likely that the attribute will secure the success of these undertakings.

Despite the abundance of courses, schools, and textbooks, it is difficult to believe that the mystery of innovation will vanish and that the cultivation of the capacity to exercise it can be confined to algorithms or universal practical recipes. Epistemological theories or the knowledge of how the brain functions only enable us to see innovation as a special attitude, a product of various, yet unidentified, factors. We might at least agree on the circumstances that could facilitate or encourage it to flourish. It is not clear who will come up with the surprise.

Here is an edifying example. We process knowledge, we use it, systematize it, or enrich it through reasoning. For centuries, we have debated the merits of the Aristotelian deduction or of Baconian logic. Both are vertical, but the former operates from the general to the particular, downwards, from principles to facts, while the latter functions the other way round, from particular cases toward generalization.

4.3. State, Democracy, and Market

An acutely perceived need is felt to clarify the relationships between the state and the market economy in the new century. The need is so much greater as education, work, and knowledge put additional pressures on both the state and the market. No issue is as topical for political discourse as the relationship between politics and the economy and between the State and the market. The former has decision-making and managerial power relative to public good. The power of the latter lies in the welfare offered by the private owner and producer. Political parties are basically classified according to focus and supremacy. Emphasis is laid on importance and priority.

One interpretation suggested that the triumph of the market would lead to the decline and eventual disappearance of states. Instead, at the end of the first decade of transition, analysts concluded that growing poverty in some countries was due to the weakening of the state, while prosperity in others was based on the assumption that wealthy states do not take the news of their imminent demise seriously.

States use the laws to provide a proper infrastructure for the operation of the privately owned economy. The State has institutions designed to apply those laws in order to provide roads and public transportation, trained personnel, improved health, clean cities, and the rational use of resources. It also has to ensure the protection of property and the security of lawful transactions.

The diseases from which states suffer are generally different from those of private businesses. First, there is bureaucracy resulting in rigidity, inadequacy, waste, duplication, high costs, and inefficiency. Second, there is corruption, when public responsibility is misused for personal gain. Third, there is a temptation to paint everything in political colours, bringing along a great deal of ideology and demagogy and pushing aside the criteria of competence, which should be decisive in public service.

Nevertheless, the State is the main employer, sponsor, and leader of education and knowledge. It also has to be the creator and mentor of the legislation regulating work and other civil rights. But the pace of change in the internal structures of states is slow, and their adaptation to global challenges (technology, trade, financial markets, knowledge) is held back by considerable inertial forces and vested interests. The diseases of the state are a perpetual memento of the dangers that education and work have to face.

Tangible indications of emergent counteraction are already visible. The educational system has reacted by promoting decentralization, i.e., the transfer of ministerial duties to regional and local authorities, down to the level of schools. Increased academic autonomy, the enhanced responsibility of schools in terms of financial administration, the growing number of optional courses, and parent and community involvement provide clear evidence of the flexibility that the educational system has been asked to develop.

The inherent shortcomings of the market, especially its absolute acceptance of extremist liberal trends, directly concern education and knowledge. They also have a bearing on employment policy. Such is the case with the short-term goals and limited interests involved

in the calculation of profit. Who would be willing to invest in the expectation that possible competitors would benefit from the results? It is only the State that can make such generous gestures because it has to treat the whole of society as a beneficiary.

The avoidance of a long-term view has unfortunate effects on education and research. Comparative studies of several countries indicate that the tangible results of a robust modernizing reform and of considerable investment are to be reaped within a minimum of twenty years. Advancements in the fundamental sciences, in mathematics, in the structure of matter, and in the system of life are also a matter of long cycles. Statistics indicate an increased interest on the part of the private sector in such activities, as expressed in the increased availability of funding. Still, with almost no exception, such funds are funneled into short-term efficiency projects. The genome project was deemed to advance fundamental science, but it also had extensive applications in the industries that had benefited from the progress of cellular biology. The promise of considerable profits precipitated the interest and funding from the private sector.

In the countries in transition from planned to market economies, the mistaken perception of the role of the State in relation to market resources led simply to the closing of research institutes employing highly trained personnel. In those countries, private universities have mushroomed: they now enroll up to half the total university population in some places. The key word of transition is privatization, so why not apply it to education as well?

The results were mixed. On the one hand, quality went down. Selection for admission was almost non-existent. State education lost teachers but also candidates who no longer wished to face the rigours of entrance examinations. On the other hand, the flexibility of private universities was much higher; so was their openness to innovation. State universities also rose to the challenge by admitting students without requiring an entrance examination and by charging them tuition fees. These fees enabled the universities to increase the wages of professors and to improve study conditions.

The tendency to privatize the educational system in the circumstances of the new economy is a new phenomenon. The premises of this position are undoubtedly viable. The producers of national wealth, the state budget, and the state institutions included, must have a say with respect to the fate of the learning industry that has become the main resource in a knowledge economy. They are also entitled to demand that the necessary knowledge, skills, and attitudes be produced with a view to obtaining more wealth. Now, when human capital has become more important than physical capital, it may at least claim a place in the decision-making *Areopagus*, next to public authority and civil society. Will the logic of the market prevail over the traditional approach, based on the public good? Will education stand to gain in that perspective?

One of the arguments that is frequently heard is that private enterprise is better equipped to train young people for the global economy of the Twenty-First Century, characterized as it is by increased competitiveness.

We must face the reality that the “products” of public schooling do not inculcate the kind of active dedication to competition that companies seem to be seeking. In Japan, the

graduates of regular universities are welcomed into the business community with the following slogan: “Now you [will] start from the beginning; you will enter the real school of the company which will enable you to perform an activity for which you are completely unprepared at this point”. And still, according to Japanese tradition, those young people are likely to remain in the respective company for the rest of their lives.

“The shrinking sphere of action, the limitation of goals, and the increasing specialization are features that do not conform to current aspirations to maintain an open and mobile pool of competent and innovative human resources.”

The disadvantage of corporate universities is characterized by the frequent situation of young people who are trained to fit the profile and behavioural pattern of a given company and who lose their jobs. In conformity with the law of increasing mobility, young people in such a situation must adapt to the requirements of another company, with a different pattern, logic, and fidelity commitment.

It should be noted that the impatience of companies about the perceived insufficiencies of the combative skills provided by regular schools is not entirely justified. The admission tests, the evaluation system, the selection through examination, the involvement of students in competitions with other schools, the struggle for recognition and prestige, the very effort required to graduate, and the fear of dropping out demonstrate that there is competition in the public education system. Aggressive competitiveness is also reinforced through sports.

For an evaluation of the advantages and disadvantages of a possible preference for education provided by private companies, corporate universities and the training they offer are a case in point. The emergence of such centers of learning has made the established educational system more alert and open to innovation. Corporate educational units are privileged places for experimentation and innovation, enjoying significantly superior facilities compared to the public sector. They have already brought in a stimulating and even provocative touch of freshness. Conversely, the emergence of segregated educational enclaves may appear ominous in any learning system in the circumstances of globalization. The shrinking sphere of action, the limitation of goals, and the increasing specialization are features that do not conform to current aspirations to maintain an open and mobile pool of competent and innovative human resources.

It is now the time to examine another dimension, which in the general confusion has been represented as a merit of the triumphant march of the market: democracy. Indeed, market and democracy do have something in common, *i.e.*, the idea of liberty, the recognition of individual responsibility, the encouragement of an entrepreneurial spirit, and risk-taking. These features were even celebrated as inseparable expressions of the victory of liberal democracy by Francis Fukuyama in *The End of History and the Last Man* (1992).

A closer look reveals that market and democracy are quite neatly delimited when it comes to equality. Democracy exalts the equality of citizens before the law as equal owners of a set of universal rights, including the rights to education and to work, and it requires the State to watch over the observance of those rights. Moreover, democracy demands that the State ceaselessly strive to remedy the undesired effects of economic mechanisms (illiteracy, unemployment, discrimination).

The principles that guide the functioning of the market are free of such concerns. It has been recognized (and measured) that the economic processes leading to successful accumulation of wealth are accompanied by deepening inequalities both domestically and at an international level. The route might be the same and the processes may run parallel, but still, democracy and the market are currently heading in opposite directions. Cogent data offered by economists confirm this fact.

In the transition countries, the latter statement is attributed to those suspected of being nostalgic regarding the planned economy. In the developed countries, it may pass for a socializing outburst on the part of the enemies of entrepreneurship. And yet, inter-governmental meetings taking place in resplendent historic cities have to face the anger of fringe groups that describe themselves as “anti-capitalist”. At United Nations summits, the acceptance of globalization as an ineluctable process is accompanied by lamentations regarding the inequalities that it tends to aggravate. It should be noted that most of the protesters are teenagers; so are the persons who are throwing stones in Gaza and Jericho. Even though there is some talk about manipulation, we must not overlook the anxieties caused by delays and hesitations in applying the agreed measures designed to correct some of the more severe inequities or to bring certain critical conflictual situations to an end.

Theoretically speaking, school is a propitious place to understand democracy, to develop it practically, and to assimilate it durably. Facing the teacher, all pupils are equal. Young minds perceive any negative or positive discrimination as intolerable. Any references to ethnic, religious, or linguistic specificities or to those of habit or belief are regarded as deviations from the general norms of education. Of course, such a position presupposes that the system itself is not contaminated or poisoned. Non-discrimination and education for all are key notions in modern conceptions of education, as attested by acts of law, international conventions, and educational theories. Education is probably the climax of equality, which the tougher realities of social and economic life will eventually dilute.

What is the solution? Who are the future patrons of education, science, and knowledge? Classical Antiquity invented the *triumvirate* as a form of government. In some states, the employers, the trade unions, and the government co-operate on matters concerning production and work. It is also plausible that educational processes should develop under the auspices of a triangle consisting of public authorities, private enterprise, and civil society. Each of the three has the material and conceptual resources that can provide education with an organizational formula that would meet the requirements of participation, anticipation, and work quality.

4.4. Democracy and Roles

An honest survey of the Twentieth Century would surely reveal that work was a clear winner. It marked the end of the era of Sisyphean toil, of a brutalizing pace, and of raw physical effort. Suffice it to say that the workweek used to be nearly eighty hours long in the Nineteenth Century

Around 1800, in Germany, people worked for ten to twelve hours a day; in 1820, for eleven to fourteen; and between 1830 and 1860, for fourteen to sixteen hours. The maximum nearly reached 112 hours per week. Reading the ILO statistics on the average numbers of working hours per week (34.7 in the United States, 38.3 in Germany, and 38.9 in France, recently cut to 35), we realize how much modern technology and advanced management have done to improve the human condition.

The remuneration for this more relaxed work shows a continuously rising trend, reminding one of Fourastié's calculations (Fourastié, 1966) for the equivalent of an hour of work in kilograms of bread over two centuries.

A major failure in the field of work, unemployment, has, however, become an obsession for politicians and a constant concern to society.

Let us look at the industrialized countries first. According to OECD standards, unemployment should normally affect about 8.5 percent of the labour force, a total of 35 million people. The situation was not always the same during the postwar period. Until 1970, unemployment did not affect more than 10 million persons in the OECD countries, but soon after it started to grow and eventually tripled in 1982. Despite some amelioration owing to the economic expansion of the 1980s and to massive countervailing measures, the level of unemployment did not fall. Rather, it tended to remain unchanged, defying a plethora of legislative, economic, and social remedies. The persistence of that phenomenon pointed to a weakness in the system and to the under-performance of the economy. Those who seek solace in the fact that an aging population reduces the pressures on the job market in some countries are confronted by the reality of a longer active life and the claim on the part of senior citizens of the right to work.

Several conclusions can be drawn from an analysis of developments in those countries in which unemployment and its social consequences have been extensively covered in specialized research literature.

First of all, what is the meaning of structural unemployment? It has to do with a failure of adjustment between demand and offer on the labour market. Some authors estimate that this type of unemployment is quite important: 8 percent of the labour force against an overall rate of 10 percent. As its name illustrates, structural unemployment is the effect not only of market regulation but also of structural change. One of its underlying causes is that of qualification, which should have been provided through education.

There are quite a few vacant positions calling for high skill levels. Every day one hears of frantic efforts to fill the gap in demand for software programmers. At the same time,

the growing mass of job seekers with low-grade or obsolescent skills is confronted with an obvious saturation of demand. Once again, we have here a telling demonstration of the fact that the mission of education has to be closely linked to the future of work. The knowledge factor pushes the standards required of education ever higher, at a greater speed than the ability of the schools to adapt.

Current programmes for coping with unemployment are primarily directed at a better mobilization of the existing labour supply. They involve additional training for unemployed adults and special measures for young people and for the disabled. A different but complementary strategy involves government assistance to persons who are willing to start a new business on their own or special incentives for companies to employ additional workers. In most of the industrialized countries, expenditures for this type of measure aimed at increasing the chances of productive employment of their citizens have reached some 0.5 percent of GDP.

Another possible solution is *active search*, i.e., employers trying to contact job seekers by all kinds of methods including employment services and an effort to encourage more mobility for a wider variety of jobs.

A special category of measures has been developed purely in the educational sphere. The aim is to develop employment-related knowledge and skills within the educational system through the initiative of employers. This new type of activity is definitely on the rise. Never has the variety of non-classical methods or innovative approaches been so wide. Lifelong education, education for work, modular curricula, adult education, and on-the-job training offer a broad spectrum of solutions. Their diversity is in inverse proportion to their ability to fit a single coherent scheme. Hence the need to develop an articulate system whereby the issues of education and work can find practical answers at a lower cost compared to the previous loss-making, old-fashioned, and outdated systems.

Even though the debate on the natural and legitimate responsibilities of the state in economic matters has been as heated and as controversial as ever, the state still retains powerful levers for reformulating its own functions in order to control, or at least to influence, the developments that may be of concern to society as a whole. Instead of a command panel with as many buttons as a nuclear power plant or a transatlantic jet, the state still relies on a small set of simple pedals, most of them not necessarily governmental, to influence the course of economic development.

Inflation and unemployment are among those phenomena that can be realistically controlled. The pedal that the government of a market-oriented country can push is the one that sets the level of the prime interest rate, which accounts for the essence of its economic policy. Controlling inflation takes priority. It has been the main headache of decision-makers and economists because it affects the living standards of the entire population. Broadly speaking, to check rampant inflation, one has to raise interest rates. Money becomes more expensive; prices go down; and so inflation is tamed. When the pedal is released and the interest rates rise, the cost of money goes up, investments go down, economic growth slows down, fewer new jobs are created, and unemployment soars.

Europe is illustrative of a policy that keeps the interest rates high resulting in heavy unemployment. This trap has lived on, despite a post-recession recovery. For quite a while, Europe has been casting envious glances at the paradoxical situation of the United States, where a combination of a high rate of economic growth, a low inflation rate, and high employment defied the classical equation for almost a decade.

Globalization makes the prospects of stimulating growth through classical methods even gloomier in certain countries. The huge amounts of money that move rapidly around in the networks of globalization make it necessary to adjust monetary policies accordingly, rather than to pump money into the economy. As a defensive reaction, the interest rates will increase, thus inhibiting a rational use of available productive resources. In terms of philosophical approach, the economic policies of many developed nations are still dominated by monetarist neo-liberals, who do not rank increased employment high on their lists of priorities.

The pedals available to government authorities do not function perfectly. Sometimes their expected effects are delayed. Here we are faced with another paradox. At a microeconomic level, considerable profit increases following the introduction of new technologies and subsequent expansion occurs simultaneously entailing significant cutbacks in personnel. This phenomenon is what companies describe as *downsizing*. New trends in management have turned the proportion of efficiency and the volume of human resources upside down. Again, paradoxically, this phenomenon occurs during non-recessionary periods.

While past recessions primarily affected blue-collar workers, in the late 1980s, four out of five people who lost their jobs were white-collar workers, i.e., managers, clerical workers, and salespeople. The figures for the United States are relevant. In the late 1980s and early 1990s, two waves of corporate downsizing swept across the economy eliminating about 2.5 million jobs. In 1995, when corporations cashed in the highest profits in twenty-five years, 600,000 people were laid off. The same phenomenon was replicated in Europe. Also in 1995, a major bank posted a \$1.75 billion profit while eliminating 10,000 jobs.

In defense of these measures, some specialists claimed that most of the personnel who had been made redundant eventually found employment with other companies. True enough; however, as one case shows, only 70 percent of the workers found new jobs, and half of them for lower wages. In many cases, downsizing meant that people had to be content with poorly paid work that earned them far less than what they had earned in their previous employment.

Some American economists praise the flexibility of the American labour market as opposed to the more rigid system prevailing in Europe. The price of that rigidity, caused by generous social programmes supported by the trade unions, could be high unemployment.

Lester Thurow (1999) draws the conclusion that “downsizing has destroyed the old implicit post-Second World War social contract”, whereby people could count on stable or lifetime employment, provided their own performance was satisfactory and that their company made profits. He actually provides a definition of work mobility when describing the effects of downsizing. Firms, he writes, “are developing a contingent workforce composed of involuntary part-time, temporary workers, limited-contract workers, and ...consultants who work for wages far below what they have previously been receiving”.

Another worrying phenomenon in the labour market is the condition of those persons who have been completely and definitively left out.

Marx's *Lumpenproletariat*, whose reduced productivity made them undesirable to any employer, are now known as "the homeless". The sidewalks along the streets of many great cities serve as bedrooms for the terminally unemployed. In order to understand the possible consequences of the emergence of that underclass, let us recall Herbert Marcuse's forecast (in *MacIntyre*, 1970) according to which future revolutions would not be carried out by the proletariat but rather by people who were marginalized and rejected by society: the *lumpenproletarians*. They are said to comprise between 600,000 and 800,000 people in France and nearly 7 million, over a five-year period, in the United States.

The prevailing fatalistic attitude toward the mysterious ways of the economy and financial mechanisms does not exonerate the state from its own responsibilities. Unemployment is a sensitive electoral issue for politicians. Taxpayers, who also happen to be voters, do not easily accept job insecurity or loss. States tend to acknowledge their responsibilities as well as the fact that individuals are powerless when left, on their own, to confront the scourge of unemployment. The response is basically embodied in the quasi-philanthropic and humiliating unemployment benefits, "the dole", which amounted to almost 2 percent of the GDP in the countries with an unemployment rate of 10 percent. One should add to this nearly 0.5 percent of GDP for mobilizing the existing labour supply through training and recycling.

The problem of jobs is acute. Attempts to alleviate it have always led to an aggravation of the budgetary situation, threatening financial disruption and bankruptcy: however, there is a viable economic solution in sight.

At this point, the contrast between the lucid acknowledgement by the State that urgent measures with regard to the education/work relationship are needed and the inability of the State to follow-through on such measures is confusing. A lingering suspicion exists that active measures to combat unemployment simply do not work.

Let us take a look at the official texts of a meeting of labour ministers of the industrialized countries that took place at the end of the 1990s.

Everything that was stated there is true and pertinent. The ministers admitted that globalization stimulated technological advances and worldwide liberalization but that the relationship of globalization to the structure of production and employment was problematic. The link between rising unemployment and the widening income gap was quite correctly emphasized. The ministers also noted that structural changes were difficult for some countries to absorb and that a public backlash against globalization was possible. They were convinced that broad-based strategies and structural reforms were necessary in order to reduce unemployment, parallel to fostering the emergence of a knowledge society "capable of generating high-productivity and high-wage jobs". They mentioned the importance of new incentives to improve training, to enhance the effectiveness of an active labour market, and to bolster employability through coherent strategies for lifelong learning. A strong link between

work and learning groups was recommended, along with a better co-ordination of the labour market, between workers and employers, so as to promote education and training. All the right premises were recognized, from the knowledge and learning society to employability for all, even the need to find the appropriate answers together. But practical solutions were still missing. The bottleneck was identified at the point of transition from school to work. Sheer intuition must have prompted the ministers to state that the young entrants into the labour market “are likely to be required to have a variety of educational and employment experiences, either concurrently or in quick succession”.

Educational experts congratulate themselves on having a five-year mandate (still uncompleted by 2001) to develop lifelong education for all. They regard the latter as an effective tool to reduce the risks of economic and social marginalization. They are concerned with providing learning throughout adulthood and with creating new opportunities to mix work with learning. They acknowledge the need to introduce more flexibility into the educational timetable and to consider new combinations and new pedagogical approaches to meet, more effectively, the learning requirements of adults. Here again we find another bottleneck: the insufficiency of the means to measure and to recognize how better education translates into higher productivity. The peremptory statement according to which “teaching in the classroom is the central instrument of educational policy” is even more disarming. That very premise might have to be abandoned so as to get closer to the right answer.

All the pertinent terms are present in that scheme, even the curriculum, with timid attempts to season it with a few topical subjects. Only modularity is missing, gathering dust in some forgotten drawer. Without it, no matter how good the co-operation among various ingredients may be, the mixture will neither coagulate nor come to life. The solution of lifelong learning through individual curricula that are freely chosen, knowledge intensive, and aim-oriented in a system with multiple entry and exit points, in the double helix of work and learning, is still not visible.

4.5. Knowledge as Self-Fulfillment

We have noted with satisfaction the encounter between the economic sphere and knowledge as an essential factor of production. It is a decisive step for the development of a mutual interest in the future of education and its funding and for the establishment of a creative relationship between work and education. Knowledge will have to moderate its appetite for theorizing and formalizing in favour of applications and utilization. The new method for upgrading the status of work with better qualifications and higher wages is paralleled by enhanced motivation, which energizes the learning processes. Last but not least, it creates a favourable environment in order, simultaneously, to deal with the rigid processes that have been so resistant to change in the spheres of both work and learning. The two can be finally joined together on the same social spiral.

Turning this exclusively utilitarian vision of knowledge into a dominant paradigm or theory may obscure the danger of neglecting the major changes that have altered the world-view of a significant part of the population, especially the young.

First, there is a different type of knowledge than active knowledge, which used to lead the individual along either known or new paths. That knowledge is sometimes called “inert” because it has been stored without counting on an obvious opportunity to use it in new and predictable situations. Active knowledge has a visible and recognized utility, while the inert type has different utility criteria (e.g., aesthetic satisfaction, aspirations to erudition, private answers to philosophical questions, and support for individual mediation). It is hard to believe that such knowledge can be compatible with an employment-oriented vision.

For the time being we shall restrict ourselves to formulating the principle and to examining what its corollaries are from the point of view of society’s obligations towards the child. This principle is that education (the “full development of the human personality”) is not simply a contribution that would be superimposed on top of the results of an individual development regulated in some inborn way, or that is accomplished by the family alone. From birth to the end of adolescence, education is one whole, and is one of two fundamental, necessary factors for intellectual and moral formation, so much so that the school carries a great responsibility regarding the final success or failure of the individual in pursuit of his own potential and adaptation to social living. In a word, the internal evolution of a person (according to the aptitudes of each one) ...provides merely a certain amount of rough outlines that are capable of being developed, or left in an untouched state. But these are only rough outlines, and only social and educational interactions will transform them into efficient behavioral patterns or destroy them totally. The right to education, therefore, is neither more nor less than the right of an individual to develop normally, in accord with all the potential he possesses, and the obligation that society has to transform this potential into useful and effective fulfillment. (Jean Piaget, *To Understand Is To Invent The Future of Education*, 1973).

Second, useful and active knowledge maintains the educational system as a knowledge-manufacturing machine. The individual enters it untrained and comes out at the other end, well prepared to be engulfed in the social machine of work, in which he or she produces goods and wealth assisted by advanced tools. This vision fails to put people first with all their measurable and immeasurable needs. It is, therefore, contrary to a prevailing and almost universal aspiration.

Third, the active knowledge that is needed for employability and sustained productivity is susceptible to being regulated by market demand, thus enhancing the contrast with the less general activity of public education, which trains people for social roles, even though certain roles may be considered unproductive. This difference also becomes visible in the gap between proprietary knowledge (a status to which active, expropriable knowledge aspires) and general, inert knowledge, which is of no interest to entrepreneurs since it fits the notion of knowledge as a public good.

Fourth, active knowledge aims at exclusivity. It is available to a limited and select number of people. The inherent consequence is alienation from the universal and indiscriminate calls for education for all, thus widening the gap between the “haves” and the “have nots”.

Fifth, active knowledge ignores that “inert” stock from which individuals spontaneously and unexpectedly pick up associations and ideas to develop a creative initiative or an innovation. What we call “intuition” has deep roots that cannot be programmed. It plods its way slowly, drawing from the complex experience of life. When it comes to problem-solving competencies – for which it develops solutions, algorithms, and recipes – knowledge leaves out the capacity to invent new problems, the true quality of innovative spirit.

A more radical sociological school starts from the adage that “knowledge is power” in order to reach the conclusion that education has invariably produced trained individuals according to the pattern imposed by superior authority. It claims that the economic paradigm of knowledge is nothing but a rehashed form of the old stratagem: economic power shapes individuals for its own purposes. An influential contemporary trend, while denouncing technology and science as allies of the dehumanizing and homogenizing structures of power, goes so far as to recommend that people smash the windows of productivity and paid work-oriented knowledge.

A less militant perspective is offered by the examination of the differences between objective knowledge and subjective values. A theorem or a technological procedure, a work of art or a personal opinion, belong to two different families. One is that of civilization, which includes all activities and goods having a universal vocation. There are no different ways of building aircraft, laying out roads, organizing hospitals, or making banks operational. Everything is there in the universal research network. Any statement produced by that network is provable and reproducible anywhere in the world. However, the same does not apply to values, which belong to various and numerous cultures. Cultures (always in the plural) comprise traditions, history, languages, and untranslatable beliefs. They lie at the other side of the spectrum considered by Arnold Toynbee. When we talk about globalization, we make references to civilization, i.e., to technology, science, economy, and infrastructures. At this level, the unprecedented flourishing of cultural variety parallels globalization. Cultures thrive through specificity and originality, unlike civilization that creates similar roles and professions all over the world.

Still, the quest for identity holds its ground in our modern world. It is linked to the aspiration for dignity, and it ranks high in the book of universal human rights and values, which go beyond all cultures. In economic literature, with the employment-wages-qualification triad at its core, there is no reference to dignity. Yet dignity plays a fundamental role in both work and learning processes. Work creates humankind and builds up his or her personality. A human being is what he or she produces.

In addition to self-identity pertaining to dignity and self-respect, there are two other elements that have been neglected by the economy-oriented approach. One is the quest for meaning, which does appear in the process of knowledge in the absence of value, and therefore culture. It adds to our linguistic symbols and conceptual elaborations through the use and assiduous frequentation of contexts, beyond the factual or formal enunciation. There is relevance in the story about the man working for a railway company who, after thirty years of successful activity, had only one wish: to be told why on earth he had to hit the train

wheels with a hammer at the station. Know-how never exhausts the meaning of work, always searching for whys. That question is also essential to learning.

“Schools of thought contesting the value of reason flourished, without noticing that the disputed areas and the banners of victory were nothing but extensions of the same reason too narrowly and arrogantly defined.”

The second element is ludic, also common to learning and work. *Homo ludens* enjoys playing games – competitions with rules. When one says that a young person finds satisfaction in learning and an older person is happy with his or her work, the sensation evoked is primarily a ludic one.

There are very many reasons to think of civilization and of cultures together, in “opposite inseparable terms”. Recent writings admit that mankind is passing from an or/or logic to an and/and logic. Learning and work are the most evident areas in which civilization and cultures intermingle.

The impact of this shift on the curriculum is considerable. Also, it increases the difficulty in reflecting the essential from a vast variety of cultures. With a mandatory and fixed curriculum, many pitched controversies are expected to emerge. The competition between the universal and the local, illustrated by Alan Bloom’s book, *The Closing of the American Mind* (1987) has been enlivening American society for many years. As to the individual curriculum, the problem becomes much simpler. We only have to ask ourselves what modules are recommended for individual choice in the process of lifelong learning.

There is also an overriding civic culture, which allows individuals to assimilate and to apply, meaningfully, all the concepts and practices of social life. It is regulated by the laws and mechanisms of the social contract it has itself generated. Democracy falls under this chapter. So do human rights, in close conjunction with duties and responsibilities. The mechanisms of governance, the policies of political parties and the games they play, the limits and the value of power, the conduct of elections and the exercise of suffrage, the relationships between state and nation, between the governmental and the non-governmental, between public and private goods – are all topics for modules designed to examine the same thing from different angles. Political theory should not be mistakenly taken for a theme of learning. Modules titled, “A Day in Parliament”, or “A Cabinet Meeting”, or “Debating the Budget”, or “Attending a Trial” could be ways of conducting actual or virtual experiments, with a greater impact than any theory-based lectures. An efficient method is that of young people simulating a political debate. A module could consist in debating a conflict at the United Nations. Many schools already use such work sessions with roles assigned to pupils.

Community culture aims at targets that are different from social cohesion. It deals with traditions, history, and beliefs specific to a single community, with the cultural binder of

various groups expressing their specificity and their own identity. It points to multicultural society and to respect cultural diversity. This is an extremely topical issue at a time when the cult of specific identity has been heated to incandescence resulting in conflicts that dot the world map. The acceptance of alterity is a salutary virtue that can be sown at the very heart of community culture.

Integrating philosophical culture appears to be a difficult task, and its language sometimes makes it inassimilable. However, if presented in friendly modules focusing on predominant trends – to which we unconsciously stick, much like Monsieur Jourdain's prose in the play by Molière – philosophical culture might offer the young person or the adult the satisfaction of organizing his or her own ideas in a coherent format. The post-Second World War generation experienced, one after the other, existentialism, structuralism, Neo-Kantianism, Heideggerianism, and postmodernism, with its illusion of the *demier cri*. It also visited cybernetic theory, systems theory, and the theory of chaos. Schools of thought contesting the value of reason flourished, without noticing that the disputed areas and the banners of victory were nothing but extensions of the same reason too narrowly and arrogantly defined. These schools have affected everybody in varying degrees, the same as old disputes can be identified in collective mentalities (see, for instance, the debate between the triumphant hedonism in today's consumer society and the vanishing stoicism).

An author classified the three phases of modernity as follows: (i) industry; (ii) globalization, and (iii) revival (expected in the new century). According to him, knowledge is uniform in the industrial age, segmented in the phase of globalization, and customized in the new era. The modular itinerary strives for this sequence. However, in order to create his or her own vision of the world, the individual needs the critical exercise of examining ideas.

Moral culture has many sources. Nobody can decide whether the guide for one's conduct and the dramatic distinction between good and evil is based on religion or on secular beliefs. Kant assimilated conscience to a divine imperative. There are still people who consider conscience as categorical and ultimate. Modern society reflects a deficit regarding this point. The amorality of science is questioned. Prevalent immorality is denounced. Old ethical codes are completed and enriched (*e.g.*, the work ethic); new ethics are suggested (the ecological ethic).

With respect to this last point, a new culture has asserted itself by introducing the values of respect and love for nature, care for resource conservation, preservation of the diversity of the species, and environmental concern. The strategies inspired by this culture, which has the support of young people, establish the responsibility of those living today for the future of the following generations.

Last but not least, we have to mention the culture of literary fiction and the creative or performing arts, described as aesthetic culture responding to eternal and profound human needs. It is a fundamental dimension, always present in the picture of the complete personality produced by individual learning and work in all their aspects. Many of the propensities of modern humanity find their driving force here. Science fiction cherishes the anticipatory spirit, and literary fiction guides us through the realm of the imaginary so that we may return to our own reality in a more relaxed state of mind.

The topics of culture lend themselves more than any other subjects to the free choice of the individual. He or she can cover a multitude of optional modules, which do not lead to definitive statements, but to possible and plausible ones, thus encouraging a permanently critical attitude.

Why is knowledge, in the positive and universal form of science and technology, so much contested by the advocates of cultural values and beliefs? Why are those cultural elements viewed with suspicion and often ignored by the proponents of positive knowledge? Because of what distortion or sophism engendered by a schizophrenic and separatist dualism can they not be accepted together as inseparable components of learning and work? Their common spiral invites a further effort to restore the wholeness of the mind and to reconcile the two hemispheres of the brain, which are naturally destined to work together.

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