



Homoeconomico-politicus, Scientific Consciousness, and the Defense of Fundamental Values in the Context of the Climate Change Crisis: The Challenge of Scientific Responsibility for the Future of Economic and Political Science

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Abstract

The general framework of this paper is to focus on the evolution of scientific consciousness and the dramatic technological developments it has generated, which have vital and highly consequential consequences for social organization on a global basis. The central fact about the current technological revolution is the enormous challenges it provides for political and economic decision-making. The political and economic choices are often merged in a symbiotic wave of challenges. In politics, we have understood the background and challenges that confront homopoliticus. These challenges are even more pronounced as challenges for homoeconomico-politicus. In short, homoeconomico-politicus is both an observer and a participator in the challenges of dramatic technological change. What ties these two concepts together is that they are fed by a form of scientific consciousness. Dramatic forces of change, now unleashed, literally require new paradigms of political and economic thinking to inform wise policy makers about sensible political and economic choices. Both economics and politics are dramatically interrelated and shaped by the philosophy of science known as Logical Positivism. The problem with this approach is that it demands a form of scientific objectivity that rigorously excludes the study of values in the science of politics and economics. But the broader level of scientific consciousness would virtually require that these disciplines adequately account for the value implications of their work.

These generalized comments may be an appropriate introduction to a deeper understanding of the impact of technological changes on the organization of political economy at all levels of social organization from the local to the global. One of the issues that we seek to underscore in this paper is a better understanding of the idea of economic consciousness. It would seem to be obvious that economic consciousness influences economic theory and practice. In this sense, economic consciousness would seek to have a connection to the idea

of political consciousness. The two are clearly intimately interrelated. In the field of political science, there is a well-developed theory of the power-oriented personality. When we connect the power-oriented personality to the personality focused on political economy, it may be appropriate to suggest the idea of a marriage of homopoliticus and homoeconomicus. This connection could be expressed in neologism: homoeconomico-politicus. It is the centrality of the idea of economic and political consciousness that merges these ideas in the form of an inclusive level of consciousness, which we wish to explore. If we accept the idea of homoeconomico-politicus level of consciousness, the next assumption would have to be that this form of human consciousness is obviously influenced by science and the interposition of value-based analysis. These few introductory comments are simply used to raise the question of the role of values in the evolution of the technological capacity in economics and politics of the human family.

1. Introduction

Modern technological innovation has had a dramatic effect on the boundaries of the study of politics and economics. In part, this is a consequence of the dramatic changes that technology has produced in terms of its effects on social process. Therefore, we live in a world that is in the midst of an accelerating technological revolution. The consequence of dramatic technological innovation and change quite literally imposes dramatic changes on the way social process works. The physicist Albert Einstein put the dilemma this way: "There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle." So dramatic are technological developments that they challenge the traditional grounding of human identity, spiritual aspiration, and transcendental consciousness. Today we live in a world that is radically transforming itself. First, we experience the radical transformations in communications and transportation technologies. Communication has been compressed between human beings so that information is instantly communicated across the planet and technological innovation in travel has radically compressed the distance of both time and space between human beings. In the context of major coercion and more, the development of modern armaments including thermonuclear weapons and delivery systems puts in the reach of human decision the basic question of whether humanity will be sufficiently shortsighted to destroy itself. In the areas of industrialization and mass production of goods and services, technological innovations are increasingly dependent on modern innovations and less dependent on human labor. This is an area where change requires a radical rethinking of the role of labor and social stability in human relations. Even more remarkable are the developments in the areas of artificial intelligence. Scientists predict that shortly within the grasp of modern science will be instruments of artificial intelligence vastly superior to those of the humans that created it. This may raise the difficult question of whether such artificial forms of intelligence may resist control by human agency. Other technological prospects include the radical new developments for the advancement of solar energy. Scientists have already determined that in the molecular structure of sand there are elements which, if isolated, could dramatically increase the collection, storage and distribution of solar energy. Since this is an inexhaustible supply of energy, it could have radial implications for political economy in the social process.

It is very apparent that the revolutionary changes in technology are a product of the massive expansion of scientific consciousness. To the extent that scientific consciousness will directly shape the contours of political economic inquiry, it is apparent that scientific consciousness will dramatically influence the consciousness of *homoeconomico-politicus*.

2. Science, Human Subjectivity, Consciousness and Modern Science

We would contend that values are implicated in virtually all levels of technological innovation. The problem with values in this context is that values are produced and understood by the same intellectual processes that generate technological innovation and change. In short, technological progress and the importance of values in understanding and providing normative guidance for such processes emerge existentially from the process of human consciousness. This is especially true in matters of politics and economics. The question is, what do we understand about human consciousness? For the scientists, human consciousness would simply be necessary for the development of scientific reason and scientific rationality. From the perspective of the culture of transcendental experience, human consciousness is the tool or lever for the development of spiritual conscious aspirations. In general, scientists tend to accept the idea that there does exist a form of consciousness which indirectly influences scientific reason and scientific achievements. However, scientists have had difficulty in understanding a possible connection between the study of the human brain and the study of human consciousness. The central problem is whether consciousness is a reality or an illusion. To some scientists the idea of consciousness is simply one of the great mysteries that confront scientific inquiry. To other scientists it is really a non-problem. Following this conclusion, many scientists believe that consciousness is insufficiently scientific to waste much time on it. At most, consciousness may simply be a byproduct of complex physical processes. Another problem is that in general, scientists tend to believe that consciousness is something that lies outside of the boundaries of normal science. An important contributing factor to the notion that consciousness is outside of science is the philosophy of science grounded in positivism. Positivism suggests that the concerns of science be completely objective and distinct from the contamination of human subjectivity and values. It insists on the principle that science has an exclusive preoccupation with the *is* and not with the *ought* implied in value analysis.

Modern physics has raised important questions, which implicate the process of consciousness; this further implicates the problem of values. In the 1920s, Werner Heisenberg, one of the founders of quantum physics, made a completely inexplicable discovery. He discovered that when observing subatomic phenomena, it was impossible to separate the observer from what was observed. The observer influenced the movement of subatomic particles. This means that the observer has a level of subjectivity that influences the object of observation. This is an uncomfortable conclusion for strict positivism.

Human subjectivity in the form of perspective* has been largely a field monopolized by the psychological sciences. It has been in a very important way also, a field dominated by

* The idea of perspective is an outcome of human subjectivity and human consciousness. Observers discern within the perspective of human subjectivity identifiable perspectives of identity, of value aspiration and of fundamental expectation.

religion.* Today this sharp division has been eroded as the field of quantum mechanics has disclosed properties and insights of micro-particles and waves. The experiments in quantum physics confirm results that are sometimes described as weird. The results do not make sense in the world of cause and effect as objectively observed. One of the insights of quantum physics is the role of the observer in shaping the behavior of the particles observed. This has raised the question that human consciousness, when focused on the particles, has an influence on how the particles behave. In short, observational consciousness appears to be a form of participatory interaction. It has been shown experimentally that the cells of the body and the DNA communicate through this subtle field of energy that is difficult to quantify or measure. More than that, it has been shown that human emotion has a direct influence on living DNA. These effects eliminate the interposition of distance between these objects. According to the physicist Amit Goswami, “when we understand us, our consciousness, we also understand the universe and separation disappears.” The scientific results from quantum physics experiments indicate that the human DNA has an effect on the particles that constitute the matter of the universe. It is also established that human emotion has an effect on DNA, which in turn affects the particles the world is made of. Additionally, the connection between emotion and DNA has effects which transcend space and time. Scientists now believe that there is, in space, a matrix of energy that connects any one thing with everything in the universe. This connected field accounts for the unexpected results of experiments. It is further believed that the DNA of the human body gives us access to the energy that connects with the universe. Emotion is the key for tapping into this field. The following is according to the famous quantum physicist Max Planck. He stated that, “as a man who has devoted his whole life to the most clear-headed science, to the study of matter, I can tell you as a result of my research about the atoms this much: There is no matter as such! All matter originates and exists only by virtue of a force which brings the particles of an atom to vibration and holds this most minute solar system of the atom together... We must assume behind this force the existence of a conscious and intelligent Mind. This Mind is the matrix of all matter.”¹

The central insight of modern physics is that we live in a participatory universe. Human consciousness, it is believed, participates in this universe via human perspectives and emotions and represents a profound insight and even deeper challenge to the age-old question of the being and becoming of humanity. This is a critical challenge for the consciousness of *homoeconomico-politicus*. This participatory universe generates the future of multiple possibilities which gives strength and responsibility to the idea of creative orientation, another important challenge for *homoeconomico-politicus*. These possibilities may emerge as real and would therefore appear to be influenced by the emotion filter, through consciousness and observation. In short, there is more to the idea of focus of attention. A focus of attention generates the concern of human consciousness which may create a possible future reality. Scientists still dispute the precise meaning of the nature of possibilities and overlapping possibilities. There are three important interpretations. First, the Copenhagen Perspective. Theorists here focus on experiments which indicate that a person observing an electron moving through a slit in a barrier suggest that observation itself is what turns quantum

* For a deeper understanding of human subjectivity, see Colapietro, V. M. (1989). *Peirce's approach to the self: A semiotic perspective on human subjectivity*. Albany: State University of New York Press.

possibilities into reality. Second, there is the Many Worlds interpretation. This interpretation is similar to the Copenhagen Perspective but suggests that the possibilities are infinite and all of them exist simultaneously. However, in the “many worlds” view each possibility happens in its own space and cannot be seen by others. These unique spaces are called ‘alternate universes’. Finally, there is the Penrose interpretation. Here, Penrose maintains the belief of many possibilities existing at the quantum level. However, his theory is distinctive as to what it actually is that “locks” into a particular possibility that becomes our reality. Penrose recognizes that each possibility has its own gravitational field. It takes energy to maintain this field and the more energy a probability requires the more unstable it is. The consequence is that without enough energy to sustain all possibilities they collapse into a single state which represents our reality. The conclusions that are drawn from the insights of quantum possibilities are that emotion is a part of consciousness, and human subjective perspective is the central factor in the choice of reality.

“Neither politics nor economics as academic disciplines can be value-free. Indeed, ignoring values would seem to be an exercise in academic irresponsibility.”

From this point of view, it is the language of human emotion that speaks to the quantum forces of the universe and to Planck’s intelligent matrix. The polar extremities of feeling and emotion, which may feed into human consciousness, are the extremes of *love* and *hate*. Thus, the greatest challenge presented in the world of quantum physics and human consciousness has a similarity to the challenges posed by great religious and mystical insights. For example, central to love is the idea of compassion, empathy and positive sentiment which we describe later as “affection”. Positive sentiment in the form of compassion is according to the Buddhist tradition the feeling of “what connects all things”. And compassion in this tradition is both a force of creation and an experience. In short, science and mystical experience seem to converge on the importance of positive sentiment for personal growth and transformation with large-scale existential implications. In short, it is love, compassion, empathy, and positive sentiment that we must embody in our lives and feelings as the way we choose to experience the world. On the other hand, there is the inevitability of choice in the orientation of emotion and feeling. Such choices may well reflect the framework of the pole of hate which is reflected in the existential fears in human experience in terms of abandonment, low self-worth, and lack of trust. The negative sentiment would be the feature for the creation of a negative utopia and the ultimate expression in reality of a negative utopia would be the practices and policies for the extermination of human aggregates. The fundamental insight of modern physics which implies that we live in a participatory universe, has large scale implications for the study of world politics and global economics. In short, it suggests that neither politics nor economics as academic disciplines can be value-free. Indeed, ignoring values would seem to be an exercise in academic irresponsibility. The perspectives of

economic and political theorists are infused with value choices and in particular the choice orientation of a form of positive sentiment and a form of negative sentiment that may shape political and economic inquiry. Bringing human subjectivity into the focus of inquiry is a basic historical problem for scientific objectivity. It should be noted that when we account for human subjectivity, we must also account for human values in the evolution of society.*

3. Human Subjectivity – Emotion and Consciousness as Drivers of Human Values: the Role of Positive and Negative Sentiment in Social Process

It may also be that, in general, societies take for granted the importance of emotion and sentiment in the construction of future generations. Here, intellectually, the idea of affection or positive emotional sentiment may need to be more explicitly recognized as an important cultural and policy preference. In short, emotion and sentiment permeate all human behavior. Emotion and sentiment may be the driving force for finding out what is right concerning the human prospect and what is required to avoid what was wrong with it. Modern scholarship has drawn attention to the importance of the emotions encapsulated in positive and negative emotion.† We provide a provisional overview of positive and negative sentiment. Indeed what we suggest is that genocide is impossible when culture, law, and politics give due deference to the principles of positive sentiment or affects and heightens the prospect of genocide and atrocity when the negative symbols of emotionalized hate are dominant. Perhaps the most important insight here is that positive sentiment is a critical foundation for the culture of human rights. Negative sentiment is critical for the denial of cultural human rights.

Figure 1 is an illustration of modern psychological science connecting emotion to the ideas of positive and negative sentiment. The diagram does not quite explain that positive sentiment as it affects us is an identifiable social process.

To the extent that we are living in a participatory universe, positive and negative emotions require the guidance of basic values. Below, we set out a generalized model of positive and negative sentiment that we can assume permeates the culture of science and any other discipline. Negative sentiment is a psychosocial process of communitywide salience. Below we reproduce a model of the structure of negative sentiment as a social process.

The first line of inquiry must be the ubiquity with which human beings generate the culturally acknowledged and received symbols of identity.^{2,3} We generally consider this to be a natural process. The “I” is born into a family, or analogous micro-social unit, and soon the identification of the “I” broadens to include the “we”. But how inclusive or exclusive is

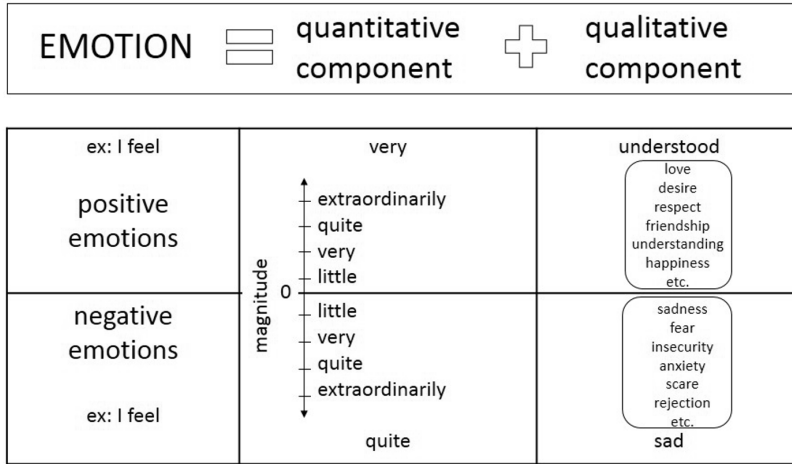
* Bringing human subjectivity to the center of an appropriate focus of inquiry for *homoeconomico-politicus* raises the critical question of the absence of objective measurable indicators of shared human subjectivity and shared professional consciousness. This is an issue that has generated an important interest in the measurement of subjectivity. A founding presence in this initiative was William Stephenson. Stephenson was an Englishman. He obtained a PhD in both physics and psychology. He is credited with developing a credible scientific method for the measurement of shared human subjectivity. His method was called the Q Methodology. The Q methodology is described as “a methodology for dealing with intra-individual data. Its relations to other methods of multivariate data analysis are described and, in particular, the implications of factor analysis for it... the practical applications to different fields, e.g. type psychology, social psychology, projective tests, etc.” See Stephenson, *The study of behavior: Q-technique and its methodology* (1953).

See also Brown, “Q Methodology and Qualitative Research” (1996) Brown, “A Primer on Q Methodology” (1993), <http://www.operantsubjectivity.org/>

† For further reading see McCraty, R., Rein, G., & Atkinson, M. (1995). The Physiological and Psychological Effects of Compassion and Anger. *Journal of the Advancement of Medicine*, 8(2), 87-103.

the “we”? We realize that the expansion of the “we” is not unlimited and the boundaries of the “we” invariably demarcate those groups that constitute the “non-we” that is to say the group or class of “non-self others”. This is an ordinary process that happens in all human communities.

Figure 1: Modern Psychological Science Connecting Emotion to the Ideas of Positive and Negative Sentiment



The social process also generates the identifiable markers of a social process of positive sentiment. Part of the positive sentiment maximizes within the personality of the individual self system the salience of affection, empathy and solidarity with humanity as a whole. As such, it is a process that is very fundamental to social organization that seeks to universalize the dignity of man. As such, a social process of positive sentiment is an antidote to anti-Semitism, to racial discrimination, to prejudice, to group domination and to group extinction. Since the social process of positive sentiment like negative sentiment is a form of emotion and a driver of human behavior, it is an important addendum to understanding the social processes that generate forms of social pathology such as anti-Semitism and Holocaust like the outcomes of behavior. The tables below outline the structures and the processes of positive sentiment of affect and negative sentiment of hate. It is important for us to recognize that every technological innovator comes to his craft with human consciousness influenced by human subjectivity and emotion; the same would apply to an economic scientist and a political scientist.* If we accept the guidance of Socrates, namely “know thyself”, then we would have to admit that all scientists and the rest of humanity come to their vocation with a context of emotions, some positive and some negative.

* For further reading on measurements of subjectivity see Stephenson, W. (1982). Q-Methodology, Interbehavioral Psychology, and Quantum Theory. The Psychological Record, 32, 235-248.

Also see Goode, W. J. (1964). The family. Englewood Cliffs, NJ: Prentice-Hall.

*Table 1: The Social Process of Positive Sentiment (Affection/Compassion):
The Relevant Analytical Markers*

<p>Formal Myth System</p>	<p>The formal myth of love and affection may be concealed (or may otherwise appear informal), but it is nonetheless a real myth reinforcing the symbology of togetherness of the target of love and affection and those within the “in-group” of the community context.</p>
<p>Symbol-Myth System</p>	<p>The symbol-myth system of solidarity and affection is a crucial component of the perspectives of the community or its elite, or its traditional and opinion leaders.</p>
<p>Subjectivities/ Perspectives</p>	<p>These subjectivities or perspectives of positive sentiment are outcomes of complex behavior patterns, which are characterized by affective sentiments and strong portrayals of the target of affect as appropriate for the displacement of positive inference and meaning in terms of shared affect.</p>
<p>Emergent Patterns</p>	<p>Indications of emergent patterns that consolidate the collaborative behaviors of the “we” or the “in-group,” vesting that group with the idealization of appropriate community acceptance as positive sentiment and love and the foundation for the licit family form which is also culturally preferred and valued.</p>
<p>Propaganda</p>	<p>There are further emergent, often graduated, behaviors in the primary group, which consolidate and sustain the image of community solidarity through patterns of collaboratively conditioned behavior conditioned by positive sentiment. These include the communication of discrete signs, symbols, operational codes, myths, narratives, and reified stereotypes, which symbolize the institutionalization of the ideals of love and a positive sense of shared affect in the community.</p>
<p>Denotation and Isolation</p>	<p>The process of affection also involves the manipulation of signs, symbols, codes, myths, narratives and stories between members of the “in-group” and between members of the “in” or “out-group.” Positive sentiment may be used in a way that also isolates those not included in this universe of affect and solidarity.</p>

<p>Alliance and Allegiance</p>	<p>The system of generalized affective behaviors thus involves distinctive, and often, discrete patterns of communication of relevant signs and symbols of the “in-group” loyalty and solidarity, as well as signs and symbols that identify, disparage, or threaten members of the “out-group.” The patterns of communication are sustained or enhanced by collaborative operations in the exercise of public or private power. This may mean repression and exploitation for some and the power to exploit the positive sentiment for base motives on the other. Thus, solidarity and patriotism may be promoted in such a way that it underlines by implication the vulnerability and validity of victimizing others such as the social pariahs, outcasts, those who are indifferent to the situation of all others.</p>
<p>Nurtured Pre-dispositions</p>	<p>Human beings conditioned to generate positive sentiment (affection) as an ordinary aspect of personal identity are obviously desired from a human rights perspective. The predispositions of the personality included to positive sentiment invariably create environments in which micro-social relations reflect the normative priority given to the reproduction of positive sentiment or affect. Thus, innocent child rearing and nurturing in which love and affection are a practice generates personality types better suited to reproduce personality types partial to democratic political culture. On the other hand, a person may be raised in a climate of negative sentiment where repression, deprivation and fear wittingly or unwittingly reproduce insecurity and intolerance of others in the self-system. Thus, the practices of negative sentiment in the family or affection units may be a dangerous social inheritance. When such personality types mature, they exhibit the partiality to anti-democratic perspectives such as authoritarianism and domination. They reproduce the cycle of negative sentiment.</p>
<p>Social Reinforcement through Positive Feedback Mechanisms</p>	<p>Reproducing the cycle of positive sentiment is critical to the culture of human rights and its sustainability on a global basis. Thus, the micro-social units (affection units) ostensibly specialized to positive sentiment or love and affection are critical for a healthy and normal society that does not institutionalize compulsive, neurotic or psychopathological outcomes. In short, a psycho-political culture of positive sentiment reproduces in effect the social and political foundations of the culture of human rights. Perhaps even more than that, it is giving to those committed to the love of God, the religious redemption of the love ideal through human rights.</p>

*Table 2: The Social Process of Negative Sentiment (Hate/Greed):
The Relevant Analytical Markers*

Formal Myth System	The formal myth of love and affection may be concealed (or otherwise appear informal), but it nonetheless obscures a real myth reinforcing the symbology of otherness of the target “out-group.”
Symbol-Myth System	A symbol-myth system of prejudice, fear and hate is a crucial component of the perspectives of the dominant group or its elite and opinion leaders.
Subjectivities/ Perspectives	These subjectivities or perspectives are outcomes of complex behavior patterns, which are characterized by negative sentiments and negative portrayals of the “other,” such that the symbolic “other” is reinforced as a target for negative inference and meaning.
Emergent Patterns	There are emergent patterns that consolidate the collaborative behaviors of the “we” or the “in-group,” vesting that group with a sense of superiority, or “herrenvolkism,” paternalism, and further, seeking to enhance the value position of that group at the expense of the “out-group”.
Propaganda	There is further emergent, often graduated, behaviors in the dominant group, which consolidate and sustain the image of the victim group through patterns of conflict-conditioned behavior. These include the communication of discrete signs, symbols, operational codes, myths, narratives, and reified stereotypes on such issues as racism, anti-Semitism and more.
Denotation and Isolation	The process of group deprivations also involves the manipulation of signs, symbols, codes, myths, narratives and stories between members of the “in-group” and also between members of the “in” and “out-group”.
Alliance and Allegiance	The system of generalized group deprivations thus involves distinctive, and often, discrete patterns of communication of relevant signs and symbols of the “in-group” loyalty and solidarity, as well as signs and symbols that identify, disparage, or threaten members of the “out-group”. The patterns of communication are sustained or enhanced by collaborative operations in the exercise of public or private power that moves beyond discrimination, anti-Semitism, prejudice or hate to the possibilities of wholesale extinction of cultures and masses of human beings.

<p>Nurtured Predispositions</p>	<p>Human beings conditioned to generate negative sentiment as a normal aspect of the predisposition of personality invariably create environments in which micro-social relations reflect the normative priority given to the reproduction of negative sentiment. Thus, innocent child rearing and nurturing practices although covered in an ostensible mantle of love may in fact impact on personality development so that the person that emerges is ill-suited to a democratic political culture. On the contrary, the person may be raised in a climate in which repression and fear unwittingly reproduce insecurity and intolerance of others. As such personality types mature, they exhibit partiality to authoritarianism and domination. They reproduce the cycle of negative sentiment. Therefore, the micro-social units ostensibly specialized to positive sentiment or love and affection may actually be specialized to do the opposite. In short, such a psychopathological political culture may be reproducing the “Anti-Christ of human rights.”</p>
<p>Halting the Cycle of Social Reinforcement by Derailing Negative Feedback Mechanisms</p>	<p>Breaking the cycle of negative sentiment is critical to the culture of human rights and its sustainability on a global basis.</p>

4. Technology, Scientific Consciousness and Social Responsibilities

It is widely acknowledged today that science, technology and innovation are some of the most powerful forces directing the future of our global social process. It is also recognized that technology represents remarkable advances as well as existential threats to humanity.⁴ Some aspects of technology are, in fact, fairly strictly controlled politically. These areas include nuclear technology, pharmaceuticals, agricultural chemicals, and food additives. Other areas of technological development would appear to be somewhat more anarchic. These areas include the computerization of financial transactions, automation, biological research, and telecommunication systems. The speed of technological development and distribution appears now to be way ahead of the capacity of governance to adapt to the changes that technology generates. This results in social stress, uneven social development, social upheaval, displacement and mass-migration and vast disruptions of stability in social processes globally. Leading thinkers in international governmental institutions and global scientific institutions continue to stress the critical importance of the issue of values in scientific research and education and are of great importance in the formulation of wise public policy, as evident from their presentations and talks during the recent meeting at CERN in Geneva in November 2015 Michel Jarraud recently stressed the issue of social responsibility for the

management of scientific activity.* Ivo Šlaus, in a similar vein, stresses the acceptance of a collective and individual duty from a global point of view for a commitment to the realization of sustainable development objectives. Raymond Torres stresses the question of technology's imprint on global income inequality and insecurity. He also insists upon a socially responsible form for the governance of technological innovation. Marie-Paule Kieny from WHO also insists on a recognition of a mutual sense of social responsibility addressing the tension between the promotion of global health and the commercial objectives of pharmaceutical interests. Alexander Likhotal warns of the corrosive aspect of money-power on technology. Herwig Schopper underlines the special responsibility of scientists and intellectuals toward global society. Garry Jacobs draws particular attention to the problem of the perspectives of technological innovators. His fear is that their perspectives may be unduly influenced by selfish motives such as careerism, competition for grants and intellectual prominence. He insists on a refinement of scientific values in the public interest. Martin Lees is another important world leader who draws attention to the difficult problem of political responsibility versus intellectual and scientific responsibility. Christophe Rossel stresses the importance of classical scientific values and their ethical guidelines. He insists that regular assessments of the social and economic impact of technology are an urgent necessity. Momir Đurović draws attention to the problem that technological innovation has an incipient tendency to determinism. This means that human beings do not control technology; technology controls human beings. He too stresses the importance of strengthening mechanisms to improve the social responsibility factor. What is implicit in these important views is that technological innovation and development is a critical driver of paradigm change in the context of appropriately developing the theoretical frameworks to better understand, to better control and regulate the scope and character of revolutionary technological changes. It is apparent that there is a critical link between the issue of social responsibility and consciousness and the critical relevance of a deeper and more comprehensive understanding of the role of values in scientific consciousness, political consciousness, and in general, the consciousness of humanity.

This summary of the perspectives that stress scientific responsibility, the centrality of ethics and morality and values is, of course, the critical challenge of understanding the interrelationship of consciousness, technology, and human values. Alexander Likhotal puts this challenge in terms of a level of practicality when he states the following:

“Political leaders, in particular, badly need to be exposed to scientific vision. The mind, once stretched by a new idea, never reverts to its original dimensions. Unfortunately, we have to recognize that today’s governments are ill equipped to understand science, sophisticated technological challenges, or the opportunities facing the world. New instruments are needed to ensure that science and technology are adequately applied to address the wide range of increasingly urgent global problems—and not just to make our smartphone batteries last longer. This will require a rapid transition to a different model of development; one

* See Science, Technology, Innovation and Social Responsibility [Abstract]. (2016). WAAS Newsletter, Winter 2016.

*which not only takes into account the interest of short-term growth, but provides opportunities for sustainable and inclusive development.”**

The discussion of consciousness and values in scientific culture has always been an uneasy business. From a scientific point of view, the proper scientific culture is to be value-free. If the discourse of science is permeated with values, it is permeated with human subjectivity and not scientific objectivity. On the other hand, we know that in human society the important stakes about community organization, endurance, and promise seem to be tied up with values in some form or the other. The traditional limit on the use of values from a scientific point of view remains a problem for the subjectivity of value-toned discourse. This aspect of scientific culture has highly influenced modern political and economic science. Let me seek to clarify this. Values in the context of intellectual culture are discussed in two distinct ways. First, values are used descriptively. In this sense, the scientific observer is merely observing the value-conditioned behavior of social or political participants. What does the observer see? He sees individual human beings acting in a community, energized to pursue the things that they desire or value. In this sense, viewed from an anthropological point of view, what we call things that are desired or valued might, in a basic sense, be the human needs that the individual seeks to secure in the social context of his or her life. This is simply a descriptive inquiry into what the individual wants, how the individual goes about getting what he wants, and what he does with the desired thing that he has gotten. This will give us a description of the system of community or public order as it is. This descriptive sense of human values is well illustrated by the psychologist Abraham Maslow in his hierarchy of human needs:⁵

1. *Physiological – hunger, thirst, bodily comforts, warmth*
2. *Safety/Security – out of danger, order, law, stability*
3. *Belongingness and love – affiliate with others, be accepted*
4. *Esteem – to achieve, be competent, gain approval and recognition*
5. *Self-Actualization – realizing personal potential, self-fulfillment, seeking personal growth and peak experiences*

Economists and Political scientists often use categories similar to Maslow’s without recognizing that they are describing needs/values of actual human beings in social processes.

There is another sense in which the term ‘values’ is used. In this sense, the term is vested with normative importance. In other words, the question is not how values are produced and distributed but how they *ought* to be produced and distributed. This, therefore, is not a descriptive exercise; it is an exercise of normative judgment. In the case of values used as a description of community order as it is, we are dealing with propositions that can be proved or disproved by observation, creating a hypothesis about what is observed. Further observation may prove or disprove the hypothesis. This is an empirical inquiry. When values are used in a normative sense, we are really evaluating the goodness or badness of their production and distribution. The determination of the normative priority or the preference given to a value statement reflecting the “ought” will have to be established by some other criterion of validation. That criterion, at least in the context of moral philosophy, is based on

* Presentation at the Conference on Science, Technology, Innovation and Social Responsibility held on November 11, 2015 at CERN, Geneva.

the idea that a statement about a normative preference or “ought” can be validated by reasons external to the statement-maker. In short, there are objective, justifiable reasons that may be formulated to determine the currency, or lack of it, of a moral or value proposition. We shall be using the term ‘value’ in both a descriptive and a normative sense, but we will attempt to secure a sufficient clarity of exposition that while we discuss them as interrelated matters, we can keep them sufficiently distinct in order to establish different insights into the problems we are discussing about society.

5. Human Needs and Values in the Anthropological Sciences

The anthropological literature has given us a key to understanding life in a very elementary community. Life revolves around human beings energized to satisfy human needs. Anthropologists also identify the structures that emerge from society which are specialized in whatever degree of efficacy to facilitate securing those needs. When we map needs onto institutions, we emerge with a social process that is based on the interaction of energies directed at securing needs through institutions. These institutions direct human energies, in some degree, to the satisfaction of those needs. We can now begin to identify basic human needs as the goods, services, honors, and gratifications that people in society desire or need. Moreover, we can classify these desires/needs in terms of the basic values that the individual social participant acts to secure for himself and those dependent on him. Thus, we may emerge with a model of social process in which human beings pursue values through institutions based on resources. Now, this is a purely descriptive inquiry, but it is possible to observe that the needs/values and the institutions specialized to secure them are, generally speaking, identifiable. What are these values and what are the institutions specialized to secure them in any social process?

Table 3: The Human Perspective and Consciousness in the Evolution and Interdetermination of Values in the Human Social Process

Values	Institutions	Situations	Outcomes
Power	Governance-Political Parties	Arena	Decision
Enlightenment	Universities, WAAS	Forum	Knowledge
Wealth	Corporations	Market	Transaction
Well-Being	Hospitals, Clinics	Habitat	Vitality
Skill	Labor Unions, Professional Organization	Shop	Performance
Affection	Micro-social Units (Family) Macro-social Units (Loyalty)	Circle	Cordiality, Positive Sentiment, Patriotism
Respect	Social Class	Stage	Prestige
Rectitude	Churches, Temples	Court	Rightness
Aesthetics	Museums, Monuments, Culture	Creative Orientation	Symbols of Cultural Beauty and Aspiration

In this representation, values and institutions are represented descriptively in order to describe the system of community order as it is. It should, however, be understood that the social process of the community is a dynamic process in which there is an energy flow between the participators, the values, the institutions, and the results. Some of the results are generative of conflict. Other results are generative of the success of institutions functioning optimally. What is important is that social process is a generator of problems, and these problems are about the acquisition and distribution of values. This means that the dynamism of society requires a decision process that is frequently challenged to produce a solution to the problems of value conflict, value deprivation, or value over-indulgence. Thus, the community response to the problems that values pose for community order invariably must implicate a normative dimension about the optimal allocation of values in society. Indeed, some political scientists describe political science as concerned with the authoritative allocation of values in society. The intimate link between the politics of power and the political economy of wealth is this: power may serve as a base of power to get more power. It may serve as a base to get more of all the other values extant in social process. Even more importantly, every value may serve as a base of power to get and keep power. Wealth may serve as a base of power to acquire power and keep it. It may serve as a base to get more wealth. It may serve as a base to get a lion's share of all the values extant in social process. Thus, *homoeconomico-politicus* are an intimate association influencing the production and distribution of value needs in social process.

In reviewing the map of values and institutions of social process, it is important to keep in mind that it is the human perspective that gives meaning and life to the values and institutions in society. The human perspective comes with the perspective of identity, ego-demands, and the value ideals of expectation. These perspectives are driven by deep drives for self-actualization, self-realization, and psycho-social fulfillment. In this sense, the private motives of personality, even when displaced on public objects and rationalized in the public interests, still represent an underlying force that moves the personality in all social relations. This underlying force may be the force of self-affirmation for self-determination and is the most foundational energizer of the demand for human rights and dignity. The relationship between personality and value achievement may itself generate a sense of inner-fulfillment, which, in turn, becomes the driver of still greater levels of value creation and achievement.

6. Consciousness in the Identification and Allocation of Values in Society

The problem of the allocation of values implicates the idea that there may be different standards which justify one form of allocation over another. Historically, at least in law, there has been an assumption that legal interventions are meant to discriminate between the claims for values that are just and those that are unjust. It is this challenge that has given rise to the great traditions of jurisprudence and, most importantly, the jurisprudence of natural law. Natural law, however, could only generate procedures, not substantive rules, to facilitate the use of right reason in the resolution of value conflicts. Two of the most enduring of these natural law-based rules have survived and are essentially matters of procedural justice: *audi alteram partem* [the obligation to hear both sides] and *nemo iudex in sua causa* [no one

should be a judge in his own cause]. However, we had to await the aftermath of the tragedy of the Second World War before we got a kind of official code of natural law in the form of the Universal Declaration of Human Rights. Although couched in the form of rights, the Declaration may be reduced to nine fundamental value-needs categories. The adoption of a code of moral priority, intended to bind all participants in the international system, limited the speculation about the role of values in the social process. Although most intellectual and scholastic speculation stresses the notion that values are somewhat opaque, difficult to distill, and even more difficult to clarify, the adoption of the United Nations Charter has served as a political impetus for the development and clarification of values. As a starting point, therefore, we may reduce the Charter [a legally binding instrument of global salience] into several comprehensible and clearly articulated keynote precepts. We list them as follows:

7. Global Values, the UN Charter: the Normative Value Guidance for Science and Society

1. The Charter's authority is rooted in the perspectives of all members of the global community, i.e. the peoples.* This is indicated by the words, '[w]e the peoples of the United Nations.' Thus, the authority for the international rule of law, and its power to review and supervise important global matters, is an authority not rooted in abstractions like 'sovereignty,' 'elite,' or 'ruling class' but in the actual perspectives of the people of the world community. This means that the peoples' goals, expressed through appropriate forum (including the United Nations, governments and public opinion), are critical indicators of the principle of international authority and the dictates of public conscience.
2. The Charter embraces the high purpose of saving succeeding generations from the scourge of war. When this precept is seen in the light of organized crime syndicates' involvement in the illicit shipment of arms, the possibility that they might have access to nuclear weapons technologies, and chemical and biological weapons, the reference to 'war' in this precept must be construed to enhance the principle of international security for all in the broadest sense.
3. The Charter references the 'dignity and worth of the human person'. The eradication of millions of human beings with a single nuclear weapon or policies or practices of ethnic cleansing, genocide and mass murder hardly values the dignity or worth of the human person. What is of cardinal legal, political, and moral import is the idea that international law based on the law of the charter be interpreted to enhance the dignity and worth of all peoples and individuals, rather than be complicit in the destruction of the core values of human dignity.
4. The Preamble is emphatically anti-imperialist. It holds that the equal rights of all nations must be respected. Principles such as non-intervention, respect for sovereignty, including political- independence and territorial integrity are also issues that remain under constant threat of penetration by alienated terrorists or organized crime cartels.

* For a full copy of the Charter see Charter of the United Nations | United Nations. (1945). <http://www.un.org/en/charter-united-nations/>

5. The Preamble refers to the obligation to respect international law (this effectually means the rule of law) based not only on treaty commitments but also on 'other sources of international law'. These other sources of law include values, which complement efforts to promote ethical precepts built into expectations of the universal ideals of morality.
6. The Preamble contains a deeply rooted expectation of progress, improved standards of living, and enhanced domains of freedom and equality for all human beings on the planet.

Based on the keynote precepts in the UN Charter, the world community also adopted an International Bill of Rights. The central challenge to a scholastic understanding of the International Bill of Rights is the need to clarify and distill its basic, underlying values. It may now be with confidence stated that we can distill at least nine functional values that underlie the entire international bill of rights. In a general sense, these rights, when considered collectively, represent the integrated, supreme universal value of human dignity. The central challenge then, is that those charged with decision-making responsibility must prescribe and apply a multitude of values in concrete instances and hope that their choices contribute to the enhancement of human dignity and do not, in fact, disparage it. At an abstract philosophical level, distinguished philosophers such as Sir Isaiah Berlin have maintained that it is futile to attempt to integrate these values with the abstract principle of human dignity because fundamentally, these values are incommensurable. Not everyone agrees with this. Specialists in decision and policy acknowledge that human dignity based on universal respect represents a cluster of complex values and value-processes. Therefore, the challenge requires that ostensibly conflicting values be subject to a deeper level of contextualized social insight and a complete sensitivity to inter-disciplinary knowledge, procedures, and insights. Thus, decisions in these contexts are challenged with the task of broader methods of cognition and a better understanding of abstract formulations of value judgments. Disciplined intellectual procedures have been developed to provide better guidance in particular instances of choice to approximate the application and integration of values in terms of the human dignity postulate. Does the ethic of universal respect and human dignity demand absolute, universal compliance at the expense of other universally accepted values? Ensuring that the values of respect, democratic entitlement, and humanitarian law standards are honored requires fine-tuned analysis and great subtlety in the structure and process of decisional interventions. Rules of construction and 'interpretation' are painfully worked out, which hold, for example, that even if a peremptory principle (*in scogens*) of international law embodies an obligation *erga omnes*. It should be evaluated, appraised, and construed to enhance rather than disparage similar rights, which may also have to be accommodated. The currency behind the universal ethic of essential dignity and respect is that it provides practical decision-makers with goals, objectives, and working standards that permit the transformation of law and practice into a greater and more explicit approximation of the basic goals and standards built into the UN Charter system itself. This prescribes a public order committed to universal peace and dignity for the people of the entire earth-space community.

The most important thing to keep in mind here is that from a global perspective, politics and economics are intimately connected to the critical questions on the nature of global

governance. In short, they are critical to an understanding of the allocation of basic value needs in the planetary social process as it is and the challenges concerning the allocation of values for an improvement of the human prospect. This requires a challenge to scientific consciousness as well as a challenge to the consciousness of *homoeconomico-politicus*.

“Widespread human dignity flourishes when the dignity of the individual flourishes and reproduces values of exponential importance for the common interest of all.”

7.1. Consciousness, Values and Public Order

It is useful to approach the questions of value in terms of the nature of the public order that the rule of law system seeks to promote and defend. The system of public order secures the complex values that it is committed to defend by making an essential distinction between the minimum-order aspects and the optimum-order aspects of the system of public order.

7.2. Consciousness, Values and the Minimum Order

The problem of scientific responsibility, values and the prospect of at least realizing a system of minimum order in the global governance of humanity now represents a critical challenge for scientific consciousness. We may understand the relationship between community, minimum order, and values by imagining a society without an expectation that agreements and exchanges made in good faith and according to law will be honored; that wrongs (delicts) inflicted upon innocent parties will be compensated; that basic interests and expectations of entitlement [as in fundamental norms of right and wrong] shall be sanctioned by a collective community response; or that basic structures of governance and administration will respect the rules of natural justice such as *nemo iudex in sua causa* or *audi alteram partem*, and will in general constrain the abuse of power and thus the prospect of caprice and arbitrariness in governance. The necessity of minimum order in a comparative, cross-cultural, historic reality is that human beings interact within and without community lines. In doing so, they commit wrongs intentionally or unintentionally, they require some security over their possessions and entitlements, and their systems of governance aspire invariably to constrain the impulse for abusing power. These are the minimum values of social coexistence. It is in this sense that law as minimum order confronts the idea of justice and potentiality. It is commonly thought that minimum order is a critical, but not absolute, condition of a more just, more decent, more optimistic human prospect. The rule of law precept is uncontroversial in the sense of minimum order and its ‘boundaries’. Peace, security, and minimal standards of human rights are reflections of these values in international, constitutional, and municipal law. Fundamentally, the quest for the maintenance of a minimum order in society would appear to be an essential condition for the individual or aggregate of individuals to evolve toward a social process that maximizes value production and distribution. It is possible to see in this an evolutionary idea of progressive change relating to the production and distribution, optimally for all social participants. It is imperative that in the education of scientists and technology

innovators, their sense of social responsibility is at least minimally influenced by the global values of a minimum sustainable system of world order.

7.3. Consciousness, Values and the Optimum Order

This challenge to the public order raises the question of the production and the distribution of values beyond the minimum for social coexistence. This is an insight that is more challenging to the question of scientific responsibility and the values that ought to guide it. Clearly, a great deal of science will have an imprint that goes beyond minimum order and will be let loose in the domain of optimal possibilities and prospects. Here, it is critically important that value clarification be a component of the definition of scientific social responsibility. This is the challenge of the unequal distribution of opportunities or results. Human beings exist not only spatially, but also in terms of the duration of time and events. There is hopefully a tomorrow, a next week, next month, next year, and next century. Human beings, such as scientists, are also transformative agents who make things happen, and in doing so underline the question embedded in the nature of law and community that we can change things for better or worse, for the common good or the special interests, for the sense of expanding human dignity or the prospect of a negative utopia, the rule of human indignity. This is a critical challenge for scientific consciousness. The central challenge for values posed by the optimum order precept is the problem of the procedures and methods for producing values as well as the procedures, methods and normative ideas about the fair distribution of the values that are produced in society. At the back of the concern for human values is the belief in human capacity for the essential, energized generation of value at every level of the social process and the human resource as a producer of ideas, insights, and values of exponential salience. At the back of the human dignity idea is the belief that widespread human dignity flourishes when the dignity of the individual flourishes and reproduces values of exponential importance for the common interest of all. Fellows of the World Academy of Art and Science have suggested that the nine values embedded in the International Bill of Rights [power, wealth, respect, rectitude, enlightenment, skill, affection, health and wellbeing, and aesthetics] are the key to the notion of a public order of human dignity. They postulate that the maximal production and distribution of these values on a universal basis is the key to improving the human prospect and approximating a public order of human dignity. This means that the prescription, application, and enforcement of the fundamental values behind human rights remain a major professional challenge to *homoeconomico-politicus* and its focus on the importance of global governance remains afar off the global processes of governance charged with the defense of global public order. We may conclude that value needs are a condition and a consequence of focusing and directing the energy of the human perspective into concrete operations that establish institutions concentrated and specialized to value realization. In this sense, values and needs are incentives that generate a self-directed force, which ultimately evolves into institutions of effective power crucial to the allocation of values. It is possible to see these generalizations in the evolution of the sovereign authority of the nation-state and its own evolution from state absolutism to sovereignty routed in people's expectations. Another insight of this model is found in the notion that the power process itself is energized by human expectations, especially expectations of demand. Without demanding or claiming an

aspect of social power, society would be static. Thus, we see in the power process, the social activist. In the United States, Rosa Parks resented segregation in public transportation, so she staked a claim to repudiate racial discrimination in public transportation. Gandhi was thrown off a train in South Africa because he was not white. He initiated a claim to challenge the power of the state to impose unjust discriminatory laws. His challenges to the power process brought him to India as a leader of the Indian Independence Movement. Nelson Mandela challenged apartheid and indicated in open court that he was committed to human dignity and democracy and that these ideals were ones that he was prepared to die for. Therefore, it is important that we have a clear understanding of the process of effective power, and what the limits and strategies are for mobilizing bases of power, to effect meaningful social change. It is quite obvious that scientific consciousness, driven by a commitment to scientific social responsibility, will have to carry a significant level of commitment in utilizing social power so that the results of technology serve human purposes that are constructive and avoid those that are destructive. As Einstein suggested, the development of science and technology should be a blessing and not a curse on human kind.

“The problem with regulating science is the problem that it will be regulated by a politically ignorant constituency, who may seek to appropriate technology with selfish special interests.”

From the perspective of an enlightened *homoeconomico-politicus*, concerned with science, consciousness and values, the following framework is provided as value-conditioned guidance for the technological innovators of our time and the immediate future.

8. Value Frameworks to Guide Scientific Consciousness and the Social Responsibility of *Homoeconomico-politicus*

1. *The value of life*: This is a centrally valued human subjectivity. It is referred to not in the “pro-life” sense (that a pregnant woman must bear a child), but in the Bill of Rights sense (that a person has the right to personhood and autonomy). The value of life, therefore, includes the respect and deference given to the individual in the global community.
2. *The status of the value of power and security*: Should it be narrowly or widely shared? Is the common interest of all honored in a system that seeks to secure the widest possible participation in all key areas of the power process? One of the central values identified in the Atlantic Charter was the freedom from fear. This concern for freedom has evolved so much that today no one denies that there is a critical interdependence between the concept of peace as a human right and all the other values in the UDHR. Peace and security might well be included under the functional category of power. However, peace is recognized as a complex peremptory component of the human rights value system. It is of value to again recognize that there are complex ways in which all human rights values have an influence on peace and security, recognizing as well that peace and security at

all levels are critical conditions for the effective mobilization of human rights values. A central aspect of the values of peace and security relates to the connection between the mobilizing force of strategy for the realization of human rights goals and the realization of these goals themselves. For example, is it appropriate to deploy violent strategies of action to achieve human rights objectives? Is it appropriate to disengage the value discourse involving strategy and struggle on the one hand and idealistic value objectives on the other hand? Gandhi, for one, insisted that the morality of struggle was even more important than the morality of distant idealistic objectives. Indeed, he also insisted that a disconnect between struggle, strategy, and goals was morally indefensible.

3. *The status and value of economic and wealth processes:* Is the common interest of all better secured by optimizing the capacity to produce and distribute wealth or the opposite?
4. *The status and value of respect and equalitarian values:* Should invidious discrimination be fully prohibited (covering all areas of race, gender, alienage, etc.)? Can equality be meaningful if it is only a formal, juridical idea without regard to the legacy of exploitation, repression, and discrimination? The repression of equal opportunity is also an invidious denial of liberty.
5. *The status and value of educational and enlightened values:* Should these values be widely produced and distributed or narrowly experienced? In the context of science, the critical value that secures scientific innovation and the liberation of scientific consciousness is the freedom of inquiry. The challenge posed by dramatic technological innovation is that further scientific consciousness will generate an internal process focused on scientific responsibility and a deeper sense of the value implications and consequences of technological innovation. The problem with regulating science is that it will be regulated by a politically ignorant constituency, who may seek to appropriate technology with selfish special interests. *Homoeconomico-politicus* has a critical role to play in the transmission of shared enlightenment.
6. *The status and value of skill and labor values:* The centrality of labor and skill values to the human condition indicates that these are central and fundamental values implicated in the rights and expectations of those who seek to create and sustain these rights and labor values. Should these rights and expectations be widely shared or narrowly shared? The global crisis of massive unemployment would seem to impose a special responsibility on *homoeconomico-politicus*.
7. *The status and value of health and well-being values:* The delivery of reasonably formulated and accessible healthcare and social services to all is now widely regarded as a crucial entitlement, if the most basic standards of decency in politics and society are valued. Today, unemployment aid, social security, Medicare, and other social services are considered crucial to a society that cares for its people.
8. *The status and value of the family and other affective values:* Because the family is the basis of collective existence and is central to the human rights of children, the public

policies of a society that destroys family (and other affective ties) pose a problem for the wide generation of affective values including the loyalty values of patriotic deference.

9. *The status and value of moral experience and rectitude:* A system that endorses the centrality of moral experience to the legal and political culture and seeks to maximize the spiritual freedom of all is yet another of the central themes of human rights. Rectitude should never be a foundation for sectarian and ethnic conflict.
10. *The status and value of cultural and aesthetic experience:* The term ‘cultural’ includes the concept of the aesthetic. In fact, the word “cultural” could encompass all the value preferences that we might extract from the UDHR. There is, however, a narrower meaning that the term culture might carry. That meaning ties in with the notion of human rights as also emblematic of the diversity of human experience, experience that reflects the cultural richness of humanity as a global community. There is great controversy about the issue of culture and tradition, culture and creativity of the present, culture and the elaboration of the aesthetic, which may capture and nurture the cultural narrative of creativity and beauty which may in fact be the critical psychological view of how the glue of social solidarity promotes creativity. The boundaries of this discourse are controversial. Sensitive matters of sexual regulation which may differ widely may be justified by culture and yet here the culture of tradition may not be compatible with the culture and creativity of the present or the future in human rights terms. For example, female genital mutilation justified by cultural tradition is not justified by either religion or by the science of human sexuality. Human rights thus provide a process by which these boundaries may be appropriately protected and expanded according to the normative challenges of human dignity. The current discourse often suggests that universality trumps cultural relativity or vice versa. This is not necessarily helpful unless one sees these ideas as only the starting point for value clarification and application from a human rights perspective. Aesthetics should never be a foundation for demonizing vast sectors of humanity.
11. *The status and value of the eco-system:* Today, we recognize a complex right to a viable eco-system on what theorists have seen as Spaceship Earth. The values embedded in the protection and promotion of a healthy eco-system are, like many other values, issues of complex inter-dependence and inter-determination. However, implicit at least in the concern for the integrity of the eco-system is clearly the notion that there are no human rights if there is no environment in which human beings can survive and possibly even improve the human prospect. But this insight suggests an even higher level of moral consciousness in the sense that the eco-system (with its plant life and animals, wild and domesticated) is part of a complex cycle, in which human beings are both custodians and also utterly dependent as individuals and as society. This means that we now see in nature not something irresponsibly exploited and destroyed but central to our identity as a sentient species. To take a simple example, for all the vaunted technology of human progress and human egotism, no one has seen a dog or a cat or a rat or indeed the most elemental of recognizable life forms outside of this lonely and unremarkable planet called Earth. Thus, as humanity, we now look at life even in its most humble forms as

not only indispensable to the interconnected chain of life on this planet but we see in it something new and utterly connected to the very consciousness of being human and being alive. In short, we know that our dogs identify with us. We may now know those ordinary pets in terms of how they and all other living forms have shaped our identity both psychologically and physiologically. The integrity of the ecosystem requires a form of identification from *homoeconomico-politicus* that is sufficiently comprehensive to cover the entire Earth Space System.

9. *Homopolitico-economicus* and the Challenge of a Green Economy as a Critical Eco-System Value

In this paper we seek to clarify the salience of *homoeconomico-politicus* and the challenge of climate change. Climate Change is a good tool to better understand the idea of *homoeconomico-politicus*,* consciousness and social responsibility for values. Climate change floundered at the Copenhagen conference because of the determined efforts of the climate change deniers lobby.

The Fossil fuel industry is in effect responsible for the overwhelming contribution of greenhouse gases to the looming crisis of climate change.

The concern for the development of a global mandate on climate change through the good offices of the UN had to confront a longstanding global problem: the division of the world community of states between the rich and the impoverished. Since a lion's share of the carbon emissions in the atmosphere was generated by the rich industrialized countries, there was a lingering concern about the price and distribution of the price for reducing carbon emissions in the world community. Since the poor states made a negligible contribution to greenhouse gases in the atmosphere a question of justice and fairness seemed to emerge. Why should they share in the cost of the reduction of greenhouse gases when they are not responsible for the crisis? More than that, the predictions of the crisis could spell catastrophe for poor states.

Perhaps these states should be the beneficiaries of financial assistance from large states to convert themselves to green economies, and to compensate for the damages they suffer. Clearly, in attempting to move forward there needed to be some formula for allocating responsibility as fairly and as universally as possible. Perhaps the most important outcome of the Paris accord is that every country is a stakeholder in the problem and must commit itself to a constructive role in reducing greenhouse gases in the future. Most countries were persuaded to come up with plans as to how the economy would respond to cutting carbon emissions through 2025-2030.† In this context, every state is required to come up with a plan without a specification of the extent to which individual countries would cut emissions.

The agreement is not in the form of a treaty.‡ It will only become technically and legally binding as an international treaty when at least 55 states which together represent 55 percent

* The best studies on the role of the political and economic personality types can be found in Lasswell, H. D., & McDougal, M. S. (1991). *Jurisprudence for a free society: Studies in law, science, and policy* (Vol. 1). Dordrecht, Netherlands: M. Nijhoff. Pages 399-472, 473-507, 509-523, 525-555 and 591-630.

† European Commission. (2015, December). Paris Agreement. http://ec.europa.eu/clima/policies/international/negotiations/future/index_en.htm

‡ For a full discussion of contemporary theories of international law-making, including the emergence of international economic soft law, see Nagan, W. (2007). *Communications Theory and World Public Order*. *Virginia Journal of International Law*, 47(3), 760-774.

of global greenhouse emissions adopt the agreement within their own legal systems as a form of treaty ratification. Even assuming that this happens, the question would still remain as to what the legal responsibilities are of the other approximately 100 states. We would contend that the agreement as it now exists is not without an element of a juridical *imprimatur*. In effect, the agreement contains in terms of its background, the core elements of the creation of a form of international soft law, and this would appear to have an approximation to the development of a form of customary international law. The reasoning is as follows.

This agreement depends upon the good faith obligation that international law imposes on states, which establish public declarations of the nature and scope of their duties. The good faith obligation implies that these will be legally binding on the states. Thus, the binding effect of the agreement is not in the agreement itself but a matter of the customary international law dealing with the rights and duties of states. The agreement contains a legal expectation that states are required to reconvene in good faith every five years starting in 2020 indicating in good faith their updated plans to strengthen their emissions cuts. States were also required to reconvene every five years starting in 2023 to publicly report how they are achieving their emissions cuts, compared with their stated plans. Moreover, the agreement requires states in good faith to monitor and report the state of their emissions levels and reductions using a universally accepted counting system. This approach was achieved largely because the Obama administration did not want an agreement specifying specific levels of emissions reductions. Of course, such an agreement would in effect resemble the form of a treaty and the U.S. administration would have to submit it to the senate of its advice and consent.

In short, the standard of emissions set in good faith by states is voluntary but there is a legal requirement that they publically monitor, verify, and report on their progress. This model seems to work on the principle of transparency as a foundation for global peer pressure on states. States therefore will not want to be embarrassed by falling short of their own commitments. It is by no means clear that these steps are both necessary and sufficient to avert continued disasters triggered by the climate change process. In the United States itself, various states have experienced massive floods, including the states of major climate change deniers. To get the poorest countries onboard, the preamble of the agreement indicates that \$100 billion dollars is promised to help the poor countries adapt to a desirable green economy and to mitigate some of the damages of climate change.

The principal feature of the climate change agreement is the target of holding the average global temperature to a figure below 2 degrees Celsius above pre-industrial levels. In practical terms this means that, the temperature increase on the planet should not increase above 1.5 degrees Celsius above pre-industrial levels. The idea of limiting the global temperature to 1.5 degrees above pre-industrial levels means that there is a concrete goal to stay well below 2 degrees. Scientists believe that this would likely ward off the worst effects of climate change.⁶ No one is exactly sure what the triggering point is that would melt the entire Greenland ice sheet as well as the West Antarctic ice sheet. It is possible that staying below 2 degrees Celsius would trigger such catastrophe. However, the odds are much better if we stay 1.5 degrees Celsius. It is not necessarily clear that the 1.5 target will be achieved by pure reliance on voluntary state action. Even if it is achieved, it is only a scientific guess that this will be

sufficient to avert the worst consequences of climate change. The position of this economic forum is that the target of 1.5 is a bare minimum to be attained and if it could be improved upon, it would secure a greater safety net for humanity. Additionally, the fact that the agreement is not a treaty of hard law does not mean that it has no juridical effect whatsoever.

In this regard to this target, the target temperature aspiration is not mandated as a matter of international treaty law. It therefore does not have the status of hard international law would require advocacy from the XII International Colloquium and its allies that the agreement is still binding as a matter of law. However, it does have important juridical characteristics, sometimes defined as international soft law. The idea of soft law means that the binding character of the agreement is a matter reinforced by indirect methods designed to give the agreement the force of international obligation. First, the agreement comes with a consensus of 150+ states. The agreement comes with strong support from the international scientific community as well as important scepters of learned societies of the international social process. The agreement comes with a strong support of a multitude of organizations constituting the civil society of the planet committed to environmental integrity. The agreement is supported not only by states, but also by civil society, learned societies in the arts and sciences, specialist communities in the sciences, and those committed to environmental integrity.

“Green growth can be achieved by the recognition of human capital’s basic resource, human creativity.”

Additionally, the agreement comes with the institutional support of the foundations of authority of the United Nations system itself as well as other organizations of nation states at different levels of global society. Specialist aspects of civil society concerned with human rights and humanitarian values are also lined up in support of this agreement. This adds up to considerable strength in the foundations of the authority component, which is a critical part of the dynamics of international law making. The other important component of international law making is the component loosely described as the controlling intention designed to give prescriptive force to the obligation. Here the controlling intention is reflected in part in the good faith expression of intent to abide by the agreement of at least 190 sovereign states. In general, the good faith expression by a sovereign state that it intends to respect a prescription it has openly supported or advocated is enough to secure the notion that the agreement has sufficient controlling intention, which along with the authority signal gives it the force of law. Additionally, the agreement requires a public commitment to the scope of the obligation with regard to emissions reductions that the states openly subscribe to. This public commitment includes a threshold publication of the state’s plan of action in the future, and a reporting of the results of its action, which requires global transparency. This provides an additional lever to support the seriousness of the controlling intention of the sovereign states’ commitment to emissions reductions. The active monitoring of the process by the United Nations itself, as well as a vast constituency of members of civil society including specialists in local politics, environmental advocacy, scientific expert knowledge, human rights organizations, and highly respected learned societies, reinforces the controlling intention of states.

Finally, international law making does require clarity in the expression of the specific prescriptive expectations that the agreement entails.⁷ Since the states have stated what the prescriptive expectations are, this provides a degree of clarity in terms of the prescriptive expectations that a state is obliged to honor. Thus it would seem that at least in the context of the specific objectives of state action in reducing carbon emissions there is without a doubt a binding obligation on the part of states and their subjects to respect their agreements that the states have agreed to having the force of binding international soft law.

The most important aspect of giving the human efficacy is the recognition that within states major corporate and industrial enterprises are largely responsible for greenhouse gases.⁸ This puts the controlling intention of the state against the self-interest of the corporate and industrial sector within a state. This is a challenge that has to be confronted. The most significant cause of pollution lies with the fossil fuel industry. Modern society owes progress to energy. To change this confronts not only corporate interests, but also the interest of workers dependent on the fossil fuel industry. There has to be an alternative and that alternative would depend in part upon radical new thinking, envisioned in the new economic thinking of this economic forum, as well as the economic thinking behind the policy and progress of the global sustainability movement. The fundamental challenge lies in the shift on a global basis from the total dependence on the fossil fuel process to an alternative approach to meeting global energy needs as well as producing energy that eliminates the flow of greenhouse gases into the atmosphere. Experts maintain that the fundamental challenge of stabilizing the global climate via green economic growth is a matter of fundamental policy choices.⁹ Those policy choices have to be made on the basis of new economic thinking which makes as its fundamental postulate, the vital importance of human capital. Green growth can be achieved by the recognition of human capital's basic resource, human creativity.¹⁰ We must therefore creatively take stock of how to make buildings, transportation systems, and industrial processes, energy efficient. This would have to extend to offices, homes, residences, cooking equipment, automobiles, and public transportation.

The recognition of human creativity must be sustained by a commitment to major investments in clean and renewable energy. This includes solar, wind, geo-thermal, and various scales of hydroelectric power. If we are willing to recognize the genius of human creativity in creating a carbon neutral environment, experts estimate that an investment of 1.5 percent of the global GDP will generate effective and alternative energy policies for all countries at any level of development. Such large-scale investment in clean energy would help raise efficiency standards in buildings, expand public transportation, and replace fossil fuels with clean and renewable energy. It is further estimated that such investments will pay for themselves in 3-5 years. These investments will have to come from both the public and private sectors. The attractiveness of green energy would mean that energy costs would be reduced for all. If a carbon tax is placed on fossil fuels, then the price of fossil fuels will be far more expensive than green energy. A policy commitment to green energy would enormously expand job opportunities. It is estimated that if the U.S. spent 200 billion a year on the green energy economy, it would drop U.S. emissions by 40 percent in 20 years and

create a net increase of 2.7 million jobs. If India spent 1.5 percent of GDP on the economy, a 20-year program with these investments would create more than 10 million jobs a year. Other illustrations are equally impressive.

“Scientific leadership must be more articulate in the defense of the values that sustain a creative, dynamic, and responsible scientific, economic and political culture as an indispensable foundation for an improved world order based on human rights and human dignity.”

The real losers will be the fossil fuel industry and the mega-corporate giants that own it. It is estimated that they stand to lose \$3 trillion in values over the next 20 years. Clearly, the petroleum industry will not take this lying down. Hence, the real problem is with green energy and greed energy. The losses of the fossil fuel sector may be somewhat tolerable if the losses are averaged out over 20 years coming to about 150 billion a year. One major issue that the mega-giants of the fossil fuel industry must consider is that the holdings of the largest 200 corporations in the fossil fuel sector hold assets, which indicate that 60 percent of those assets are unburnable. This is an important issue for investors and already some 456 institutions investing some 2.6 trillion dollars have committed themselves to this investment, or to reinvestment in clean energy.¹¹ Others have already looked at diversification of their investments. For example, Warren Buffet, a famous corporate investor, doubled his holdings in solar and green energy companies in the amount of some 50 billion dollars. It is important that this economic forum use its good offices to illustrate to the major players in the fossil fuel industry, the importance of their diversifying their energy enterprise in the direction of green clean energy. The XIII International Colloquium should emerge with a declaration in support of universal clean green energy.

10. Conclusion

This paper has sought to clarify the salience of the difficult concept of scientific consciousness, and its implications for *homoeconomico-politicus*, and the importance of cultivating that consciousness not only in creative ways but in ways that are morally and ethically compelling. This means that consciousness should be alert to the dynamics of positive and negative sentiment in the shaping of the technological paradigm of the future. Even more importantly, it is crucial for scientific consciousness to self-regulate itself by being better informed about the values it seeks to promote and defend. Successful self-regulation of science avoids the danger of control and regulation by forces completely ignorant of the implications of science and technology. This means that scientific leadership must be more articulate in the defense of the values that sustain a creative, dynamic, and responsible scientific, economic and political culture as an indispensable foundation for an improved

world order based on human rights and human dignity. This issue is made practically relevant by the challenges demanded for economics and politics equal to the challenge of climate change for the earth-space community.

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Notes

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