Legal Culture Confronts Science in Search of a New Paradigm of Humane Governance

The Expanding and Constraining Boundaries of Legal Space, Curvature of Time, and the Challenge of Globalization

World Academy of Art and Science
Hyderabad, India
October 16-October 20, 2008

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Prologue

The theme of this assembly is the anthropocene crisis of the 21st century. Intuitively this crisis reflects the development of human capacity to make choices to master the socio-ecological reality. It is also intuitively the case that the mastery of the eco-social system has generated significantly threats to the viability of that system. Among the high visibility issues are issues of climate change and environmental chaos. There are other threats as man has mastered much of natural order, and how to manipulate it for human advantage or disadvantage. Society generates rules through culture and more formally through the state, to control and regulate the capacity of man to manage and change the environment for the common good. Global crises test the viability of law to control and regulate in the common good because politically, space and time are not as malleable as in a physics lab. More is needed to generate wise decision making about common spaces beyond the conventional boundaries of law.

Implicit in the idea of law is the notion that laws emerge from natural order and generate their own self-regulation. Thus, there are the laws of physics, which must be discovered, but these laws dictate the boundaries of science and possibly science do not necessarily dictate these boundaries. The boundaries of the material world were discoverable by science in the splitting of the atom. The use of this scientific discovery as an instrument of war was dictated not by mechanistic rules, but by human choice of a political nature. The nature of law in the context of the organization of culture and society has itself been a prisoner of the autonomous law idea: the perception of law as independent of human choice versus the idea that law evolves as society interacts in terms of its human actors and the largely eco-spatial system. The element of choice and decision as the critical factor in law is a recent development. Moreover, this insight has required a deeper understanding of the nature of law and the impact of law on social process. The critical issue of professional responsibility confronts the role of law in the promotion and defense of the most important values of the earth-space community: peace, security, ecological integrity and dignity.

In seeking to secure a deeper insight into law and the challenges of the human imprint on the global eco-social process, we immediately encounter a critical problem of establishing an appropriate standpoint from which to describe and evaluate the inter-stimulation of both juridical and eco-social relationships. We immediately encounter the challenge of modern science. In particular, there would be the question of the relativity of the observer, motion, and time.[1] Additionally, there would be the intriguing insights from quantum physics about uncertainty in the behavior of microscopic particles, and the possible role of observation that may influence the movement of such particles. In the

[1] *See generally,* Richard P. Feynman, THE CHARACTER OF PHYSICAL LAW, 99 p. 9. Compare Jeffrey Satinover, A QUANTUM BRAIN, Jonathan Wiley (2001). Feynman makes the point that our imagination is stretched to the utmost, not as in fiction, to imagine things which are not really there, but just to comprehend those things which are there. This would appear to be true of legal cognition and imagination concerning the nature and function of law. There is a powerful resonance of insecurity in human relations. The orthodoxy of law seeks to freeze experience and legal knowledge in the formulaic strongbox of legal rules and precepts. The power of past experience is reflected in the compulsions of precedent. As Northrop put it, precedent works on an assumption that nothing should be done for the first time. Justice Murphy of the Australian Supreme Court suggested that this was a doctrine eminently suitable for a nation predominately preoccupied by sheep.

context of the social sciences, Harold Lasswell recognized that a Newtonian version of observation in space and time was no longer adequate. He put it this way:

> Now it is impossible to abolish uncertainty by the refinement of retrospective observations, by the accumulation of historical detail, by the application of precision methods to elapsed events; the crucial test of adequate analysis is nothing less than the future verification of the insight into the nature of the master configuration against which details are constructed. Each specific interpretation is subject to redefinition as the structural potentialities of the future become actualized in the past and present of participant observers. The analyst moves between the contemplation of detail and of configuration, knowing that the soundness of result is an act of creative orientation rather than of automatic projection. The search for precision in the routines of the past must be constantly chastened and given relevance and direction by reference to the task of self-orientation, which is the goal of analysis.[2]

It is possible that the relativity principle and the human agent of observation effectually suggest a multitude of possible standpoints of observation, which will affect what is observed and how it is observed as well as the ostensible effects of mere observation on the object of observation.[3] Thus, to provide an appropriate reference to the term law in the eco-social context may vary in terms of whether the standpoint or perspective comes from a member of the established elite or the ordinary citizen. Moreover, viewing law and describing it, may vary according to culture, confessional outlook, gender complexity, racial pedigree, age, or the experience of crisis. Even within the framework of the professional side of law, the observer may be a legislature, a prosecutor, an attorney, a judge, an appellate judge, a minister of justice, a juror, or the plaintiff or defendant. According to Professor Reisman, "no standpoint is more authentic than another but the scholar must be sensitive to the variations in perception that attend each perspective" and must be sufficiently disengaged to select a perspective that is appropriate.[4]

This paper draws on scientific metaphors that have been used by jurists and social science theorists to more adequately explain inquire into and appraise the policy foundations and social consequences of law-conditioned phenomena. Evolution of some sort is more or less accepted in the aftermath of Darwin, it is therefore not surprising that we may also see the evolution of legal thought and social process in ways that are more comprehensible and better understood in terms of the challenges they pose for the viability of an earth-space community of the future. The nineteenth century generated a powerful social and philosophical movement in the United States rooted in pragmatism. The pragmatism of American intellectual life expressed itself as a revolt against

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[2] HAROLD D. LASWELL, WORLD POLITICS AND PERSONAL INSECURITY 13 (1965).

[3] This is a significant issue touching on the issue of the so-called non-local mind. There is much speculation in physics about this idea.

[4] W. Michael Reisman, *The View from the New Haven School of International Law*, in PUBLIC ORDER OF THE WORLD COMMUNITY.

formalism. This movement had a significant legal presence: The presence of a Supreme Court justice, Oliver Wendell Holmes, Jr.

Holmes powerfully expressed the view that law does not autonomously function in a strong box of legal rules and precepts. On the contrary, it was driven by human agents of decision in different roles. This insight with its emphasis on the role of decision and choice required a broader framework of understanding in terms not of the logical syllogism, but also of human experience. It is the evolution of this insight in the twentieth and twentieth first centuries that also opened up the epistemology of law as a critical component of scientific inquiry and analysis.

The idea of legal theory as a self-conscious theory for inquiry about law has opened up the framework of observation, participation and heightened social responsibility in ways that have been creative and open to analogies and metaphors from the developments in modern science. This paper explores some of the dominant borrowed metaphors and an importance to wide range of concerns in law technically, as well as laws capacity to manage such issues as weapons of mass destruction, rights of indigenous people, deforestation, climate change and the fundamental rights of the inhabitants of the Rain Forest.

Background

Law is a very old academic discipline. It is also a practical profession. The agents of the legal process are meant to respond to the flow of problems that emerge from social process. What is perhaps possibly distinctive to the professional practice of law is not only drafting precepts of prescriptive value such as precedents, rules, codes, statutes, orders, and decrees, legislation and constitutions. Law also records the micro-detailed particulars of human interaction and in that sense, as Justice Holmes suggests, law is an external or objective deposit of human experience. Holmes was a towering legal figure of the turn of the 20th century, generated insights, which parallel the broader role and responsibility of human agency in law and the eco-social environment. In a memorable quotation, Holmes maintained that the life of the law was not rooted in formal logic, but in experience. Holmes was expressing an idea, which became more fully developed in the philosophical pragmatism of the late nineteenth and early twentieth century American thought outlook, namely the revolt against formalism.

The Holmesian insight into looking at law through the prism of experience and avoiding abstract formalistic modes of inquiry and expression was well expressed in a famous speech he gave near the turn of the century titled, The Path of the Law.[5] In this famous meditation on law, Holmes traversed many paths which explore the eco-social functions of law in social process. Holmes explained the limits of mechanical jurisprudence as follows: "For the rational study of the law the black letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics. It is revolting that there is no better reason for a rule of law than that so it was laid down in the time of Henry IV."[6] The seductions of legal logic and its presumed stabilizing qualities applied to resolve human problems are also put into serious question.

[5] The speech was later published in an article. Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARVARD L.R. 457 (1897).
[6] *Id.* at 469.

Consider the following: "And the logical method and form flatter that longing for certainty and for repose which is in every human mind, but certainty is generally an illusion, and repose is not the destiny of man." According to Holmes "The life of the law has not been logic; it has been experience." [7] Holmes suggested that as a judge, he could give any conclusion a logical form.

A refinement of the human imprint of role and responsibility for eco-social choices implicating law is the notion that the critical factor in law is human choice. In particular, Holmes suggested that the predictions of what judges do in fact constitute the operational living law. Focusing on judges as choice makers provided us with a framework and focus through which after vast disputation, there emerged in the theoretical universe of law, the idea that law at whatever level is a process of authoritative and controlling decision-making whereby members in diverse institutional roles seek to clarify and implement the common interest of all. This led to another important development, namely that decision-makers respond to problems in good and bad ways. These problems are generated by human interaction within the larger ecological and technological environment. This brief evolutionary gloss on legal thought and insight was critically developed in the United States by a powerful jurisprudential movement known as American legal realism. Realism itself was taken in the direction unforeseen or anticipated by legal realists. The architects of that change were fellows of the World Academy of Art and Science, Harold Dwight Lasswell and Myres Smith McDougal, Michael Reisman, and associates.

The Law, Science and Policy Paradigm of McDougal and Lasswell

McDougal and Lasswell are the co-founders of a new paradigm of jurisprudential discourse. Their discourse has insisted that jurisprudence be a theory for inquiry about law. The issue of jurisprudence for inquiry about law stresses the importance of understanding the context from which problems requiring legal intervention arise, including the technical ability to predict problems and respond to those problems with refined techniques for the clarification and development of policies that promote and defend the dignity of man. The evolution of this approach to law requires a distinctive focus on authoritative and controlling decision-making. Such a focus requires innovations in understanding the context of problems to which law responds (which includes contextual mapping).

These tools for identifying and contextualizing problems then also require the integration of a number of interrelated intellectual skills, such as normative clarification and appraisal, the scientific task of conditioning factors involved in decision, the historic task of delineation and understanding relevant trends and decisions, the prediction or projection of developmental constructs, and the invention of alternative policy recommendations. This approach requires an understanding of the complexity of observation and participation, as well as the distinctively anthropomorphic concern for the quality and value of outcomes for both decision and social process. This approach is one that is guided in part by the concern for the policy implications and social consequences of knowledge and an appropriate self-awareness of the role of the scholar/participant in this process.

[7] *See* Holmes, THE COMMON LAW, p. 6 (OUP 1963).

McDougal and Lasswell characterized their approach to inquiry about law and policy as one that required "configurative thinking." (policy thinking) Configurative thinking contemplates the establishment of a creative orientation to inquiry and involvement in an effort to influence beneficent outcomes. As indicated this is different to the conventional modes of thinking narrowly in terms of the "is" and the ought" or thinking in terms of the logical syllogism. Configurative or policy thinking thus requires normative discourse to guide inquiry, as well as, thinking in terms of causes, consequences, trends, future projections, and the creation of policy alternatives. The epistemology of the policy sciences thus requires the use and integration of a multitude of intellectual tasks beyond conventional modes of thought, inquiry, and expression. Policy thinking assumes critical tasks of creative orientation to observation and participation, as well as responsibility for the political consequences of policy and social values that come under the label of human dignity.

It is important that this approach to the study of law and jurisprudence require a system that is open-ended and in flux rather than a system, encased in a strong box of legal rules radically insulated from the eco-social process context or the consequences of its mechanistic application.

Scientific Metaphors and the Evolution of Policy Thinking

The influence of the sciences on the evolving decision-focused, context-driven, interdisciplinary and goal-guided epistemology of policy and juridical inquiry was reflected in Harold Lasswell's earliest writings on Psychopathology and Politics.[8] In this work, Lasswell conceptualized the State in terms of a manifold of events. The terms "manifold" and "event" are not conventional terms ubiquitously used in law or the social sciences. The concept of a manifold implicates the notion of the State in terms of the general notion of its spatial characteristics (territorial). The concept of events captures the idea that events are phenomena that have duration and therefore implicate the idea of time and space as interrelated conditions. The anthropomorphic gloss here is the impact of human communication and cooperation on space and events, and the variability in the form and structure of space and time in politics and law.

Lasswell's conceptualization of the interrelatedness of space and time and the nature of the State was influenced by the terms and concepts of the physicist Alfred North Whitehead.[9] Whitehead introduced the notion that events have trajectories in time and space. Whitehead suggested that these events "emerge" and "endure" on a continuum. Regarding space, Whitehead stated "duration is the field for the realized pattern constituting the character of the event."[10] Whitehead's concept of endurance required "a succession of durations, each exhibiting the pattern."[11] The concept of time in this view is simply a "sheer succession of epochal durations."[12] Whitehead encapsulated the notional basis of all events, which endure in the continuum: a "relationship enters into

[8] HAROLD LASSWELL, PSYCHOPATHOLOGY AND POLITICS (The Univ. of Chicago Press 1930).
[9] *See* ALFRED NORTH WHITEHEAD, SCIENCE AND THE MODERN WORLD 83–186 (1931).
[10] Id. at 183.
[11] Id.
[12] Id.

the essence of the event; so that, apart from that relationship, the event would not be itself."[13]

Whitehead stated, "The meaning of endurance presupposes a meaning for the lapse of time within the spatial-temporal continuum."[14] Regardless of how Whitehead was technically using these concepts in the discipline of theoretical physics, Lasswell found these ideas to be valuable rethinking the State and its inner relationships. Lasswell articulated that the State manifests relationships with spatial and temporal characteristics that are linked by the notion of events in time and space. Events in this sense are related to each other by the concepts of endurance and emergence. Thus, Lasswell precociously conceptualized the State as a manifold of events where events have duration, endurance and emergent pattern-like outcomes such as territory (spatial dimensions), as well as populations and institutions of authority and control which give the State its political and juridical salience. These events also culminate as the trajectories of communication and cooperation which describe governance in the State and which describe the State's role and function in the larger emergent universe.[15]

What makes the State an observable and measurable phenomenon is the trajectories of meaning and policy generated by the system of communications. It is the process of interaction communication and collaboration, which gives the State as a manifold of events coherence as an observable and malleable process. The State generates the dynamics of events in terms that also have "emergent qualities" thus; the manifold itself is not static but permeable. These concepts in turn are usefully related to each other on a time-space continuum. Lasswell's use of these ideas to improve our understanding of the nature of the State, communications theory, and world politics is a creative recasting of cross-disciplinary concepts from the sciences.

Further Appropriations of Scientific Terms and Concepts

An important and significant use of analogy in exploring time-space boundaries of law and jurisprudence came from the distinguished international lawyer, Richard Falk. In 1975, Falk gave the Sherrill lectures at Yale and applied the theory of scientific revolutions of Kuhn[16] to the development of a theory of scientific legal revolution.[17] Falk found parallels that he thought were applicable to legal evolution and development in the idea of the identification of a dominant paradigm, the diminishing of the paradigm by the accumulation of new scientific knowledge and insight and the emergence of a more appropriate or newer scientific paradigm of thinking about law. Falk found that he could analogize the State as an appropriate legal analog to the Newtonian world view of physics. In Falk's view, the State occupied undifferentiated juridical space, which could be identified and understood objectively according to simple laws relating to the

[13] Id. at 180.
[14] Id. at 175.
[15] *See* Winston P. Nagan & Craig Hammer, *Communications Theory and World Public Order: The Jurisprudential Foundations of International Human Rights*, VA. J. INT'L L. (2007).
[16] THOMAS S KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (The Univ. of Chicago Press 1962).
[17] Falk's scientific legal theories from the Sherrill lectures were later revised and published. Richard Falk, *A New Paradigm for International Legal Studies: Prospects and Proposals*, 84 YALE L.J. 969 (Apr. 1975).

hypothesis of sovereignty. Law is the product of the sovereign for the masses and it is enforced by the power and coercion at the sovereign's disposal. Powerful efforts are made to defend this particular theory of law but it cannot account effectively for law on a horizontal plane in a global community with a multitude of actors. Those actors are not confined exclusively to States. Thus, the view of law in the global community is that for the law to be realistic it must account for a multitude of actors in addition to States and must further recognize that the activities of these actors implicate a multitude of trajectories, including, vertical and horizontal patterns of communication, cooperation, conflict and general interaction.

A new paradigm of law transcends the State. Its reach is global and eco-social. It is fed by the strengthening of a vigorous and increasingly organized civil society and is well challenged by profound non-State threats ranging from alienated terrorists to large scale for-profit enterprises searching for a capacity to act in terms of market opportunities rather than the restraints of law and regulation. It is challenged by the threats of environmental destruction. Thus, the paradigm idea from science has held an important place in the law and social process, which culminates in the contemporary idea of globalization. Professor Falk suggested that the McDougal/Lasswell approach was an approach that generated inconvenient, even dangerous knowledge.

Other Ideas from the Physical Sciences That Have Influenced Structure of Legal Thought

Some ideas appropriated by modern law from the scientific universe have been influenced by Einstein's ideas on the grand scale as suggested in his general theory of relativity. The theory suggests that the grand physical objects of the universe, observable through the telescope, are not neutral as implied in Newtonian ideas of the physical universe, but on the contrary have an inter-action impact on the "form of space." That is to say, these great objects change the space around them by giving it a warp effect. Einstein thus rejects the view that time is absolute. Time is relative; it changes with the motion of the particular observer. The further implication: time is not linear. The past, present, and future have no fixed status. These implications are in general counter-intuitive, and startling.

The general theory of relativity stipulates that space is bent and shaped by the very curvature of space itself. In this sense space is not absolute or uniform but relative and not uniform at all. It is both the background and any other surround ground of the objects existing within it. This of course is a radically new way of thinking about space and time and the objects in it. In this view, space and time are dynamic phenomena. The movement of a body or a force will affect the curvature of both space and time. Space and time also affect the way forces and bodies move and act. These ideas are central to law in a sense that law may be conceptualized as a force, which influences the way the bodies [participants] are affected by it, and how the human bodies affect the law.

Another important insight for modern legal theory is to be found in the idea that observing is a means of actually changing the physical world by observation. The insights generated at the subatomic level of physical inquiry associated with quantum physics tests the concept of observation and its effects upon what is observed at this level. According to the basics of this theory, the very process of which sub-atomic particles are

observed and analyzed may alter the elements being observed and may change their movements after that. This is one of the principles of quantum theory namely the Heisenberg Uncertainty Principle.[18]

According to Heisenberg, the measurement of a particle produces uncertainty in what is measured if the measurement is accurate. In short, the higher the degree of accuracy in measurement, the less the accurate the researchers is able to measure where it is headed. The Heisenberg Uncertainty Principle is intensified the smaller the particles are to be measured. It has been shown for example that photons impact on electrons, through using a beam of light to locate an electron at a particular instant, will significantly disturb the speed of electron. The conclusion drawn is about the relationship between the observer and the object that is to be observed. The act of observation will diminish knowledge of its velocity and vice versa. This insight into the impact of observation on the object observed has an important parallel in legal discourse. Law maintains perspectives of observation, recognizing that the observer is in effect a component of the time/space manifold of events tied to law and social process.

The observer by choosing to observe will in effect be influencing and changing what is observed in ways that are very difficult to predict or explain. In short, the act of observation is effectually a form of participation although we see this as a detached neutral form of activity. In configurative legal theory, the observer and the objects of observation inter-stimulate and influence each other. In this sense, there is an analogy to the role of the non-neutral observer in quantum physics and there is the question of the relativity in space and time of what the observer experiences.

Observing in the form of scholarly detachment an neutrality is tempered by the realization that scholars come to legal observation with conscious and unconscious perspectives of identification, value preferences, and expectations. Judges are also ostensibly situated in a posture of neutral observer in time and space may by simply discharging their neutral role be affecting the legal universe. Judicial behavior will have important consequences for good or ill in the social process. Law is not simply a background or foreground phenomenon of social interaction. It is intricately related to the social organization of space/time and the full range of participants. In this role, scholars and judges are an integral part of legal space and time, which is manipulated within the context of human interaction, deeply influenced by communications innovations.

Creating Legal Space in a Post Newtonian World

There is a parallel between general relativity and quantum physics on one hand and the law that deals with macro-social decision-making, and the law, which deals with micro-social decision-making. At the macro-level we have the great controversies of international law and the way in which this process has contributed to the curvature and malleability of law in space and time. At this level, we confront phenomenon of globalization. Among the important issues in globalization are the pressures to generate space in which there is a legal vacuum to provide greater freedom from complex regulatory institutions. Among the most obvious of these are the emergence of the

[18] W. Heisenberg, *Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik*, *Zeitschrift für Physik*, **43** 1927, pp. 172-198. English translation: J. A. Wheeler and H. Zurek, *Quantum Theory and Measurement* Princeton Univ. Press, 1983, pp. 62-84.

institutions of corporate enterprise as well as entities that thrive on organized criminal behavior, and more recently the emergence of privatizing of global security operations. A theory that law is the exclusive product of the sovereign will find it difficult to control and regulate global corporate enterprise, which functions beyond the boundaries of a particular State. Similarly, organized crime is skilled in exploiting the limitations on the extraterritorial reach of law in terms of international criminal enterprise. The growth of private security corporations ready to receive outsourcing contracts from governments and military establishments within them is another area in which there is a constructed legal vacuum which appears to change the *jus ad bellum* and the *jus in bello*. In the area of environmental law, a huge cluster of problems has arisen touching on the issues of global warming and carbon trading. It is unclear whether the carbon trading is meant to function as a relatively deregulated enterprise whose only constraints would be the trans-national market and the self-interest of the directly involved participants. This aspect is set out somewhat more extensively in the context of the dangers it poses of the destruction of forests and particularly the deforestation of the rainforest of Amazonia.

Specific Applications and Influence of Material Science on Legal Development and Methods

Lessons from Antiquity

From time immemorial, a central problem of making law work in society is the problem imposed by spatial and temporal limitations. The classic problems are the political problems of spatial control over the community and its members. This issue became critical for law when the community absorbed outsiders. The lawgiver had to figure out what law would govern ordinary day-to-day transactions, which gave rise to conflicts and claims between private individuals who were aliens or in the context of conflicts between aliens and citizens. The lawgiver did not support the notion that a gap in law would leave conflicting parties in a legal "no-mans land."

From this emerged the idea that an alien is not bereft of general rights that flow from some general sense of community in a world of multiple communities; *ius gentium* supplements the *ius civile*. Perhaps the most famous of these concepts still used today is the idea that the alien will have a claim in international law against the State that denies him fundamental justice (denial of justice). The practical problem of managing space is the historic problem of the movement of people, goods, armies, love, repression and mayhem across human space in time. Human beings appear to resist boundaries.

The classic illustrations of the law's practical need to fill the gap between the alien and the citizen come from the example of the law of the Roman Republic. The Romans recognized that in their expanding empire they were including many aliens who they treated as aliens. To handle the problems of aliens now in compressed Roman imperial space, they created a special legal official, the Praetor Peregrinus.[19] This special official was the law authority for conflicts within Roman space involving Peregrines among themselves and Peregrines and Romans. Some of these ideas still permeate the law today. For instance, when a US lawyer sued a South African judge in South Africa,

[19] COLEMAN PHILLIPSON, THE INTERNATIONAL LAW AND CUSTOM OF ANCIENT GREECE AND ROME 268 (Macmillan and Co., Limited 1911).

the judge claimed that the lawyer should face special jurisdictional hurdles because the lawyer was a "Peregrine," an outsider. In some ways, modern international law is simply a vastly more complex process of communication and collaboration involving the status of outsiders, or those outside the political and legal space of ordinary social intercourse.

Pre-Modern Law

In the common law tradition, space became the foundation of status. One had no place in the social world if one were not in some degree tied to land which conferred appropriate status and respect. This meant that the rights and obligations of the person were rigidly demarked by the location of the person in spatial terms. Thus, progressive society experienced a change in perspective when status was removed from land and gravitated to the development of the exchange mode of production in commerce- the idea of "contract" and free will. As Sir Henry Maine put it, the movement of progressive societies has been from status to contract. Maine was infected with evolutionary thinking.

How did law expand space to include interests of the exercise of free will of legal importance? This required the use of legal imagination in which jurists might create virtual jurisdictional space. The human element to achieve this breakthrough was the use of the idea of a legal fiction. For example, assume that the plaintiff has contracted for a widget in the defendant's home jurisdiction. The plaintiff and the defendant live in different judicial venues. However, since all law is territorial, the plaintiff cannot sue the defendant in the plaintiff's home venue because the cause of action arose in the defendant's home venue. Thus, if the plaintiff wishes to sue the defendant in the plaintiff's home, there is no cause of action because the cause of action arose in the defendant's home. The creation of legal rights and obligations was strictly localized spatially and territorially. The plaintiff therefore to carry his case forward had to in an imaginary sense, fold space. Technically, the plaintiff would plead that the defendant's liability arose in the defendant's State. The pleading would add a phrase at the end of this, which would read "to wit", the venue of the defendant's home then indicate the defendant's home jurisdiction. This of course, manipulates space by fiction to permit a cause of action involving more than one State to proceed to judicial settlement in the plaintiff's home State. The plaintiff's home court is asked to pretend that it is the court of the place (or venue) where the cause of action (obligation) arose (the defendant's home State or venue) and it prescribes and applies the law of the defendant's home as if it is its own law. Today, the local action rule is narrow and exceptional and is defined by impact of litigation on real estate. The normal action is the one rooted in the legal fiction- the transitory cause of action and most lawsuits implicate either judicial space of a multitude of States, use this rule as the operating norm. From these stogy developments, one sees that legal evolution develops ways of managing the spatial limitations inherent in the reach of law. Historically, in the common law tradition, all legal actions were "local." Today, almost all legal actions are "transitory." They fold space conventionally.[20]

[20] For explanations of these developments see Cuba Railroad v. Crosby, 22 US 478. Holmes J. states the following: "[W]hen an action is brought upon a cause of action arising outside the jurisdiction…the duty of the court is not to administer its notion of justice, but to enforce an obligation that has been created by a different law. The law of the forum is material only as setting a limit of policy beyond which such

As society experiences the acceleration of social and political development, the impact of technology on law serves to compress both space and time. In a classic illustration of the point, many States in the United States began to enact statutes, which stated that if the defendant had an accident involving an automobile in a jurisdiction other than his own, and then took off to avoid the legal proceedings, the plaintiff could serve the process on the Secretary of State. The statute would stipulate that the Secretary is the defendant's legal agent for the receipt of the summons. Of course, this contract of agency between the defendant and the Secretary of State is a fiction. However, the Supreme Court decided this case based on the rationale that automobiles were dangerous, and thus substituted the fictional agency relationship between the defendant and the Secretary of State for this very real public safety concern. The State therefore has the reasonable sovereign power to exercise extraterritorial jurisdiction over the defendant using a "safety of the citizens" rationale.

Customary Law on the Plane of Time

In terms of time, there is the notion that the rules of law strengthened their claim to legitimacy by the length of their identified existence. People seem to equate law as an external deposit of tradition, with the assumption that the older it is, the better it is. A Supreme Court Justice once said that it was revolting that there was no better reason for a rule than that it was enacted in medieval times. One of the important sources of international law is customary law. One of the assumptions about custom is an assumption of its longevity. However, there are good customs and bad customs. Their goodness or badness will invariably be a function of other factors than the duration of time. In any event, the printing press would have a remarkable impact on the development of norms and rules that might have the currency of law or the pretense to law. From the printing press to the modern communications, revolution is a quantum leap. The modern communications revolution radically folds space and time so that hard and soft legal norms are created ubiquitously. Indeed, it may be that we globally experience an unrestrained profusion of norms of aspiration as well as norms insistent on instant application. In short, we have great difficulty figuring out real law from pretend law. The impact of modern communications has required that we rethink customary international law in an age of globalization and recognize that the development of norms occurs in an environment that telescopes space and radically contacts time. This itself is

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obligations will not be enforced there. With very rare exceptions, the liabilities of the parties to each other are fixed by the law of the territorial jurisdiction within which the wrong is done and the parties are at the time of doing it. That, and that alone, is the foundation of their rights." P. 478. Compare Loucks v. Standard Oil, Co., 120 NE 198, 201 (1918), Cardozo, J., "A foreign statute is not in this state, but gives rise to an obligation, which if transitory, follows the person and maybe enforced wherever the person is found. The plaintiff owns something and we will help him get it. We do this unless some sound reason of public policy makes it unwise for us to lend our aid." Further clarification is given by Holmes J. in Slater v. Mexican National Railroad Co., 194, 120 at 126 (1904), "The theory of a foreign law suit is that, although the act complained of was subject to no law having force in the forum, it gave rise to an obligation which, like other obligations follows the person and maybe enforced wherever the person is found. But as the only source of the obligation is the law of the place of the act, it follows that law determines not merely the existence of the obligation but equally its extent."

required that law borrow from the science of modern communications theory to better understand the boundaries and limits and reality of law.[21]

The World Academy of Arts and Science (WAAS) is a professional body that actually has an important law making capacity outside of any State.[22] Its law making is made efficacious by modern mechanisms of communication and collaboration. These modern mechanisms radically changed the spatial and temporal characteristics of norm creation, endurance, and termination. In fact, while modern mechanisms tend to erode the traditional justification for custom, it also alerts society to the fact that human beings, like the picture of Einstein's theory of relativity, are in fact dynamically interacting. Thus, non-governmental organizations, like the WAAS, is an organization that generates norms what an older tradition of legal theorists called the living law of an intellectual community. Modern communications theory now permits us to understand the functional attributes of the law making contributions of such a human aggregate. We identify the institution and players; we review their communications to determine the prescriptive content of those communications, whether those communications are consistent with the authority foundations of the association and whether these communications are effectively applied to the target audience or members. The outcomes of human interaction, whether at the macro or micro level or something intermediate do not suggest some linear Newtonian vertical trajectory of law communication or even one dominated by horizontal trajectories, which flow from the subjects of law? On the contrary, it is more like wave and particle theory where the trajectories flow in every direction constrained by the speed of communication and the fact that speed correlates with time, creating a world of contested norms of law, control and regulation from micro-social to macro-social universes. Even the WAAS contests that priority of its own norms from time to time.

Legal Stability and Certitude in a World of Relativity and Quantum Uncertainty

Holmes expressed skepticism of the conception of law as conditioned by legal rules. The concern with legal rules is that they are precepts and are analyzed in terms of a major premise from which a legal consequence is derived. This has given rise to a concern that rules are symbols of communication that are inherently incomplete, often ambiguous and logically circular. Thus, a foundation of legal discourse as rule bound is inherently going to produce gaps in the law or the specter of areas of interaction, which may be consigned to a legal vacuum. A famous legal realist indicated that rules in the hands of a technically skilled lawyer are "mere pretty play things." There is obviously an analogy between the definition of law in terms of rules and the concern that rules yield "penumbras of uncertainty" analogous to the principle of uncertainty in quantum physics. These technical components, which generate legal uncertainty, also permeate the world of legal interpretation, as well as the particularization of law in specific cases and precedents. Additionally, it is well established that legal precepts and norms often come in structures of legal complementarily. For instance, contract formation illustrates how to

[21] Nagan and Hammer, COMMUNICATIONS THEORY AND WORLD PUBLIC ORDER: THE ANTHROPORMOPHIC FOUNDATIONS OF INTERNATIONAL HUMAN RIGHTS, 47 Va. J. Intl. L. 725 (2007).
[22] *See* World Academy of Arts and Science website, http://worldacademy.org/ (last visited Sept. 30, 2008) (hereinafter WAAS).

make a deal and how to break a deal. The rules of public international law reserve jurisdiction to the domain of so-called domestic jurisdiction and limits domestic jurisdiction by the legal domain of international concern. These technical legal precepts and tools of analysis invariably generate legal spaces and controversies about how these spaces have to be filled in the specific prescription application and enforcement of law.

The Impact of Globalization on the Curvature of Space and Time and the Generation of Juridical Uncertainty

In general, international law is conventionally seen as a law generating rules of legal efficacy between "sovereign" territorially organized political bodies. Powerful critiques of the State have suggested that there is the mismanagement of governance, including the concentration and abuse of power. Thus, the idea emerged that global prosperity is ineluctably tied to the processes of global economic freedom. The mantra included the terms "world peace through world trade." The quest for a free flow of goods, services, and values across State and national lines frequently confronted the imperatives that regulatory space be curved to conform to the gravitational pull of national sovereignty. The demise of the USSR and the freedoms experienced in Eastern Europe provided a powerful incentive to the animating forces behind the push for a global free market. Among the most important developments internationally was the emergence of a forum of economically dominant powers, the G-8. The driving force was to create more political space for the evolution of free market policies. In a sense, the shift of power came partly at the expense of the UN. Perhaps it is appropriate to see the G-8 as a global, economic security council. The outcome of the global experiment with accelerated privatization has generated growing concerns that pre-existing issues of global concern have become accentuated crises for the global community:

- Global economic apartheid[23]
- The human right to development or development as a gift of the planet's economically dominant actors[24]
- Global economic institutions and their preference for vindicating the interests of the powerful over the interest of the powerless. Free trade versus fair trade[25]
- The protection of the environment, global warming, and the undermining of global understandings regarding the balance between sustainable development and the destruction of the environment[26]

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[23] *See* Winston P. Nagan, *An Appraisal of the Comprehensive Anti-Apartheid Act of 1986,* 5 J.L. & REL. 327 (1987).

[24] *See* Declaration on the Right to Development, G.A. Res. 41/128, U.N. GAOR, 41st Sess., Supp. No. 53, at 186, U.N. Doc. A/41/53 (1986).

[25] See RAVI BATRA, THE MYTH OF FREE TRADE: THE POORING OF AMERICA (Touchstone 1996)

[26] *See* U.N. Conference on the Human Env't, June 5-16, 1972, Declaration of the United Nations Conference on the Human Environment, U.N. Doc. A/Conf. 48/14 and Corr. 1 (June 16, 1972); World Charter for Nature, G.A. Res. 37/7, U.N. GAOR, 37th Sess., Supp. No. 51, at 17, U.N. Doc. A/37/51 (1982); United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, U.N. Doc. A/CONF.151/5/Rev.1 (1992); Johannesburg Declaration on Sustainable Development, U.N. Doc. A/Conf. 199/L.6/Rev.2, in Report of the World Summit on Sustainable Development, U.N. Doc. A/CONF.199/20, U.N. (Sept. 4, 2002), available at

- Human population growth and the capacity of the earth to maintain human populations within the eco-social and economic capacity of the earth
- The global heath crisis (Aids, malaria, bird flu, resurgence of TB, etc.)[27]
- The global capacity to respond to natural global catastrophes (Tsunamis, Earthquakes, Hurricanes, etc.)[28]
- The crisis regarding the respect for human rights and humanitarian values in time of war, peace, or community crisis[29]
- The crisis of the global war system[30]
- The acceleration of the global arms market at all levels
- The proliferation and ostensible deregulation of the control and regulation of nuclear arsenals as well as biological and chemical weapons of mass destruction[31] and
- The growth of civil society deviance which threatens the world order in the form of apocalyptic terrorism, state terrorism, organized crime, trafficking in human beings, drugs, small arms, and possibly criminal trading in the components of weapons of mass destruction[32]

The drive to privatization of the global eco-social process is informed by an aggressive ideology that sees economic value in a weakening of the State and possibly underplays the role of the State in providing a level playing field of opportunity for all of its citizens.

The drive to privatization has been dramatically expanded to the control and regulation of international coercion and war. This is reflected in the exponential

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http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm (last visited Oct. 10, 2006).

[27] *See, e.g.,* The World Health Report 2006, Working Together for Health, available at http://www.who.int/whr/2006/whr06_en.pdf (last visited Oct. 10, 2006); The World Health Report 2005 – Make Every Mother and Child Count, available at http://www.who.int/whr/2005/media_centre/slides_en.pdf (last visited Oct. 10, 2006); The world health report 2004 - changing history, available at http://www.who.int/whr/2005/media_centre/slides_en.pdf (last visited Oct. 10, 2006); The world health report 2003 - shaping the future, available at http://www.who.int/whr/2003/en/index.html (last visited Oct. 10, 2006).

[28] *See generally* How Prepared Are We, New York? -- A Survey on Residential Preparedness, NYU, available at http://www.nyu.edu/ccpr/pubs/NYU-RedCrossPreparednessReport.pdf (last visited Oct. 10, 2006).

[29] *See e.g.,* Winston P. Nagan, *African Human Rights Process: A Contextual Policy Oriented Approach*, 21 SW. U. L. Rev. 63 (1992); Winston P. Nagan, *The Politics of Ratification: The Potential for United States Adoption and Enforcement of the Convention Against Torture, The Covenants on Civil and Political Rights and Economic, Social and Cultural Rights*, 20 Ga. J. Int'l & Comp. L. 311 (1990); Winston P. Nagan, *International Intellectual Property, Access to Health Care, and Human Rights: South Africa v. United States*, 14 Fla. J. Int'l L. 155 (2002); Winston P. Nagan, *Strengthening Humanitarian Law: Sovereignty, International Criminal Law and the Ad Hoc Tribunal for the Former Yugoslavia*, 6 Duke J. Comp. & Int'l L. 127, (1995).

[30] *See e.g.,* Winston P. Nagan & Craig Hammer, *The New Bush National Security Doctrine and the Rule of Law*, 22 BERKELEY J. INT'L L. 375 (2004); Winston P. Nagan & Craig Hammer, *Patriotism, Nationalism and the War on Terror: A Mild Plea in Avoidance*, 56 Fla. L. Rev. 933 (2004).

[31] *See* Winston Nagan, *Nuclear Arsenals, International Lawyers, and the Challenge of the Millennium*, 24 Yale L.J. 485 (1999).

[32] *See* Winston P. Nagan & Alvaro de Medeiros, *Old Poison in New Bottles: Trafficking and the Extinction of Respect*, 14 Tul. J. Int'l & Comp. L. 55 (2006).

development of private military contractors who function on a for-profit basis in many theaters of armed conflict. This significant policy shift in the control and regulation of coercion was a cardinal policy objective of US Secretary of Defense, Donald Rumsfeld. The central idea of privatizing defense functions was that if there is any function in the defense services that could be privatized, it should be privatized. This of course has had a tremendous influence on space centered in the gravity of sovereignty and legal space and time freed from those constraints. These matters have still to be fully understood and worked through. However, the connection of our defense functions to privatization raises the question of how much control and regulation over weapons of mass destruction (WMD) may be, by design or accident, privatized.

Nuclear Arsenals and the Curvature of Space and Time

Today the Earth is threatened by vast stock piles of nuclear and thermo-nuclear weapons. These weapons, if deployed, will be deployed by human agency. It is of course possible that the endemic fallibility of human decision-making might result in the threat or use of nuclear arsenals, which ultimately happen as a result of error or mistake. The Doctor Strangelove movie stands as a monument to the possibility of human error fed by mental incapacity.[33] The following gives a perhaps dated statistical indication of the distribution of nuclear arsenals as well as other weapons of mass destruction:

- The current stockpile of nuclear weapons is 13, 127, with the United States having 7,206, Russia having 4,962, France having 464, China having 410, UK having 185, and Israel having 200.
- There is an uncertainty about the programs in Iran, Iraq, North Korea, Libya, India, and Pakistan
- US spent 1.2 billion in protection of Russian nuclear weapons
- There is a task force on Unconventional Nuclear Warfare Defense
- States with known chemical warfare programs are : Iraq, Russia, USA; States with probable programs are: China, Egypt, India, Israel, Libya, Burma, Ethiopia, North and South Korea, Pakistan, Taiwan, Syria, and Vietnam
- There lays a great danger in the 15,000 impoverished Russian germ-weapons scientists
- There is a problem of verification, with the OPCWC having a shortage of funds
- States with biological weapon programs are: Iraq, Israel, Russia, US; States with probable programs are: China, Iran, North Korean, Syria, Taiwan
- Verification regime ?

[33] *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* is a Stanley Kubrick movie produced in 1964. The movie is about a mentally unstable US Air Force general who orders a first strike nuclear attack on the Soviet Union, and follows the President of the United States, his advisors, the joint chiefs of staff and a royal air fore officer as they try to recall the bombes to prevent a nuclear apocalypse, as well as the crew of one B-52 as they attempt to deliver their payload.

- Agricultural terrorism: experts claim current foot and mouth disease in Europe could have been a deliberate attack to cripple Western economies

Clearly, WMD represent a man-made threat to the survival of the earth-space community. Nuclear weapons are certainly among the most prominent of these threat factors. Biological and chemical WMD are also high up in the threat category. For the purpose of this presentation, we focus on nuclear weapons.

When the first atomic bomb was detonated over Hiroshima, John Foster Dulles lamented (I think) that the UN Charter had in fact become obsolete in the light of the nuclear age. The central feature of the splitting of the atom and its application to the conduct of war was that the power it unleashed was essentially indiscriminate. The nuclear arsenals demonstrated that technology was ahead of human moral sensibility and established legal boundaries. To the extent that there was a legal or quasi-legal constraint on the threat or use of nuclear weapons, it lay in a startling idea: MAD. This idea, Mutually Assured Destruction, worked on an assumption that the desire to survive is more compelling than the desire for mutual destruction. This of course is a slender moral or incipient juridical idea.

However, as the major powers contemplated the destructiveness of thermo-nuclear devices, they did develop, tentatively, a framework of understandings which could be reduced to a legal form. This is indicated in the treaty between the USA, USSR, and the UK in 1963.[34] The treaty prohibited the testing of nuclear weapons in the atmosphere. Since then other efforts have been made to provide a legal framework that is more comprehensive and coherent to provide guidance in the difficult area of arms control on a global basis. The central point about nuclear WMD is that the destructive capacity erodes classical limitations on the use of force in war. The principle of military necessity is basically made obsolete because the principle is undermined by the lack of proportionality inherent in the weapon and the inability to distinguish between combatants and civilians.

Moreover, the principle of humanity is not capable of being reconciled with the threat or use of nuclear weapons. Indeed, humanitarian law and human rights law are the exact antithesis of nuclear weapons systems. Thus, society may have reached a point of absolute limitation in which space in war and law is irrelevant because the human factor will not survive to give meaning to these ideas. Therefore, the human factor, the human agent of choice and decision, carries within its competence the end of evolution as a decisional choice or option. It is possible that the recognition of this possibility gave some urgency to the development of the important non-proliferation treaty.[35] The treaty sought to freeze the nuclear status quo and create a system of nuclear "haves" and "have-nots." The treaty accomplished this by having the non-nuclear powers agree to not become nuclear powers. However, the treaty contains something of a legal vacuum in the sense that it does not prohibit the development of nuclear technology for peaceful purposes. The treaty actually stipulates that this is an inalienable right of sovereignty. It is of course notoriously difficult to state with exactitude what the collective mind of a security elite in a particular State is about its intentions in developing its nuclear technologies. Presumably, developing WMD for peaceful purposes may well

[34] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (1963)
[35] Nuclear Non-proliferation Treaty (1970).

coincidentally develop the technologies that accelerate the possibility of developing nuclear weapons.

Among the important issues implicit in the testing of nuclear weapons are issues of environmental impact. Clearly, the development of nuclear arsenals requires testing, which has important impacts on an already fragile global eco-system. This too is a factor that would constrain the unrestricted development of nuclear arsenals. Many of the major nuclear powers were adamant about testing, so long as the testing did not occur in their own backyards. The United States tested its arsenals far away from the mainland, in the far South Sea Islands. France, following the US's example, proceeded to test its nuclear arsenals there as well. Of course, Britain tested its nuclear weapons in Australia, in an exercise that kept the Australian people in the dark. The most important development therefore followed almost ineluctably from the NPT initiative, which was the emergence of the Comprehensive Test Ban Treaty.[36] Although the treaty received considerable support, including the support of the US administration, the CTBT was defeated in the Senate. It is now reposing in a legal vacuum waiting for a courageous leader to resurrect it in the interest of the US and global security. The official status of the instrument, according to a Senate study, is that it is "pending." It has been "pending" since 1999. The nuclear crisis has required a curvature of space and an acceleration of time. It also underlines the juridical vacuum created by the limits on the spatial reach of law in space and time and by the uncertainty of its exact placement and identification in that legal reality.

Climate Change/Global Warming Crisis

We now move to the issue of climate change/global warming and the human factor. One of the critical threats touching the question of climate change and global warming is the issue of deforestation. There is no more efficient system for storing carbon than the tropical Rain Forest. Thus, the protection of the Rain Forest is one of the important issues implicating climate change and global warming. These territories in particular, Amazonia, are occupied by indigenous communities. These communities have fought a difficult battle to survive the onslaught of predatory invasions of economic and industrial interests. This puts vulnerable indigenous communities in conflict with the powerful forces of modern industrial development. The particular setting is the unique position of the Rain Forest of the Amazon as a shield in the process of global warming. To provide an appropriate appreciation of the inter-play of environmental integrity and fundamental human rights, at least of indigenous people, the Amazon Basin is a spatial laboratory of how these complex and ostensibly unrelated issues come together and challenge both the dynamic of science and the dynamic of law. In a recent study done by an important Brazilian NGO, the map of the Brazilian part of the Rain Forest showed astounding deforestation. The parts of the forest that retain ecological balance are those parts that overwhelmingly survive by the courage and the willingness to fight for their rights of the indigenous inhabitants of these regions. The central point of the Brazilian study is that the survival of a significant part of the Amazonian Rain Forest is attributable to the courage, bravery, strategic skill and tenacity of the Rain Forest peoples. We therefore start this section with a focus on the human component of the Rain Forest,

[36] Comprehensive Test Ban Treaty

which has been its most critical defender: the indigenous peoples and nations of the Rain Forest.

The Fundamental Rights of Indigenous People

In general, it is widely acknowledged that indigenous people on Earth are a forgotten population, or at least only a half-remembered population. In part, the kind of judicial non-recognition that such communities have often experienced is tied to the fact that they may either be viewed as a threat to elites that have terribly exploited them, or these communities sit on resources that modern society considers to be vital and valuable. To recognize such communities and to recognize their viable systems of law that may protect their rights may compromise the elites who somehow feel that such communities have or should have no genuine legal patrimony over their material and intellectual assets. For example, it was only in 1998 that in the new Ecuadorian Constitution, indigenous nations in Ecuador were given the normal rights of citizenship. Prior to this, indigenous people were treated as juveniles in Ecuador, with no legal capacity to assert rights and defend asserted obligations against them.

One of the most important insights concerning the nature of traditional societies, such as those nations of the Amazon, is that these communities do not see land and related ecological assets as necessarily commodities that are completely fungible or merely commodities that can be disposed of, like used toothbrushes, etc. To these communities the land and the inter-related eco-social values is not an **aspect** of the group, it is the **basis** of the group itself. Thus, a destruction of the land or the eco-social values that secure the environmental integrity of the land signals the destruction of the group itself. This therefore makes the world view of such groups somewhat more compatible, with emerging issues that relate to concerns like deforestation, climate warming, etc. At the heart of the land/human rights problem of indigenous communities in this part of the world is the question of who owns the land. It is an old question.

Relevant Historic Context of Indigenous Land Rights

It was settled by the Pope in the late 1500's/early 1600's when he claimed that all indigenous lands in Brazil, and by implication the New World, belonged to His Holiness. To confirm this legal conclusion, the Pope got one of the finest lawyers in Spain to confirm the claim legally. What he got was not what he expected. That jurist Francesco Vittora concluded that the Pope did not own anything. He rejected the Pope's claims with the powerful reason of a superbly trained legal canonical mind. If history had been left in this state the indigenous people of Latin America may well have had a less rocky and risky future. However, this was not to be. The elites who drafted the first Brazilian Constitution, snuck in a provision, which said that everything under the sub-soil of the land was owned by the State, and of course, these drafters were the human agents behind the State whose predatory economic interests were thus secured.

Recent studies taking account of the alarming rate of deforestation in Brazil have noted that the lands not deforested have been those where the indigenous people have been able to physically protect themselves and the forest. The State has been largely an actor which by default or by actively aiding and abetting has allowed vast intrusions into

indigenous lands because questions of title and ownership are completely ambiguous. The Brazilian model was copied in other Latin American jurisdictions. Interestingly, it was not copied in Ecuador. In that State, the fact that the indigenous people had no locus standi but indeed were "children" under the law their interests was represented by the church. This was an imperfect way of protecting them but it did serve as a limitation on what State elites could do in terms of expropriation of indigenous lands and the destruction of indigenous communities.

However, indigenous lands without the clarification of title could be cleared and occupied and then declared to be the property of the occupier. One particular nation, the Shuar, a people with a proud war-like disposition and a people unconquered by Spanish imperialism have kept predators out of their territory with political skill, as well as the fear that alien intrusions are dangerous to the aliens. The Shuar territory and related territories in Amazonia have therefore been preserved with the highest level of global bio-diversity. Moreover, the culture of the Shuar is old and as transmitted over generations the most pristine knowledge about the flora and fauna and the possible uses and combinations of such for medical and commercial purposes. Additionally, the territories have vast oil reserves and other resources of commercial value.

When Texaco came to drill for oil in the adjacent territories it appeared to carry on its activities without a concern for environmental destruction, the activities of its operations polluted the upper-reaches of the Amazon and had a devastating effect on fish, and animal resources, as well as human populations. When the activities were exposed a lawsuit was filed against them in Houston. The oil company fought tooth and nail to prevent the case from being heard in the US federal court. In fact, Texaco insisted the case had to be handled in Ecuador. Now their successes are arguing vigorously that the courts they insisted upon for litigating the case are incapable of giving them a fair trial. It may well be that they will face liability of substantial billions of dollars. The extent of the environmental pollution is in some estimates 4 or 5 times greater than the Exxon Valdez mess in Alaska.

In the meanwhile, other oil companies brandishing alleged concessionary agreements attempted to physically invade territories of the Shuar and its allies with bulldozers and armed operatives. Thousands of indigenous people showed up to prevent another massive oil pollution problem. In the stand-off the lawyers from Houston insisted to the indigenous leaders that they were only there to claim their lawful rights. They acquired these allegedly lawful rights without any indigenous people or leaders knowing about it. To the shock of Houston finest, the Shuar produced a copy of a Bill of Rights which the Shuar have adopted through the lawful processes available to them under Ecuador's Constitution. In the Bill of Rights, there is a specific clause governing the standards that have to be met in order to secure a valid deed of concession. That provision is quoted because it is an example of an indigenous community being able to speed up juridical space and time for the purpose of filling a notorious vacuum in the law that might have put them at risk. This is an example of proactive decision making filling legal spaces.

ARTICLE 36, Bill of Fundamental Rights of the Shuar

In order to protect the patrimony of the Shuar for this generation and for generations to come, it is solemnly declared that the sovereignty over the land of the Shuar belongs to the Shuar now and to

the generations to come. All consultations affecting any rights contained in this Declaration must be performed through the authority of the Federation. Any agreement, contract, conveyance, sale, concession, license or any other form of agreement or understanding made pursuant to a consultation with the Federation shall be committed to writing and must in every particular conform to the rights declared in this instrument. Such document shall be a public record and available to the Federation and to any Shuar citizen upon request. Any agreement or understanding generated from any prior consultation at any time must now be renegotiated and involve a new consultation to ensure that such agreement or understanding is fully consistent with all the rights declared in this instrument. Indigenous peoples have the right to the recognition, observance and enforcement of treaties, agreements and other constructive arrangements concluded with States or their successors, according to their original spirit and intent, and to have States honour and respect such treaties, agreements and other constructive agreements. Conflicts and disputes which cannot otherwise be settled should be submitted to competent international bodies agreed to by all parties concerned.

This document of the Shuar was based on provisions codified in what was then a Draft Declaration on the Rights of Indigenous People. The Draft Declaration itself restated and codified important principles of human rights that had been developed by the ILO for the protection of indigenous people. The adoption of the Draft Declaration last October was an enormously difficult political exercise and it took years of negotiation to secure its passage. The Draft Declaration was far more controversial than the adoption of the Universal Declaration of Human Rights. The human rights of indigenous people, which implicates land and environmental factors, has had to rely on clarification in the application of human rights standards to important issues of environmental integrity that deeply implicate their interests. Thus, the issue of climate change in the context of the themes of space, time, and uncertainty and the particular application to the lands and peoples who live in politically contested environments arises.

The legal status of indigenous communities within sovereign States has historically been one of severe deprivation for such communities. The central problem such communities face is the denial that there own cultures have articulate juridical concepts by which they can secure their most valuable assets, the environment within which they live. This has resulted in for example, the petroleum extraction scandals in Ecuador where the Texaco operations are responsible for polluting the world's most important tropical forests, the scale of which is estimated to be 4, or 5 times the scale of Exxon Valdez. In the litigation involving this case, the indigenous communities sought to bring their legal claim in Houston Texas, in the courts where the defendants were doing business. The defendants fought against the suit being litigated in Houston on the basis that the pollution had occurred in the Ecuadorian/Amazonian rainforest and it was inconvenient (forum non-convenience) to litigate the case in Houston. The Texas courts agreed and the case was dismissed.

The plaintiff's filed a suit in Macas, Ecuador, and this time they were confronted with a very tough Ecuadorian local judge. It appears that the oil company is going to be liable for damages in the region of multiple billions. Currently, the oil defendants are back in US courts attempting to see whether contrary to their early claims, they could remove the case to the US. What is critical is that the decision-making capacity of indigenous nations has had to evolve to meet the threats to their survival, and to protect the fragile rainforest ecosystem from further deprivation. Thus, it may be that there is an evolutionary necessity which stresses the need to engage in decision-making strategies, which include litigation and which is able to appropriate global legal resources to secure

the protection of what is in effect a global commons in which the indigenous people are both stakeholders and guardians. One of the most important global initiatives to limit the power of the State has been the generation of both hard and soft law understandings through the work of the International Labor Organization and the UN forum on the Rights of Indigenous People. These forms of law have been critical in limiting the destructive power of the State or predatory interest groups.

Climate Change and its Implication for Human Rights Interests and Values

Climate change in Amazonia is one of the most critical factors shaping the state of the global environment. The terms climate change cover a wide range of human interests and values. The raw numbers belie their importance for the future of the human prospect. Just a few degrees of global warming may trigger a melt down of the polar ice caps triggering vast changes in the climate and weather patterns, as well as, significant increase in the level of planets oceans.[37]

Climate change effectually means risking well being, health and more broadly, dangerous ecological change. Environmental change has consequences for human well being, health and indeed for life itself. Environmental degradation, conditioned by dangerous climate change demonstrates the interdependence of fundamental human values and environmental integrity. The Millennium Report of the former Secretary General Annan underscored on the clear interdependence of human rights and the environment. If the environment collapses, Human Rights, prospects collapse. This insight would appear to be a Universal warning for those who take human dignity seriously. However, those most immediately affected by dangerous climate change may be the weakest communities in the world.[38] Moreover, the moral calculus of Human Rights victimization because of climate change will probably be immediate and catastrophic for the weakest populations. These nations include the indigenous First Nations of Amazonia.

Dangerous climate change will threaten human access to resources necessary for survival itself: food security, access to water and basic health services. Because the weakest must bear the cost of the abuse of the environment by the strongest global interests, we are compelled to bring to the focus of Human Rights concern an acute discriminating moral calculus. The moral calculus becomes more poignant when it is suggested that a significant factor in dangerous climate change is unregulated industrial enterprise. For e.g. food, security is threatened by the monopolistic trend implicit in Global agri-business. States, which receive foreign assistance, must deregulate and permit global market forces to determine access and the pricing of food commodities.

[37] The results of temperature rise according to some predicted models suggest that if things remain as they are we will have an ice-free Arctic in 2040. Such an environmental event has not existed for almost a million years. Models that are more recent predict an ice-free Arctic by 2013. Environmental change is happening faster than some predicted models. Related to this aspect of Global Warming is the anticipated loss of glacier mass. It is predicted that this will have a dramatic effect on water resources, agriculture and bio-diversity and would negatively affect 40% of the world's population. Scientists also attribute a drought, fires, floods and extreme weather events to climate warming. *See* Plants and Climate Change: Which Future? By Hawkins Sharock and Havens.

[38] For e.g. the depletion of ozone layer above, Australia is causing skin cancer and other skin diseases to the Australians.

The weak states have no safety net touching food security. The weakest are at the mercy of impersonal global market forces. Conventional environmental law requires regulation. Conventional Human Rights requires regulation. Ideologically driven versions of a theoretically pure market require no regulation. Thus, we see the clash of normative priority; to regulate or not to regulate is the critical question.

How may these issues affect the indigenous people of the rain forest of Amazonia. Secretary General Ban Ki-moon has affirmed that nations least responsible for climate change suffer disproportionately from its environmental impact. The moral calculus we have presented involving the interdependence of the environment and Human Rights on the one hand and the power of a impersonal market forces on the other has raised the question about the precise normative priority of respect for the environment, Human Rights and more specifically the Human and environmental rights of indigenous communities.

The recognition that environmental integrity is critical to the protection and promotion of Human Rights is at least implicit in several early Human Rights instruments. The Covenant on Economic, Social and Cultural Rights stipulates the Right to Adequate Standard of Living as well as the Highest Attainable Health Standard. The Covenant on Civil and Political Rights stipulates the Right to Life.

Filling the Legal Space between Environmental Rights and Human Well-Being: the Relevance of Human Rights

From these implicit Human Rights, roots the connection between environmental rights and Human Rights becomes more explicit:

> "*Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears solemn responsibility to protect and improve the environment, for present and future generations….*"

For the purpose of Amazonia, the additional protocol to the American Convention on Human Rights specifically mentions environmental issues. The International Labor Organization Convention No.-16, covers the Rights of Indigenous and Tribal Peoples in Independent Countries, specifically recognizes the fundamental principle that the land resources and environment are the basis of such communities. It stipulates that special measures shall be adopted to protect the environment of indigenous people consistent with freely expressed wishes (Art.4). ILO Convention 16 also requires that planned development be preceded by an environmental impact assessment in co-operation with the people concerned (Art7 (3)). Art11 of the San Salvador Protocol stipulates the right to healthy environment and public services for all. It also stipulates the protection, promotion, preservation and environmental enhancement.

To the extent that indigenous people also enjoy the status of minorities, the Sub-Commission on the Prevention of Discrimination Against Minorities generated the Draft Declaration on Human Rights and the Environment, showing, that these themes are universal, interdependent and indivisible. This principle was also influential in the drafting the 1992 Rio Declaration on the environment and development. In 1994, the UN

General Assembly affirmed in resolution 45/94, the Environmental Human Rights connection.

One of the most important Human Rights Developments from the perspective of indigenous people of Amazonia was the UNECE Convention on access to information, public participation in decision-making, access to justice in environmental matters (1998). This Convention establishes the further link that transparency, accountability and decision-making are critical factors in fully recognizing Human Rights and Environmental Rights in the practical world of authoritative decision making. The central and critical principle, which is an important yardstick for the people of Amazonia, is the focus on environmental awareness as a tool of political empowerment for the people and a principle of accountability and responsibility at least on the part of the State.

The Specific Relevance of the UN Framework Agreement on Climate Change and Related Initiatives

For the purpose of this presentation, the critical United Nations instrument on Climate Change is United Nations framework Agreement on Climate Change (opened for signature in 1992, entered into force in 1994). Its objectives are expressed in Art.2 as follows:

> *'The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a period sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'.*

The subsequent Convention to Combat Desertification was adopted in 1994. This Convention provides more specificity to the Human Rights issues that are inherent in environmental destruction. Currently 192 states are parties. This Convention is especially important to the custodians of the rain forest.

One of the outcomes of global warming and dangerous climate change is desertification. This Convention focuses on the responsibility of the State, community participation and the important role of developed States. The significance of the integration of a Human Rights approach to this specific environmental threat lies in community participation and essential transparency. These developments would mean very little if they could not be given operational importance. Among these issues is the importance of advocacy, that is driven by ecological and Human Rights perspectives. Advocacy in the abstract cannot be effective without resources. The absence of advocacy resources means that indigenous nations do not have the basis to advocate wise policies dealing with fundamental interests. Advocacy and interest articulation are critical ingredients for participation in the decision-making process concerning the interests of the indigenous nations in vital Human Rights and environmental values.

One of the central weaknesses, which have historically served to destroy the Human Rights and eco-system values of indigenous nations, is of the fact that their autonomous decision-making processes are marginalized, repressed and resource starved. Wise policy, which serves the interests of indigenous communities, must respect the popular institutions of indigenous nations. Because of the technical nature of environmental issues the importance of science technology, knowledge generation and sharing are critical participatory tools for indigenous communities. Resource scarcity undermines the access to the full expression of this right, which is essentially a Human Right of political association and participation.

The transfer of core resources and decision-making skills come under the category of capacity building that is critical for the protection of the rain forests and the communities who are living there. The poverty of indigenous communities literally means - weakness, beyond even economic weaknesses. Threats to the rain forests carry the possibility of wide spread poverty and disempowerment. Additionally the violation of land and ecological rights requires access to justice. Access to justice requires resources including technical and professional representation at all levels.

Critical to the protection of the indigenous communities in Human Rights in Amazonia is the issue of land and resource assets related to land. The Shuar and other important Amazonian communities have led Latin America in seeking to protect the rain forests. They have received no rewards, recognition or compensation. Rather they have seen as a stumbling bloc to predatory interests seeking to destroy the rain forests, the larger eco-system including whole communities.

Another critical issue is the wholesale of transfer of traditional technologies in particular traditional knowledge dealing with botanical assets of pharmacological, medical and scientific value. This whole sale plunders via bio-piracy and bio-prospecting takes the benefits but gives no recognition of the cultural contribution of the indigenous people. Such appropriations hold economic values but more than that they also represent a complete disrespect for traditional culture by taking and not giving any credit or due respect to the community from whom such knowledge is appropriated. It is worthy of note that the knowledge drawn from bio-diversity and Shamanic insight would be destroyed by the effects of dangerous climate change. Dangerous climate change destroys biodiversity and may have untold impacts upon plant resources for human health related purposes. These two issues are, in important ways, connected to the specific problem of the protection of the rain forests and the threat of dangerous climate change.

Climate Change[39] and the Rain Forest as Protected Areas

One of the most important scientific findings is that *Green House Gases* are a major cause of *Global Warming*. Carbon dioxide (CO2) is the major element driving climate change because of its affect on global warming. One of the important reasons for the increase of CO2 in the atmosphere is deforestation. Forests are an important natural resource for removing CO2 from the atmosphere. The destruction of forests therefore has a significant impact on Global Warming. Global Warming generates floods and droughts, extreme weather, high storm intensity and appears to enhance diseases spread by insects.[40]

A central point about the relationship of all plant forms of life especially the Rain Forest, to climate change is that climate affects all plant life and plants in turn affect all other forms of life. Over one third of the earth's surface is covered by forest. Forests soak up CO2 and store it as biomass. Since forests are slow, growing their rapid destruction by climate warming will have major effects on environmental rights. Dead forests cannot absorb CO2. Changes in the ecosystem in a forest may create other imbalances in the ecosystem that are destructive. The human impacts on deforestation are issues that human beings can control and regulate with political work and technical and political skill. Thus, the work of conservation by indigenous communities is one of the most critical factors in seeking to solve the problem of Global Warming. Consider the following:

> "*The conservation of forests is therefore particularly important, offering opportunities to conserve species diversity as well as showing climate change. In terms of climate mitigation impacts, studies have shown that conservation efforts should particularly be focused on ancient old growth forests, as these store significantly more carbon than young forests (Broad meadow and Mathews,2003; Zhou et al.,2006). Though young, fast growing forests soak up carbon quickly, old growth forests store substantially more carbon in soils and continue to 'inhale' carbon even when growth has*

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[39] *Climate* is defined as the average 30-year weather patterns of a region (World Meteorological Association, no date). We do not need to be able to predict exact weather conditions to be able to understand average climatic change.

Climate change constitutes three main variables; elevated carbon dioxide (CO2), alters rainfall patterns and temperature ranges.

Dangerous climate was legally introduced as a term in 1992, when the United Nations Framework Convention on Climate Change (UNFCCC) called for stabilization of GHGs to prevent dangerous anthropogenic interference with the climate system. The Convention suggested that such level should be achieved within periods sufficient to allow ecosystems to adapt naturally to climate change; to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

Though scientific knowledge is insufficient to point to a single 'safe' GHG concentration, it has been suggested that the most serious consequences of climate change (i.e. dangerous climate change) might be avoided if global average temperatures rise by no more than 2-degree Celsius above pre-industrial levels. Any temperature rise above this would significantly increase risks of irreversible feedback mechanisms that could produce run away climate change. GHG emissions of 550ppm would very likely raise temperatures above that level, and so an appropriate precautionary approach would aim to stabilize emissions as far below 550ppm as possible (Schellnhuber, 2006). A 2006 study by Lowe *et al*. (2006) showed that even with stabilization at 450ppm, 5% of the modeled scenarios led to a complete and irreversible melting of the Greenland ice sheet.

In 2006, the Stern Review calculated a 77-99% chance of a 2 degree Celsius rise before 2035 and at least a 50% chance of exceeding 5 degree Celsius during the following decades. We are rapidly approaching this mark.

[40] *See* Plant and Climate Change: Which Future? Page 12.

slowed. Converting the old growth forests to faster growing young plantations is not therefore an effective method of increasing NPP and CO2 storage. In fact, carbon storage of young forests does not even approach old growth capacity for at least 200 years (Harmon et al., 1990). With respect to their environmental responses, mature forests also have well-established root systems and are less sensitive to moisture changes in the short term (Agarwal & Agarwal, 2000)."

It would be useful to place the populations of Amazonia in to the Global context. Globally 350 million people live in forest areas and 1.6 billion rely on the forest assets for their livelihood. Some two billion people are dependant on traditional medicines, which are harvested and developed. Indeed the World Health Organization (WHO) has stated that 80% of the global population relies for primary health on traditional medicine. Trade in traditional plants is estimated to be a 60 billion in a year industry. Thus, the threat of climate change and deforestation will affect adversely the health needs of billions of people. The proposed strategies apart from the reduction in green house gases are to develop a global approach for plant conservation. This includes understanding, identifying and documenting plant diversity, developing conservation strategies, sustainable use of endangered species promoting educational awareness and capacity building in this field.

These strategic proposals have impacts on indigenous nations who live in complex interdependencies with the forests. For any of these initiatives, the critical Human Rights issue is participation in decision making about these strategies and the Human Rights consequences for indigenous communities. Before there can be participation there must be cooperation and understanding about the process and outcomes of access, sustainability and benefits. Participation as a right may be weakened by the much abused term "consultation." In fact, past practice has used the concept of consultation to undermine participation. Participation as a right may be related to the word consultation. However, past practice does not necessarily confirm this. Participation must be supported by informed consent for access as well as benefit sharing, for the further use and exploitation of plant diversity important to commerce, science and medicine. In the next section we focus on some specific strategies that directly impact the indigenous patrimony over the Amazonian Rain Forest and the possibility that naïve good intentions may have unintended consequences. One of these new initiatives is the stratagem of defining protected areas for conservation. Those protected areas are often areas occupied by indigenous people and it is unclear what the broader implications are if protected areas are forms of state expropriation of the human rights of indigenous people.

The Issues of Protected Areas, Carbon Trading, and Indigenous Rights

The protected areas concept has become a vehicle for attempting to constrain the destruction of the eco-system thus facilitating climate change. The protected areas however, contain human populations and often these populations are completely ignored in the way in which the States declare unilaterally that the ecosystems of indigenous populations are now State protected areas. Emerging practice from the State of Ecuador illustrates:

The indigenous people of Ecuador maintain that the only reason that the State of Ecuador has any protected areas (which is has declared) is because the indigenous people have protected these areas for hundreds of years from the State and its surrogate

predators. Possibly a similar story prevails in many other states. Now, these protected areas can be used by the State for carbon trading. Our protected areas are now all of a sudden being given State protection by a massive implication that the self-interest of the State is genuinely environmental altruism and human rights sensitivity. If history is to be a judge, these are very testable perspectives. Many indigenous communities, especially those whose lands were spectacularly polluted by foreign corporations, and state malfeasance will not doubt be highly skeptical of this form of born again altruism.

It will be obvious that the Republic of Ecuador by designating parts of the rain forests as protected areas, in which the facilitation of resource exploitation in petroleum and related resources will be ended or limited, may provide the State with a potential asset in the form of carbon credits, which may be traded in various carbon exchange markets. The State may also negotiate with an entity such as the European Union (EU) in terms of its net loses in preventing in restricting the production of petroleum products for the world market from these protected areas.

The Ecuadorian State is reported to have negotiated with the EU for a payment of some quarter of a billion dollars. According to the German press, the EU has offered debt reduction in region of some 200 million dollars with approximately 40 million in aid. The status of these negotiations is not publicly clear at this time. However, implicit in these negotiations is the principle widely discussed and still in its early stages of creating a kind of carbon pollution commodity exchange system. This initiative globally is known as the '*CARBON CAP AND TRADE INITIATIVE'*. The technical detail of the mechanism is complex and cannot be easily summarized in a paragraph. What can be provided is the general framework of how it supposed to work. It must also be remembered that however elegant the general model, the devil will repose in the fine print. It will repose in the detail of particular cases and not in theoretical abstractions.

The central question is one of clarification of values. Is the right to pollute a property right? Is it wise to make pollution a commodity vested with property values? We indigenous communities still marvel at the discourse internationally and nationally which holds that our traditional knowledge may not be of value and may not be property, and in worse scenarios, that we hold no property rights ourselves. Fundamentally, the question before us is the basic idea that pollution is a commodity, a kind of property right of economic value that may be licitly traded on the global market. Bringing the market into the picture brings with it a powerful ideological preference for non-regulation. A non-regulated or weakly-regulated global carbon trading market may well result in a catastrophic effect accelerating global warming and dangerous climate change. The ideological preference in the market for non- regulation may of course result in a catastrophic failure for the environment. If the right to pollute is only constrained by the market, then the issue of self-interest versus the common interest in the well-being of all is an issue at considerable risk of confusion, to say the least.

It seems to me that a corporation that functions in a weakened climate of social and corporate responsibility may as a rational self-interested actor assume that if the right to pollute is more profitable than the right to constrain pollution it will chose the former. Moreover, a corporation may rationally calculate that the added cost of purchasing pollution credits is the cost that can be passed on to the consumer at least up to the point that it predicts a depreciation of its market share. In general, this is the big downside to this approach.

The Basic Elements of the Cap and Trade Approach[41]

Here is an example: assume that a group of States agrees to cap their carbon emissions at a certain presumably statistical level. They agree to create a body for issuing permits to the industries that pollute. The permits are simply a permission that tells them what the ostensible limit of pollution by them is permissible over a certain period. Companies have an incentive to pollute below the limits are allowed to trade carbon credits for value. These are Emission Credits. If they exceed the limits, they will be assigned sanctions for exceeding the limits. However, they may purchase credits, which give them the right to exceed those limits. In the US, the right to trade pollution is part of the revised *Clean Air Act of 1990*.[42]

The Unites State has experience with a very limited market, or universe of polluters, and has some modest success. However, this model is not sufficiently developed for the entire earth space community. While modest positive outcomes have happened, those results must be treated with caution from a global perspective. The idea of a global marketing pollution experiment is a huge gamble in which the risks to the human habitat are unimaginable. Thus, as an environmental, market driven experiment with the world as a guinea pig, this is an untested policy with limited public participation and feedback. A good example is the situation in the European Union.

In 2003, the EU looked at 9,400 polluting corporations in 21 states. This was the foundation of the EU green house gas emissions trading mechanism. In 2005, the EU collected self-estimates of corporations concerning the volume of pollution they put out. The EU then distributed valuable carbon credits ***free*** to these corporations based on their self-declared pollution impact. Since these permits were issued free, they have economic exchange value. The corporations got the permits free and could sell them making money. They were thus, selling the right to pollute.

It was later determined in 2006, that all these companies had polluted below their own self-estimates. This co-incidence implied that the companies had inflated their numbers and thus, they could sell excess credits. In effect, they were selling the right to pollute, increasing the problem of global warming. Of course, if there is surplus of credits to sell there will be an incentive to enhance pollution in order to make the credits more profitable. This is a concern with a highly self-interested incentive. A recent study has indicated that the carbon trading has not resulted in a decline in European carbon emissions.

Of course, there are multitude of models that touch on the issue of trading and the development of carbon off sets. However, our concern for this conference is from the point of view of using some version of these models by the state for the ostensible purpose of environmental security but may have the effect of undermining the Human

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[41] Two useful studies are Michael Wara, IS THE GLOBAL CARBON MARKET WORKING? Nature (February 2007). Additionally, an important study outlines the conceptual tensions between the regulatory approach to climate warming and the emergence of an investment centered paradigm. *See* Michael Shellenberger, et al, FAST, CLEAN AND CHEAP: CUTTING GLOBAL WARMINGS GORDIAN KNOT, The Harvard Law and Policy Review, Vol 2, No 1 (2008), p. 93ff.

[42] The Clean Air Act of 1990.

Rights of indigenous communities who own the resources of some of these national park protected areas.

Regarding the declaration of protected areas inside the sovereignty of an Amazon Rain Forest Nation, has generated serious concerns about the adequacy of participation in the decisions about the declaration and what agreements impacting the process are made by the state and outside interests. For example, in the Shuar territory of Ecuador about the size of Belgium, the Shuar have a petition based on a strong legal foundation that they are the owners of this portion of the Rain Forest, which they have secured, in pristine condition. Has the act of declaring a protected area by the state meant that all their rights now are expropriated and all their legitimate concerns about alien intrusions are now illegitimate? At the back of the State of Ecuador's concerns is the enormous store of natural resources of untold wealth in which the state is now asserting a form of creeping expropriation ownership.

The World Bank has gotten into the process as well and is willing to significantly fund market-driven carbon capping access to traditional lands with no consultation and no participation by the indigenous nations of the region. In a recent paper given by Bolivian scientists they carefully reviewed the fine print of a cap and trade deal in which the indigenous peoples interests was marginalized. It turns out that the company that brought into the carbon credits appropriated to itself 51% of the funding for its use of its technological facilities to measure the quantum of the carbon cap. The state took a lion share of about 30%, the local government of non-indigenous took some 18% and a fraction of what was left was allocated to indigenous needs. Quite clearly, the devil lurks in the fine print. In the next section, we consider the critical component of participatory rights in the processes of local to global climate warming policy.

One fact stands out clearly. The heroes of conservation preservation remain the indigenous peoples of the planet and in particular, the indigenous nations of Amazonia. It is not appropriate for the World Bank to structure negotiations with various parties and exclude the indigenous political leadership from these secret discussions on the basis that the World Bank only negotiates with states. In fact, the World Bank is not beyond international law. When confronted with the problem of this nature, it should consider whether its rules are consistent with international law, in particular, the law that deals with the human right to participant of indigenous people. In this next section then we look at the concepts of free prior and informed consent as a component of the right to political participation concerning fundamental decisions affecting the well being and existence of indigenous people and their longstanding role in the front line of environmental integrity.

The Law of Free Prior and Informed Consent of Indigenous Nations

A principle of Human Rights law relating to the rights of indigenous nations is the principle of informed consent and the right to participate in decisions that impact upon the fundamental rights of indigenous people. The right to participate is meaningless if there is disrespect for the institutions of governance of indigenous leaders who authoritatively represent the people. This is a process that has been cynically abused by both private interest groups and corrupt or incompetent government functionaries. This has been described as cynical because it is a complete corruption of the solemn

undertaking that the State has committed itself to in international law. The State of Ecuador, for example, belatedly latched on to ILO Convention 169, in which the term *'consultation'* is used with regard to indigenous lands and interests. This term is used in the Convention only with regard to interest in Indian lands that have been lawfully appropriated by the state. It is preceded by a paragraph that clearly protects all interests in land whose ownership vests with the indigenous nations. The concept of consultation is meant to communicate in good faith with the legitimate leadership with the indigenous communities.

In the current context, the central point is that when a protected area is proclaimed without prior informed consent and without consultation that is meaningful, and when the non- exploitation of indigenous resources is a matter of value to be negotiated and traded in some version of the urban trade market, to whom do the benefits flow? If there is an agreement to give the government of Ecuador 240 million dollars a year not to explore and develop resources not owned by the government but by the indigenous nations, are these nations entitled to benefit sharing of these assets for internal development?

Among the most important developments of modern Human Rights, law has been the right of self-determination. This right is sometimes expressed as being tied to independence. However, it is also a critical right of indigenous communities to seek a degree of self-determined authority and competence to protect and enhance their most fundamental values. In this context, the evolving of law of Human Rights stresses the right to participate in the decision-making processes that impact upon the survivability and essential dignity of indigenous nations. This right to participate in decision making also seeks to ensure that the elected and authorized leaders of indigenous communities are protected in the tasks of evolving their political and economic skills and transferring such competence to the people themselves. We conclude our presentation drawing on material developed by the Amazon alliance and the author given in Bonn Germany, June 3, 2008.

The ILO Convention 169 was one of the first treaties to recognize explicitly the right of indigenous peoples to participate in decision-making process - including their right to prior informed consent. Subsequently, other treaties, including, the Convention on the Elimination of All Forms of Racial Discrimination, the American Convention on Human Rights, and the American Declaration of Human Rights, have been interpreted as requiring recognition and implementation of the rights of indigenous peoples to free, prior, and informed consent in order to effectuate the substantive rights embodied by these treaties. The Committee interpreting the Convention on the Elimination of All Forms of Racial Discrimination has indicated in fact, "members of indigenous peoples have equal rights in respect of effective participation in public life, and that ***no decisions*** directly relating to their rights and interests are taken without their informed consent."

The Inter-American System of Human Rights has been particularly explicit about the need to secure the prior informed consent of indigenous peoples with respect to activities that may affect their lands and other natural resources even when the State has not recognized indigenous peoples' property rights. Most recently, the UN Declaration on the Rights of Indigenous Peoples strongly recognized the rights of indigenous peoples to control access to and manage their natural resources. For example, "*States shall consult and cooperate in good faith with the indigenous peoples concerned . . . in order to obtain their free, prior and informed consent before adopting and implementing . . . measures*

that may affect them". Additionally, "Indigenous peoples have the right to participate in decision-making in matters which would affect their rights". Furthermore, "Indigenous peoples have the right to determine and develop priorities and strategies for exercising their right to development."

Clearly, international law requires respect for the rights of indigenous peoples to participate in decision-making processes not only at the project level, but also at the level of international decision-making. Decisions made in these international processes obviously will have far-reaching and profound impacts on decisions made at local levels and implications for many significant rights of indigenous peoples. This may be especially true of international negotiations convened under the auspices of UN bodies.

The UN Declaration stipulates that "The organs and specialized agencies of the United Nations system and other intergovernmental organizations shall contribute to the full realization of the provisions of this Declaration through the mobilization, inter alia, of financial cooperation and technical assistance. Ways and means of ensuring participation of indigenous peoples on issues affecting them shall be established."[43]

For all the aforementioned reasons, the current climate change negotiation must respect the right of indigenous peoples to free, prior, and informed consent. In addition, these principles reflect the broader standard of the right to participation as a human right. The decisions taken at the negotiations will have an impact on indigenous peoples, whose livelihoods, cultures and well-being depend on natural resources that are adversely impacted by climate change events. Consequently, their free prior informed consent must be obtained before final decisions affecting them are made.

Conclusion

Law has sought to file vacant spaces and gaps in a way that is characteristic of how lawyers define problems and purport to solve them. This means that lawyers have had to use the human factor to better understand and manipulate both the time and space dimensions of the legal event manifold. What is important is that the human factor does seek to fill the gaps and we see this historically from the operational uses of the Roman law *ius gentium* to the modern law of human rights in the global system. The relationship of science to law is complicated because scientific advances pose difficult questions that are often in advance of legal thinking. On the other hand, scientific ideas, metaphors and analogies have been enormously useful in deepening our understanding of the potentials, limits, and importance of law in human governance.

[43] The UN Declaration on the Rights of Indigenous People (2007).