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Legal Theory and the Anthropocene Challenge: The Implications of Law, Science, and Policy for Weapons of Mass Destruction and Climate Change: The Expanding the Constraining Boundaries of Legal Space and Time and the Challenge of the Anthropocene

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INTRODUCTION

The theme of this article is the anthropocene crisis of the 21st century. In the evolution of Earth's history, we have progressed into a period where human actions have a drastic impact on and influence the planet. This period of the Earth's evolution is regarded as the anthropocene period.[1] The concept of understanding the Earth-Space community in terms of its

[1] Scientists "identify the anthropocene as a central and yet ambiguous system of thought for Earth, System, and Science that both challenges and reproduces the Enlightenment, promise of human self realization, autonomy, and control. While the anthropocene imagery rests on the daunting human transformations of the earth's land surface, oceans and atmosphere, our analysis suggests this imagery paradoxically mediates the very mentality that has brought about these transformations in the first place." Eva Lovbrand et al., *Earth System Governmentality: Reflections on Science in the Anthropocene* 19 GLOBAL ENVIRONMENTAL CHANGE 7 (2009).

promises, threats, and impact on society's survival is the concept referred to as the anthropocene challenge. According to Crutzn and Estoermer, the original meaning of the anthropocene represents a "new geological Èpoque dominated by human activity."[2]

As the Earth advances into the anthropocene period, society must be careful to avoid catastrophe. Tom Brooks describes, "one of the central features of the anthropocene is a looming extinction event . . . on par with the five catastrophic mass extinctions of Earth's history."[3] Of the many human activities that burden the Earth, destruction of natural habitats, disease, over harvest and climate change are the ones that have the biggest impact for the anthropocene challenge.[4] Closely tied to environmental issues, nuclear weapons and the global war-system also are a resounding concern. Scientists have applied the anthropocene way of thinking to what they call "earth system science" as a novel approach to global environmental change and research.[5]

To avoid the impact of man's ability to fold space and manipulate time from becoming catastrophic to Earth's existence, one must look beyond hard rules and instead examine decision-making techniques. Intuitively this crisis reflects the development of human capacity to make choices to master the socio-ecological reality. To examine the anthropocene challenge, more sophisticated tools than conventional legal analysis is required.[6] Implicit in the generic idea of law is the notion that laws emerge from natural order and generate their own self-regulation. Thus, some legal theories have borrowed from science and the laws of physics to combat the anthropocene challenge. However the boundaries of

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2 *Id.* at 10.

3 Tom Brooks, The Anthropocene Extinction Event: Magnitude, Phylogeography, Geography, Causes, Consequences, and Responses, (Conservation International, abstract, 2009), available at http://extinction-workshop.psu.edu/abstracts/brooks.pdf.

4 *Id.*

5 Lovbrand et al., *supra* note 1, at 14.

6 Supreme Court justice, Oliver Wendell Holmes, Jr. expressed the powerful view that law does not autonomously function in a strong box of legal rules and precepts. *See, e.g.,* OLIVER WENDELL HOLMES, JR., THE COMMON LAW 5 (Transaction Publishers 2005) (1881) [hereinafter *HOLMES, THE COMMON LAW*]. On the contrary, it was driven by human agents of decision in different roles. Holmes emphasized that "the life of the law has not been logic, but experience" and believed in a court that evolved with a changing society instead of holding on to worn-out slogans and formulas. *Id.* at 1. This insight, with its emphasis on the role of decision and choice, required a broader framework of understanding rooted in human experience, rather than logical syllogism. It is the evolution of Homes' insight that expanded the epistemology of law as a critical component of scientific inquiry, description and analysis.

science are invariably uncertain and establishing an appropriate standpoint from which to describe and evaluate the inter-stimulation of both juridical and eco-social relationships is complex. In particular, there is the question of the relativity of the observer, motion, and time.[7] Additionally, there are 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.[8] It is possible that the relativity principle and the spatial location of the human agent effectually suggest a multitude of possible standpoints of observation[9], each that will affect what is observed and how it is observed as well as the ostensible effects of mere observation on the object of observation.[10] Thus, in the

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[7] *Compare generally,* Richard P. Feynman, The Character of Physical Law 9 (M.I.T. Press 1967), *with* Jeffrey Satinover, A Quantum Brain: The Search for Freedom and the Next Generation of Man (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. *Lionel Murphy, The Responsibility of Judges, in* Law, Politics and the Labor Movement, 5-6 (Gareth Evans ed., 1980).

[8] The scope of research in the aftermath of the work of these early twentieth century physicists has been provocative and far reaching. For an overview of this research see LYNNE MCTAGGART, THE FIELD: THE QUEST FOR THE SECRET FORCE OF THE UNIVERSE (Harper Collins 2001). In the context of the connections between the physical and the biological reality see Fritz-Albert Popp & Jiin-Ju Chang, *Mechanism of Interaction Between Electromagnetic Fields and Living Systems*, 43 SCIENCE IN CHINA 507, 507-18 (2000). For specific applications to medicine, see Jacques Benveniste et al., *Specific Remote Detection of Bacteria Using an Electromagnetic/Digital Procedure*, 13 FASEB J. A852 (1999). The collaboration of Dean Robert G. Jahn and Brenda J. Dunne is also of significance. *See generally* Robert G. Jahn & Brenda J. Dunne, *On the Quantum Mechanics of Consciousness with Application to Anomalous Phenomena*, 16 FOUNDATIONS OF PHYSICS 721 (1986). *See also* ROBERT G. JAHN & BRENDA J. DUNNE, MARGINS OF REALITY: THE ROLE OF CONSCIOUSNESS IN THE PHYSICAL WORLD (Harcourt Brace Jovanovich 1987).

[9] For a discussion of the importance of the observation standpoint to a theory of inquiring about the law see 2 Harold Dwight Lasswell & Myres Smith McDougal, *Trends in Theories about Law: Establishing and Maintaining an Observational Standpoint, in* JURISPRUDENCE FOR A FREE SOCIETY: STUDIES IN LAW, SCIENCE, AND POLICY, 39-48 (Harold Dwight Lasswell & Myres Smith McDougal eds., Martinus Nijhoff 1992). *Compare also* J.W. Bingham, *What is the Law?*, 11 MICH. L. REV. 1 (1912) *and* Thurman W. Arnold, *Institute Priests and Yale Observers--A Reply to Dean Goodrich*, 84 U. PA. L. REV. 811 (1936) *with* William L. Twining, *Pericles and the Plumber*, 83 LAW Q. REV. 396 (1967).

[10] This is a significant issue touching on the understanding of the so-called nonlocal mind. There is much speculation in physics about this idea. The terminology "non-local mind" was introduced in 1989 by Larry Dossey. *See* LARRY DOSSEY, RECOVERING THE SOUL: A SCIENTIFIC

legal paradigm, the law may vary depending on the standpoint of the observer. This article seeks to add to the discourse generated by the anthropocene perspective by giving that perspective a self-conscious focus on decision-making which provides the challenges and opportunities that legal culture generates for the anthropocene crisis. The idea of legal theory as a self-conscious theory for inquiry about law has opened up the framework of observation and participation. It has heightened social responsibility in ways that have been creative and receptive to analogies and metaphors from the developments in modern science. This paper explores some of these dominant borrowed metaphors. It further emphasizes the importance of the wide range of concerns in law technically, as well as the law's capacity to manage and manipulate space and time implicating such issues as weapons of mass destruction, rights of indigenous people, deforestation, and climate change.

BACKGROUND

Law is a venerable academic discipline.[11] It is also a very ancient and practical profession.[12] The law is meant to respond to the flow of problems

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AND SPIRITUAL SEARCH (1989). Since coining the term, many scientists have explored this notion. Henry P. Stapp, a leading quantum physicist, observed, "[T]he new physics presents prima facie evidence that our human thoughts are linked to nature by nonlocal connections: what a person chooses to do in one region seems immediately to effect what is true elsewhere in the universe. This nonlocal aspect can be understood by conceiving the universe to be not a collection of tiny bits of matter, but rather a growing compendium of 'bits of information... .'" Henry Stapp, *Harnessing Science and Religion: Implications of the New Scientific Conception of Human Beings,* 1(6) RES. NEWS OPPORTUNITIES SCI. THEOLOGY 8 (2001). Stapp further postulates that "our conscious thoughts ought eventually to be understood within science and that when properly understood, our thoughts will be seen to DO something: they will be efficacious." *Id.* However, the notion of a nonlocal mind has been around since Rene Descartes' dualism concept. "Rene Descartes was among the first to realize that mind or consciousness in the mechanistic worldview of classical physics appeared to exist in a realm separate and distinct from nature." ROBERT NADEAU & MENAS KAFATOS, THE NON-LOCAL UNIVERSE: THE NEW PHYSICS AND MATTERS OF THE MIND vii (1999).

[11] *See e.g.,* 1 GAIUS, THE INSTITUTES OF GAIUS: TEXT WITH CRITICAL NOTES AND TRANSLATION (Francis De Zulueta ed., trans., Clarendon Press 1946); A.M. HONORE, GAIUS, A BIOGRAPHY (Clarendon Press 1962); A.M. HONORE, TRIBONIAN (Gerald Duckworth & Co Ltd. ed., 1978); THOMAS COLLETT SANDARS, THE INSTITUTES OF JUSTINIAN (Longmans Green 1956).

[12] The orators of Ancient Athens are arguably the first lawyers. As early as 350 BC, Aristotle proclaimed the "rule of law is better than the rule of any individual." ARISTOTLE, THE POLITICS, Book 3:16 (Penguin Books 1962). In the translated version by T.A. Sinclair, it says "It is preferable that law should rule rather than any single one of the citizens." *Id.* at 226. However, one can argue that the legal profession began with ancient Rome. Romans were the first people

that emerge from social process. What is perhaps distinctive to the professional practice of law is not only drafting precepts of prescriptive value such as precedents, rules, codes, statutes, orders, decrees, legislation and constitutions, but also recording the micro-detailed particulars of human interaction. In that sense, as Justice Holmes suggests, law is an external or objective deposit of human experience.[13] Holmes was a towering legal figure of the turn of the 20th century, generating 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 logic, but in experience.[14] Holmes was expressing an idea, which became more fully developed in the philosophical pragmatism of the early twentieth century American outlook, identified as the revolt against formalism.[15]

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".[16] In this famous meditation on law, Holmes traversed many paths that explored the functions of law in social process. Holmes explained the limits of mechanical jurisprudence by suggesting: "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."[17] The seductions of legal logic and its presumed stabilizing qualities applied to resolve human problems are also put into serious question. 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"[18] Accordingly,

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who spent their days thinking about legal problems as more than simply a hobby, but rather, as an actual profession. *See generally* TONY HONORE, ULPIAN: THE PIONEER OF HUMAN RIGHTS (Oxford 2002). (arguing that the Ulpian sense of professionalism was deeply influenced by Stoic philosophy and that his legacy carries the seeds of human rights as well as professional values).

13 Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 457, 459 (1897) [hereinafter Holmes, *The Path of the Law*].

14 HOLMES, THE COMMON LAW, *supra* note 6, at p. 1

15 Formalism was also referred to as mechanical jurisprudence and dictated judges to decide cases based on distinct legal rules, leading to unique case-by-case results. THE BLACKWELL GUIDE TO THE PHILOSOPHY OF LAW AND LEGAL THEORY: AMERICAN LEGAL REALISM (Martin P. Golding & William A. Edmundson eds., 2004).

16 The speech was later published in an article, *The Path of the Law*. *See* Holmes, *The Path of the Law*, *supra* note 13.

17 *Id.* at 469.

18 *Id.* at 466.

"The life of the law has not been logic; it has been experience."[19] Holmes suggested that as a judge, he could give "any conclusion a logical form."[20]

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.[21] Focusing on judges as choice makers provided us with a framework and focus through which—after vast disputation[22]—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.[23] This led to another important development, namely that decision-makers respond to problems in good and bad ways.[24] 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.[25] Realism itself was taken in a direction unforeseen or anticipated by legal realists. The architects of that change were two Yale law professors, Harold Dwight Lasswell and Myres Smith McDougal.

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19 HOLMES, THE COMMON LAW, *supra* note 6, at 1.

20 Holmes, *The Path of the Law*, *supra* note 13, at 466.

21 Holmes, *The Path of the Law* at 460-461; Karl N. Llewellyn, *Some Realism about Realism – Responding to Dean Pound*, 44 HARV. L. REV. 1222, 1233-1241 (1931).

22 See, e.g., Winston P. Nagan, Not Just a Descending Trail: Traversing Holmes' Many Paths of the Law, 49 FLA. L. REV. 463 (1997).

23 *See generally* JURISPRUDENCE FOR A FREE SOCIETY: STUDIES IN LAW, SCIENCE, AND POLICY (Harold Dwight Lasswell & Myres Smith McDougal eds., Martinus Nijhoff 1992).

24 *See supra* note 21 at 1233-1241.

25 For a good review of American legal realism, see WILLIAM FISHER ET AL., AMERICAN LEGAL REALISM (Oxford University Press 1993). Famous theorists of legal realism include Oliver Wendell Holmes, James Thayer, Roscoe Pound, John Chipman Gray, Wesley Hohfeld, Karl Llewellyn, Arthur Corbin, Nathan Isaacs, Robert Hale, Harold Laski, and Max Radin. American legal realism was in reaction to formalism and postulated that courts decide cases on what is "fair" and the legal rules and reasons that were a hallmark of formalism were really only an afterthought to justify the courts' decisions that were based on nonlegal considerations. Brian Leiter, *American Legal Realism*, *in* THE BLACKWELL GUIDE TO THE PHILOSOPHY OF LAW AND LEGAL THEORY (Martin P. Golding & William A. Edmundson eds., 2004).

THE LAW, SCIENCE AND POLICY APPROACH OF MCDOUGAL AND LASSWELL

McDougal and Lasswell are the co-founders of a novel paradigm of jurisprudential discourse.[26] Their approach insisted on jurisprudence as a theory for inquiry about law, with a deliberate focus on decision-making. 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 deliberate focus on authoritative and controlling decision-making. Such a focus requires innovations in understanding the context of problems to which law responds in the form of decision-making (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.

McDougal and Lasswell characterized their approach to inquiry about law and policy as one that required "configurative thinking" or policy thinking.[27] Configurative thinking contemplates the establishment of a creative orientation to inquiry and involvement in an effort to influence beneficent outcomes.[28] As indicated, this is different than the conventional

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[26] Lasswell & McDougal, *supra* note 23.

[27] *See* LASSWELL & MCDOUGAL, *supra* note 23, at 34-36. The principal statement and delineation of policy-oriented jurisprudence is presented in Lasswell & McDougal's two-volume treatise. For earlier expressions of the approach, see HAROLD DWIGHT LASSWELL, WORLD POLITICS AND PERSONAL INSECURITY

(rev. introduction 1965), and Harold Dwight LASSWELL & ABRAHAM KAPLAN, POWER AND SOCIETY: A FRAMEWORK FOR POLITICAL INQUIRY (1950).

[28] LASSWELL & MCDOUGAL, *supra* note 23, at 34-36.

modes of thinking narrowly in terms of the "is" and the "ought" or thinking in terms of the logical syllogism.[29] Configurative or policy thinking therefore 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.

The approach of Lasswell and McDougal is very compatible with the challenges implicit in the anthropocene perspective, in particular its deliberate emphasis on human choice or decision-making. It is an approach that may have broader appeal in terms of science, including the social sciences. 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. This approach is influenced by scientific metaphors that borrow from the insights of relativity theory and ideas from quantum physics including the issue of uncertainty.

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.[30] 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 State in terms of the general notion of its spatial characteristics (territorial).[31] The concept of events captures the idea that events (which include regulation and control) are phenomena that have duration and therefore implicate time and space as

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29 *Id.*

30 *See, e.g.*, Harold Lasswell, Psychopathology and Politics (Univ. Chicago Press 1930).

31 *Id.* at 240-67

interrelated conditions.[32] 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.[33]

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.[34] 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."[35] Whitehead's concept of endurance required "a succession of durations, each exhibiting the pattern."[36] The concept of time in this view is simply a "sheer succession of epochal durations."[37] Whitehead encapsulated the notional basis of all events, which endure in the continuum: a "relationship enters into the essence of the event; so that, apart from that relationship, the event would not be itself."[38]

Whitehead stated, "The meaning of endurance presupposes a meaning

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32 *Id.*

33 Today, we experience a revolution in human communications. The new technologies of communication systems compress space and time and have created new realities such as cyber-space. On cyber-space, see MARK BUCHANAN, SMALL WORLDS AND THE GROUNDBREAKING THEORY OF NETWORKS 82-86 (W.W. Norton 2002). The central discovery regarding cyber-space is that the world wide web and the internet have evolved randomly and yet studies about its architecture indicate that there is a common universal architecture behind the apparent randomness of these communications systems. A good introduction to the voluminous scientific literature is found in ITHIEL DE SOLA POOL, POLITICS IN WIRED NATIONS: SELECTED WRITINGS OF ITHIEL DE SOLA POOL 15-16 (Lloyd S. Etheredge ed., Transaction Publishers 1998). The breadth of this field is suggested in the following statement of De Sola Pool:

> One can document the breadth of the topics that may be analyzed as political communication by reviewing some of the classical contributions to the field. Among works prior to 1914 that a student of communication would have to consider as major contributions to his field would be Plato's Gorgias, which considers morality in propaganda; Aristotle's Rhetoric and Mill's System of Logic, which analyze the structure of persuasive argumentation; Machiavelli's The Prince and Lenin's What Is to Be Done?, which are handbooks of political communication for the securing of power; Milton's Areopagitica and Mill's On Liberty, which consider the systematic effects of permitting individual variation in the flow of political messages; Dicey's The Development of Law and Opinion in England in the Nineteenth Century, which considers the effects of the ideological context on public actions; and Marx's German Ideology, Sorel's Reflections on Violence, and Pareto's The Mind and Society, which distinguish the social function from the true value of beliefs. *Id.*

34 *See* Alfred North Whitehead, Science and the Modern World 83–186 (1931).

35 *Id.* at 183.

36 *Id.*

37 *Id.*

38 *Id.* at 180.

for the lapse of time within the spatial-temporal continuum."[39] 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.[40] 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.[41] 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.[42] 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 legal and political universe.[43]

What makes the State an observable and measurable phenomenon are the trajectories of meaning and policy generated by the system of communications.[44] 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.[45] 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.[46] From the point of view of the anthropocene

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39 *Id.* at 175.

40 Winston P. Nagan & Craig Hammer, Communications Theory and World Public Order: The Anthropomorphic, Jurisprudential Foundations of International Human Rights. 47 Va. J. Int'l. L. 725, 744-753 (2007).

41 *Id.*

42 *Id.*

43 *Id.*

44 *Id.*

45 *Id.*

46 The further development of these ideas about approaches to inquiry on an interdisciplinary basis is found in Myres S. McDougal & Harold D. Lasswell, *Legal Education and Public Policy: Professional Training in the Public Interest* 52 YALE L. J. 203-95 (1943) *reprinted in* HAROLD D. LASSWELL, THE ANALYSIS OF POLITICAL BEHAVIOR: AN EMPIRICAL APPROACH (Routledge & Kegan Paul 1948). For a distinctively future orientation to interdisciplinary research agendas see Harold D. Lasswell, *The Political Science of Science: An Inquiry into the Possible Reconciliation*

perspective the importance of seeing the State in governance in terms that are dynamic and flexible adds realism to analysis and permits a more explicit exploration of the projection of law as authoritative policy into spaces that are beyond the conventional boundaries of States.

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[47] to the development of a theory of scientific legal revolution.[48] 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.[49] Falk found that he could analogize the State as an appropriate legal analog to the Newtonian worldview of physics.[50] In Falk's view, the State occupied undifferentiated juridical space, which could be identified and understood objectively according to simple laws relating to the hypothesis of sovereignty.[51] Law is the product of the sovereign created for the masses and it is enforced by the power and coercion at the sovereign's disposal. Powerful professional efforts are made to defend this particular theory of law although it cannot account for law effectively 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 it to be

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of Mastery and Freedom, 50 AM. POL. SCI. REV. 961-79 (1956); Harold D. Lasswell, *Future Systems of Identity in the World Community in* THE FUTURE OF INTERNATIONAL LEGAL ORDER 3-31 (Cyril E. Black & Richard A. Falk eds., Princeton Univ. Press 1972) (1969); Harold D. Lasswell, *International Lawyers and Scientists as Agents and Counter-Agents of World Public Order*, Presidential Address, American Society of International Law, Washington, D.C., Apr. 30, 1971. Further references include Myres S. McDougal, *The Role of Law in World Politics* 20 MISS. L.J. (1949); Myres S. McDougal & Gertrude C.K. Leighton, *The Rights of Man in the World Community: Constitutional Illusions versus Rational Action* 59 YALE L.J. (1949).

47 THOMAS S. KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (Univ. Chicago Press 1962).

48 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 (1975) [hereinafter *Falk, A New Paradigm*].

49 *Id.* at 976-978.

50 *Id.*

51 *Id.* at 990-992.

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.

The 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 outside the restraints of sovereign law and regulation.[52] It is challenged by the threats of environmental destruction.[53] 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.[54] Professor Falk's paradigm idea with its emphasis on the importance of the human element in global society, outside of the boundaries of the State, anticipates a global anthropocentric perspective. Indeed, it stresses the importance of understanding the trends in evolving international legal studies and legal theory for a fuller appreciation of this insight.

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.[55] 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 in the sense of interdependence and inter-determination in the material universe bound by these objects. They shape and reshape the "form of space." That is to say, these great objects

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52 *Id.* at 995, 999, 1001, 1006, 1011.

53 *Id.* at 1019.

54 Professor Falk suggested that the McDougal/Lasswell approach was an approach that generated inconvenient, even dangerous knowledge. *Id.* at 1918-1019,1021.

55 Einstein's 1916 General Theory of Relativity proposed that matter causes space to curve. *See* ALBERT EINSTEIN, RELATIVITY: A SPECIAL AND GENERAL THEORY (Crown Publishers 1961) [hereinafter EINSTEIN, RELATIVITY]. Hans von Baeyer describes the basic postulate of Einstein's theory of "spacetime as an invisible stream flowing ever onward, bending in response to objects in its path, carrying everything in the universe along its twists and turns." Hans von Baeyer, *A Ripple in Gravity's Lens, in* THE FERMI SOLUTION 39 (Random House 1993).

change the space around them by giving space a warp effect.[56] Einstein also rejects the view that time is absolute.[57] 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[58] 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. 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, [control and authority] which influences the way the bodies [participants] are affected by it, and how human agency "bodies" affect the law. A further 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.[59] In a sense, when a legal observer brings the focal lens of observation onto particular human problems it influences the understanding of the problem, the ubiquity of how the problem is communicated to institutions of authoritative and controlling decision, and may as well influence the decision-making outcome. However, there will be considerable uncertainty as to the precise influence of the observer. 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.[60] This is one of the principles of quantum theory implicated in the

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[56] For advanced exploration of this theme see Ben Allanach, *Particle Physics: Do the Space Warp, in* 1 NATURE PHYSICS 15 (2006).

[57] "This distinction between past, present and future, is only an illusion." GEVIN GIORBAN, EVERYTHING FOREVER: LEARNING TO SEE TIMELESSNESS (Gevin 2006) (citing Albert Einstein).

[58] For an excellent overview see, MAX BORN, EINSTEIN'S THEORY OF RELATIVITY (1962).

[59] Werner Heisenberg, *Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik, Zeitschrift für Physik, in* QUANTUM THEORY AND MEASUREMENT 62-84 (John A. Wheeler & Wojciech *H. Zurek* eds., John A. Wheeler & Wojciech *H. Zurek* trans., Princeton Univ. Press 1983). Heisenberg first presented this principle in Feb. 1927 in a letter to Wolfgang Pauli.

[60] *Id.*

Heisenberg Uncertainty Principle.[61]

According to Heisenberg, the measurement of a particle produces uncertainty in what is measured if the measurement is accurate.[62] In short, the higher the degree of accuracy in measurement, the less accurately the researcher is able to measure where it is headed. The Heisenberg Uncertainty Principle is intensified the smaller the particles are targeted for measurement. 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.[63] The act of observation will diminish knowledge of its velocity and/or its mass. 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 its influence on 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.[64] 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 and its assumed 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 the 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

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61 *Id.*

62 *Id.*

63 BBC.co.uk, Heisenberg's Uncertainty Principle, http://www.bbc.co.uk/dna/h2g2/A408638.

64 *See supra* note 9.

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.

SPECIFIC APPLICATIONS AND INFLUENCE OF PHYSICAL SCIENCE ON LEGAL DEVELOPMENT AND METHODS

Lessons from Antiquity

From time immemorial, the 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 which might leave conflicting parties in a legal "no-man's land."[65]

From this emerged the idea that an alien is not bereft of general rights that flow from some broader sense of community in a world of multiple communities; *ius gentium* supplements the *ius civile*.[66] 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 and sometimes defy spatial boundaries.

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[65] This can be seen in the different Roman distinctions of lawyers. The *Praetores Urbani* were the lawyers who had jurisdiction over cases involving Roman citizens and the *Praetores Peregrini* were the lawyers who had jurisdiction over foreigners. *See* HERBERT F. JOLOWICZ, HISTORICAL INTRODUCTION TO THE STUDY OF ROMAN LAW 46-48 (1961). On the status of the Peregrine, or foreigner, in Roman law see, *Id.* at 100- 105.

[66] *Ius Civile* is the law in Roman times that was applied to Roman citizens, and *Ius Gentium* was known as the law of nations, and applied to Romans in conflict with foreigners. *Id.* at 61-63. *Ius Naturale* was the set of Roman laws that applied to all human beings. *Id.* at 100-105. *See also* R.W. LEE, THE ELEMENTS OF ROMAN LAW: INSTITUTES OF JUSTINIAN 43-35 (Sweet & Maxwell Limited 4th ed. 1956).

Pre-Modern Law

In the common law tradition, space became the foundation of status.[67] One had no place in the social world if one were not in some degree tied to land which conferred appropriate status and respect.[68] This meant that the rights and obligations of the person were rigidly demarked by the location of the person in spatial terms. Later, 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.[69] As Sir Henry Maine put it, the movement of progressive societies has been from status to contract.[70] 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 imaginative idea of a legal fiction. Today the normal action is the one rooted in the legal fiction of the transitory cause of action and most lawsuits implicate judicial space of a multitude of States, using this rule as the operative norm.[71] From these

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67 *See* SIR HENRY MAINE, ANCIENT LAW 17-36 (Oxford Univ. Press 1959).

68 *Id.*

69 *Id.*

70 Sir Henry James Sumner Maine was a 19th century English jurist. His thesis *Ancient Law* argued that in ancient times, people were bound by status and the family unit, where land was held commonly among all the members of the family. However, in modern times, people are autonomous agents, making contracts on an individual basis and thus having individual ownership, as opposed to common ownership. GEORGE FEAVER, FROM STATUS TO CONTRACT: A BIOGRAPHY OF SIR HENRY MAINE 1822-1888 (Longmans Green 1969).

71 *See, e.g.,* Livingston v. Jefferson, 15 F.Cas. 660 (C.C.D.Va. 1811)(in which the Court dismissed a trespass case occurring in New Orleans for lack of in rem jurisdiction).The law of venue relates to the place where a lawsuit may be properly instituted. Broadly speaking, the law of venue divides between a local action and a transitory cause of action. This essentially means that a lawsuit can only be bought in the place of the situs of real property. Additionally, matters not "local" in this sense are considered transitory and may be brought wherever one can find the Defendant. This is limited by a doctrine defined as forum non-conveniens. A court may still dismiss a suit if the court determines that it is an inconvenient forum within which the suit should be litigated. This may involve the convenience of the parties, the convenience of the witnesses, as well as the interests of justice. A recent statement from the Supreme Court is found in Piper Aircraft Co. v. Reyno 454 U.S. 235, 241 (1981) (stating that "when trial in the chosen forum would 'establish . . . oppressiveness and vexation to the defendant . . . out of all proportion to the plaintiff's convenience,' or when the 'chosen forum [is] inappropriate because of considerations affecting the Court's own administrative and legal problems,' the Court may, in the exercise of its sound discretion, dismiss the case").

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.[72] In conventional international law, rooted in the sovereignty of the State, States' jealously guard their sovereignty in terms of the concept of territorial integrity.[73] This of course creates the major problem in the age of globalization, when the mutual assertions of legal interests over problems which sovereigns concurrently or sequentially can establish important public interests.[74] In the practice of law, great developments have emerged to substitute territorial limits, which may leave important questions of mutual concern in a legal vacuum.

To illustrate a contemporary effort to manipulate legal space, the War on Terrorism provides striking examples. The President's legal advisors giving a literal reading to a Supreme Court precedent, *Johnson v.*

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[72] For explanations of these developments see Cuba Railroad Co. v. Crosby, 222 U.S. 478. Justice Holmes 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 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." *Id.* at 478.

Compare id. with Loucks v. Standard Oil, Co., 120 N.E. 198, 201 (1918), where Justice Cardozo stated:

> 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 Justice Holmes in Slater v. Mexican National Railroad Co., 194 U.S.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.

[73] This is the reason why international law exists concurrently with domestic national law and does not supersede domestic law, so as to protect the State sovereignty of each nation. SEAN D. MURPHY, PRINCIPLES OF INTERNATIONAL LAW 3-4 (2006).

[74] The United States has "generally refrained from exercising jurisdiction where it would be unreasonable to do so." RESTATEMENT (THIRD) OF FOREIGN RELATIONS § 403 cmt. a (1987). "Some United States courts have applied the principle of reasonableness as a requirement of comity, that term being understood not merely as an act of discretion and courtesy but as reflecting a sense of obligation among states. This section states the principle of reasonableness as a rule of international law." *Id. See also Id.* at § 421 and § 431.

Eisentrager[75], effectually advised the President that he could establish a prison at Guantanamo Bay for housing enemy aliens.[76] The Office of Legal Counsel advised "that the weight of legal authority indicates that a federal district court could not probably exercise habeas [corpus] jurisdiction over an alien detained at Guantanamo Bay."[77] In the case of *Boumediene v. Bush,* the Petitioner petitioned the Supreme Court to have the constitutional privilege of the writ of habeas corpus. [78] The Petitioner was successful and one of the hurdles the Petitioner had to overcome was the assumption that the privilege of habeas corpus was territorially limited.[79] Since Guantanamo was under *de jure* Cuban sovereignty, Boumediene was beyond the jurisdiction of the Supreme Court.[80] This implicated an analysis of the status of Guantanamo Bay, which was under the lease to the United States. The lease was a treaty between the United States and Cuba. Without resolving the question of the exact legal nature of Cuba's residual sovereign status, the Court ruled that it had given the Constitution extra-territorial application on numerous occasions.[81] Central to the Court's analysis was the notion that the United States had complete control over this territory and that pressing the formalistic argument of residual sovereignty in Cuba was insufficient when taken into account certain objective factors and practical concerns which were decisive factors in the

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[75] In Johnson v. Eisentrager, German nationals were arrested in China, charged with offenses against the laws of war, and convicted by a military commission for engaging in continued military activity against the USA after Germany had surrendered during WWII. The alien nationals wanted to bring a habeas corpus petition in the USA arguing that any alien is entitled to a habeas petition if the individual was deprived of his liberty under any purported authority of the USA. The Supreme Court denied such request, stating that the Constitution of the USA did not give immunity to aliens from military trials for individuals engaged in hostilities for governments at war with the USA. Johnson v. Eisentrager, 339 U.S. 763 (1950).

[76] US Dept of Justice, Office of Legal Counsel, Memo for Alberto Gonzalez from Wm. J. Haynes, II, Jan. 2002; www.justice.gov/olc/2006/nsa-white-paper.pdf- Alberto Gonzalez.

[77] Memorandum from Patrick F. Philman & John C. Yoo to William J. Hayes, II, General Counsel Department of Defense (Dec. 20, 2001) (on file with author).

[78] 128 S. Ct. 2229 (2008).

[79] *Id.* at 68 (stating "whether a constitutional provision has extraterritorial effect depends upon the 'particular circumstances, the practical necessities, and the possible alternatives which Congress had before it' and, in particular, whether judicial enforcement of the provision would be impracticable and anomalous").

[80] *Id.* at 73-74 (rejecting the Eisentrager Court's rationale that prisoners in Germany were beyond the territorial jurisdiction of any court of the United States). See also id. at 77-78 stating "the government's view is that the Constitution had no effect there, at least as to the noncitizens, because the United States disclaimed sovereignty in the formal sense of the term."

[81] *Id.* at 60-77 (Section IV, A)..

determination of the Court's competence.[82] In short, the Court stressed the notion of a functional approach to its extra-territorial jurisdiction rather than one based on formalism.

A further illustration from the context of commercial law theories have developed which project the appropriate division of lawmaking and law applying competence betweens states as turning on the significance of the particular legal interests for the concerned sovereign state.[83] In English practice, this is described as determining the proper law that is to govern the relationship.[84] These are ideas that have emerged from the field of private international law. In the context of public international law, territorialism has long been considered to be a foundation for a state under international law to prescribe and apply the law that is to govern a problem in which its territorial spaces are implicated.[85] Even here the idea of what a territorial space is in the context of a legal problem has been made flexible by the idea that a state may read into its claim to jurisdiction, a concept of reasonableness. In the Restatement (Third), this is referred to as the jurisdictional rule of reason.[86]

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.[87] People seem to equate law as an external deposit of tradition, with the assumption that the older it is, the better it is.[88] Justice Holmes said that it was revolting that there was no better reason for a rule than that it was enacted in medieval times.[89]

One of the important sources of international law is customary law.[90]

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82 *Id.* at 77 (stating that "[w]e see a common thread uniting the Insular cases, Eisentrager, and Reid: the idea that questions of extraterritoriality turn on objective factors and practical concerns, not formalism").

83 The semi-official expression of this view is the work of the RESTATEMENT (SECOND) OF CONFLICT OF LAWS (1971).

84 On the doctrine of the proper law of the contract, see P.M. NORTH, CHESHIRE'S PRIVATE INTERNATIONAL LAW 201- 16 (Butterworths 1974) (1935).

85 *See generally* Ian Brownlie, Principles of Public International Law (6th ed. 2003).

86 *See supra* note 74.

87 See generally Holmes, The Path of the Law, supra note 13.

88 Holmes, *The Path of the Law*, *supra* note 13, at 469.

89 *Id.*

90 For a discussion on customary international law, see Venkata Raman, *Toward a General Theory of International Customary Law* at 365-66 in TOWARD WORLD ORDER AND HUMAN DIGNITY 365 (W. Michael Reisman & Burns H. Weston eds., The Free Press 1976); David H. Ott, *Public International Law in the Modern World* 13-16 (1987), *as reprinted in* BURNS H. WESTON ET AL. EDS., INTERNATIONAL LAW AND WORLD ORDER 108 (Thomson West 1980);

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.[91] 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.[92] This itself requires that law borrow from the science of modern communications theory to better understand the boundaries and limits and reality of law.[93]

The salience of the law creating function of custom is broader than the conventional boundaries of international law. Customs are generated to a large extent by civil society and in the modern world the complex organizations created by it for example, there are intellectual and professional organizations that generate rules for themselves and often the rules and declarations that they adopt enter into the stream of prescriptive expectation in the larger community. Consider for example an organization like the World Academy of Arts and Science (WAAS). The WAAS is a professional body that actually has an important law making capacity outside of any State.[94] Its law making is made efficacious by modern

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Anthony A. D'Amato, *The Concept of Custom in International Law* 88-89 (1971) *as reprinted in* BURNS H. WESTON ET AL. EDS., INTERNATIONAL LAW AND WORLD ORDER 111 (Thomson West 1980); Rosalyn Higgins, *Problems and Process: International Law and How We Use It* 19-22 (1994) *as reprinted in* BURNS H. WESTON ET AL. EDS., INTERNATIONAL LAW AND WORLD ORDER 112 (Thomson West 1980).

91 *See* Ithiel De Sola Pool, POLITICS IN WIRED NATIONS, SELECTED WRITINGS OF ITHIEL DE SOLA POOL (Lloyd S. Etheredge ed., Transaction Publishers 1998).

92 *Id.*

93 Winston P. Nagan & Craig Hammer, Communications Theory and World Public Order: The Anthropomorphic, Jurisprudential Foundations of International Human Rights, 47 VA. J. INT'L. L. 725 (2007).

94 World Academy of Arts and Science Home Page, http://worldacademy.org/ [hereinafter *WAAS*].

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, they also alert society to the fact that human beings, like the picture of Einstein's theory of relativity, are in fact dynamically interacting.[95] Thus, non-governmental organizations, like the WAAS, are organizations that generate norms that 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.[96] 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. This insight into the dynamism of the creation of prescriptive norms, often outside of state control and often inspired by social activism is an important addendum to the discourse generated by the anthropocene insight.

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.[97] 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

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95 *See generally* EINSTEIN, RELATIVITY, *supra* note 55.

96 *See supra* note 93 at 764-766.

97 *See generally* HOLMES, THE COMMON LAW, *supra* note 6; Holmes, *The Path of the Law*, *supra* note 13.

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."[98] There is obviously an analogy between the definition of law in terms of rules and the concern that rules yield "penumbras of uncertainty"[99] 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 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.[100] Powerful critiques of the State have suggested that there is the mismanagement of governance, including the concentration and abuse of power.[101] Thus, the idea emerged that global prosperity is ineluctably tied to the processes of global economic freedom. The mantra included the

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98 *See* comment.

99 H.L.A. HART, THE CONCEPT OF LAW 123-26 (Clarendon 1994) (1961).

100 *See* IAN BROWNLIE, PRINCIPLES OF PUBLIC INTERNATIONAL LAW, (4th ed., 1990); John Austin, *The Province Of Jurisprudence Determined And The Uses Of The Study Of Jurisprudence*, lecture 1, 4 (Weidenfeld & Nicolson 1954) (1832); *see also* THOMAS M. FRANCK, THE POWER OF LEGITIMACY AMONG NATIONS 16, 21-25 (1990); JAVAID REHMAN, INTERNATIONAL HUMAN RIGHTS LAW: A PRACTICAL APPROACH 15 (2003).

101 Falk, *A New Paradigm supra* note 48 at 999, 1004-1006.

terms "world peace through world trade."[102] 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.[103] 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.[104]

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 development of private military contractors who function on a for-profit basis in many theaters of armed conflict.[105] This significant policy shift in the control and regulation of coercion was a cardinal policy

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[102] *Id.* at 999, 1004-1006.

[103] The G-8 is an exclusive body comprised of the leaders of the world's top industrialized countries. Originally a forum to discuss economic and trade matters, every year, the leaders convene at a summit to discuss a broad range of global challenges, including recently global security, Middle East peace, and Iraq. The 8 members of the G-8 are: Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States. BBC News, *Profile: G8*, Sept. 17, 2008, http://news.bbc.co.uk/2/hi/americas/country_profiles/3777557.stm.

[104] See e.g., Winston P. Nagan, *An Appraisal of the Comprehensive Anti-Apartheid Act of 1986,* 5 J. L. & REL. 327 (1987) (global economic apartheid); Winston P. Nagan & Craig Hammer, *The New Bush National Security Doctrine and the Rule of Law*, 22 BERKLEY J. INT'L L. 375 (2004) (crisis of the global war system); 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) (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); 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) (crisis regarding the respect for human rights and humanitarian values in time of war, peace, or community crisis).

[105] See e.g., James Glanz, Contractors Outnumber U.S. Troops in Afghanistan, New York Times, Sept. 1, 2009.

objective of US Secretary of Defense, Donald Rumsfeld.[106] 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.[107] 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 WMD may be, by design or accident, privatized. From the anthropocene perspective, it is important to understand the animating perspectives as well as the operations in economic theory and public policy that have contributed to these outcomes. Economic neoliberalsm has had a dominant affect on the U.S. and global economy. In this sense, theory matters in the real world of policy and decision. To the extent that we can attribute a dominant economic theory which has justified practices of economic and political ordering of the global economy we can give significant deference to the political economy of neo-liberalism. Ulrich Brand of the University of Vienna has provided insights that tie neo-liberalism to the challenges posed by the environmental crisis. He sees as a driving force in neo-liberalism a limitless motivation for the appropriation of nature. According to Brand:

> [I]n principle this opens up space for a critique of and a practical change in the dominant forms of societal relationships with nature. However, there are few really alternative practices beyond the important local experiences of subsistence. Therefore, and despite all minor changes, I would call the current constellation a widely recognized crisis of the dominant social-economic, political and cultural forms of the appropriation of nature with, at the same time, strong passive consent- as there are no visible and accepted alternatives on a large scale- for those crisis-driven forms. Environmental politics aims to deal with this contradiction and this is the terrain where postneoliberal strategies and politics emerge.[108]

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[106] *See generally,* ADRIAN R. LEWIS, THE AMERICAN CULTURE OF WAR: THE HISTORY OF U.S. MILITARY FORCE FROM WORLD WAR II TO OPERATION IRAQI FREEDOM 386 (CRC Press 2007); Vernon Leob and Thomas E. Ricks, *Rumsfeld's Style, Goals Strain Ties in Pentagon; 'Transformation' Effort Spawns Issues in Contorol,* THE WASHINGTON POST, OCT.16, 2002.

[107] See generally, Winston P. Nagan & Craig Hammer, The Rise of Outsourcing in Modern Warfare: Sovereign Power, Private Military Actors, and the Constitutive Process, 60 MAINE L. REV. 430 (2008).

[108] Ulrich Brand, Environmental Crises and the Ambiguous Postneoliberalising of Nature, 51 DEV. DIALOGUE 103, 104 (2009).

The anthropocene perspective may thus be seen as an important stratagem for the justification of postneoliberal theory and policy concerning environmental justice and human solidarity. To better appreciate the significant influence of neoliberal political economy and the possible reconstruction of global political economic values it would be useful to give a brief account of the foundations of neoliberalism and the alternatives to it in the context of global political and economic ordering.

In 1944 the scholar, Karl Polanyi provided a critical analysis on the role of governance and regulation, specifically the market economy, in the context of human freedom.[109] He distinguished two kinds of freedom: good freedom and bad freedom.[110] Bad freedom involved the freedom to exploit others; the freedom to take disproportionate benefits without commensurate service to the community.[111] Bad freedom involved the freedom to appropriate technological invention without use for public benefit and the freedom to exploit social disaster for private benefit.[112] In contrast, Polanyi stated, "The market economy under which these freedoms throve also produced freedoms we prize highly. Freedom of conscience, freedom of speech, freedom of meeting, freedom of association, freedom to choose ones own job."[113] These good freedoms are the product of the conditions that also give us the bad freedoms.[114] Polanyi speculated, interestingly, on a post market economy and its capacity to enhance freedom. According to Polanyi:

> The passing of the market economy can become the beginning of an era of unprecedented freedom. Juridical and actual freedom can be made wider and more general than ever before; regulation and control can achieve freedom not only for the few, but for all. Freedom is not an appurtenance of privilege, tainted at the source, but as a prescriptive right extending far beyond the narrow confines of the political sphere into the intimate organization of society itself. Thus, will old freedoms and civic rights be added to the fund of new freedoms generated by the leisure and security that industrial society offers to all? Such a society can afford to be both just and free.[115]

Polanyi also noted that an important impediment to such a future was

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109 See, Karl Polanyi, The Great Transformation: The Political and Economic Origins of Our Time (Beacon Press 1944).

110 David Harvey, A Brief History of Neo-Liberalism 36 (Oxford U. Press 2007).

111 *Id.*

112 *Id.*

113 *Id.*

114 *Id.*

115 Karl Polanyi, The Great Transformation: The Political and Economic Origins of our Time 256-58 (Beacon Press 1944).

the moral obstacle of liberal utopianism. He refers to Friedrich August von Hayek as a key figure in this area.[116] According to Polanyi:

> Planning and control are being attacked as a denial of freedom. Free enterprise and private ownership are declared to be essentials of freedom. No society built on other foundations is said to deserve to be called free. The freedom that regulation creates is denounced as unfreedom; the justice, liberty and welfare are decried as a camouflage of slavery.[117]

Polanyi's view of neo-liberalism is that it is doomed. It has the seed of authoritarianism and fascism. Thus, the good freedoms are destroyed and the bad ones are ascended. Polanyi's view of good and bad freedom and the role of the state in maximizing the good and minimizing the bad is an important insight into the modern industrial state influenced by social democratic political principles. It is very consistent with Roosevelt's view that severe economic deprivation and poverty diminishes the freedom of the person deprived.[118] Polanyi's view is that the disparities between the elite, rich, and the deprived poor are moderated by regulation, which has the consequence of enhancing good freedom and moderating bad freedom.[119] Thus, regulation in this view is not an oppressive state centered invention but part of the complex process of using the state to manage power in ways that enhance the aggregate position of the individual in terms of equality and freedom. This idea is reflected internationally in the International Bill of Rights.[120] The development of human rights codes, regulations and practices are not instruments of repression but instruments that enhance human freedom and liberation. In this sense, the UN Charter

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116 Hayek was an Austrian philosopher and economist whose book "The Road to Serfdom" was a battle cry against socialism. He was the first to articulate with clarity and force why collectivist ideas and policies should be challenged and his book became a hallmark for those wishing to criticize the welfare state. Hayek stressed the importance of ideas in the growth of political movements and denounced socialism as products not of economic forces but of erroneous and destructive ideas. In his essay, *The Intellectuals and Socialism* Hayek road mapped a strategy for combating collectivist doctrines, namely writing "what we lack is a liberal Utopia, a program which seems neither a defense of things as they are nor a diluted kind of socialism, but a truly liberal radicalism . . . which does not confine itself to what appears today as politically possible." F.A. Hayek, *The Intellectuals and Socialism,* 16 U. CHI. L. REV. 417 (1948-1949).

117 *Supra* note 125.

118 CASS SUNSTEIN, THE SECOND BILL OF RIGHTS 69-73 (2004).

119 *Supra* note 125.

120 The International Bill of Rights consists of 3 international treaties: the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights. Office of the United Nations High Commissioner for Human Rights, *International Law*, http://www2.ohchr.org/english/law.

and Roosevelt's four freedoms[121] reflect social democratic ideology about the values which guide and animate governance and regulation at the international level as well.

It was probably the implications of social democratic ideology and values that gave significant impetus to the development of an alternative ideological perspective: neo-liberalism.[122] Neo-liberalism was essentially meant to provide a solution to the problems of capitalist political economy. But it would do so in ways that were antithetical to the modern New Deal style state. In 1947, a group of influential academics met in Switzerland in a town called Mont Pelerin.[123] There they formed the Mont Pelerin Society and formulated a founding document which would serve as a guide to its members.[124] Those who attended the meeting included the Austrian political philosopher, Friedrich von Hayek, Milton Friedman and the philosopher, Karl Popper.[125] The founding document explains the problem of modern political economy as seen through the lens of a neo-liberal philosophical perspective.

> The central values of civilization are in danger. Over large stretches of the earth's surface the essential conditions of human dignity and freedom have already disappeared. In others they are under constant menace from the development of current tendencies of policy. The position of the individual and the voluntary group are progressively undermined by the extensions of arbitrary power. Even that most precious possession of Western Man, freedom of thought and

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121 Franklin Delano Roosevelt delivered a speech to Congress entitled "The Four Freedoms" on Jan. 6, 1941 in which he declared there were 4 essential human freedoms that the world should strive to obtain: the freedom of speech and expression everywhere in the world, the freedom of religion everywhere in the world, the freedom from want, and the freedom from fear. President Franklin Delano Roosevelt, State of the Union Address to Congress (Jan. 6, 1941), *available at* http://www.ourdocuments.gov/doc.php?flash=true&doc=70&page=transcript.

122 Neoliberalism advocates for an extremely deregulated economy and is most similar to libertarianism. Neo-liberals are against large-scale subsidy of the military industrial complex, a considerable degree of corporate wealth, and protectionism. The goal of neoliberalism is to make trade between nations easier and to maximize profits while using the cheapest resources. To achieve this goal, neoliberals advocate no tariffs, no regulations, no standard laws or, and no restrictions on capital flows and investments. For an overview of neoliberalism, *see* DAVID HARVEY, A BRIEF HISTORY OF NEOLIBERALISM (2005).

123 Friedrich August von Hayek initiated the meeting, inviting economists, philosophers and historians to Mont Pelerin. He served as President of the Mont Pelerin Society until 1961. Mont Pelerin Society, http://www.montpelerin.org/mpsHayek.cfm.

124 The Mont Pelerin Society is based on the principles that there is "danger in expansion of government, not least in state welfare, in the power of trade unions and business monopoly, and in the continuing threat and reality of inflation." Mont Pelerin Society, http://www.montpelerin.org/home.cfm (last visited April 7, 2010). After a 10 day meeting in 1947, the Society created a Statement of Aims to combat the "crisis of our times." Mont Pelerin Society, http://www.montpelerin.org/mpsGoals.cfm.

125 *Supra* note 133.

> expression, is threatened by the spread of creeds which, claiming the privilege of tolerance when in the position of a minority, seek only to establish a position of power in which they can suppress and obliterate all views but their own.
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> The group holds that these developments have been fostered by the growth of a new history which denies all absolute moral standards and by the growth of theories which question the desirability of the rule of law. It holds further that they have been fostered by a decline of belief in private property and the competitive market; for without the diffused power and initiative associated with these institutions it is difficult to imagine a society in which freedom may be effectively preserved.[126]

They firmly believed that self-interested greed in the market would be moderated by the invisible hand of market institutions and generate benefits for all. In this sense, the invisible hand was one of the elements in neo-liberalism that stood in stark contrast to state interventionist's theories inspired by John Maynard Keynes.[127] In the context of post-war policies, governments were still committed to various versions of Keynesian economics to manage the ups and downs of the business cycle. The founding statement was an especially skilful draft in its effort to pre-empt the foundations of freedom, human dignity and the rule of law. Central to the privatizing of the political economy would be the institutions of private law themselves. These institutions reflected the notion of strong protections of private property by law. They also reflected a critical reliance on the stability and efficacy, if not primacy of contractual undertakings. To the extent that the economy was subject to legal regulation it was legal regulation anchored in institutions of private property and the security of title as well as the rules generated in the market relating to the terms and conditions of enforceable exchanges.

The emergence of neo-liberalism as a dominating global ideology from its modest beginnings in Switzerland is in itself a remarkable

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126 Mont Pelerin Society, http://www.montpelerin.org/mpsGoals.cfm.

127 John Maynard Keynes advocated that the government should mitigate the adverse effects of the business cycles, recessions, and depressions. For a general biography, *see* Roy Harrod, The Life of John Maynard Keynes (W.W. Norton & Co. 1982). "Keynes' basic idea was simple. In order to keep people fully employed, governments have to run deficits when the economy is slowing. That's because the private sector won't invest enough. As their markets become saturated, businesses reduce their investments, setting in motion a dangerous cycle: less investment, fewer jobs, less consumption and even less reason for business to invest. The economy may reach perfect balance, but at a cost of high unemployment and social misery. Better for governments to avoid the pain in the first place by taking up the slack." Robert B. Reich, *John Maynard Keynes*, TIME (Mar. 29, 1999) (on file with author), *available at* http://205.188.238.181/time/time100/scientist/profile/keynes.html.

narrative of the power of ideas and the ability to disseminate them. Besides the Mont Pelerin Society, there were two important think tanks that were generously supported by private sector capital. These were the London based Institute of Economic Affairs[128] and the US based Heritage Foundation.[129] These institutions provided a regular flow of critical appraisal of economic policy.[130] Additionally, in 1974, the neo-liberal perspective gained considerable respectability when Hayek received the Nobel Prize in economics.[131] Two years later, Milton Friedman received the Nobel Prize as well.[132] Thus, neo-liberalism was fed by powerful, well-financed, critically placed think tanks together with the validation given by two Nobel prizes.

On the international stage, there was the emergence of two critical leaders. The first was Margaret Thatcher who was elected Prime Minister of the UK.[133] She had a strong mandate to reform the ailing British economy and she generated an economic revolution based on the privatization of public enterprises diminishing the entitlements of the welfare state, reducing taxes, creating a favorable business climate which induced foreign investment.[134] Thatcher's approach to the implementation of the neo-liberal economy was revolutionary.[135] She described economics

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128 The Institute of Economic Affairs was founded in 1955. *See* Denis Boneau, *Friedrich von Hayek, the Father of Neo-Liberalism*, http://www.voltairenet.org/article30058.html.

129 For more about the Heritage Foundation, *see* http://www.heritage.org.

130 *See, e.g.*, J.D. Foster, *Keynesian Fiscal Stimulus Policies Stimulate Debt--Not the Economy*, THE HERITAGE FOUNDATION, July 27, 2009, http://www.heritage.org/Research/Economy/bg2302.cfm.

131 Mont Pelerin Society, http://www.montpelerin.org/mpsHayek.cfm.

132 The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 1976, http://nobelprize.org/nobel_prizes/economics/laureates/1976/. Milton Friedman won the Nobel Prize "for his achievements in the fields of consumption analysis, monetary history and theory and for his demonstration of the complexity of stabilization policy."

133 Historic Figures: Margaret Thatcher (1925-), BBC, http://www.bbc.co.uk/history/historic_figures/thatcher_margaret.shtml.

134 *See* Susan George, *A Short History of Neo-Liberalism: Twenty Years of Elite Economics and Emerging Opportunities for Structural Change, in* GLOBAL FINANCE: NEW THINKING ON REGULATING SPECULATIVE CAPITAL MARKETS (Walden Bello, Nicola Bullard & Kamal Malhotra eds., 2000). "The Iron Lady was herself a disciple of Friedrich von Hayek, she was a social Darwinist and had no qualms about expressing her convictions. She was well known for justifying her programme with the single word TINA, short for There Is No Alternative. The central value of Thatcher's doctrine and of neo-liberalism itself is the notion of competition--competition between nations, regions, firms and of course between individuals. Competition is central because it separates the sheep from the goats, the men from the boys, the fit from the unfit. It is supposed to allocate all resources, whether physical, natural, human or financial with the greatest possible efficiency." *Id.* at 29.

135 "[T]he 'conservative revolution' in Great Britain [was] headed by Margaret Thatcher." *See* Denis Boneau, *The British "conservative revolution", in "Market Democracy": Friedrich von Hayek, the Father of Neo-Liberalism*, http://www.voltairenet.org/article30058.html.

as the method, but the objective was effectually to change the soul of the individuals comprising the body politics.

In the US, Ronald Reagan led the charge for the drift in the US economy toward neo-liberal values.[136] However, just prior to Reagan coming into power, Paul Volcker, Chairman of the US Federal Reserve, organized a major change in US monetary policy.[137] It was an approach which effectually undermined key tenets of the New Deal. Central to Volcker's objective was to being inflation under control even if it meant high unemployment. When Reagan came into power his advisors intuitively liked Volcker's monetarist initiatives for the ailing US economy and Reagan reappointed him.[138] Reagan then provided the political muscle for massive deregulation, tax cuts, tax on union power and more. These developments were sufficiently foraging in the UK and the US that the labour government of Blair and the democratic administration of Clinton were basically conducting economic policy within the doctrines of neo-liberalism. What is important is that the ideology of neo-liberalism influenced institutions critical to the global political economy like the IMF and the World Bank.[139] What is central to the construction of freedom and human dignity in the neo-liberal view is radically divorced from the policies of government intervention to promote social justice. In this sense, the New Deal human rights framework that covers economic, social and cultural rights, do not have a preferred placement in the structure and process of neo-liberal governance. For example, the millennium goals developed by the UN and based explicitly on the promise and mandate of the four freedoms; do not figure into the discourse of neo-liberal political economy.[140]

To summarize the foundations of neo-liberalism work on a faith in

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136 *See* David Harvey, A Brief History of Neoliberalism (Oxford Univ. Press 2005).

137 Miller Center of Public Affairs, Ronald Wilson Reagan (1911-2004): Domestic Affairs, http://millercenter.org/academic/americanpresident/reagan/essays/biography/4 (last visited Aug. 20, 2009). Volcker "aimed to bring inflation under control by tightening the nation's money supply. The result was higher interest rates for borrowing money, which squeezed small businesses and middle-class Americans. Volcker believed that this painful, economic medicine was necessary to break the back of inflation." For an overview of the policies of the federal reserve, see ROBERT L. HETZEL, THE MONETARY POLICY OF THE FEDERAL RESERVE: A HISTORY (Cambridge Univ. Press 2008).

138 DONALD R. WELLS, THE FEDERAL RESERVE SYSTEM: A HISTORY 153 (2004).

139 Mont Pelerin Society, http://www.montpelerin.org/mpsHayek.cfm.

140 See The Secretary-General, We the Peoples: The Role of the United Nations in the 21st Century, delivered at the Millennium Summit, DPI/2083/Rev.1 (Sept. 5, 2000).

self-regulating markets which essentially function autonomously from governmental intervention. The faith in these markets and autonomous regulation stands as a challenge to the capacity of political authority to regulate in order to enhance freedom and security rather than to prescribe rules of political oppression and arbitrariness.

In the next two sections of the article we focus on the problem of the control and regulation of nuclear arsenals as well as the problem of the control and regulation of ecological values and human rights in the specific context of the Amazonian challenge.

NUCLEAR ARSENALS AND THE CURVATURE OF SPACE AND TIME

Today the Earth is threatened by vast stockpiles of nuclear and thermo-nuclear weapons.[141] The development of the massive arsenals of nuclear weapons is a product of the anthropocene crisis. Here, human choice is at the center of the development of weapons that have the capacity to destroy the entire earth-space system as we know it. These weapons, therefore pose awesome questions for human choice, for the role of morality in human choice, for understanding the impact of science and technology on human choice, and for developing appropriate procedures and methods for a more clear space education of the issue of choice and responsibility for inclusive earth-space values.

Nuclear 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.[142] The Doctor Strangelove movie stands as a monument to the possibility of human error fed by mental incapacity.[143] The following gives a perhaps dated statistical

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[141] *See infra* note 154.

[142] Such mistakes have occurred in the context of so called "broken arrows." Two such incidents may serve to illustrate this phenomenon: first, an American warplane went down in Spain with its thermal nuclear arsenal in 1966. That event created an extraordinary level of environmental destruction and pollution. Second, a nuclear device was released when a plane was in trouble off the coast of Savannah, Georgia. That nuclear device has not been recovered and thus far efforts of the military to find it have been unsuccessful. This device may degrade in the ocean causing massive consequences to the environment. *See generally*: Michael Woods, *'66 H-Bomb Accident Still a Concern in Spain*, PITTSBURGH POST-GAZETTE, Nov. 29, 2003; JAMES C. OSKINS & MICHAEL H. MAGGELET, BROKEN ARROWS: THE DECLASSIFIED HISTORY OF U.S. NUCLEAR WEAPONS ACCIDENTS 222 (2008); Jaya Tiwari & Cleve J. Gray, Center for Defense Information, U.S. Nuclear Weapons Accidents, *available at* http://www.cdi.org/Issues/NukeAccidents/Accidents.htm.

[143] DR. STRANGELOVE OR: HOW I LEARNED TO STOP WORRYING AND LOVE THE BOMB (Columbia Pictures 1964). Directed by Stanley Kubrick, the movie is about a mentally unstable

indication of the distribution of nuclear arsenals as well as other weapons of mass destruction:

- The current stockpile of nuclear weapons is 23,335, with the United States having 9,400, Russia having 13,000, France having 300, China having 240, UK having 185, and Israel having 80[144]
- There is an uncertainty about the programs in Iran, Iraq, North Korea, Libya, India, and Pakistan, however it is estimated that Pakistan and India have 60 nuclear weapons, while North Korea has less than 10[145]
- There is a task force on Unconventional Nuclear Warfare Defense[146]
- States with known chemical warfare programs are: Iraq, Russia, Iran, Libya, North Korea, Syria[147]
- States with probable chemical warfare programs are: China, Egypt, Israel, Myanmar, Ethiopia, Pakistan, Taiwan[148]
- Currently no States have active biological warfare programs, however Iraq previously had an active production program and most likely has re-constituted its program[149]
- States with probable biological warfare programs are: China, Egypt, Iran, Israel, North Korean, Syria[150]
- There lays a great danger in the thousands of impoverished Russian germ-weapons scientists[151]

US Air Force general who orders a first strike nuclear attack on the Soviet Union. The movie follows the President of the United States, his advisors, the Joint Chiefs of Staff and a royal air force officer as they try to recall the bombs to prevent a nuclear apocalypse, and the crew of a B-52 as they attempt to deliver their payload.

144 Federation of American Scientists, Status of World Nuclear Forces, http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html.

145 *Id.*

146 Defense Science Board Newsletter (Department of Defense, Washington D.C) May 2000, at 2, *available at* http://www.acq.osd.mil/dsb/newsletters/may00newsletter.pdf.

147 Monetary Institute of International Studies, Chemical & Biological Weapons Resources Page, http://cns.miis.edu/cbw/possess.htm.

148 *Id.*

149 *Id.*

150 *Id.*

151 Michael Crowley, *Germs: Biological Weapons and America's Secret War. (Political booknotes: plague upon us).* Washington Monthly (2001) (reviewing JUDITH MILLER ET AL., GERMS: BIOLOGICAL WEAPONS AND AMERICA'S SECRET WAR (2001)). "Many Russian scientists are desperately poor, they are easily susceptible to terrorist groups" and "'could teach a terrorist group how to make devastating germ weapons from a few handfuls of backyard dirt and some

- With the OPCW lacking in funding, there is minimum verification that no new chemical warfare programs are emerging[152]
- There is an increasing threat of agro-terrorism; certain diseases affecting livestock, like foot and mouth disease, could be introduced to cripple western economies[153]

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, Secretary of State John Foster Dulles lamented that the UN Charter had in fact become obsolete in the light of the nuclear age.[154] 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.[155] 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.[156] The treaty

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easily available lab equipment'."

[152] Jonathan B. Tucker, *Challenges to the Chemical Weapons Convention*, Monterey Institute of International Studies, http://cns.miis.edu/opapers/op3/tucker.htm (last visited Aug. 20, 2009). The agency that oversees the Chemical Weapons Convention's implementation is the Organization for the Prohibition of Chemical Weapons (OPCW). The OPCW inspects countries, in an effort to reduce chemical warfare programs.

[153] *See, e.g.*, Harvey W. Kushner, Encyclopedia of Terrorism 7 (Sage Publication 2003).

[154] John Foster Dulles, Secretary of State, U.S. Constitution and UN Charter: An Appraisal, Address Before the American Bar Association at Boston (Aug. 26, 1953).

[155] Col Alan J. Parrington, *Mutually Assured Destruction Revisited*, AIRPOWER JOURNAL(Feb. 1997). MAD is a doctrine of military strategy that is based on the theory that both the attacker and the defender would be destroyed if nuclear weapons were deployed. Thus in order to avoid nuclear annihilation, MAD advocates nuclear deterrence.

[156] Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, 14 U.S.T.S. 1313, 480 U.N.T.S. 43.

prohibited the testing of nuclear weapons in the atmosphere.[157] 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.[158]

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 Non-proliferation Treaty.[159] 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.[160] 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.[161] The treaty actually stipulates that development for peaceful purposes is an inalienable right of sovereignty.[162] It is of course notoriously difficult to state with exactitude what the collective mind of a State is about its intentions in developing nuclear technologies. Presumably, developing nuclear technologies for peaceful purposes may well 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

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157 *Id.*

158 *See* JOSEPH ROTBLAT: VISIONARY FOR PEACE (R. Braun et al. eds., 2007).

159 Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 21 U.S.T.S. 483, 729 U.N.T.S. 161.

160 *Id.*

161 *Id.* at art. IV and art. V.

162 *Id.* at art. IV.

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 mainly tested its arsenals far away from the mainland, in the South Sea Islands.[163] France, following the US's example, proceeded to test its nuclear arsenals there as well,[164] while Britain tested its nuclear weapons in Australia.[165] The most important development therefore followed almost ineluctably from the NPT initiative, which was the emergence of the Comprehensive Test Ban Treaty.[166] Although the treaty received considerable support, including the support of the US administration, the CTBT was defeated in the Senate.[167] 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.

The Obama Administration has taken an approach to the issue of nuclear weapons that is diametrically opposed to that of the Bush Administration.[168] The changed position reflects support for the adoption of the CTBT, but more importantly in the light of his major speech in the Czech Republic committing the US to working towards a world order free of nuclear weapons. The most important change in direction of national security concerns from the Bush Administration. The Bush Administration initiated a nuclear posture review under Rumsfeld's direction which was a significant and major change in the US position on disarmament and

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163 *See* Nuclear Test Sites, http://www.atomicarchive.com/Almanac/Testing.shtml.

164 Eni F.H. Faleomavaega, U.S. Congressman, Statement In Opposition to France's Resumption of Nuclear Testing in the South Pacific (June 16, 1995).

165 Peter Walker, Nuclear Test Veterans Victims of 'Cavalier Attitude', High Court Told: Link to Cancer Now Undeniable, Says Lawyer Representing 998 Ex-Servicemen Seeking Compensation, The Guardian (Jan. 21, 2009), http://www.guardian.co.uk/uk/2009/jan/21/south-pacific-nuclear-veterans-sue.

166 Comprehensive Nuclear Test Ban Treaty, Sept. 10, 1996, 35 I.L.M. 1439 (hereinafter *CTBT*).

167 Press Release, Friends Committee on National Legislation, Senate Defeat of Comprehensive Test Ban Treaty (Oct. 13, 1999).

168 For a good overview of the Obama administration's progress and specific policy initiatives, *see* Nuclear Posture Review Report, U.S. Department of Defense (April 2010), *available at http://www.defense.gov/npr/.*

nuclear weapons.[169] That initiative included the notion of a global strike option,[170] the development of possible new generations of tactical nuclear weapons (mini-nukes and bunker busters).[171] The Bush Administration made it clear on numerous occasions that he was completely uninterested in promoting the adoption of the CTBT.[172] The Obama Administration has expressed a clear objective to aggressively pursue the ratification of the CTBT.[173] It has also initiated a process for negotiating a new strategic arms reduction treaty to replace START, a treaty entered into by the U.S. and the U.S.S.R. on July 31, 1999.[174] Additionally, it is also committed to improving the Non-proliferation Treaty by strengthening its inspection capability and authority under the International Atomic Energy Agency.[175] It is particularly interested in establishing an international fuel bank to allocate nuclear energy for civilian purposes.[176] This latter proposal is designed to prevent states from developing nuclear capabilities under the

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170 William Arkin, *Not Just a Last Resort? A Global Strike Plan, With a Nuclear Option*, WASHINGTON POST, May 15, 2005, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2005/05/14/AR2005051400071.html.

171 Benjamin Friedman, *Mini-Nukes, Bunker-Busters, and Deterrence: Framing the Debate*, CENTER FOR DEFENSE INTELLIGENCE, Apr. 26, 2002, http://www.cdi.org/terrorism/mininukes.cfm.

172 George W. Bush stated the CTBT "does not stop proliferation, especially in renegade regimes. It is not verifiable. It is not enforceable. And it would stop us from ensuring the safety and reliability of our nation's deterrent, should the need arise." Priyanka Subramaniam, *The US and the CTBT*, INSTITUTE OF PEACE AND CONFLICT STUDIES, June 15, 2009, *available at* http://www.ipcs.org/article_details.php?articleNo=2893.

173 *Obama Hopes to Win CTBT Ratification by May*, GLOBAL SECURITY MAGAZINE, Aug. 10, 2009 (stating that President Obama is hopeful the US will ratify the CTBT before the upcoming May 2010 meeting). Key officials in Obama's administration have also indicated their support for ratification of the CTBT. *See e.g.* John Kerry, *America Looks to a World Free of Nuclear Weapons*, FINANCIAL TIMES, June 25, 2008, *available at* http://www.ft.com/; Bryan Bender, *Kerry Poised to Cap Long Journey*, THE BOSTON GLOBE, Nov. 20, 2008, *available at* http://www.boston.com/news/nation/articles/2008/11/20/kerry_poised_to_cap_long_journey/?page=1; Robert Gates, U.S. Secretary of Defense, *Gates: Nuclear Weapons and Deterrence in the 21st Century*, Oct. 28, 2008, *available at* http://www.carnegieendowment.org/files/1028_transcrip_gates_checked.pdf.

174 This negotiation has since been successful. Peter Baker & Dan Bilefsky, *Russia and U.S. Sign Nuclear Arms Reduction Pact,* N.Y. TIMES, Apr. 8, 2010, at A8.

175 Press Release, Partnership for a Secure America, Our Best Weapon Against Nuclear Proliferation? A Pen: Obama's Administration's First Major Test on Nonproliferation Promises (May 4, 2009), *available at* http://www.psaonline.org/article.php?id=514.

176 *Office of the President-Elect, Agenda: Homeland Security*, U.S. DEPT. OF HOMELAND SECURITY, http://change.gov/agenda/homeland_security_agenda.

guise that they are doing it for peaceful purposes.[177] They also plan to work towards an international regime to punish states which violate the treaty. The Obama Administration is also committed to a new international treaty to effectively facilitate the end of the production of fission materials which could be used for nuclear weapons. This is the so-called Fissile Materials Cut-Off Treaty.[178]

It will therefore be apparent that the US is moving in a very different direction on the issue of the status of nuclear weapons and related research technologies which undermine proliferation. It is currently developing its own nuclear posture review. The Obama position has been followed up in public opinion circles in Russia. For example, Mikhail Gorbachev recently distributed an article titled Get Rid of Your Nukes in The Progressive magazine.[179] According to Gorbachev "after President Obama's Prague speech on April 5 [calling for a nuclear free world] there is a real prospect that the United States will ratify the CTBT. This would be an important step forward, particularly in combination with a new strategic arms reduction treaty between the United States and Russia."[180] Gorbachev is completely supportive of the idea of a nuclear free world.[181] When nuclear weapons are considered in the light of technology of delivery systems, they pose a critical man-made threat to the survival of the earth-space system. In this sense, the anthropocene perspective permits us to focus and understand the problem and its possible solution.

INDIGENOUS HUMAN RIGHTS: ENVIRONMENTAL PROTECTION AND GLOBAL VALUES IN AMAZONIA

The anthropocene crisis in Amazonia implicates a number of disparate issues that are inextricably linked to each other in complex ways and which further involve high stakes for environmental integrity and human rights values. The environmental integrity of Amazonia and the rainforest is considered to be a critical factor in for instance the issue of global warming. To destroy the Amazonian rainforest would have vast impacts for

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177 Holly Benner, *Managing Global Insecurity, President Obama's First 100 Days: Managing Global Insecurity Project Recommendations and an Evaluation of U.S. Global Engagement* (Brookings Institution), 2009, at 10.

178 For a discussion of the Fissile Material Cut-Off Treaty [hereinafter *FMCT*] *see* Kingston Reif & Madeleine Foley, *Factsheet on the Fissile Material Cutoff Treaty* (The Center for Arms Control and Non-Proliferation), Jul. 15, 2009.

179 *Get Rid of Your Nukes*, THE PROGRESSIVE, Aug. 2009, at 26-27.

180 *Id.* at 27.

181 Romesh Ratnesar, *Gorbachev, Shultz, Nunn, Perry Urge a Nuclear-Free World*, TIME, May 04, 2009, *available at* http://www.time.com/time/magazine/article/0,9171,1893066,00.html.

human populations throughout the world, and specifically on the indigenous peoples of the Amazonian rainforest. Their ability to defend and enhance the integrity of the rainforest is dependent upon the extent to which they are able to defend and promote their fundamental human rights. Thus, the context of Amazonia places issues of environmental integrity directly in the path of the well-being of the human populations that live there.

Globally 350 million people live in forest areas[182] and 1.2 billion rely significantly on the forest assets for their livelihood.[183] One of the many recent threats touching the indigenous communities of the Amazon is deforestation. Deforestation destroys biodiversity.[184] Biodiversity is critical to the well-being of the indigenous people in the rainforest. Since there is no more efficient system for storing carbon dioxide than the tropical rainforest, the protection of the rainforest is essential to the discourse on climate change and global warming. In a recent study done by an important Brazilian NGO, a map of the Brazilian rainforest shows an alarming rate of deforestation.[185] The parts of the forest that retain ecological balance are those parts that overwhelmingly survive by the courage, strategic skill, and the willingness to fight for their rights of the indigenous inhabitants of these regions. These indigenous communities have fought a difficult battle to survive the onslaught of predatory invasions of economic and industrial interests.[186] This puts vulnerable indigenous communities in conflict with

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[182] Augusta Molnar, Andy White, and Arvind Khare, Conference Paper: Forest Rights And Asset Based Livelihoods: Catalysing Rural Economies And Forest Conservation Through Policy Reform And Collective Action (Arusha Conference,"New Frontiers of Social Policy" – December 12-15, 2005), at 5, *available at* http://siteresources.worldbank.org/INTRANETSOCIALDEVELOPMENT/Resources/244329-1133801177129/Molnar.rev.1.pdf.

[183] *Id.*

[184] Steve Goldstein, A Grand Plan: Ecuador and "Forest Partners", Conservation International, http://www.conservation.org/FMG/Articles/Pages/grand_plan_ecuador_and_forest_partners.aspx.

[185] For various charts documenting the rates of deforestation in Brazil, as well as other Amazonian countries, *see* Rhett A. Butler, *Deforestation in the Amazon*, MONGABAY, http://www.mongabay.com/brazil.html (within a 6 year time period, the size of Brazil's rainforest that was depleted was the size of Greece); *See also* Rhett A. Butler, *A World Imperiled: Forces Behind Forest Loss*, MONGABAY, http://rainforests.mongabay.com/0801.htm.

186 *Jutta Schwengsbier*, Indigenous peoples protect the rainforest with hi-tech tools, *DEUTCHE WELLE, Aug. 10, 2009, available at* http://www.dw-world.de/dw/article/0,,4547011,00.html; *Our Work in Brazil,* RAINFOREST FOUNDATION US, http://www.rainforestfoundation.org/?q=en/node/201.

the powerful forces of modern industrial development. To provide an appropriate appreciation of the interplay 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.

One significant consequence of deforestation, besides depriving indigenous communities of their land and cultural integrity, is the production of dangerous climate change and global warming. [187] When deforestation takes place, massive amounts of CO_2 that were stored within the rainforest itself for the process of photosynthesis, is released into the air.[188] Forests are an important natural resource for removing CO2 from the

[187] Climate is defined as "average weather", or more rigorously, as the statistical description of the weather in terms of the mean and variability of relevant quantities over periods of several decades (typically three decades as defined by WMO). These quantities are most often surface variables such as temperature, precipitation, and wind, but in a wider sense the "climate" is the description of the state of the climate system. *Glossary*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (World Meterological Organization) at 4, *available at* http://www.ipcc.ch/pdf/glossary/ipcc-glossary.pdf. Exact weather conditions do not need to be predicted to be able to understand average climatic change. Climate change is defined as "A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." *Id.* The notion of dangerous climate was legally introduced as a term in 1992, when the United Nations Framework Convention on Climate Change (UNFCCC) called for stabilization of green house gases (GHG) to "prevent dangerous anthropogenic interference with the climate system." United Nations Framework Convention on Climate Change, art. 2, May 9, 1992, 31 I.L.M. 848 [hereinafter *FCCC*]. The FCCC suggested that "[s]uch 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." *Id.* 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. WORLDWATCH INSTITUTE, STATE OF THE WORLD 2009: INTO A WARMING WORLD 23 (2009). Any temperature rise above this would significantly increase risks of irreversible feedback mechanisms that could produce run away climate change. *Id.* 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. *Id.* 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. Jason A. Lowe et al., *The Role of Sea-Level Rise and the Greenland Ice Sheet in Dangerous Climate Change: Implications for the Stabilisation of Climate, in* AVOIDING DANGEROUS CLIMATE CHANGE 31-32 (Hans Joachim Schellnhuber et al eds., 2006). 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. SIR NICHOLAS STERN, STERN REVIEW ON THE ECONOMICS OF CLIMATE CHANGE (2006). The world is rapidly approaching this mark.

[188] *See Rainforest Factsheet*, (Young People's Trust for the Environment), http://www.ypte.org.uk/environmental/rainforest/89.

atmosphere by absorbing it.[189] This release of CO2 into the air is called a greenhouse gas and helps retain the heat of the sun within the Earth's atmosphere.[190] Thus, deforestation indirectly causes the earth to heat up,[191] which is known as global warming. Global warming generates floods and droughts, extreme weather, high storm intensity and appears to enhance diseases spread by insects.[192] The destruction of forests in the Amazon therefore has a significant impact on global warming.

A central point about the relationship of all plant forms of life, especially in the rainforest, 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.[193] Since forests are slow growing, their rapid destruction by climate warming will have major effects on environmental rights. Dead forests cannot absorb CO2.[194] Changes in the ecosystem in a forest may create other imbalances in the ecosystem that are destructive, like off-setting the delicate balance between predator and prey or extinguishing hundreds of helpful plant and insect life.[195] The human impacts on deforestation are issues that human beings can control and regulate with political and technical skill and work. Thus, the work of conservation by indigenous communities is one of the most critical factors in seeking to solve the problem of global warming.

Forest conservation is critical for biodiversity. It is important for the conservation of species diversity. It is also important for slowing climate change. In terms of forest policy conservation and climate change it is also shown that the focus of intervention should be on ancient old growth forests.[196] These forests store more carbon than young forests. While young rainforests rapidly absorb carbon, old growth forests store more carbon in soils and inhale carbon when growth has slowed. Changing old growth forests to fast growing forest plantations is not effective for increasing CO2

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189 Roberta Mann, *Waiting to Exhale?: Global Warming and Tax Policy*, 51 AM. U. L. REV. 1135, 1142-43 (2002).

190 See Rainforest Factsheet, supra note 198.

191 *Id.*

192 *See* Belinda Hawkins et al., Plant and Climate Change: Which Future? 12 (2008).

193 *Forest for the future,* (UNESCO), *available at* http://www.unesco.org/education/educprog/ste/pdf_files/sourcebook/module9.pdf.

194 For an overview of the forest and CO2 absorption relevant to the Amazon, *see* Rhett A. Butler, *Some Amazon Rainforest Trees are Over 1000 Years Old Finds Study*, MONGABAY, Dec. 13, 2005, http://news.mongabay.com/2005/1213-amazon.html.

195 See Rainforest Factsheet, supra note 198.

196 *Id.*

storage.[197] Carbon storage in young forests does not approach old growth forest capacity for at least 200 years.[198] Mature forests have well established root systems and are also less susceptible to short-term moisture changes. Forest science provides critical policy insights into the importance and priority of conserving the rainforest.

The current approach to providing assistance to indigenous people in the Amazon in order to protect the rainforest for the purpose of reducing green house gases has stressed the issue of plant conservation. The scientific task here is to identify and document plant diversity, develop conservation strategies, sustainable uses for endangered species, as well as the promotion of educational values and capacity building in indigenous people.[199] These strategic proposals have impacts on indigenous nations who live in complex interdependencies with the forests.[200] 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.[201] 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. This article will later focus on some specific strategies that directly impact the indigenous patrimony over the Amazonian rain forest

197 *Id.*

198 *Id.*

199 For instance, in 2008, the Minister of the Environment in Ecuador announced a pilot program called the Programa Socio Bosque, which provided additional income to indigenous populations who promised to protect the rainforest and curb deforestation. Steve Goldstein, *A Grand Plan: Ecuador and "Forest Partners"*, CONSERVATION INTERNATIONAL, http://www.conservation.org/FMG/Articles/Pages/grand_plan_ecuador_and_forest_partners.aspx.

200 Id.

201 *E.g.*, in the International Labour Organization [ILO] Convention 169 Concerning Indigenous People, the term *consultation* is used with regard to indigenous lands and interests. 28 I.L.M. 1382 (1989) [hereinafter *ILO Convention 169*]. Article 15 (2) states that "[i]n cases in which the State retains the ownership of mineral or sub-surface resources or right to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall consult these people before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. *Id.* Thus, ILO Convention 169 uses the term *consultation* with regard to interest in indigenous lands that have been lawfully appropriated by the State. In Articles 13 and 14 of the Convention, indigenous peoples' right to their land and resources is expressly stated and their land ownership rights are clearly protected.

and the possibility that naive 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.[202]

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 meltdown 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.[203]

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 the clear interdependence of human rights and the environment.[204] If the environment collapses, human rights prospects collapse.[205] This insight would appear to be a universal warning for those who take human dignity seriously. However, those most immediately

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[202] A central question is to whom to the benefits flow when for instance 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. If there is an agreement for instance 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 community, are these indigenous communities entitled to benefit sharing of these assets for internal development?

[203] 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* ILO Convention 169, *supra* note 206.

[204] The Secretary-General, We the Peoples: The Role of the United Nations in the 21st Century, delivered at the Millennium Summit, (Sept. 5, 2000), available at http://www.un.org/millennium/sg/report/full.htm.

[205] Id.

affected by dangerous climate change may be the weakest communities in the world.[206] 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 example, 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.[207] 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, there is a clash of normative priority; to regulate or not to regulate is the critical question.

How may these issues affect the indigenous people of the rainforest of the Amazon? Secretary General Ban Ki-moon has affirmed that nations least responsible for climate change suffer disproportionately from its environmental impact.[208] 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

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206 *Poor countries will suffer most from global warming, Ban Ki-moon warns*, UN NEWS CENTRE, Feb. 5, 2007, http://www.un.org/apps/news/story.asp?NewsID=21448&Cr=climate&Cr1.

207 *Id.*

208 *Id.*

the highest attainable health standard.[209] The Covenant on Civil and Political Rights stipulates the right to life.[210] Specifically, pertaining to the environment and climate change, the critical United Nations instrument on Climate Change is United Nations framework Agreement on Climate Change.[211] Its objectives are expressed in Article 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'.[212]

The subsequent Convention to Combat Desertification was adopted in 1994.[213] This Convention provides more specificity to the Human Rights issues that are inherent in environmental destruction.[214] Currently 192 states are parties.[215] This Convention is especially important to the custodians of the rainforest. This Convention focuses on the responsibility of the State, community participation and the important role of developed States.[216] 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

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209 Article 11 (1) "recognizes the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. International Covenant on Economic, Social and Cultural Rights, art. 11 (1), Dec. 16, 1966, 933 U.N.T.S. 3, 6 I.L.M. 360 [hereinafter ICESCR]. Article 11 (2) recognizes the fundamental right to be free from hunger and the right of States to implement measures to "improve methods of production, conservation and distribution of food . . . ."; Article 12 states there is a "right of everyone to the enjoyment of the highest attainable standard of physical and mental health."

210 International Covenant on Civil and Political Rights, art. 6 (1), Dec. 16, 1966, 999 U.N.T.S. 171.

211 United Nations Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 848.

212 *Id.* at art 2.

213 United Nations Convention To Combat Desertification In Those Countries Experiencing Serious Drought And/Or Desertification, G.A. Res. 48/191, U.N. Doc. A/49/477 (May 10, 1994).

214 *Id.*

215 *Update on the Ratification of the UNCCD* (United Nations Convention to Combat Desertification), Feb. 4, 2008, *available at* http://www.unccd.int/convention/ratif/doeif.php.

216 *See* Schwengsbier, *supra* note 196.

importance of advocacy, which 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 rainforests and the communities who are living there. The poverty of indigenous communities literally means - weakness, beyond even economic weaknesses. Threats to the rainforests 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 human rights of indigenous communities in the Amazon 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 rainforests. They have received no rewards, recognition or compensation. Rather they have seen as a stumbling block to predatory interests seeking to destroy the rainforests, 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. These wholesale plunderings via bio-piracy and bio-prospecting take the benefits of but give no recognition to 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 rainforests and the threat of dangerous climate change.

One central issue that has become more obvious is that it is impossible to separate conservation values from the human rights values of the affected indigenous communities. An important insights concerning the nature of traditional societies, is that indigenous communities in the Amazon 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, but it is the **basis** of the group itself.[217] 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 worldview 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.

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 creating a restraint on dangerous 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

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[217] See e.g.,UN Background Information in preparation for the Sixth Session of the UN permanent forum on indigenous issues, available at http://www.un.org/esa/socdev/unpfii/documents/6_session_factsheet1.pdf (stating that "indigenous peoples' relationship with their traditional lands and territories is said to form a core part of their identity and spirituality and to be deeply rooted in their culture and history"); Jim Igoe, Becoming Indigenous Peoples: Difference, Inequality, and the Globalization of East African Identity Politics, 105 African Affairs 399, 402 (2006) (linking cultural identity and the foundation of indigenous peoples' existence to their land).

State of Ecuador illustrates:

The indigenous people of Ecuador maintain that the only reason that the State of Ecuador has any protected areas 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.[218] The 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 no 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 rainforests 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.[219] The State may also negotiate with an entity such as the European Union (EU) in terms of its net losses 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 contribution for lost oil revenues from the Yasuni National Park. The monetary amount Ecuador could receive is in the millions.[220] The status of these negotiations is not publicly clear at this time. [221] 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*

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[218] *See, e.g.*, Remi Moncel, *Ecuador Proposes Leaving Oil Untapped to Protect Forests and People*, WORLD RESOURCES INSTITUTE, Jan. 29, 2009, http://www.wri.org/stories/2009/01/ecuador-proposes-leaving-oil-untapped-protect-forests-and-people.

[219] *Id. See also* Joshua Partlow, *In Ecuador, an Unusual Carbon-Credit Plan to Leave Oil Untapped*, WASHINGTON POST, May 27, 2009, *available at* http://www.bicusa.org/en/Article.11214.aspx.

[220] For an overview of the European Commission's aid allocations to Ecuador, *see Ecuador*, EUROPEAN COMMISSION, http://ec.europa.eu/europeaid/where/latin-america/country-cooperation/ecuador/ecuador_en.htm.

[221] Leaving Ecuador's Oil in the Ground, 2007, CLINTON GLOBAL INITIATIVE, http://www.clintonglobalinitiative.org//Page.aspx?pid=2646&q=272705&n=x; Rory Carroll, *$350m to leave oil in the ground: Country asks developed world to pay it not to pump - and avoid further pollution of the Amazon rainforest*, THE GUARDIAN, Aug. 31, 2007, *available at* http://www.guardian.co.uk/environment/2007/aug/31/1.

INITIATIVE'.[222] 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? Indigenous communities still marvel at the international and national discourse which holds that their traditional knowledge may not be of value, may not be property, and—in worse scenarios—that they may hold no property rights themselves. 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 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.

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[222] *House Panel Approves 'Cap and Trade' Initiative,* News Max, May 22, 2009, *available at* http://www.newsmax.com/newsfront/house_oks_climate_bill/2009/05/22/217200.

THE BASIC ELEMENTS OF THE CAP AND TRADE APPROACH[223]

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.[224] 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.[225] In the US, the right to trade pollution is part of the revised *Clean Air Act of 1990.*[226]

The United States 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.[227] This was the foundation of the EU green house gas emissions trading mechanism.[228] In 2005, the EU collected self-estimates of corporations concerning the volume of pollution they put out. The EU then distributed

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223 *See* Michael Wara, *Is the Global Carbon Market Working?*, NATURE, Feb. 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 Warming's Gordian Knot*, 2 HARV. L. POL'Y REV. 93 (2008).

224 Jessica Stillman, *What is Carbon Credit?*, BNET, http://www.bnet.com/2403-13241_23-187036.html.

225 *Id.*

226 The Clean Air Act, 42 U.S.C. §§ 7401 7671q (2009) (as amended by Pub. L. 101-549, November 15, 1990).

227 Michael K. Dorsey, *Carbon trading won't work*, LA TIMES, Apr. 1, 2007, *available at* http://www.latimes.com/news/opinion/commentary/la-op-dorsey1apr01,0,1230661.story?coll=la-home-commentary.

228 European Parliament and Council Decision 280/2004/EC, 2004 O.J. (L 49) (concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol).

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 coincidence implied that the companies had inflated their numbers so as to sell excess credits. In effect, they were selling the right to pollute, increasing the problem of global warming. Of course, if there is a 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 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, the concern in this article is that if the state uses some version of these models for the ostensible purpose of environmental security, this may have the effect of undermining the Human Rights of indigenous communities who own the resources of some of these national park protected areas.

Regarding the declarations of protected areas inside the sovereignty of an Amazon rainforest nation; this 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, the Shuar have a petition based on a strong legal foundation that they are the owners of this portion of the rainforest, 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.[229] The World Bank has inserted itself into the process as well

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[229] Joshua Partlow, *In Ecuador, an Unusual Carbon-Credit Plan to Leave Oil Untapped*, WASHINGTON POST, May 27, 2009, *available at* http://www.bicusa.org/en/Article.11214.aspx. *See also* Jesse Fox, Why the World Should Pay Ecuador to Keep its Oil in the Ground, TREE HUGGER, Aug. 9, 2009, http://www.treehugger.com/files/2009/08/why-the-world-should-pay-ecuador-to-keep-its-oil-underground.php; Alberto Acosta et al., *A Political, Economic, and Ecological Initiative in the Ecuadorian Amazon*, INTERNATIONAL RELATIONS CENTER, Aug. 13, 2009, http://americas.irc-online.org/am/6345. *Compare* to Ecuadorian Environmental Minister,

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.[230]

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.[231] 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.

This article takes the issue relating to protected areas, climate change and land, in a broader direction with a specific case focus on the land issues and indigenous rights in Ecuador and Peru. This article focuses in this context on two problems. First, this article takes as an illustration the situation of the ownership of land of an indigenous community, the Shuar, in the Republic of Ecuador. Here, the issue of land ownership is tied to the intrusions of private sector commercial expectations. The entitlement rights of the indigenous people had been ignored under the pressures of private sector exploitation. The second issue relates to the claims to land ownership and occupation of the indigenous people in the Amazonian part of Peru. The central issue here is participation in State decision-making. The State has ignored this right. It is the State that is the direct intervener

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Marcela Aguiñaga, presenting to Germany the following: "The Ecuadorians are proposing that the crude oil in the Yasuni region be incorporated into the CO2 trading system. The Yasuni reserves would be converted into equivalent tons of CO2 not emitted into the atmosphere as a result of Ecuador preventing production from moving forward." Bob Zimway, *Ecuador, Where Trees Have Standing For Now*, DAILY KOS, Feb. 3, 2009, http://www.dailykos.com/story/2009/2/3/691560/-Ecuador,-Where-Trees-Have-Standing.-For-Now.

230 *Compare* Chris Lang, *How the World Bank explains REDD to Indigenous Peoples*, REDD-MONITOR, May 18, 2009, http://www.redd-monitor.org/2009/05/18/how-the-world-bank-explains-redd-to-indigenous-peoples/ *and* Victoria Tauli-Corpuz, *Indigenous Peoples and Carbon Trading*, REDD-MONITOR, Apr. 8, 2009, http://www.redd-monitor.org/2009/04/08/indigenous-peoples-and-carbon-trading/.

231 *Carbon conservation schemes will fail without forest people*, MONGABAY, Oct. 16, 2008, http://news.mongabay.com/2008/1016-indigenous.html.

with force and violence in the Peruvian situation. In setting this out, the authors draw on a well-established anthropological distinction that land in a traditional society is not an aspect of the group. In this sense, it is not a commodity. It is the basis of the group itself and the destruction of the land destroys the existential capacity of the group to survive and exist. In the next section, the article starts with the distinctive character of the fundamental human rights of indigenous people.

THE CASE OF THE SHUAR NATION AND THE ANTHROPOCENE CRISIS

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 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.[232] Prior to this, indigenous people were treated as juveniles in Ecuador, with no legal capacity to assert rights and defend asserted obligations against them.

The Shuar are an indigenous nation mainly living in the Amazonian rainforest of Ecuador.[233] Since one of the authors of this paper is the legal advisor to the Shuar, and both authors have regular communications with the indigenous population, the authors have a first hand knowledge of the distinctive history of the Shuar in the context of Latin America and their current situation. The Shuar are the only indigenous nation never to be conquered by the conquistadors.[234] This is meant that the Shuar, although

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[232] The Republic of Ecuador Constitution of 1998, art. 83, *available at* http://pdba.georgetown.edu/Constitutions/Ecuador/ecuador98.html#mozTocId46575 [hereinafter *Republic of Ecuador Constitution of 1998*].

[233] *Shuar Indians*, FUNDECOPIA, http://www.fundecoipa.com/The%20Shuar. There are Shuar who also live in States adjoining Ecuador.

[234] The Shuar are highly skilled at protecting themselves and their environment. Their reputation as strategically gifted warriors, able to use their knowledge of the rainforest as well as traditional methods of warfare, was solidified when they successfully defeated as many as 30,000

citizens of Ecuador, retain a distinctive and strong identity as well as an unbroken almost 5,000 year old cultural identity. The most important political fact about the standing of the Shuar in Ecuador is that they are organized, with an articulate and vibrant political structure and the development of that political structure has been seen by variously situated Ecuadorian elites as a potential threat to State interests. Thus, the relationship between the Shuar political leadership and the Ecuadorian State is invariably an arms length relationship in which the State will intrude on Shuar interests by indirect manipulation and possible subterfuge.

There are three principle problems that the Shuar have to deal with in terms of protecting their interests in the territories of the rainforest they now occupy. First, the question of precisely what their indigenous legal title is to their land in Ecuador is deliberately ambiguous. This means that from time to time the State will enact policies and administrative regulations that exploit the element of ambiguity in the law. The second main issue is the extent to which the State may independently of the Shuar political leadership enter into private concessionary agreements for the exploitation of resources in the Shuar territory. To a large extent, the specific resource that is most contentious is the oil resources in the territory. The third issue that affects the Shuar both culturally and materially is the fact that their tradition of Shamanism represents an important repository of knowledge about both flora and fauna of the rainforest which have medicinal or commercial applications. The Shuar have been victimized by such entities as the New York Botanical Garden, which has appropriated vast quantities of traditional knowledge in what today is called biopiracy. All these issues remain technically pending as legal issues. They all implicate the integrity of the rainforest as well as the fundamental human and community rights of the Shuar people. This article briefly comments on each of these issues, starting with the ownership of the land.

This article indicated that the legal rights of ownership to the land, which the Shuar now occupy in the Amazon, are somewhat ambiguous under Ecuadorian law. The State has claimed, but not in any official written document, that under the civil law the State is the owner of all resources

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Spanish Conquistadors, after which they allowed the Spanish priest as the sole survivor to return to Spain with a full account of the defeat to which he had bore witness. *See also* JOHN PERKINS & SHAKAIM MARIANO SHAKAI IJISAM CHUMPI, SPIRIT OF THE SHUAR: WISDOM FROM THE LAST UNCONQUERED PEOPLE OF THE AMAZON 101 (2001) ("[E]ven today Shuar territory is governed primarily by the Shuar Federation. 'You never see a policeman inside that huge area; it's run very much as though it is a separate country outside the limits of Ecuadorian rule and also beyond the grasp of the United States and the United Nations.'").

under the soil. As a consequence, it is staking a claim that it owns virtually all resources of value in the rainforest if it can show that those resources are or originate under the soil. The authors of this article have served as legal advisers to the Shuar and have filed a petition contesting the ostensible claim of the Ecuadorian State to the ownership of all resources under the soil of the territory owned by the Shuar. That is in a petition filed with the Inter-American Commission of Human Rights.[235] The petition is pending before the Commission. In this petition, the authors argued on behalf of the Shuar that civil law does not make the distinction that resources under the soil by operation of law repose in the State.[236] Civil law, with its strong tradition in defined ownership and dominion, gives the owner ownership rights down to the infernal depths of the Earth and up to the stars. The petition also reviewed the foundation of a widespread practice in Latin America where States claim, usually based on provisions put in their constitutions, that the State owns everything under the soil. The history of this development is briefly summarized.

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.[237] To confirm this legal conclusion, the Pope got one of the finest lawyers in Spain to confirm the claim legally, Francesco de Vitoria.[238] What he got was not what he expected. That jurist Francesco Vitoria concluded that the Pope did not own anything.[239] He

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235 Petition to the Inter-American Commission On Human Rights Seeking Recognition Of The Shuar Land Rights, And Relief From The Acts And Omissions By The Republic Of Ecuador That Have Resulted In The Violation Of Shuar Land Rights, filed June 21, 2007 (on file with author).

236 *Id.*

237 The pope claimed that as the supreme head of the church and thus lord of the world, he has dominion over all inferior subjects and therefore barbarians. JAMES BROWN SCOTT, THE SPANISH ORIGIN OF INTERNATIONAL LAW FRANCISCO DE VITORIA AND HIS LAW OF NATIONS 117 (2000). In the *Inter caetera* bulls of Pope Alexander VI, Columbus's discovery of the new lands was given to Spain by title. *The Inter caetera*, Papal Bull of May 4, 1493, *available at* http://www.kwabs.com/bull_of_1493.html. Vitoria was also consulted by Charles V, Holy Roman Emperor and King of Spain to justify the Spanish imperial power over the indigenous populations of America.

238 Francesco de Victoria was a Spanish theologian, jurist and philosopher who lived from 1485-1546. He is known for establishing a school of thought, the School of Salamanca, and is known for his contributions to the theory of just war and international law.

239 Although Francesco de Victoria never published anything in his lifetime, his philosophies were written and transcribed by his students. In one of his lecture notes, entitled De Indis, Victoria commented "the writers in question build on a false hypothesis, namely, that the Pope has Jurisdiction over the Indian aborigines." DE INDIS ET DE IVRE BELLI RELECTIONES 115-162

rejected the Pope's claims with the powerful reason of a superbly trained legal canonical mind.[240] 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. The Brazilian model for appropriating the resources of indigenous land was copied in many other Latin American states. However, no such provisions are found in the Constitution or the laws of Ecuador.

As mentioned earlier, the lands not deforested in the Amazon have been those where the indigenous people have been able to physically protect themselves and the forest. The State has been largely an actor that 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 indigenous people had no *locus standi* but indeed were "children" under the law, meant that their interests were 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.

Oil Concessions in the Shuar Territories

This article now turns to the influence of private economic interests on the land and ecological rights of the Shuar. The territories in the Amazon, specifically in the Shuar area, have vast oil reserves and other resources of commercial value. [241] Texaco received a concession from the State of

(Ernest Nys ed., John Pawley Bate trans., 1964).

[240] Vitoria based this rejection on the canons of natural law, namely that since all humans share the same nature, they must share the same rights and liberties. Vitoria rejected the notion that the pope had temporal power or that the indigenous populations voluntarily submitted to domination. Indigenous people were free people by nature and thus had legitimate property rights he concluded. *Id.*

[241] There are 4 major areas of oil exploration in Ecuador: Block 7, 21, 23, and 24. *See 2008 Fact Book* (ConocoPhillips), September 2009, at 17, *available at* http://www.conocophillips.com/EN/about/company_reports/fact_book/documents/South_America.pdf [hereinafter *ConocoPhillips Report*]. Block 24 and 23 are directly on the Shuar territory. It should be noted that although the Ecuadorian president signed contracts with ConocoPhillips and

Ecuador to drill for oil in the adjacent territories.[242] It appeared to carry on its activities without a concern for environmental destruction. Its operations polluted the upper-reaches of the Amazon and had a devastating effect on fish, and animal resources, as well as human populations.[243] The extent of the environmental pollution involves some 18 billion gallons of toxic waste.[244] This is in some estimates 4 or 5 times greater than the Exxon Valdez mess in Alaska.[245] Texaco's activities were exposed in a lawsuit

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its subsidiary Burlington Resources for the exploration of Block 23 and Block 24, due to indigenous groups' right to be consulted about exploration in their territory, the areas have been under "force majeure" with no exploration activities having begun. *See* Oliver Blach, *Indigenous opposition prevents oil exploration in Ecuadorian Amazon*, ETHICAL CORPORATION, May 2, 2005, http://www.ethicalcorp.com/content.asp?ContentID=3658; ConocoPhillips Report, *supra* note 247.

[242] See generally, Judith Kimerling, Symposium: Lands, Liberties, and Legacies: Indigenous Peoples and International Law: Regional Issues in the International Indigenous Rights Movement: Transnational Operations, Bi-national Injustice: ChevronTexaco and Indigenous Huaorani and Kichwa in the Amazon Rainforest in Ecuador, 31 AM. INDIAN L. REV. 445 (2006/2007).

[243] A study of the indigenous population near the drilling sites showed they suffered from higher rates of ski-related diseases and had an increased risk for reproductive and neurological problems and cancer. *Rights Violations In The Ecuadorian Amazon: The Human Consequences Of Oil Development* (The Center For Economic And Social Rights), Mar. 1994, at 20.

[244] Chevron Botching Ecuador Case, Says Influential Report: $27 Billion Liability in Ecuador "Poorly Handled" By Chevron's Top Management, Analyst Tells Leading Trade Publication, AMAZON DEFENSE COALITION, May 27, 2009, available at http://chevrontoxico.com/news-and-multimedia/2009/0527-chevron-botching-ecuador-case-says-influential-report.html. See also Shelly Alpern, Chevron Liability in Ecuador Pollution Case Approaches $27 Billion, TRILLIUM ASSET MANAGEMENT, http://trilliuminvest.com/news-articles-category/cover-story-news-articles/chevron-liability-in-ecuador-pollution-case-approaches-27-billion/.

[245] Exxon Valdez was an oil tanker that spilled an estimated 11 million gallons of crude oil in Alaska in 1989. It was one of the largest oil spills in USA history. *The Exxon Valdez Oil Spill: A Report to the President (Executive Summary),* U.S. ENVIRONMENTAL PROTECTION AGENCY, *available at* http://www.epa.gov/history/topics/valdez/04.htm; *Chevron Suffers Further Setbacks in $27 Billion Ecuador Environmental Trial Court Fines Chevron Lawyer for Causing Delay; Criminal Prosecution Gains Steam*, AMAZON WATCH, Aug. 18, 2009, *available at* http://www.amazonwatch.org/newsroom/view_news.php?id=1901. ("The damages report, which contains 4,000 pages of data and was prepared by a team of 15 experts, found that Chevron could be liable for up to $27.3 billion for dumping billions of gallons of toxic waste into Amazon waterways and abandoning more than 900 unlined waste pits when it operated a large oil concession in the Amazon rainforest from 1964 to 1990. Five indigenous groups have been decimated by the contamination, while experts believe a clean-up would dwarf the largest decontamination effort ever undertaken."; Chevron has engaged in multiple strategies designed to delay this litigation coming to a close. "Chevron induced a local Ecuadorian army official to fabricate a security threat against Chevron lawyers to delay a key inspection where members of an indigenous group planned to testify. Chevron was never sanctioned." Further, "The court has permitted Chevron to continually submit irrelevant but time-consuming evidence, such as soil samples taken far from contaminated sites. The trial judge this year allowed Chevron to conduct

filed against them in Houston, the defendant's place of business.[246] The oil company fought tooth and nail to prevent the case from being heard in the US federal court, claiming that the pollution had occurred in the Ecuadorian/Amazonian rainforest and it was inconvenient to litigate the case in Houston.[247] Texaco, therefore, insisted the case had to be handled in Ecuador.[248] Now Texaco is arguing vigorously that the Ecuadorian court they insisted upon for litigating the case is incapable of giving them a fair trial. It may well be that they will face liability in the area of 27 billion dollars.[249]

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's finest legal muscle, 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.[250] 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.[251] That provision is quoted because it is an example of an indigenous community being able to speed up juridical space and time for

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eight redundant field inspections even though the inspections phase of the trial began in 2004 and ended in 2006. Reports from the eight inspections are still pending.")

246 Aguinda v. Texaco was filed in 1993 and accused Texaco of polluting the environment during drilling operations in the 1970's- 1980's. Aguinda v. Texaco, Inc., 1994 WL 142006 (S.D.N.Y. Apr. 11, 1994).

247 See id. See also Lisa Lambert, At the Crossroads of Environmental and Human Rights Standards: Aguinda v. Texaco, Inc. Using the Alien Tort Claims Act to Hold Multinational Corporate Violators of International Laws Accountable in U.S. Courts, 10 J. TRANSNAT'L L. & POL'Y 109, 114 (2000).

248 *ChevronTexaco faces shareholder revolt over alleged Amazon pollution*, ETHICAL CORPORATION, Apr. 7, 2004, *available at* http://www.ethicalcorp.com/content.asp?ContentID=1883. In 2001, the case was dismissed on the ground of *forum non conveniens* and the Second Circuit Court of Appeals upheld the dismissal in favor of Ecuadorian jurisdiction. Aguinda v. Texaco, Inc., 303 F.3d 470, 480 (2d Cir. 2002). The plaintiff then filed a suit in Ecuador.

249 AMAZON DEFENSE COALITION, supra note 250; *See also* Alpern, *supra* note 250.

250 Professor Winston P. Nagan is the drafter of the Shuar Bill of Rights based on the then Draft Declaration of the Rights of the Indigenous People, U.N. Doc. E/CN.4/Sub.2/1994/56, Aug. 26, 1994, 34 I.L.M. 541 [hereinafter *Draft Declaration of the Rights of the Indigenous People*]. The Bill of Rights was adopted in the rainforest by the Grand Assembly of the Shuar in 2002 [hereinafter *Shuar Bill of Rights*] (on file with author).

251 Shuar Bill of Rights.

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:
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> 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 honor 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.[252]

This document of the Shuar was based on provisions codified in what was then a Draft Declaration on the Rights of Indigenous People.[253] 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.[254] The adoption of the Draft Declaration in 2007 by the UN

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252 *Id.* at art. 36.

253 Draft Declaration on the Rights of Indigenous Peoples, *supra* note 256. Art. 3 of the Declaration gives indigenous people the right to self-determination and art. 9 guarantees the right to belong to an indigenous community and live in accordance with indigenous customs and traditions. *Id.* at art.3 and art.9. Further, art. 19 and art. 20 recognize the right of indigenous people to participate in all levels of decision-making in matters concerning them. *Id.* at art. 19 and art. 20.

254 *Compare* Draft Declaration on the Rights of Indigenous People, *supra* note 256 *and* ILO Convention 169, *supra* note 206. Specifically, Article 6 of ILO Convention 169 recognizes the right of indigenous people to be consulted and to participate in decision-making processes that affect their way of life.

General Assembly was an enormously difficult political exercise and it took years of negotiation to secure its passage.[255] 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.

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 their own cultures have articulate juridical concepts by which they can secure their most valuable assets, the environment within which they live. 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.

Biopiracy in the Shuar Territory

The third problem of importance to the rainforest, and in particular the Shuar people, is the misappropriation of their traditional knowledge by powerful interests tied to the botanical gardens and NIH establishments.[256] The Shuar territory and related territories in Amazonia have been preserved with the highest level of global bio-diversity.[257] 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.[258] Worldwide,

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[255] Stefania Errico, UN Declaration on the Rights of Indigenous Peoples in Adopted: An Overview, 7 HUM. RTS. L. REV. 756 (2007).

[256] The importance of ethnobotany to the US establishment is recorded in Michael J. Balick and Paul Alan Cox, Plants, People, and Culture: The Science of Ethnobotany (1997).

[257] The territory is estimated to hold approximately 17-18% of the world's biodiversity. *Biodiversity Hotspots Map*, Conservation International, *available at* http://www.conservation.org/Documents/cihotspotmap.pdf.

[258] *See* Chidi Oguamanam, International Law and Indigenous Knowledge: Intellectual Property, Plant Biodiversity, and Traditional Medicine 140 (2006) (acknowledging that the presence of pharmacological properties in plants used in traditional therapy is "beyond question"). Oguamanam notes for instance, that "the efficacy of screening plants for medicinal properties increased by more than 400 per cent" with the use of traditional knowledge. *Id.* at 5-6.

three billion people are dependent on traditional medicines.[259] Indeed, the World Health Organization (WHO) has stated that 80% of certain populations, namely in Asia and Africa, rely on traditional medicine for primary health care.[260] Trade in traditional plants is estimated to be up to 60 billion dollars per year industry.[261]

The Shuar have been victimized by unscrupulous practices designed to acquire their traditional knowledge for medical, industrial, and commercial purposes by fraud and subterfuge. In 1986, legislation was promulgated in the US, amending the Foreign Assistance Act of 1961.[262] Consequently, the New York Botanical Garden (NYBG) and the Missouri Botanical Garden applied for and received USAID grants to bio-prospect in Ecuador.[263] After which, an operative of the NYBG inserted himself into a small village in the Shuar territory with the ostensible purpose to provide an educational service for Shuar children concerning their botanical heritage. [264]

A US Congressional Report in 1993 concluded that the National Cancer Institute could have doubled their success rate for finding anticancer drugs, in the period between 1956-1975, if they had taken into account the knowledge of the traditional communities to specifically target certain plants for testing. Pushpam Kumar & Nori Tarui, *Identifying the Contribution of Indigenous Knowledge in Bioprospecting for Effective Conservation Strategy*, *available at* http://www.millenniumassessment.org/documents/bridging/papers/kumar.pushpam.pdf (referencing Josephine R. Axt et al., *Biotechnology, Indigenous Peoples, and Intellectual Property Rights* (CRS Report for Congress) (Apr. 16, 1993)). The World Health Organization [hereinafter *WHO*] defines traditional medicine as "the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses." *World Health Organization Fact Sheet*, WHO, *available at* http://www.who.int/mediacentre/factsheets/fs134/en/index.html (the WHO estimates that in some parts of the world 80% of the populations use traditional medicine as their primary source of medical care).

[259] *Integrative Medicine Foundation Briefing Book* (Integrative Medicine Foundation, New York, N.Y.), at 2, *available at* http://www.integrativemedicinefoundation.org/assets/pdf/briefing_book.pdf.

[260] World Health Organization Fact Sheet, supra note 264.

[261] Joe Skelton, *Fair Trade?*, ALIVE, May 2004, *available at* http://www.alive.com/1796a5a2.php?subject_bread_cramb=172. *See also* NARAIN SINGH CHAUHAN, MEDICINAL AND AROMATIC PLANTS OF HIMACHAL PRADESH 463 (1999) (It is predicted that world trade in medicinal plants would rise to 5 trillion U.S. dollars by 2050, according to a 1996 World Bank Report).

[262] The Foreign Assistance Act, 22 U.S.C. §2151 (1961). The amendment was for funding to gain access to organic compounds from the natural environment itself.

[263] USAID was created by the Foreign Assistance Act of 1961 for the purpose of administering economic assistance programs. *USAID HISTORY*, USAID, http://www.usaid.gov/about_usaid/usaidhist.html.

[264] The methods used are summarized on pages 14-18. This book contains the list which

Essentially, under the guise of learning and teaching the children about the rainforest, the operative used the children to acquire information about plants deemed valuable by the Shuar and their Shamans in their healing and other practices and actually collected specimens of the plants. A treasure trove of some 578 specimens of commercial value was collected. These were duly documented in a report submitted to USAID and the New York Botanical Garden. Those reports then listed these plants and their traditional uses on the National Cancer Institute registry for the use of research scientists. This traditional knowledge in the NCI registry was exclusively available to the big pharmaceuticals from 1992 – 2002. In 2002, NYBG published an in-house publication drawn from reports from USAID and NCI, essentially misappropriating secret knowledge of the Shuar.[265] It was in response to NYBG's actions that the Shuar created their Bill of Rights to protect their economic patrimony. Thus, the issue of biopiracy is in part linked to the question of securing the integrity of the rainforest and its peoples.

LAND RIGHTS, HUMAN RIGHTS, AND INFORMED CONSENT IN PERU

This article now takes up the problem of the State as an intervener in the context of the land rights of indigenous people in Peru. Peru has a long and dubious history, in terms of the protection of its indigenous populations and, in particular, their patrimony and legal interests in rainforest lands. The Peruvian Amazon includes basic resources of oil, gas, timber, and mineral wealth that are extremely profitable to those in control of the land.[266] Not surprisingly, President Alan Gabriel Ludwig Perez is adamant on obtaining that control. Peru has recently signed the US-Peru Trade Promotion Agreement.[267] To implement that agreement, President Perez sought fast track authorization in order to enact legislation by executive decree. The Peruvian Congress, in 2008, passed Law 29157, which delegated to the President the competence to legislate for a period of 180 days for the purpose of implementing trade agreement.[268]

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identifies the plants and their uses. BRADLEY C. BENNETT, ETHNOBOTANY OF THE SHUAR OF EASTERN ECUADOR (2002).

265 *Id.*

266 *Background Note: Peru*, U.S. Dep't of State, http://www.state.gov/r/pa/ei/bgn/35762.htm.

267 U.S.-Peru Trade Promotion Agreement, U.S.- Peru, Apr. 12, 2006, Publ. L. No. 110-138, 121 Stat. 1455 2007.

268 *Issue Brief: Indigenous Mobilizations in the Peruvian Amazon*, AMAZON WATCH, *available at* www.bicusa.org/admin/Document.101184.aspx.

The Garcia Fast Track Decrees

It was in this context that President Garcia issued 99 legislative decrees, the most controversial of which was DL 1015 [later modified 1073].[269] This decree was essentially a decree of expropriation of the communally owned lands of the indigenous people and the allocation of the resources of the indigenous communities to foreign corporations.[270] According to President Garcia: "We have to understand that, when there are resources like oil, gas, and timber, they don't only belong to the people who had the fortune to be born there—because that would mean more than half of Peru's territory would belong to a few thousand people."[271]

The decrees are thought to be incompatible with pre-existing Peruvian law, including the Peruvian Constitution, relating to the rights of the indigenous community. Peru's own Constitutional Commission has repealed such a decree on the basis that the right to allocate the use of land could not be done by decree but only according to law.[272] President Garcia has refused to hear these concerns, which have been expressed by indigenous leaders and communities in Peru as well as by leading politicians, including Prime Minister Yehude Simon.[273] In short, the politicians insist upon the right to revisit these executive decrees and modify them.

The indigenous people who are directly affected by these decrees insist that they are unlawful, that they violate international law, and that they should be entirely repealed.[274] The government has not heard them.[275]

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269 *Id.* Decree 1015 opens up approximately "45 million hectares to foreign investment and timber, oil, and mining exploitation." Laura Carlsen, *Trade Agreement Kills Amazon Indians*, FOREIGN POLICY IN FOCUS, June 18, 2009, http://www.fpif.org/articles/trade_agreement_kills_amazon_indians.

270 *See supra* note 232. *See also,* Chris Kraul, *Peru's indigenous people win one round over developers*, LA TIMES, June 25, 2009, *available at* http://www.amazonwatch.org/newsroom/view_news.php?id=1874.

271 **Sam Urquhart,** *The Global Significance Of The Amazon Protest*, COUNTER CURRENTS, June 11, 2009, http://www.countercurrents.org/urquhart110609.htm.

272 Carlsen, *supra* note 275.

273 Prime Minister Yehude Simon actually asked the Peruvian Congress to repeal two of the decrees and have been leading the negotiations between the indigenous communities and the government. Prime Minister Simon will resign after the conflict is over. Press Release, Amazon Watch, Peruvian Congress to Vote Today on Repealing Two Controversial Decrees: Government Urged to Drop Criminal Charges Against Indigenous Leaders and Investigate Violent Incidents in Bagua, Amazon Watch (June 18, 2009), *available at* http://www.commondreams.org/newswire/2009/06/18-27.

274 *See Carbon conservation schemes will fail without forest people*, MONGABAY, Oct. 16,

The indigenous communities, in turn, have resorted to non-violent protests in order to ensure that their voices are heard and that their human rights are respected.[276] The protestors have taken over airports, blocked bridges and highways, prevented navigation along several rivers, and have stopped oil extracted from the Amazon from being shipped out of the region.[277] The government responded by breaking the non-violent protests through the use of force.[278] The government also responded by issuing propaganda, in which it has sought to depict the indigenous protestors as terrorists.[279] Labeling the protestors "terrorists" is really an effort to find a justification for the use of unrestrained military force under the guise of state security.[280] It is also a propaganda stratagem to deflect attention away from the government's own violation of its own law and international law to which the state of Peru is bound.

The national indigenous organization of Peru, AIDESEP, fully supports the indigenous efforts to resist the President's executive decrees expropriating the economic and cultural patrimony of the indigenous nations of Peru.[281] The indigenous community demands that the state cease its violent repression of indigenous protests and lifts the state of emergency.[282] It further demands the repeal of the free trade laws that allow oil extraction, logging, and agricultural activity, as well as road-building into indigenous territories for these purposes. The communities also

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2008, http://news.mongabay.com/2008/1016-indigenous.html.

275 The government insists that the decrees are needed to implement the provisions of the U.S.-Peru Free Trade Agreement. Chris Kraul, *supra* note 276.

276 *Id.*

277 *See* Republic of Ecuador Constitution of 1998, *supra* note 238. *See also Headlines for June 17, 2009*, DEMOCRACY NOW, http://www.democracynow.org/2009/6/17/headlines#13.

278 Rory Cox, *The fight for the Peruvian rainforest*, THE GUARDIAN, July 4, 2009, *available at* http://www.amazonwatch.org/newsroom/view_news.php?id=1883. *See also*, *Police Open Fire on Indigenous Blockade in the Peruvian Amazon - 25 Civilians and 9 Police Dead, 150 Injured*, AMAZON WATCH, June 6, 2009, http://www.amazonwatch.org/newsroom/view_news.php?id=1837; *Headlines for June 12, 2009*, DEMOCRACY NOW, http://www.democracynow.org/2009/6/12/headlines#13; *APRODEH: Open Letter To Peruvian President Alan Garcia*, AMAZON WATCH, Aug. 10, 2009, http://www.amazonwatch.org/newsroom/view_news.php?id=1896.

279 John Gibler, *Indigenous Protest and State Violence in the Peruvian Amazon: How the Media Misrepresents*, HUFFINGTON POST, June 12, 2009, *available at* http://www.huffingtonpost.com/john-gibler/indigenous-protest-and-st_b_214901.html.

280 For example, eyewitness reports indicate that the attacks on indigenous protestors were unprovoked and automatic weapons were used despite the indigenous community's request for dialogue and peaceful resolution. *Id.* Garcia refers to indigenous people as "garden watchdogs" who defend their "food" that "they don't eat nor let others eat." *See* Kraul, *supra* note 276.

281 *Action Platform Of The Amazonian Indigenous Peoples (AIDESEP)*, AMAZON WATCH, Apr. 4, 2009, http://www.amazonwatch.org/newsroom/view_news.php?id=1766.

282 *See* Republic of Ecuador Constitution of 1998, *supra* note 238.

demand that their constitutionally guaranteed rights—to self-determination, to control over their own traditional lands, and to prior consultation—be respected. Further, the indigenous community wants a good faith process of communication and collaboration to resolve the conflict.

The most targeted demands of the indigenous communities deal specifically with the following legislative decrees[283]:

(1) DL 1064 Article 8.4

> This decree, in effect, abolishes any requirement of negotiation or consultation with a community prior to the state appropriating their land for state concessionary interests. This is a violation of the obligation under the International Labor Organization Convention [ILO] No. 169 to consult with indigenous people prior to signing contracts establishing developmental initiatives that affect them. This Article removes any obligation to negotiate even financial matters with affected communities. Such a model of development is designed to destroy fundamental indigenous human rights.

(2) DL 1064 Article 7

> This Article characterizes community land rights as subordinate to individual property rights. Under ILO 169 Article 14, indigenous communities must have their land rights given greater protection than other land right claims. Under this decree, any conflict between individual's companies or settlers who have invaded the territory have superior claims to title. This is a clear violation of Article 14.

(3) DL 1089

> This decree expands the role of the institution created to formalize property rights in urban areas so that it will now assume responsibilities that will include Amazonian land. Since this organization is directed to formalize private individual rights, it could be an instrument for favoring such rights over the communal land titles of indigenous peoples, which rights are protected under ILO 169 Article 14.

(4) DL 1020

> This law [creates] a system of benefits for rural cooperatives, individual farmers, and small companies. Indigenous people living in communal land are precluded from these benefits.

International Law and Garcia Decrees

The international treaty most pertinent to the rights of the indigenous

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[283] Peru Indigenous Mobilizations Issue Brief, AMAZON WATCH, May 18, 2009, http://www.bicusa.org/EN/Article.11185.aspx. On the decrees, *see* Rhett A. Butler, *Peru revokes decrees that sparked Amazon Indian uprising*, MONGABAY, June 19, 2009, http://news.mongabay.com/2009/0619-peru.html; **Lila Barrera-Hernández,** *Peruvian Indigenous Land Conflict Explained*, http://www.as-coa.org/article.php?id=1710.

people in the Peruvian Amazon is the ILO Convention 169.[284] According to Article 3 (1), "Indigenous and Tribal peoples shall enjoy the full measure of human rights and fundamental freedoms, without hindrance or discrimination."[285] Article 3 (2) stipulates "no form of force or coercion shall be used in the violation of the human rights and fundamental freedoms of the people concerned."[286] Thus, the State's use of force to repress legitimate dissent is a violation of the treaty obligation. To the extent that President Garcia has enacted special measures, Article 4 stipulates, "such special measures shall not be contrary to the freely expressed wishes of the people concerned."[287]

In the context of the relationship of land and the indigenous community, it is widely accepted that land is not simply a commercial commodity belonging to the indigenous community. It is, in fact, the *basis* of the community.[288] In this sense, Article 5 of the ILO Convention is directly on point, and suggests a further treaty violation of the Peruvian government. According to Article 5:

> In applying the provisions of this Convention:
>
> (a) the social, cultural, religious and spiritual values and practices of these peoples shall be recognised and protected, and due account shall be taken of the nature of the problems which face them both as groups and as individuals;
>
> (b) the integrity of the values, practices and institutions of these peoples shall be respected;
>
> (c) policies aimed at mitigating the difficulties experienced by these peoples in facing new conditions of life and work shall be adopted, with the

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284 ILO Convention 169, *supra* note 206. Peru has ratified ILO Convention 169 in 1994.

285 *Id.* at art.3 (1).

286 *Id.* at art. 3(2).

287 *Id.* at art. 4 (2). Art 4(3) further states that "[e]njoyment of the general rights of citizenship, without discrimination, shall not be prejudiced in any way by such special measures." *Id.* at art. 4 (3).

288 Article 13 (1) of ILO Convention 169 states that the governments "shall respect the special importance for the cultures and spiritual values of the peoples concerned of their relationship with the lands or territories. . *Id.* at art. 13 (1). *See also*, Phrang Roy, Assistant President, International Fund for Agricultural Development, Indigenous Peoples: Human Rights, Dignity and Development with Identity, Address at the International Day of the World's Indigenous People (Aug. 9, 2006), *available at* http://www.ifad.org/english/indigenous/documents/ip.pdf; Rodolfo Stavenhagen, *Indigenous Peoples: An Essay on Land, Territory, Autonomy and Self-Determination*, LAND RESEARCH ACTION NETWORK, Sept. 5, 2005, *available at* http://www.landaction.org/display.php?article=327.

> participation and co-operation of the peoples affected.[289]

Because land is the base of the community, it implicates survival as well as the implications of environmental destruction by extracting industrial activity. There is a fundamental inter-dependence between environmental integrity, the fundamental human rights of indigenous people, and the recognized role in preserving the ecological integrity and balance of the rainforest.

> 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.[290]

For the purpose of Amazonia, the Additional Protocol to the American Convention on Human Rights specifically mentions environmental issues.[291] Article 11 stipulates the right to a healthy environment and public services for all.[292] The same article further recognizes the protection, promotion, preservation, and enhancement of the environment.[293] Further, the San Salvador Protocol recognizes the benefits of culture and that States shall engage in acts "necessary for the conservation, development and dissemination of science, culture and art."[294] Important to the current situation in Peru, ILO Convention 169 requires that planned development activities, like oil extraction, be preceded by an environmental impact assessment in cooperation with the indigenous people.[295] 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, which show that these themes are universal, interdependent, and indivisible.[296] It is obvious that

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289 *Id.* at art. 5.

290 Stockholm Declaration of the United Nations Conference on the Human Environment, ¶ 1, U.N. Doc A/CONF.48/14/REV.1 (June 16, 1972).

291 Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights, art. 11, Nov. 17, 1988, 28 I.L.M. 156 [hereinafter *San Salvador Protocol*].

292 *Id.*

293 *Id.*

294 *Id.* at art. 14 (2).

295 ILO Convention 169, *supra* note 206, at art. 7 (3).

296 This principle was also influential in the drafting of the 1992 Rio Declaration concerning the environment and development. Rio Declaration on Environment and Development, G.A. Res. 151/26 Annex I, U.N. Doc/A/CONF.151/26 (June 13, 1992). Principle 22 addresses the vital role

the government of Peru is in serious violation of its most fundamental international law commitments. A continuation of such conduct serves only to exacerbate the situation and undermine Peru's national interest.

Human Right of Informed Consent Among Indigenous Peruvians

Further, not only do the legislative decrees of President Garcia violate various international treaties in terms of environmental, land and cultural protection, but the decrees also violate the international law of free, prior, informed consent of the indigenous nations. 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 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. The practice of the Peruvian government—and, traditionally, in Peru—has been to disparage these rights. The current crisis is a flagrant example of this violation.

The ILO 169 was one of the first treaties to recognize explicitly the right of indigenous peoples to participate in decision-making processes, including their right to prior informed consent.[297] Subsequently, other treaties, including the Convention on the Elimination of All Forms of Racial Discrimination,[298] the American Convention on Human Rights,[299]

indigenous communities play in environmental management and development. *Id.* Principle 10 addresses the need for participation of all concerned citizens, at every relevant level, when handling environmental issues. *Id.* In 1994, the UN General Assembly affirmed in resolution 45/94, the Environmental Human Rights connection. *See* A/RES/45/94, adopted Dec. 14, 1990 at the 68th meeting, *available at* http://daccessdds.un.org/doc/RESOLUTION/GEN/NR0/564/83/IMG/NR056483.pdf?OpenElement.

[297] ILO Convention 169, *supra* note 206, at art. 6 (1). Article 6 (1)(a) states that the government shall "consult the peoples concerned, through appropriate procedures and in particular through their representative institutions, whenever consideration is being given to legislative or administrative measures which may affect them directly." *Id.* Article 6 (1) (b) further stipulates that the government "shall" establish means by which these peoples can freely participate . . . at all levels of decision-making . . . ." *Id.*

[298] International Convention on the Elimination of all Forms of Racial Discrimination, Mar. 7, 1966, 660 U.N.T.S. 195.

and the American Declaration of the Rights and Duties of Man,[300] 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, that "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."[301]

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.[302] It states, for example, that "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."[303] It also provides that, "[i]ndigenous peoples have the right to participate in decision-making in matters which would affect their rights."[304] Furthermore, "[i]ndigenous peoples have the right to determine and develop priorities and strategies for exercising their right to development."[305] Lastly, the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters established 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

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299 American Convention on Human Rights, Nov. 22, 1969, 1114 U.N.T.S. 123.

300 American Declaration of the Rights and Duties of Man, Mar. 30-May 2, 1948, O.A.S. Off. Rec OEA/SER.L/V/I.4 REV (1965).

301 General Recommendation No. 23 on Indigenous Peoples, 51st Sess., U.N. Doc. 18/08/97, ¶4(d) (Aug. 18, 1997).

302 United Nations Declaration on the Rights of Indigenous People, G.A. Res. 61/295, U.N. Doc. A/RES/61/295 (Sept. 13, 2007) [hereinafter *United Nations Declaration on the Rights of Indigenous People*].

303 *Id.* at art. 19.

304 *Id.* at art. 18.

305 *Id.* at art. 23.

authoritative decision making. [306] 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. 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.[307]

The state of Peru has disparaged these rights, to which it is obligated as a matter of international law. [308] Instead of obtaining free and informed consent, the State has provided non-transparent forms of executive legislation, ignoring the rights of the communities most affected and the right to participation as a human right. It now seeks to enforce its non-transparent decrees from the barrel of a gun. In this sense, the example set by Peru is a terrible precedent for the international rule of law and for the respect of fundamental rights of indigenous peoples throughout the world. The decisions taken by the State will have an impact on indigenous peoples, whose livelihood, culture and well-being depend on natural resources that are adversely implicated by the exploitation of their land. The case of the Shuar and the Peruvian indigenous nations underscores the point that land is tied to the fundamental human rights of indigenous people and that indigenous people who have defended their land rights have also been defending rights to ecological solidarity with global implications. It is therefore a critical component of the anthropocenic perspective that at least the involvement of the human populations in the processes relating to

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306 Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, United Nations Economic Commission for Europe (June 25, 1998), *available at* http://www.unece.org/env/pp/documents/cep43e.pdf.

307 According to the UN Declaration on the Rights of Indigenous People,

> 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.

UN Declaration on the Rights of Indigenous People, *supra* note 308.

308 Press Release, Victoria Tauli-Corpuz, Statement of the Chair of the United Nations Permanent Forum on Indigenous Issues (UNPFII) (June 2, 2009), *available at* http://www.un.org/esa/socdev/unpfii/documents/statement_vtc_peru_june08_en.pdf.

rainforest protection be secured as a component of the element of universal solidarity in securing these ecological values for posterity.

CONCLUSION

The anthropocene crisis presents important challenges for law and political economy. Law has sought to fill 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. Law, as decision, has important challenges for the open spaces of the global environment.

What we have sought to do in this article is to stress the importance of law when seen through the lens of a deliberate focus and emphasis on authoritative and controlling decision making in the context of the key anthropocene problem of global society. This article has stressed, in particular, the element of popular participation in the prescription, application, and enforcement of critical policies which affect the viability of the earth-space community. It has also drawn attention to elements of the political economy implicit in neoliberalism, as well as postneoliberalism. These issues are about the importance of regulating open spaces and filling the legal vacuum in these spaces with rules that enhance the common interest. From a neoliberal point of view, a no rules/non regulatory system is preferred. From the perspective of postneoliberalism, the importance of wise regulation is critical to the environmental future of human kind.