

GLOBAL GOVERNANCE: IMPRESSIONS
FROM COMPLEX ADAPTIVE SYSTEMS
THEORY

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FOREWORD

This paper was written as part of the Earth System Governance Project.

Earth system governance is defined in this Project as the system of formal and informal rules, rule-making mechanisms and actor-networks at all levels of human society (from local to global) that are set up to prevent, mitigate and adapt to environmental change and earth system transformation. The science plan of the Project focusses on five analytical problems: the problems of the overall *architecture* of earth system governance, of *agency* of and beyond the state, of the *adaptiveness* of governance mechanisms and processes, of their *accountability* and legitimacy, and of modes of *allocation and access* in earth system governance. In addition, the Project emphasizes four crosscutting research themes that are crucial for the study of each analytical problem: the role of power, of knowledge, of norms, and of scale. Finally, the Earth System Governance Project advances the integrated analysis of case study domains in which researchers combine analysis of the analytical problems and crosscutting themes. The main case study domains are at present the global water system, global food systems, the global climate system, and the global economic system.

The Earth System Governance Project is designed as the nodal point within the global change research programmes to guide, organize and evaluate research on these questions. The Project is implemented through a Global Alliance of Earth System Governance Research Centres, a network of Lead Faculty members and Research Fellows, a global conference series, and various research projects undertaken at multiple levels (see www.earthsystemgovernance.org).

Comments on this working paper, as well as on the other activities of the Earth System Governance Project, are highly welcome. We believe that understanding earth system governance is only feasible through joint effort of colleagues from various backgrounds and from all regions of the world. We look forward to your response.

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1. INTRODUCTION

Notwithstanding the territoriality of sovereign states and other claims to private property, Earth's biosphere is a public space. Its protection is a public and therefore a political responsibility. Managing the relationship between people and planet is the centerpiece of that responsibility, and the defining challenge of global governance.

Today the relationship between people and planet is unstable. It follows that global governance should be improved and strengthened.

This essay builds on the premise that global governance includes a strong ideational component which informs our relationship with Earth and determines our path to the future. Values, beliefs, worldviews, collective intentions and ethical propensities inherent to systems of governance contribute to a shared sense of meaning and purpose, and thereby to the character of the human/nature complex and the development trajectory we choose to follow. Given a certain sense of urgency regarding the instability of our relationship with Earth, however, and the apparent need to chart a new path forward to long-run planetary sustainability, it's appropriate now to re-evaluate, and reformulate if necessary, the ideational roots of global governance.

This approach to better governance is intended to contextualize, and perhaps catalyze, the myriad practical—and, by and large, incremental—activities aimed at securing the long-run material sustainability of the human/nature complex such as moving to a low-carbon energy regime, building resilient communities, alleviating poverty and so forth. These projects are ongoing and clearly necessary but they're also slow-moving, standing in sharp contrast to repeated (and increasingly strident) calls for radical, transformative change in our relationship with Earth, and in the direction of our forward motion. The proposition offered here is that this radical change, tantamount to securing the future of human life on Earth, will arise in large measure from a revitalized conception of global governance with a fresh focus on its ideational component.

This shift in focus from the material to the ideational, from the physical to the metaphysical, does not diminish the need for practical action but it does move to the forefront the broader objective of understanding more clearly the existential implications of our current situation, prompting us to revisit the formative questions of life: why are we here, what are we doing and what, if anything, are we trying to accomplish. Positions adopted regarding these questions (whether thoughtful or dismissive) ultimately give meaning to the human condition, and underlie all modalities of governance.

In what follows, Part I briefly introduces the notion of global governance, highlighting its ideational component. Part II will engage with Complex Adaptive Systems (CAS) theory to probe more deeply into the normative profile of global governance. Note that the unit of analysis for this essay is the human population as a whole, and the macro-behaviour of that population. Grammatical usages of 'we' and 'our' refer to humanity in its entirety.

PART I – WHAT IS GLOBAL GOVERNANCE?

The term ‘governance’ enjoys no concise and common definition, and the same is certainly true for the larger and more comprehensive concept of ‘global governance.’ In fact, as a first approximation, if governance were defined straightforwardly as the service that government delivers, then absent a world government global governance would not exist at all. And yet, a broad and diverse literature attests to its theoretical existence, and the relatively high degree of order which permeates and stabilizes world affairs speaks to its empirical presence as well.

By some accounts, global governance is about the exercise of authority on the world stage. Those who wield legitimate power include the formal institutions of national governments, a variety of international organizations (the UN, IMF, WTO, etc.), a plethora of NGOs, and a dense web of formal and informal networks including sub-national, transnational and supranational organizations that increasingly contribute to the establishment and functioning of global rules, norms and practices. This broad definition obviously covers a lot of ground; it describes a complex, multi-layered, multi-purpose system of governance the ultimate objective of which, presumably, is to manage global problems.

Adopting a simpler point of view, there are those who believe that global governance is really about people power, entailing the personal involvement of, essentially, every one of us. We live in a globalized world trending to a form of direct democracy built upon the informed and responsible participation of global citizens. On this view, the most important actor in governance systems is the individual, not organizations, and the aspirational destination is a democratic planetary civilization living in harmonious relationship with the ecosphere.

Yet another opinion focuses less on actors and more on what policy makers believe to be true, arguing that global governance implies a single, coherent worldview and the (more or less) universal participation of all states in an agreed programme of action. For example, contemporary global governance may simply refer to the ascendancy of a neo-liberal ideology which grants priority to the global economy, lionizing the efficiency and effectiveness of market outcomes and informing the operational behaviour of policy makers and civil societies everywhere.

Or maybe global governance doesn’t exist at all—not because there is no world government, but because territorial states are still the paramount political, military and administrative force on the planet. This popular state-centric point of view asserts that anything called international, or transnational, or supranational or global is nothing more than an epiphenomenon of state behaviour. Globalism is a child of and can be controlled by state agency. Global governance on this view is just a complicated and perhaps unnecessary way to describe inter-state relations.

This brief overview hints at a robust and lively discourse in the professional literature buttressed by more than thirty years of research, but for present purposes—that is, for a discussion about the relationship between people and planet—it may be easier to talk about what global governance does, as opposed to what it is. Here the field is simplified dramatically.

Global governance, regardless of how it may be constituted, can be thought of as serving two key functions. The first of these is the provision of public order for the public good. Business and finance, trade and transportation, health and safety, human rights, the environment, arms control and cyber-security are just a few global issue areas which are regulated, managed or otherwise overseen by regimes intent on providing necessary services and administrative predictability for all those affected.

The second function of global governance, and the one central to this essay, is to provide a generalized steering capability for human society. Notwithstanding its many interpretations, the verb ‘to govern’ is originally drawn from the Greek *kubernān* and the Latin *gubernāre*, both meaning ‘to steer.’ Steering implies two things: plotting a safe course through the obstacles of everyday life and, equally or perhaps even more importantly, moving steadily toward a chosen destination.

WHERE ARE WE GOING?

Good governance is intentional.¹ To the extent that world affairs are guided by systems of governance, they are shaped fundamentally by a collective sense of what purposes should be pursued, and what kinds of values should prevail. Global governance, in other words, provides order for a reason, namely, to achieve an agreed objective. An agreed objective will necessarily conform to a given set of values (one objective is, by some standard of valuation, better than another) so the purposeful nature of governance unavoidably includes a normative dimension. “Norms are at the heart of all governance structures,” as one analyst has succinctly expressed this important point.²

Today our rush to the future is oriented to the pursuit of progress and prosperity. ‘Prosperity for all’ is the desirable end we seek, and progress—in technology, in productivity, in social relations—is the means to achieve that end. It’s easy to understand why prosperity for all has been selected, from both a practical and a normative point of view. Practically speaking, we want everyone to be as well off as possible in order to reduce social tensions and to lubricate the steady flow of consumer goods through the world economy. It’s a simple, appealing and generous objective with obvious, tangible benefits. And from a normative point of view prosperity for all is fair as well as practical. It implies that the needs of the poor and disadvantaged will have been met and that a solid foundation of social equity will maintain and nurture healthy, productive relationships between all members of the world family far into the future.

It seems equally clear that progress has been chosen as the best way to eventually achieve prosperity for all. A precise definition of progress might be hard to pin down, but certainly it has been closely associated with economic growth. A growing world economy can deliver the corporate surpluses necessary to foster research, innovation, job creation and a continuous supply of consumer goods. And growth can also deliver tax revenues to support the development of the myriad public services a prosperous society needs and expects. In short, progress through growth can steadily improve living standards for everyone, and for next generations too.

Prosperity defines our preferred objective and progress identifies the means to attain it, but our rapid forward motion to a better future, though well-meaning, has been problematic. Human behaviour relative to Earth's ecosphere and resource base is demonstrably (and exponentially) rapacious. Population growth and rampant poverty still run far ahead of material well-being and many thousands of our fellow species on Earth have already been lost, their habitat destroyed. These unintended consequences are disturbing and counterproductive, calling to question the propriety of the pursuit of progress and prosperity. Though emblematic of modern global governance, this programme for human advancement is evidently not taking us where we need to go.

TOWARD A NEW AGENDA

We who are now living have been entrusted with the ecological capital of all the ages. To fail to appreciate its beauty and respect its provenance is barbarism. To waste and consume it without regard for posterity is vandalism.

William Ophuls

The clear objective of proponents of change is to identify a new path forward compatible with long-run sustainability, to catalyze the agency necessary to follow that path, and thereby to steer human society to a safe and propitious future. We seek a stable relationship between people and planet. We want this stable relationship so that we can really begin to explore the full potential of the human experience without having to worry about the basic essentials of our survival, or about the healthy vitality of the planetary ecosphere.

Redirecting the developmental trajectory of human society on Earth is, however, no trivial task. The heavy forward momentum of modern industrial society is formidable and, moreover, policy-makers and captains of industry around the world are seized of the belief that no radical change is required; that adjustments at the margins within the dominant paradigm will suffice; that our current regime of global governance is adequate to the task of creating a viable future.

As indicated earlier, catalyzing real change will require a new focus on the steering function of governance, and in particular on the set of established ideas which inform our sense of meaning and purpose, and thereby our directionality. The contents of this ideational set—shared values, beliefs, worldviews, collective intentions and ethical propensities—are currently aligned, in the main, with the trajectory we now follow. Progress and prosperity are widely perceived by the rich and the poor, by employers and employees, by governments and civil societies everywhere to be good and useful goals. Relative to this dominant paradigm a nascent current of public anxiety is barely perceptible.

The battle at play here is twofold. First, the contents of our shared ideational space must be revisited and somehow made more directly pertinent to the social-ecological challenge we now face. And second, those transformed ideational elements must be actively deployed against the existential threat of an anthropogenic eco-catastrophe. Practical success in this latter regard will depend on getting the metaphysics right. It

will depend on a better understanding and deployment of the ineffable features of the human experience and, given the seminal role of ethics in the steering function of governance, it will depend in particular on how we grapple with the moral dimension of our current predicament.

An anthropogenic eco-catastrophe would, by any reasonable measure, constitute an immoral outcome of human behaviour. It's important to note, however, that an immoral outcome is necessarily driven by prior immoral behaviour. Given that the threat of eco-catastrophe is real and present, it follows that what we're doing today must in some sense be wrong, and therefore that real change must originate from the critical scrutiny of our current behaviour from a normative point of view. The impetus to revisit the contents of our shared ideational space, and to rebuild the foundations of contemporary global governance, derives from this supposition.

Part II of this essay will begin the process of interrogating the ideational superstructure of modern human society on Earth. A good place to start is with the emerging field of Complex Adaptive Systems (CAS) theory.

PART II – IMPRESSIONS FROM COMPLEX ADAPTIVE SYSTEMS ANALYSIS

There is no escaping the fact that we are entering the opening years of difficult times with no adequate political framework or philosophy.

David Orr

INTRODUCTION

The move to planetary sustainability comprises a number of interrelated transformations, not least of which is a shift in dominant worldviews from Newtonian mechanics to complex adaptive systems. Newtonian mechanics inform the Machine Age but planetary operating systems, natural ecosystems, the global economy and human society at large are not machines. They are complex adaptive systems in which different causal forces are at play and new phenomena such as resilience, non-linearity and emergence become salient. A successful transition to sustainability will require the competent management of these forces and phenomena, a task for which a new analytical framework will be indispensable.

COMPLEX ADAPTIVE SYSTEMS

The push-pull world of Newtonian mechanics is familiar, mathematically precise and predictable. It's also useful. We build bridges, run factories and put satellites into orbit according to Newton's laws of force and motion. We use these laws to exploit and manage our material world, and to maximize economic production.

But there's another world out there that's much harder to quantify and manipulate. What laws govern how a forest works? Why is Earth's climate so hard to model? Why is the world economy so volatile? How can we explain the macro-behaviour of human society? Forests, the climate, the economy and the human population are all dynamic, hugely complex systems with many interactive parts, and with synergies among those parts which often yield unpredictable consequences. And, unlike machines, they're all constantly evolving, constantly adapting to new circumstances, some generated from within, some imposed from without. They function according to rules we can barely discern, let alone fully understand.

The largest complex adaptive system (CAS) on Earth is composed of two parts, namely the atmosphere-plus-world-ocean. The atmosphere weighs 5 quadrillion tons and occupies 50 trillion cubic kilometers. The world ocean adds another 1.5 billion cubic kilometers of volume, and 10 quintillion tons of weight. The two parts of this unitary system are dynamically coupled, exerting huge forces on each other. Trillions of tons of water are exchanged between them every day. Powered by heat from the Sun this massive, moving system is the engine of Earth's climate.

The next largest CAS on Earth also has two major components. The first part is the planetary ecosphere; the second is the population of human beings embedded within it. Together they make up what we now call the social-ecological system. Like the atmosphere-ocean complex, the two parts of this CAS are deeply interactive, giving rise to a bewildering array of changes large and small, some instant, some glacial. The human population, growing at some 70 million people each year, is changing Earth's physical landscape massively and permanently, altering ecosystems and disturbing the lives and livelihoods of other species. In turn the planet changes our behaviour as we adapt to land, air and waterways altered by human intervention. The combined entity of people and planet—that is, the planetary social-ecological system—is enormous and dynamic, constantly adapting, moving and evolving.

We know that complex adaptive systems of all kinds change and evolve over time, even if we often have difficulty precisely identifying the causes of change or the direction of evolution. In the case of the planetary social-ecological system however, we have a special interest in trying to understand the process of evolution because of our non-negotiable dependence on the ecosphere. A proper understanding of the relationship between people and planet, therefore—how it changes and how it can be managed to preserve the well-being of both components—is of the utmost importance. I explore this management problem using complex adaptive systems as an analytical framework.

MANAGING HUMAN BEHAVIOUR

The major source of uncertainty in the relationship between people and planet in the past was the changeability of nature but today, because of growing stresses imposed on Earth's operating systems by human activity, the dominating cause of unpredictability is the macro-behaviour of the human species. We're changing the composition of the atmosphere and ocean with little comprehension of the consequences. Fresh water systems, soils, forest cover, species habitat and much more are all vulnerable to roughshod human intervention, interventions so massive that we are now entering what many have called the Anthropocene epoch.

Given this new source of unpredictability, and given that human survival depends on the stability and viability of the social-ecological system over the long term, it follows that human activity—the disruptive element in this relationship—should be constrained. Managing the relationship between people and planet, and consequently the evolution of the planetary social-ecological system, is tantamount to managing human behaviour. Newton's laws tell us nothing about how to accomplish this, but a better understanding of complex adaptive systems may be helpful.

A first conceptual step in the process of managing the relationship between people and planet is to separate the social-ecological system into its component parts, namely, Earth's natural materials and processes on one hand, and the human population on the other. This analytical starting point isolates 'human society' as a separate component of the larger social-ecological complex, allowing it to be examined on its own terms. Having done this, it immediately becomes apparent that the human population on Earth is a CAS in its own right. It includes a huge number of component parts, dense linkages and dynamic synergies among those parts, and an inherent tendency to experience spontaneous non-linear behaviour—from civilian riots and the outbreak of war to spasms of global giddiness created by various passing fancies.

It is by no means uncommon for large complex systems (such as the social-ecological complex) to have smaller complex systems (such as human society) embedded within them; in fact the process of isolating ever-smaller component parts could be continued almost indefinitely. This is so because an important feature of CAS is self-similarity, a feature also intrinsic to the related field of fractal geometry. Self-similarity means that component parts of complex adaptive systems are often complex adaptive systems in their own right. A forest is a CAS, but so is an individual tree. The human population on Earth is a CAS, but so are individual people. For present purposes, however, the system of interest—the unit of analysis for this essay—is the human population as a whole. To begin to probe the meaning of the idea of managing human activity on Earth, I highlight two unique features of complex adaptive systems, namely, *resilience* and *emergence*.

COMPLEX ADAPTIVE SYSTEMS: RESILIENCE

Complex adaptive systems are composed of many interactive parts with a high degree of connectivity among those parts. They also have a propensity for fast and surprising

changes in behaviour which may be disproportionate to perceived causes. These are good things because dense connectivity and the ability to change quickly make rapid adaptation to new situations easier. Complexity is a rich source of innovation, and it's also a source of stability. Diversity among its parts, distributed capabilities among its component sub-systems, and redundancy to protect against failure all combine to make CAS highly resilient to disturbance. Too much complexity, however, can cause vulnerability. If connectivity is too dense, if component parts are too tightly coupled, if a breakdown here spontaneously creates a breakdown there, then overall system resilience decreases—the ability to adapt becomes brittle instead of flexible, and surprising changes in behaviour can be shocking and damaging instead of useful.

Arguably, the tightly-coupled connectivity so characteristic of modernity—in our financial markets, in our food production and delivery systems, in our transportation and communications networks, in our electrical power grids, and much more—has made society too complex. All these sub-systems serve us well, but they seem poised on a knife-edge, vulnerable to catastrophic failure. The management lesson from CAS theory is that the resilience of modern industrial society—the capacity to survive disturbances—should be improved.

This means decentralizing the dense nodes which control these sub-systems, distributing capabilities across a richer and more varied socio-industrial landscape. It means easing our locked-in dependence on far away suppliers of goods and services, and on irreplaceable technologies understood only by an elite few. Increasing resilience means, to a large extent, increasing self-sufficiency and autonomy.

In terms of social organization, the need for resilience calls us to envisage the democratic empowerment of local communities in order to increase diversity, redundancy and novelty, to gain greater control over basic services vital to our lives, and to reduce our ecological footprint. This devolution to local empowerment is both necessary and important, but it misses a significant point. Local autonomy is direct and practical but, if the move to planetary sustainability is to succeed there must be some degree of cooperation and coherence among these communities, and some overall sense of direction for their collective evolution as well. Recognizing the human population on Earth as a complex adaptive system interacting with its material environment leads to a new emphasis on decentralization, but by the same token it amplifies the need for supranational coordination. It is a central contention of this essay that the purpose and directionality of that coordination, provided by an overarching system of governance which facilitates the work of local authorities, is profoundly influenced by the collective ideational experience of human society at large.

COMPLEX ADAPTIVE SYSTEMS: EMERGENCE

Emergent properties are extra, unanticipated features which emanate from the synergistic interactions of a CAS's component parts. The familiar expression 'The whole is greater than the sum of its parts' loosely captures this idea. Perhaps the best example of it is individual human consciousness. The human body is a complex

adaptive system but no empirical probing of its parts or structure could predict the existence of the transcendent phenomenon of consciousness. The ability to perceive and engage with intangibles such as ideas, values, beliefs and worldviews is an emergent property of the individual human body and brain. Can a similar property be ascribed to the human population as a whole?

It's a common fact of life in modern times that we are much more comfortable with the notion of individual sets of experiences and preferences which may be aggregated into sum totals, but which do not together constitute an independent entity with unique characteristics. Jean-Jacques Rousseau called this sum total the 'will of all.' Interestingly, it is precisely this will of all, this aggregation of personal experiences and preferences, now called utility functions, which provide the rationale and raw data for our consumer-oriented economies.

Social psychological and sociological research³ does indicate, however, that the characteristics of a human group cannot be derived simply by aggregating the attributes of individual members. The 'personality' of a group is generated by the pattern of organization and dynamic interdependencies among members of the group. That personality is an emergent phenomenon with an independent ontological status and unique causal powers.

In support of the notion of a shared consciousness and in contrast to the will of all Rousseau posited the existence of a 'general will', a unified expression of social concern about the common good, a collective impulse to achieve the best interests of society as a whole. Rousseau's famous social contract was intended to create the political space in which this impulse might flourish.⁴

This hasn't happened, but complex adaptive systems and their peculiar ability to spawn emergent properties do sensitize us to the possibility that the human population, itself a CAS, may in fact be capable of generating such a phenomenon as a shared consciousness, however crude or unformed such a thing might be. The impression offered here is that this is indeed the case: a nascent collective consciousness does exist and, like Rousseau's general will, it could under the right circumstances take the form of a common intention to ensure the vitality and stability of the social-ecological complex. If this were to occur, global governance would be greatly benefited.

But we're a long way from that, and the right circumstances are not yet in place. Instead of an informed and progressive general will we are more likely to see indiscriminate waves of fear and panic, anger and excitement, guilt and sympathy spreading fast across large sectors of society, sweeping up individual sentiments in the psychological volatility of the undisciplined 'mind' of large groups of people. We are more likely to agree with Carl Jung who said, "The masses always incline to herd behaviour, hence they are easily stampeded; and to mob hysteria, hence their witless brutality and emotionalism."⁵ And, in a similar vein, William Ophuls in his most recent book has said that "The greatest weapon of mass destruction on the planet is the collective human ego."⁶ These harsh observations seem closer to reality than the

putative benevolence of an unformed general will. What explains this simple-minded behaviour?

In his well-regarded book *Moral Man and Immoral Society* (1932) American political theorist and theologian Reinhold Niebuhr⁷ explains that individual people are reasonable and morally sensible, but that reason and morality diminish from individual to group, and diminish even further as group size grows larger.⁸ Values important to individuals lose their salience in the context of group behaviour, so larger groups are less responsive to reflexive evaluation of what they're doing. This means that reasoned, morally sound supervision of our collective behaviour is weakest when the group is biggest, and the biggest group of course is the human population as a whole. The result of this is that human society on Earth is easily tantalized by simplistic ideas and momentary impulses, easily stampeded into unreflective, emotion-driven behaviour which lacks subtlety, sophistication and direction.

But change is possible: complex adaptive systems and their associated emergent properties do evolve over time. Thus it may be true that, like the individual human mind, humanity's collective consciousness can evolve through developmental stages, from a rudimentary awareness of the world around, through a kind of adolescent excitement and vulnerability, and finally to a more mature and stable form characterized by empathic care and a sense of adult responsibility. This latter stage of consciousness—the stage at which Rousseau's general will might emerge—would be well suited to serve the public interest by constraining or enabling the macro-behaviour of human society as circumstances require. It seems clear enough, however, that we are currently at the middle stage of development—excited, vulnerable and easily diverted from serious consideration of the long-term health and vitality of human society on Earth.

This has clear implications for the instigation of change. If humanity's collective consciousness is now at an intermediate phase of development and maturation; if, as such, that consciousness is susceptible to Panglossian ideas; and if, consequently, human society has embraced the ecologically unsustainable notion of unbounded progress and prosperity; then a way must be found to move the process of social evolution forward, to countermand this juvenile agenda and to put in place a more responsible plan. This means re-orienting the steering function of global governance to serve the better, more mature aspirations of people, to pursue those aspirations with a certain sense of ecological modesty, and by doing so to preserve the integrity of the planet.

THE WAY AHEAD

The objective of Part II of this essay has been to show how framing the sustainability problematic in terms of complex adaptive systems can shed new light on the need for the macro-management of human behaviour. By viewing the human population on Earth as a complex adaptive system, we learn that improved resilience in the face of economic turbulence and environmental change will require a devolution of control over some elements of society's infrastructure and material processes, and that

devolution must be accompanied by political oversight intended to maintain system-wide coherence, coordination and cooperative movement toward shared goals. And, by viewing the human population as a CAS with a nascent emergent property akin to individual consciousness, we learn that political oversight rises from the world of ideas, a world now dominated by the impossible expectations of youthful exuberance. The prospect of an improved system of global governance informed by these observations can set the right tone for public debate by promoting a more sophisticated discourse among public officials and within civil society. And, instead of rushing after material prosperity on a wave of economic growth, such discourse may lead to a richer and more rewarding future.

The managerial issue—that is, the problem of improving global governance—is especially interesting because the CAS point of view recommends a decisive shift to the ideational domain. The story of progress and prosperity now dominates this domain, and therefore dominates the international political and economic agenda. The task at hand is to challenge this story directly, not with the intention of discarding its beneficial features but to subsume it, to move beyond it toward a more efficacious narrative which serves the purposes of sustainability and social-ecological vitality.

A fresh focus on the ideational domain, that is, on the emergent metaphysical space created by the collective human experience, may very well reveal that it is inhabited by more than individually-held and shared ideas. It may be a broader, deeper place that is home not only to what we think, but also to what may be called ‘absolute values’ such as the Good, the True and the Beautiful. If so, we can engage with these values and apply them to critical issues facing the human population today. This speaks to the possibility that we can effectively revisit the philosophical foundations of modern industrial society, and rebuild the moral content of those foundations.

To date we have seen only hints of such a process. The Good, the True and the Beautiful are mirrored as morality, reason and aesthetics in the world we occupy, but we have not distinguished ourselves in the practice of these reflected values. Morality is strained by war, by the ill-treatment of our children, and by the expropriation of the living space of other species. Reason is compromised by the destruction of ecosystems vital to our survival despite clear lessons from science and history. And aesthetic sensibilities are dulled by pounding industrialism and the defacement of natural landscapes. This inappropriate behaviour is exaggerated by a collective sense of exceptionalism which we’ve misunderstood to mean that we are independent of nature and unaccountable for our actions.

Accessing and applying supra-human precepts implicit in the ideational domain will help us correct these misapprehensions and move from the fractured and fragmented values inherent in relativistic, materialistic, individualistic post-modern secularism to truer values drawn from a deeper well. New ideas suited to this purpose will emerge from synergies ignited in the domain of the collective human experience.

To bring about the tragedy of the commons it is not necessary that men be bad, only that they are not actively good.

Garrett Hardin

PROLOGUE

The foregoing essay does not address the myriad practical concerns shared by many with respect to securing the long-run relationship between people and planet. Instead, it's intended as prologue to a formative, catalytic discourse about the implicate universe we inhabit, about our place on Earth, and about the clear and present existential dangers that threaten our tenure here. We have delayed too long, missed too many opportunities for change, and failed to come to terms with the prospect of grievous harm inflicted by ourselves on ourselves, and on the planet which gave us life. Notwithstanding the hard work and commitment of countless people around the world, the business-as-usual trajectory still dominates the global agenda, still informs the system of global governance which steers us recklessly and rapidly in the wrong direction.

The physical and biological sciences provide information and new tools for practical action, but the social sciences and humanities must also be more effectively engaged if we hope to change the underlying suite of attitudes, values and worldviews which shape and give meaning to the modern human experience. Notwithstanding the better future promised by the story of progress and prosperity, today our shared mindset is uneasy. Our relationship with Earth is precarious. We have no clear sense of why we're here or where we might be going, and undercurrents of fear and fatalism are beginning to corrode the positive, hopeful sentiments inherent to human nature.

Vaclav Havel has suggested that "Hope is not the same thing as optimism. It is not the conviction that something will turn out well, but the certainty that something makes sense, regardless of how it turns out."⁹ Perhaps this is where social science (including complex adaptive systems theory) and the humanities come into play. If we can 'make sense' of what we're doing to ourselves and to the planet, if we can find comprehensible reasons for having taken the path we're on now, then a new conceptual frame may come into view which can drive a more incisive and effective kind of agency for change. For example, a 'hopeful' posture in the Havelian sense may shift the analytical terrain from how questions (How can we solve the problem of planetary sustainability?) to why questions (Why do we face an existential predicament?), adding a different kind of impetus to the quest for transformative change. Far from being an exercise in epistemological futility, this shift could encourage an exploration of deeper currents and more profound truths which may lead to new understandings, new modalities of global governance and to the breakthrough we clearly need on the road to planetary sustainability. The search for meaning is an underdeveloped aspect of the modern human experience. A new effort to make sense of a dire situation may very well hold useful surprises for us, revelations

or even an epiphany, a shared awakening to the meaning of the life-and-death struggle in which we are now engaged.

¹ James N. Rosenau. 'Governance, Order and Change in World Politics,' in James N. Rosenau and Ernst-Otto Czempiel, eds., *Governance without Government: Order and Change in World Politics*. Cambridge: Cambridge University Press, 1992, p.6.

² Steven Bernstein. *The Compromise of Liberal Environmentalism*. New York: Columbia University Press, 2001, p. 5.

³ For a unique perspective on this, see Alexander Wendt. *Quantum Mind and Social Science: Unifying Physical and Social Ontology*. Cambridge: Cambridge University Press, 2015.

⁴ Jean-Jacques Rousseau. *On the Social Contract*. Edited by Roger D. Masters and translated by Judith R. Masters. New York: St. Martin's, 1978.

⁵ Carl G. Jung. *The Practice of Psychotherapy*, translated by Gerhard Adler and R. F. C. Hull. Princeton: Princeton University Press, 1985, p.6.

⁶ William Ophuls. *Plato's Revenge: Politics in the Age of Ecology*. Cambridge, Massachusetts: The MIT Press, 2011, p. 72.

⁷ Reinhold Niebuhr. *Moral Man and Immoral Society: A Study in Ethics and Politics*. New York: Charles Scribner's Sons, [1932], 1960.

⁸ This suggestion by Niebuhr is contradicted by myriad examples of communities which, by way of social mores and pressures, corral and guide the otherwise disruptive behaviour of recalcitrant individuals. While such communities exemplify a desirable form of governance which might possibly be scaled up, Niebuhr is referring to societies in which the appropriate cultural infrastructure is absent, and to societies which have grown so large that interpersonal communication, empathy and cohesion are beyond human capabilities.

⁹ Vaclav Havel. *The Politics of Hope*. 1986. https://en.wikiquote.org/wiki/V%C3%A1clav_Havel