

Earth system ethics: a systems approach to ethics

Laura Ballantyne-Brodie BA. LLB (Hons) 2010, Post Grad Dip. MA (Ongoing). Research fellow New York University. Instructor, Yale University Center for Bioethics, Director Make Meaning LLC, Founder Rent to the World.

Introduction

The news has been delivered and we now understand with near certainty that the industrial economy is at odds with the physical systems of the planet.¹ Shocks such as the credit crunch, infectious diseases, climate instability and ecological collapses are converging towards a ‘planet crunch’. Despite this knowledge we humans are grappling with how to understand and respond to these complex and interrelated issues. Unified collective action has so far failed to address some of the most pressing environmental issues. Earth system science examines our view of Earth as a system involving interactions among the different spheres of Earth, including the biosphere, lithosphere, atmosphere, hydrosphere, cryosphere and the anthroposphere. Our emerging understanding of Earth system science in the context of the anthropocene is challenging dominant paradigms. These paradigms include our relationship to, and view of nature, and the natural environment. For example we have until now largely assumed that nature is benign/fragile and easily disrupted), and our view of changing and adapting to the natural world, ‘mechanistic’. That is, our view of Earth, has been and in many cases still is, that it is an ‘entity’ that can be broken down and studied, component by component, in isolation.

Earth system science that tells us that Earth’s spheres are interconnected and we are at the mercy of these physical systems, not the other way around. New ways of understanding and framing an ecological worldview are emerging across disciplines. In the era of the anthropocene, coupled with what we know from the study of Earth system science about the limits of Earth to sustain human civilization, this paper proposes that a new field of inquiry is needed to systematically inquire and respond to the environmental crisis. It is argued that current paradigms fail to take stock of scientific understandings of Earth as a system that has been dynamically engaged in the age of the anthropocene. As a new field, Earth system ethics provides a coherent theoretical framework to demarcate the boundaries for a unified conversation and response, that is grounded in the study of Earth systems (science), to develop a unified ecological worldview to consider the whole as it is, not as we wish it were / to be.

Overview of approach

¹http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf

Earth system ethics (i.e. systems ethics) is an ethical approach that is distinct from environmental ethics and could be developed to provide an analytical framework of general norms derived from the common morality to form the starting point for a normative framework to act.² This paper first considers the approach taken in the field of bioethics (biomedical principlism) as a useful precedent for the adoption of a principles based approach (principlism). This paper suggests that biomedical principlism underpinning bioethics is useful to demonstrate how a new field could be structured and a new discipline could operate. The purpose of this paper is to suggest that a principles approach offers an expanded view of humans' role on Earth and a whole of system change plan to implement it. A systems ethics approach suggests a practical strategy for responding to the climate, and environmental crisis. A systems ethics approach seeks to put forward a unified approach to frame our thinking, mitigate behaviour, and inform a collective response (social movements).

Earth System Science

Earth System Science examines our view of Earth in it's cosmic setting, as a closed system involving interactions among the different systems of Earth. It is instructive because it teaches us that all the different spheres are interconnected - and impacts in one system can have profound and disturbing consequences on another. Earth System Scientists are telling us that Earth isn't a static rock after all - it is a dynamic entity in a constant state of flux. This means that all man made effects on the environment do not happen in isolation: everything is interconnected. When it comes to anthropogenic warming of the atmosphere, nothing is immune. Scientists now say that we are experiencing the 6th mass extinction (Biosphere) as the rate of extinction is now 100 to 1000 times higher than the natural background rate. Oceans have effectively been permanently damaged. Increasing acidification is destroying coral and interrupts the calcification process of coral and other shellfish.

The different spheres are:

- the biosphere: everything that is living;
- the lithosphere: the solid part of Earth. Earth's crust, rock, soils;
- the atmosphere, the gases and particles that make up our air;
- the hydrosphere: fresh water, oceans, including the cryosphere - ice sheets; and
- the Anthroposphere: human impact on the Planet.

Epistemology of an emergent ecological worldview

² Principles of Biomedical Ethics, Moral Norms: some writers in biomedical ethics express reservations about the principlist approach to bioethics but despite these criticisms the field of bioethics has become an established independent field of inquiry based on four pillar principles (respect for autonomy, nonmaleficence, beneficence and justice).

Two concepts in particular that underpin our epistemology of our ecological worldview and the development of Earth System Ethics - these are Gaia theory and cosmology. The emergent ecological worldview cannot be understood in isolation. The anthropocene has been put forward to suggest that we have entered a new geological epoch due to the profound human impact on the planet. This new epoch has profound implications for humanity and the environmental movement. Perhaps the most profound implication is that we are entering a period (era) of profound instability. These new understandings of humans on the planet suggest that given our scientific awareness and understanding of Earth as a system that we have dynamically engaged. As such our conversations and response must reflect the physical systems of the planet to house humanity and sustain the 'living world'.

Cosmology

We have used different cosmological versions/ understandings to explain nature and life. These understandings have evolved over time and continue to evolve to this day. The heliocentric model of Earth in the universe first put forward by Copernicus about 400 years ago (i.e. Earth is not the center of the Universe but Earth revolves around the sun), resulted in what is referred to a worldview based on Copernican insignificance. Copernican insignificance where we started seeing ourselves not as the centre of the universe, but as a tiny planet within a very large solar system, orbiting the sun. The destruction we're inflicting flies in the face of 3.8 billion years of life, one quarter of the age of the whole universe. The Copernican paradigm of insignificance has been proven wrong. Research by prominent astrologers such as Dimitar Sasselov at Harvard, suggest that the insignificance paradigm is wrong because³ while Earth is tiny in comparison to the infinite universe, it is significant in time. The *co-evolution* of life and time makes, life on Earth significant in time, calling into question our as stewards of Earth, and life it contains.

Gaia Theory

Gaia Theory postulates that the biosphere is a self-regulating entity with the capacity to control the interconnections of the chemical and physical environment. It evolved from the development of Earth System Science in the 1980's by James Lovelock. The original Gaia, the Greek Goddess of Earth, was understood as a 'feminine' 'Mother Earth'- a docile victim that is easily hurt and needs to be protected.⁴ The idea that Earth is a docile victim with largely self stabilising systems no longer holds true. Earth System Science reminds us that the systems of Earth are largely uncontrollable, and we are at its' mercy - not the other way around. According to Clive Hamilton, if you look at Earth, like Gaia, we have a crazed vindictive goddess.⁵

A principles approach

This paper define the principles to fit into one of three categories. By identifying the principles to form an analytical framework, this paper suggests that it may help to reduce the indeterminacy of abstract norms and generate an

³ Dimitar Sasselov, ted.com/talks/dimitar_sasselov_how_we_found_hundreds_of_potential_earth_like_planets

⁴ Clive Hamilton, The Monthly

<http://www.themonthly.com.au/video/2014/06/18/1403074908/clive-hamilton-can-humans-survive-new-epoch-sydney-writers-festival>

⁵ *ibid.*

action-guiding framework based on a factorial relationship to the principles outlined.⁶ This framework approach is based on devising a set of secular principles to create an inclusive approach where anyone can participate.

These principles come in response to three main concerns: 1. cosmology 2. views of nature, and 3. social ethics. With these categories as the overriding frame, we begin to ask, what are the principles that should unify humanity and provide us with responsive imperatives to help us to lead just, and socially responsible lives? The emergent worldview principles that are put forward in this paper demonstrate a shift from the current paradigm to an emergent worldview, where we better grasp what it means to be human on Earth and in the age of the anthropocene.

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|---------------------------|---|
| 1. Nationalists | → <i>Planetism</i> |
| 2. Separateness to nature | → <i>Interdependence/ ecological enmeshment</i> |
| 3. Respect for Nature | → <i>Realization of Agency</i> |
| 4. Risk Assessment | → <i>Precautionary Principle</i> |
| 5. Individualism | → <i>Solidarity</i> |
| 6. Tragedy of the Commons | → <i>Co-operation</i> |
| 7. Centralization | → <i>Subsidiarity</i> |
| 8. Consumption | → <i>Sufficiency</i> |
| 9. Linearity | → <i>Synergistics</i> |

Cosmology

Planetism

Coined by Peter Ellyard, ‘planetism’ denotes a concept of ‘planetary nationalism’ where our first allegiance is to the planet. At the moment our geopolitics is organised around the sovereignty of nations states. We are separated based on borders and other defining features such as birthplace and flags. We miss the point that what all of humanity has in common is Earth. While I don’t seek to challenge the current world order, Planetism is a useful concept to bear in mind as it highlights what we share in common instead of highlighting what separates us. Planetism sits hand in glove with the changing cosmological worldview, which is effectively communicated by Buckminster Fuller’s metaphor of ‘Spaceship Earth’ where our role is to become effective ‘stewards of Earth’.

⁶ Henry S. Richardson, “Specifying Norms as a Way to Resolve Concrete Ethical Problems,” *Philosophy and Public Affairs* 19 (Fall 1990): 279-310.

Views of Nature

Interdependence / Ecological enmeshment

In some respects what we have is an evolution from ecology (environmental) ethics (conservation) to second wave (encompassing sustainability), to a systems approach of ethics. Beginning from an ecology level, with the (recognition of Rachel Carson's *Silent Spring*) we began observing what was happening to nature and considered the impact on human health. The sustainability movement, that largely arose after the 1992 Rio Earth Summit, notably recognized that resources are finite. Sustainable development in the ecological sense also refers to our duties to future generations, to leave some resources in prosperity. Both of these movements originate in an anthropocentric view where humans are separate to the natural world. Ecological enmeshment reveals this state of interconnection and reliance from which we can begin to articulate ecological claims. The principle of interdependence is embedded in, and stems from, the awareness that humans are part of a global interdependent system. An approach such as Earth System Ethics is a recognition that Earth is a dynamic system of which we humans are a part. That is, there is no separation. We are bound to Earth. We are waking to our enemy, and he is us. The notion that humanity is "Earth bound" we find ourselves here - we are not above or beyond nature is a concept explained by Bruno Latour, a prominent French Sociologist that reveals a new profound sense of humans suspended in the metauniverse, and we happen to be located on Earth. The principle of ecological enmeshment reveals a true understanding that we are just as much a part of the "irony, ugliness, and horror" of ecology and the natural world. This is captured by Timothy Morton's concept of 'dark ecology' - a term that captures the fact that there is no separation between nature and human.

Realization of Agency

Part of the realization of the enmeshed and interdependent nature of our existence is the principle of realization of agency. In the past, environmental ethicists, philosopher and environmentalists have relied on the principle of 'Respect for Nature'. This is a commonly referred to phrase and is a commonly referred to principle with respect to environmental ethics. Realization of agency is a principle that seeks to expand a deeper and more profound acknowledgement of our *physical* relationship to nature, in the broader context of the anthropocene. To this extent, the principle of realization of agency seeks to go beyond the principle of respect for nature, in so far as it seeks people to respect nature for its intrinsic worth, and beauty. This implies a latent admiration from afar. With this awareness, and the awareness that we are the ones who deliberately make wrong decisions, we aware of our position to compensate, by use of our agency in respect of the natural world. In addition, with respect to our understanding of Earth System Science and Gaia theory, this principle would need to embody a new conception of respect for nature that goes beyond the sanctification of nature to a deeper understanding of our dependence on the environment - that is Earth's Systems are valuable not just for their own intrinsic worth, but because "they are components of our own

being, and destroying them is literally suicidal for us”.⁷ The human relationship to nature should therefore be grounded in the realization of our agency, trepidation *and* respect - not a romanticized feminine *Mother Earth* to be must be admired and objectified.

The Precautionary Principle

The precautionary principle is a framework for forward-looking policies to protect human health and the environment, even in the face of scientific uncertainty. While the precautionary principle has fallen out of favour with some environmentalists, the need to build sustainably so as not to harm future generations is embodied by this principle. It is also useful in highlighting that we need to do what we can to pacify ‘the crazed goddess’ or at least promote the ways that will not aggravate her further. If we are to recognize that we are the ones at the mercy of nature, and not the other way around, we should recognize that we need to be prudent/ cautious before we interfere, or continue to interfere with his systems. According to Wally Broecker (a prominent Earth System Scientist), continuing to poke and prod the slumbering beast is foolishness on an epic scale.

Social Ethics

Solidarity

Solidarity is a principle commonly applied in public health ethics that justifies the reduction of individual liberty in some instances to create circumstances which are mutually beneficial for all. The more that people recognize the commonness (planetism) and interconnectedness (dependance on Earth), the principle of solidarity becomes increasingly relevant as our co-operation results in a mutual benefit.

Co-operation

Solidarity encompasses cooperation, but co-operation on its own is a useful principle that could be applied particularly in the context of advancing the idea of intergenerational justice. At the moment we’re more like selfish individual agents who act out of our own self-interest, behaving in ways that are contrary to the whole group's long-term best interests by depleting a common resource. Research shows that resource users can cooperate to conserve the resource in the name of mutual benefit, and that people do want to behave altruistically and co-operate for the benefit of the greater good or for the future.⁸ There just has to be a common and binding set of rules in place that applies universally.

Subsidiarity

⁷ Wilber, 2000a:35

⁸http://www.huffingtonpost.com/2014/06/27/voting-cooperation-decisions-future_n_5530359.html?ncid=fbklnkushpmg00000044&ir=Green

Subsidiarity embodies the need for improved and efficient infrastructure and more compact, community-oriented development. The idea is to think and act globally *and* locally. The dominant system of organization is a centralized / vertical framework. It is being challenged as it does not recognize the self-organising power of networked communities. Subsidiarity is horizontal as opposed to a vertical system. *Subsidiarity* recognises that there are nested systems and networked systems that are deeply locally relevant and the principle of subsidiarity could be applied as an important guiding principle for decision making. The principle of subsidiarity can assist us to develop a strong *networked culture*, not a retreat into the local. Polycentrism is a sub-principle that is linked to the concept of subsidiarity that can also inform how subsidiarity could be used and applied.

Sufficiency

Understood in the context of many religious ethics, such as Catholic moral theology, as well as Gandhian principles of minimal consumption; sufficiency is a principle that encapsulates the notion of self reliance. This principle represents an ethic with respect to how we each may consider living, to inform day to day choices and patterns of behaviour. In this respect, it is an immensely practical principle, that may also encompass other principles. For example, in co-operating, we can use less resources (sufficiency) and in doing so actually create more opportunities for others to get involved and share (synergism).

Synergistics

The final principle, but one that may be linked back to all the others, and is thus a principle that sits aside of the categories, (cosmology, views of nature, and social ethics) outlined so far in this paper. Synergistics is the interaction of multiple elements in a system to produce an effect that is different from, and generally greater than the sum of their individual effects. In relation to commerce, synergistics describes a state of affairs where people, groups, or companies work together in a creative, innovative, and productive manner. Synergistics calls for the establishment of a human-earth relationship that is mutually enhancing. The term synergy comes from the Greek word synergia συνέργεια from synergos, συνεργός, meaning "working together", and it importantly conveys an important *goal* or end point to strive for. It is important because it is a universal guiding principle that sits in contrast to the current paradigm of use and abuse, in case/ before we run out. A synergistics vision of a world (en bref), is a vision whereby ecosystems, social and economic systems are self pollinating, renewing and in a constant and continual cycle of growth, life, death -- and thereafter, continuation. This principle helps us to recognize that we can create villages, cities and markets, where the sum of two parts is more than the whole. We do not need to 'return to' a perpetual village lifestyle after all.

Conclusion

Understanding earth system science in the age of the anthropocene can help humanity ("Earthbound") to understand the predicament we are in. An architecture and principles approach could help to unite the social

movements working to extricate ourselves from the predicament we are in and design responses that begin to provide a responsible reality based framework from which we redesign our human made systems (i.e. socio-econ). This paper and research also forms part of a larger and useful project to find a pluralistic global ethic that will point in the direction of a more positive future. Acceptance by humans that the geosphere and biosphere are components of our own being, and destroying them is literally suicidal for us. (Wilber 2000a:35). The contention of this paper is that a new field of inquiry is needed, arising from the fact that realization of humans' as a part of a global interdependent system - and many of the truths we assumed have been overturned. The reality we face is complex, hubris will be needed to acknowledge the fact that new ways of living and being must be derived from new ways of thinking about the system we inhabit, and have dynamically engaged. The way we interact with this system require vigorous, and system wide deliberation and study.