The Academic Synopticon

Part Thirteen
Designing an Eco-Ethics: Disciplines, Ecology, Religion, and Politics

Eco-ethics must be highly multi-disciplinary, to understand the intellectual resources available to connect ethics (a subfield of philosophy) with ecology (a field of the life sciences). In addition, disciplined objections and obstructions to eco-ethics have to be charted and addressed. The eight Ur-disciplines are Philosophy, History, Social Theory, Theology, Politics, Economics, Science, and Mathematics.

Philosophy: the subfield of cosmology is the repository for knowledge of reality and causality, while the subfield of ethics is the resource for comprehending supreme goods and values. History: the areas of natural history and human history provide global and cultural stages for charting human-planet interactions and co-developments. Social Theory: the capabilities and customs of human behavior, individual and collective up the level of civilizations, must be charted and assessed. Theology: humanity's purpose and destiny should be properly oriented with the ultimate creator and sustainer. Political Theory: Applying the powers of government to projects and agendas affecting populations must be evaluated and carefully justified. Economics: Reconstructing economies should be accomplished through closely calculated and efficacious mechanisms of finance and regulation. Science: the study of ecosystems small and large will recruit knowledge from most of the natural sciences, earth sciences, environmental sciences, and biological sciences.

We must start in Philosophy, with Ethics.

1. Morality, Ethics, Ecological Ethics

Basic Moral Norms (for guiding daily life)	Ethical Principles (for deriving further rules)	Individual Rights	Ecological Ideals
Do Not Harm & Do not permit harms	Prevent Degradation	Dignity	Sustainability
Do Benefit & Promote benefits	Grow Prosperity	Opportunity	Biocapacity
Be Fair & Defend fairness	Uphold Justice	Equality	Biodiversity
Allow Freedom & Support freedoms	Enlarge Freedom	Liberty	Replenishability

Some Main Theories of Ethics

Legalism = the deontological approach that expects universal rigid rules to uphold dignity by forbidding harms and degradations unjustly done to anyone. Lower priorities are prosperity and freedom, although any legalism will try to show how rules also yield general welfare and liberty. Universal rules may be based on reason alone (Kantian ethics), or a God (divine command ethics), or a Sovereign (Statism, Fascism), and so on.

Utilitarianism = the consequentialist approach that aims to preventing injustice from missed opportunities to provide greater benefits and improved opportunities for all of society. Lower priorities are harms and freedoms, although any version of utilitarianism strives to explain how greater overall welfare across a society won't harm or constrict the less advantaged. Act utilitarianism is less calculable than rule utilitarianism, which approximates deontology.

Egalitarianism = the personalist approach that aims at entirely equitable and equal status for all persons, regardless of group custom or individual talent. Lower priorities are opportunity and liberty, although egalitarian theories argue that opportunities for superior wealth and independent status are anti-social evils. Examples of egalitarianism include agrarianism, social anarchism, communalism, "back to nature" movements, and utopian religious communities.

Libertarianism = the formalist approach that aims at preventing the harms of restricting freedoms. Lower priorities are opportunities for prosperity and social justice, although libertarians rationalize the inevitable wealth and status inequities by blaming individuals for wasting their liberty to improve their conditions. Versions of libertarianism disagree over government's scope; some simply want less economic intervention, while others approach social anarchism.

Virtue Ethics = the performance approach that aims at arranging good social roles that enhance overall harmonious justice. Lower priorities are harms and liberties, although a virtue ethics theory will try to explain how everyone benefits by dutifully performing the responsibilities of one's own assigned role, regardless of low or high status. Theories of virtue ethics work more effectively for small and homogenous groups, such as families and ethnic groups.

Communitarian Ethics = the integration approach that aims at arranging social responsibilities that ensure beneficial interrelationships promoting the welfare of the group as a whole. The lower priority is freedom, although communitarianism points out how mere liberty to be divisive is neither good for the individual or the group. Communitarian ethics, while intolerant of disruptive nonconformity, tolerates other communities and their different customs.

<u>Utilitarian Cost-Benefit Analysis</u>

Ranking	Concern	Criterion	Assessment	Cumulative Scoring
1.	Harm	Protecting the vulnerable?	weigh + / –	Net positives for both concerns?
2.	Happiness	Enlarging health and welfare?	weigh + / –	

<u>Ethical Public Policy Analysis</u>

Ranking	Concern	Criterion	Assessment	Cumulative Scoring
1.	Harm	Protecting the vulnerable?	weigh + / –	Net positives for all four concerns?
2.	Happiness	Enlarging health and welfare?	weigh + / –	No? May one net negative receive some compensation?
3.	Hope	Expanding freedom of choice?	weigh + / –	
4.	Harmony	Enforcing one law on all?	weigh + / –	Two (or more) net negatives = disapproval.

To evaluate an offered policy analysis, ask these key questions.

(1) Have all four ethical concerns been addressed? If one or more receive little to no consideration, there must be a particular justification for those omission(s). If impacts on freedoms and legalities are unaddressed, then the analysis is actually just a cost/benefit analysis.

(2) Has a ranking of concerns been explicitly provided, and justified? Although the (1, 2, 3, 4) ranking above is typical, a different ranking such as (4, 2, 1, 3) may be appropriate instead. Any ranking, including an "equal weight" approach, should be directly discussed and explained, because an analysis usually settles on one factor by the conclusion that breaks ties and tips the balance scales.

(3) Has the weighing of each concern's plusses and minuses been supported with ascertainable facts in evidence? Relying on the assent of readers' presumptions and prejudices is a serious weakness, showing how an analysis is hiding some sort of tilting of the scales in its desired direction.

(4) Has the discussion of cumulative scoring and overall concluding judgment taken into account the kinds of criticism and counter-views that would be expected from citizens and civic interest groups?

2. How can Ethics (for humans) be Environmental (for non-humans)?

Morality's purpose is to manage inter-human relations, aiding collaboration and harmonization. Ethics offers reflections on upgrading morality and its work in the world, guiding its priorities and improving its influence.

Ethics often consults Cosmology, its partner under Philosophy. Cosmology consults science, but its metaphysical aim not only describes the whole of reality, but situates humanity's place within that whole. Knowing our place can tell us our status and role in the world. Following the natural order of things easily seems to be practical and reasonable. That common wisdom is a feature of traditional cultures going back into the oral narratives and mythologies of pre-historic societies. Philosophers of early civilizations typically followed that wisdom: conform with Nature and follow what is natural about humanity. Heeding nature made sense, for what Nature does must be best, as superior and older than any creature within it.

Ethics then amounts to the principle that What is Natural is Reasonable for pursuing life, for no human will be wiser or more prudent that the "wisdom of nature's ways".

However, the dictum that "What is Natural is Reasonable" could also strike philosophical thinkers, who noticed that humanity (at least humans living in civilizations with cities and nations) no longer lived "naturally". Of course, theology and politics continued that insist that customs and laws kept their legitimacy because they were still directed by divine nature, or the godly creator(s) of nature. Philosophers of the Axial Age (circa 800 to 300 BCE) instead pointed out that humanity what is most natural for advanced peoples is to live unnaturally, because civilized nations operate according to invented and conventional norms and rules. Philosophy was then divided, going in two different directions: Ethics is Natural, or Ethics is Artificial.

That divide lingers to this day. Is the better moral life for a typical person going to be about living in close harmony with Nature, or is the moral life instead about living according to the crafted institutions of one's society? Political theory kept insisting that society's ways were the most natural for their members. We are hear this strategy to this day, and we also can see its limitations. Any political theorist prefers their own society's standards and ranks their nation as supreme. What is familiar and comfortable, after all, would appear "natural" to a local inhabitant. Philosophers, at least, knew better – yet the core problem remained. How could humanity live more naturally, when humans are obviously living less and less "naturally"?

The crucial matter turned back to Cosmology. Are we really part of Nature, or not? Consider the three logical options.

A. Humans are just one part of Nature.
B. Humans are not a part of Nature.
C. Humans are the supreme part of Nature.

Let's pause to compare A and B.

A. If we are part of Nature, and the whole is more important and more valuable than any part, then:
    (1) humans exist for the sake of whole Nature, since no whole exists simply for the sake of a part;
    (2) humans are far more dependent on the whole than the whole of Nature depends on humans;
    (3) so, humanity has the duty to subordinate its goals to what is good for Nature.

B. If we are not part of Nature, then Nature is independent of humanity, and so:
    (4) whatever value humanity has, Nature has its own value and intrinsic (non-dependent) worth;

(5) humans have no reason to think that they possess higher worth than Nature;
(6) so, humanity would be unreasonable to abuse and degrade nature for its own ends.

Interestingly, both A and B lead to the same conclusion: Humanity should not dominate and degrade Nature. Nevertheless, one more option remains, an option already promulgated by many mythologies and theologies.

C. If we are the supreme part of Nature, and the whole exists for the sake of that one part, then:
(7) whatever value Nature has, humanity has the greater value and intrinsic (non-dependent) worth;
(8) humans are reasonable to value something natural simply for its utility or comparability to us;
(9) so, humanity has the right to exploit and dominate Nature for human needs and goals.

Anthropocentrism is the label for option C and its thesis that humanity is the standard for worth, with the rest of nature only having value for its similarity to us, or its serviceability for our goals. Corollaries follow. Humans make Earth far more valuable. Only humans can be moral and pursue moral ends. Humans only have to seriously value what is akin to us and our nature, as we impose the standard of "the human" on other animals.

This anthropocentrism keeps humanity feeling superior over nature. As Europe went through its Renaissance, philosophical thinkers pondered human nature and the true basis for our superior worth. Christian theology kept reiterating its scriptural answer about divine creation and the soul's immortality. Yet the Greeks praised humanity's rationality instead. The Enlightenment placed reason, rather than religion or custom, in charge of human affairs. Immanuel Kant argued that the beings able to think rationally and morally (and hence do ethics) are the only beings with any moral status. On the one hand, this Kantian position showed how to argue that all human beings possess an intrinsic equal moral status. Demonstrating the principle of equal rights among all humans is a great ethical achievement. However, a corollary of Kantianism also showed how to elevate humanity above all non-human life as the unique species that is intrinsically (by its own nature) morally worthy. After Kant, a plausible argument to raise other species to humanity's level amounted to figuring out how a species has a trait or capability already inherent to humanity.

An anthropomorphic standard is therefore applied to other species, looking for analog features such as self-awareness, reasoning, altruism, sociality, and so on. Although efforts to identify some important feature that happens to be common among a wide variety of animals (perhaps amenable to caring or vulnerable to suffering) may bring many non-human species into the "moral circle", the status of non-humans is never taken seriously. Humans remain the gold standard and what is important to us remains crucial for moral status. Paradoxically, the pursuit of "equal rights" for animals is still too anthropomorphic, premised on taking features and abilities that humans have as the criteria for moral value among non-humans.

What would a truly non-anthropomorphic ethics look like? First, the quest for intrinsic properties or inherent traits must come to a halt. The long-standing dichotomy between intrinsic and extrinsic properties is a legacy of an outdated metaphysics. Every species has its distinctive traits and behaviors, but as soon as we think we need to discern the truly valuable feature relevant to moral status, we automatically think of something important to us humans.

To illustrate this problem with "intrinsic" natures, consider the question, "Why aren't chimpanzees persons?" Surely chimpanzees deserve the highest levels of protection that laws can enforce. The high worth to the life of a chimpanzee should be obvious to any one, but the notion that chimpanzees are persons don't have to also occur to anyone first. Compassion for animals can't depend on the right labeling or abstract arguments. It is quite reasonable to protect nonhuman species from unnecessary pain, cruelty, and domination at our hands. Laws preventing such abuse and maltreatment protect against those harms. By assigning legal status to protected animals and criminalizing offenses against those animals, they are effectively given legal rights. Such legal rights are 'equal' rights in the sense that persons should be protected like that as well. Assigning 'personhood' equality with humans isn't necessary for establishing protection rights – compassion and moral courage are plenty enough. If we can't see with our hearts how animals deserve good treatment, thinking about abstract labels with our heads won't be enough.

Assigning personhood goes much farther than protection rights. Personhood involves assigning the very highest level of moral worth and equality that we can bestow. Persons deserve not just equal protection but also equal treatment, and our staunch efforts to extend and save their lives. If there is a forced choice between saving the life of a chimpanzee or the life of a child, is it really a moral toss-up? Also, persons are guaranteed additional equal rights by

civilized societies, such as the right to freedom of movement, travel across borders, own property, get fair trials, enjoy privacy, gather together in groups, and so on. If we won't be granting those rights to chimpanzees, then we are really only talking about extending protection rights, not full personhood rights.

Additionally, the effort to justify assigning personhood to nonhumans runs into some obstacles erected by scientific fact and a little logic. First, let's at least assume that assigning personhood to all the species in the animal kingdom is not what we are aiming to do. Therefore, some criteria must be chosen which satisfy (a) and (b) -- (a) the chosen criteria select out only those "higher" species that seem sensible (for example, the criteria forbids insects but includes birds; or forbids birds but includes aardvarks; or forbids aardvarks but includes lions), and also (b) every human being possesses all the chosen criteria -- after all, it's not a good result to leave some humans out of personhood.

Next, consider the factual trouble: any criteria capable of including all humans will also include far too many nonhuman species. If comatose humans are in, then frogs surely are in. If six month old fetuses are in, then birds are in. If newborn babies are in, then wolves are in. The same problem arises for any similar category like "rights-bearer". Biting the bullet here and saying that only a subset of humans are really persons so that horses or foxes can be persons will arouse far more controversy than protecting animals from cruelty. Have animal rights activists intrigued by personhood come to any agreement about exactly when a human fetus becomes a person in the womb, if ever? What happens if their criteria for scientific criteria for personhood suggest that the line has to be drawn two months after birth? Advocates for chimpanzees probably don't have answers to such questions. Philosophers have no consensus to share, either. Further questions ensue.

Advocates say, "Non-human animals deserve rights too!" Yes, they do – so let's pass more laws assigning protective rights, as quickly as possible. Why are chimpanzees "persons"? "Because they deserve protective rights!" Yes, perhaps, but why do they deserve protective rights? "Because they are persons!" But no explanation should be going in circles. Advocates say, "We should stop using humanity as the standard for rights!" Yes indeed – but then stop using "similarity to human features" as personhood criteria. Why are chimpanzees next in line for personhood? Is it about their similarities to us? Advocates say, "Only persons have rights!" That is historically and legally false – lots of non-human animals enjoy protective rights, right now.

It has been true that political rights have swiftly guaranteed the equal protection of human dignity and liberty. However, why must we keep on presuming that a political remedy to an ethical issue has to be the only method for protecting nonhumans? Advocates say, "Being a person guarantees the highest and equal rights!" Yes, it does – that's why we must pause and think before agreeing that a chimpanzee and a baby are equal and must be treated equally, and their lives are equally worthy of being saved. Advocates say, "Non-humans have the right to be persons too!" Yet personhood is embedded in the struggle to grant rights to all human beings, simply because they are essentially human. If we need to get beyond centering everything around humanity, why focus on "personhood"? More questions for advocates: Why are chimpanzees "persons" but horses won't be? Or, if horses too, what about pigs, or cats? There is no criteria for personhood applied so far. If chimpanzees and cats are persons, what about an eight-month fetuses? An eight-month fetus has greater cognitive development and potential than a newborn chimpanzee. Advocates say, "We need to accelerate public sympathy about laws protecting some non-humans!" Yes, we do, but "personhood" arouses few emotional or moral intuitions in people – that's hardly a way to arouse immediate and intense compassion.

It instead seems wiser to think about how to use new science about nonhuman sentience and suffering to arouse human compassion for many species, than to risk limiting personhood to fewer humans. Furthermore, animals deserve better than treatment as persons. Persons on this planet can be abandoned, discarded, left without a homeland, exported, deported, and left starving to die without governments guaranteeing any rescue, all over the world. Animals deserve better from us, then we deliver to each other.

If there is going to be a "post-human" category of personhood, then the criteria for personhood must get beyond narrow human criteria. Prioritizing animals that are most like us, like the chimpanzee, is a counter-productive first step for expanding personhood. But it makes sense if advocacy just needs human sympathy, for there is plenty of human sympathy for those who are most like us. Ultimately, however, the most human sympathy is aroused when we can get to intimately know what other species are like, how they live, and why they enjoy life just as much as we do, in their own special ways. Human compassion can be amply aroused for animals not necessarily like us at all, through a stretch of the emotional imagination. In order to stop privileging humanity, we have to stop thinking only like humans.

We continue to seek an ethics that is less anthropomorphic, without surrendering the core point of morality: the widening sphere of moral concern and treatment. Let's return to what it is like to be human, without getting fixated on essences and inherent natures. Morality was never about individuals one by one, but about the harmonization of relations among the whole. Morality is for intensely interrelated and highly interdependent groups, whether human or not. Similarly, humans live as organic beings only by staying embedded within innumerable webs of co-dependencies among environing lifeforms and ecosystems. Because morality is about managing beneficial interrelationships, and humanity's welfare depends on innumerable webs of systemic dependencies through the globe's ecosystems, the thoughtful reflections of ethics have a planetary extent. Morality itself, as an evolved capacity of just one species (Homo sapiens), remains centered on human social affairs. Ethics, as thoughtful intelligence applied to advancing beneficial interrelationships involving humans, need not remain centered only on affairs within human communities.

What a de-humanized ethics would look like, that took no account of humanity or its engagements with nature, none of us humans could say. In any case, that speculation is not what is needed for environmental ethics. The granted point is that ethics is tasked with advising humanity and guiding human activities, and hence humanity won't be left out of consideration. It is precisely insisting on humanity's thorough integration and impact on all of nature that we can proceed on to develop an ecological ethics. Any ethics comes from us humans, since we must take full responsibility for our conduct. However, an ethics only for and about humanity cannot be sustainable.

Just as the study of what is truly beneficial for any species has to be ecological, the reflections of ethics must similarly be ecological as well. For this ethics, any line dividing the moral status of humans from the moral status of non-humans can no longer be sharp or decisive.

Continuing to decide matters of ethics by determining who bears intrinsic value cannot really justify protections for animals or environments. Consider this argument:

1. What has intrinsic value must not be sacrificed for something having lesser value.

2. Among all beings having some intrinsic value, any human has the *most* intrinsic value.

Therefore, 3. No human should be significantly harmed for the sake of something non-human.

This conclusion provides little protection for animals or the environment. For any expensive or intrusive protection of some part of the non-human world, some people can step up to protest about detriments to livelihood or lifestyle. Unless premise 2 is rejected, so that we can say to people seriously harmed that they matter less than animals or vegetation, humans always hold veto power over environmental progress. Therefore, environmental ethics should abandon premise 1 and seek a very different approach to comprehending humans living *with*, and not just living *on*, this good Earth.

Assigning intrinsic value to some arbitrary inherent trait serves no purpose into an endlessly interdependent world. What is important about any species is its function and contribution to the sustenance of the entire ecosystem. The opposite of an anthropomorphic ethics is not an "intrinsic worth" ethics, but rather an ecological ethics, where we constantly ask "What kind of shape is the environment in?"

Ethics itself must become more ecological, in order to truly assist environmental ethics. The central issue is an unavoidable ontological matter: What is more real, the whole or its parts? There are two primary opposed answers.

Individualism. Parts really exist, not wholes. A whole only has any existence because of its parts, that assemble to make the whole what it is.

Holism. Wholes really exist, not parts. A part only has any existence because of the whole, that incorporates it to make that part what it is.

Ontology (what has reality) correlates with axiology (what has value): What is most real has the most value.

According to holism, any part does have its value, based on the functions and service it provides for other components and the entire whole. Symbiosis, not parasitism, is the organic representation of the genuine nature of value.

Holism is the needed antidote to anthropomorphism in ethics. Dividing humans from Nature, by placing humans outside of Nature or elevating humanity above the rest of Nature, grants to humanity the power to use and abuse nature. Holism reminds us that power does not grant privilege, but it does impose responsibility. Humanity's artificial and technological powers only make us more responsible to prioritizing what is best for the whole. Furthermore, the non-human world is evidently living within dense webs of interdependent communities and ecosystems, and where there is harmonious communality, there is a kind of natural morality. Indeed, the Earth itself may be a moral end for all its inhabitants depending on the Earth's vitality. As for us humans, for all our powers, we are still entirely dependent on what makes all of Life possible: the sun-warmed and water-cooled Earth.

Of the primary theories of ethics, virtue ethics and communitarian ethics are holistic and hostile towards anthropomorphism and intrinsic value, by emphasizing the essential interrelatedness and co-dependency among everyone. Sociality is more vital than individuality. Virtue ethics lends itself to a stratified arrangement of social statuses, however. The customs of patriarchy, the military ethos, and the fascist form of government borrow the schema of virtue ethics. Communalism in ethics, by contrast, fits best with a de-centered, decentralized, and anti-hierarchical system.

3. Materialism vs Feminism and Eco-Ethics

Since the 1600s, the world gradually entered into the "Caloric Economy":	organic carbohydrates (for human labor)	+	combustion hydrocarbons (for machines)	= cheap energy

Cheap energy permitted industrialization and abundant materialism, along with environmental degradation and destruction. The rise of utilitarianism did not appreciably mitigate the patriarchal sensibility within capitalist ideology. Feminism, inspired by themes from egalitarianism and virtue ethics, easily allied with the emerging movement of environmental ethics during the twentieth century. Communitarian ethics, with its emphases on interrelatedness, interdependency, and plurality, further inspired deep ecology and ecological ethics.

Ethical Principles	**Materialism/Capitalism**	**Feminism**	**Communalism**	**Eco-Ethics**
Prevent Degradation	Exploitation	Caring	Mutuality	Sustainability
Grow Prosperity	Utilization	Nurturing	Sociality	Biocapacity
Uphold Justice	Standardization	Liberating	Plurality	Biodiversity
Enlarge Freedom	Domination	Equalizing	Integrity	Replenishability

Definitions of the four principles of eco-ethics can be briefly stated, but their full elaboration would require an additional essay. In brief:

An ecosystem's *sustainability* has to do with its characteristic of robustness despite ongoing degradations. Instead of humanity's exploitation, which fails to provide replacement, human caring promotes the endurance of an ecosystem.

An ecosystem's *biocapacity* has to do with its capacity to support a proliferation of species in communal flourishing. Instead of humanity's utilization, which reduces diversity, human nurturing enables an ecosystem's own abundance.

An ecosystem's *biodiversity* has to do with its ability to foster the diversification among species in harmonious co-dependencies., which inhibits life's diversity, human restraint allows an ecosystem to develop over centuries and millennia.

An ecosystem's *replenishability* has to do with its capability for resilience as its species co-adapt, co-evolve, or perish while the whole ecological web survives across many thousands and millions of years. Instead of humanity's domination, which diminishes ecological resilience, human integration within ecosystems promotes liberation for all.

The prioritized ranking of Sustainability, Biocapacity, Biodiversity, and Replenishability is not about their desirability, since they are all worthy goals for healthy ecosystems. Rather, this prioritization is about the threats and dangers of ecological degradation, to prevent the worst outcomes of desolation and extinction while hoping for the best. Sustainability is the lowest minimal standard, for without sustainability today and tomorrow, capacity and diversity won't be achievable. The higher standards of biodiversity and replenishability, which take a long-term outlook, presuppose that sustainability and capacity are already sufficiently present.

4. The Earth as GAIA

[adapted from John Shook's chapter in *Discovering Our World: Humanity's Epic Journey from Myth to Knowledge* (2014)]

Viewing the Earth itself as some sort of living entity may enjoy scientific merit. What really is this thing called Life? Life is fundamentally just one particular form of thermodynamic chemistry, among the many other kinds of chemical transformations constantly cycling throughout the Earth's very active surface. The earth sciences have tracked the dynamically interlocked processes happening in the upper crust, the oceans and the land, and the atmosphere. Furthermore, the organic chemistry of life is ecologically interconnected with many other continual chemical cycles. In fact, life is so thoroughly interfused with those other chemical cycles that it is somewhat arbitrary to fix a sharp line dividing living processes from non-living processes.

The cycles of organic chemistry require an energy source to create energetic chemical bonds in compound molecules, such as the carbohydrates that animals and plants use. Plants make those energy-filled compounds themselves in photosynthesis, and photosynthesis in turn requires the light source (the sun) along with available carbon dioxide and other nutrients in the soil. Animals then consume the plants, either directly like herbivores or indirectly as carnivores eating the plant-eaters. But all life would have exhausted the chemical resources laying around on the Earth's surface long ago and promptly died out. That didn't happen, because of all of the other chemical re-cycling processes simultaneously happening. Understanding the Earth's ecology permits us to see how life can sustain its organic cycles only because many other chemical cycles endlessly do their work, too.

From the widest perspective of thermodynamics and geo-chemistry, life is just one phase of the bigger process by which the Earth must shed excess energy into outer space. All of the surface thermodynamic processes can be treated most generally as a unified system which transforms inputs of available energy into dissipated forms having higher entropy. Heat from the Earth's molten core and heating from the Sun's radiation supply the input energy for everything else that happens at the Earth's surface. Without these two sources of energy, the Earth would have cooled off to reach thermodynamic equilibrium long ago. However, life and all other chemical processes are active on the Earth's surface because it cannot yet reach thermodynamic equilibrium. Kept far from thermodynamic equilibrium by those two powerful energy sources, the hot core and the hotter Sun, the Earth's surface is thermodynamically driven to re-distribute, transform, and radiate that input of energy. Life is just one of the many ways that the Earth's surface is compliantly obeying the fundamental laws of thermodynamics and chemistry. Life is no accidental or peripheral phenomenon on this planet – life is an essential part of the Earth's own evolution. Without life, the Earth would have been a dramatically different place.

We ask again, what exactly is this thing called Life? Organic life is basically one phase of the Earth's vast carbon cycle, which in turn is an essential chemical component of the Earth's futile quest for thermodynamic equilibrium. Organic life by definition is based on carbon and all of the molecular compounds that can be made from carbon, when carbon bonds with other common elements such as hydrogen, oxygen, nitrogen, sulfur, phosphorus, magnesium, and potassium. These eight elements together make up more than 99% of the mass of living cells. Life also uses organic compounds to make additional bonds with compounds made from other common elements such as silicon, calcium, and iron. For example, iron is responsible for the ability of hemoglobin in animal blood to transport oxygen for the oxidation processes happening in all cells. Plants use a compound similar to hemoglobin except that magnesium is the core element rather than iron, so that hemoglobin looks red while chlorophyll looks green. Ultimately, the success of all of life's processes depends on the endless re-cycling of carbon. Life tears apart the chemical bonds among carbon and other elements, releasing the stored energy of those tight bonds. In the end, carbon stays bonded to a couple of other elements, especially hydrogen, oxygen, and nitrogen, as it is excreted and

discarded by life. Those simplest carbon compounds just go back into the earth or the oceans as dead organic matter, or into the atmosphere as carbon dioxide, but they never rest.

The carbon cycle is the transfer of carbon between major reservoirs of carbon in the earth's crust, the oceans, the biosphere (all of organic life) and atmosphere. If any one of these reservoirs were permitted to retain its accumulated carbon, there would soon not be enough carbon for life to continue. For example, if life itself soaked up the carbon and it remained locked within the mass of living or dead organic matter, later on there could be no fresh intake of carbon for life's processes. Even the fungi and bacteria that live on decaying organic matter would themselves die out eventually, since less and less carbohydrate energy is available with each generation. All of life and organic chemistry would eventually stop. But organic matter and its carbon never stop moving. For another example, the oceans do absorb most of the earth's available surface carbon, but the ocean waters constantly engage in complex exchanges of dissolved carbon compounds with the life, mostly phytoplankton, in the water.

These exchanges between carbon reservoirs are thermodynamically inefficient and carbon-wasteful, so fresh inputs of both heat energy and fresh carbon have played a crucial role in sustaining life. Heat from the core and the Sun has already been mentioned. As for carbon, the carbon released by volcanic activity has been a significant supplement over the long history of life on Earth. Dramatic changes to the percentage of carbon compounds in the atmosphere have been especially influential on life on the land. More or less CO2 in the atmosphere dictates the flourishing of plant life, for example. Plants directly need that CO2 in photosynthesis, and plants flourish when higher concentrations of carbon compounds keep the atmosphere conveniently warmer. These changing conditions naturally affect animal life on the land as well, since animal life eats the abundant plant life and breaths the oxygen released by plants. Other kinds of chemical exchanges between the carbon reservoirs, too many to catalog here, are also critical for making sure that organic chemistry remains an essential component of the wider thermodynamic processes happening on the earth's surface.

One thousand scientists at the European Geophysical Union meeting signed a declaration at its 2001 Amsterdam meeting, agreeing that "The Earth System behaves as a single, self-regulating system with physical, chemical, biological, and human components." That's true enough, as far as science goes, but we still want to ask the question, is the Earth alive?

Because life is not independent or self-sufficient, and the chemical cycles essential to life proceed through oceanic, earthly, and atmospheric phases, it could be said that the whole thermodynamic system of the Earth's surface is alive. That planetary thermodynamic system is not alive in the narrow biological sense by consisting of cells with DNA, of course. However, from the objective standpoint of geo-chemistry, able to regard the interlocking systems of inorganic and organic chemistry as thoroughly interfused and interdependent, it is no mistake to view the earth's surface as alive. Central features of life, including the abilities to sustain and regulate its own internal structures, by maintaining constant exchanges of energy with its surroundings, and even to transform its surroundings to keep them more amenable to future use, are all displayed there.

Besides these four basic features of metabolism, self-regulation, internal regeneration, and external transformation, even more features of life can be seen, such as evolution as a whole and reproductive capacity as a whole. Life as a whole has certainly evolved on earth. 99% of the species that have ever lived on Earth are extinct but they left behind quite different descendants. Life on earth could, theoretically, be partially reproduced elsewhere on some other planet if the interstellar distances could be crossed. These six traits – metabolism, self-regulation, internal regeneration, external transformation, evolution, and reproduction – are already regarded as the primary characteristics of life. We would look for exactly these six dynamic processes on other planets if we were seeking life but we could not anticipate what concrete form it might take.

During the second half of twentieth century, the intellectual synthesis of geophysics, biochemistry, systems ecology, and related environmental fields resulted in pioneering theories that regarded the Earth's surface from bedrock up to cloud as one general system for life. This single immense thermodynamic biosphere was labeled as "Gaia" by planetary scientist and ecologist James Lovelock in the 1970s, who emphasized how Gaia was a homeostatically self-regulating and self-repairing system. He wrote that Gaia is "a complex entity involving the Earth's biosphere, atmosphere, oceans, and soil; the totality constituting a feedback or cybernetic system which seeks an optimal physical and chemical environment for life on this planet." Other scientists, such as microbiologist Lynn Margulis, gradually endorsed this Gaia theory, and together they found more and more scientific evidence that Gaia can be treated as an entity displaying those six central features of systemic life as a whole.

Three exaggerations of this Gaia theory promptly followed its entry into the scientific world. Enthusiasts about this Gaia worldview have been heard to claim that Gaia is itself a living organism, or that Gaia has some animal or even human-like traits, or even that Gaia has spiritual or divine qualities. None of these exaggerations can receive scientific support.

Some environmentalists have hastily spoken of Gaia as a unitary organism in its own right. This is a matter that the science of biology alone can settle. Biology has its set criteria for treating something as an individual organism, and Gaia as a whole does not entirely match those criteria. Biology is not just about individual organisms, of course, having become comfortable with the study of colonies of organisms and systems of interdependent organisms. The outdated notion that a genuine organism can live and reproduce by itself only really applied to some species. Complex life is multicellular, and most multicellular organisms cooperate to some degree in groups, within species or symbiotically between species.

Some species, such as certain ant species, develop into what have been called "superorganisms." A superorganism lacks physical connections among their organic parts. Ants, for example, can walk about separately – yet an entire ant colony displays behavioral traits permitting this superorganism to be alive as a whole in ways that none of its component organisms can. Individual ants cannot survive in tough environments, but a nest of ants can. What characterizes superorganisms is their intense degree of sociality: their intercommunications, intermetabolisms, and group behaviors. Ants rely on continual exchanges of pheromone signals, they rely on each other to obtain and process food resources, and they do crucial things together, such as engaging in territorial conflicts, which none of them would do individually.

Human societies are superorganisms in this carefully defined sense as well. Regarding Gaia as some sort of immense superorganism or super-superorganism cannot work too well, since Gaia's complex systemic interdependency does not rise to the level of genuine sociality as defined above. Avoiding exaggerations of Gaia as any kind of organism would be scientifically prudent. However, it remains the case that biology, while authoritative upon living organisms, may no longer enjoy exclusive say over where living processes may be found. From science's broadest geophysical perspective, Gaia evidently displays a few systemic living processes, although it should not be treated as a unified organic individual.

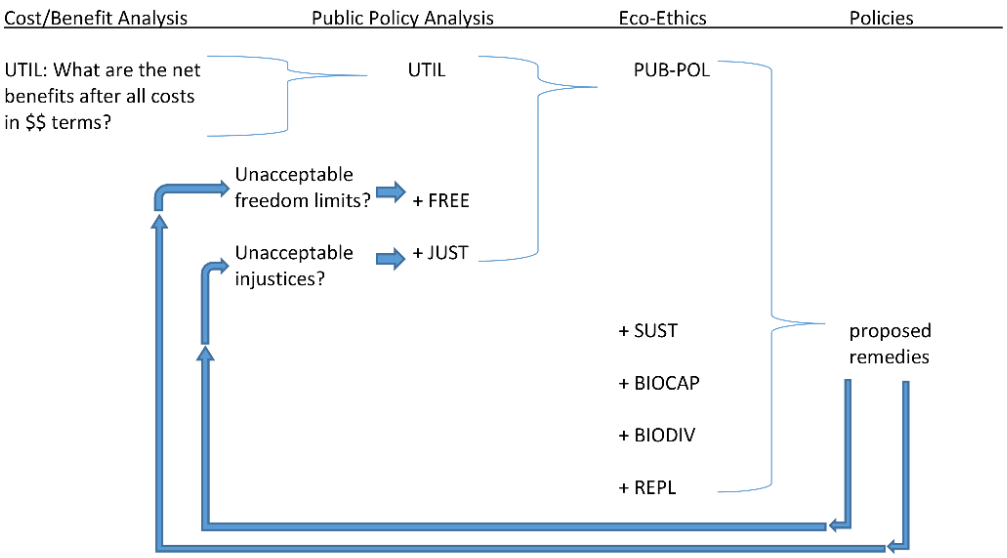
Skepticism towards the Gaia theory secondly arose because anthropomorphic traits were rashly ascribed to Gaia by some eager environmentalists. It has become common enough to hear environmental enthusiasts – but not scientific environmentalists – say things like "Gaia seeks its own survival," "Gaia protects itself against harm," "Gaia tries to repair damage to itself," and "Gaia makes Earth optimal for life." By assigning human-like aims and abilities to an entirely natural entity, these claims about Gaia assign teleological purposes to something that cannot really have them. Sufficiently complex systems can display naturally functional features over time, conditions permitting. Yet something functioning in a certain reliable way does not in any sense mean that it is trying to function in that way. Perhaps it is understandable why environmental enthusiasts would find teleological and anthropomorphic accounts of Gaia compelling. As a social species, we are used to dealing with other living agents, and we easily attribute feelings and drives to things like ourselves. Urging harmony with, and protection of, something like a person can engage peoples' instinctive sympathies and helping motivations. However, the scientific reality is the Earth's biosphere cares nothing for itself or anything else, and Gaia certainly could not forestall its doom in any great astronomical or human-caused catastrophe.

The third exaggeration of the Gaia theory inflated Gaia beyond personhood into a mythological entity with conscious, spiritual, and/or divine aspects. Many environmental enthusiasts and some scientists have encouraged this quasi-religious attitude towards Earth. Again, the rhetorical, cultural, and even political advantages to an alliance between environmentalism and religion can be appreciated. On religion's side of such an alliance, prioritizing reverence for the natural world and what is going on in this earthly life couldn't hurt. However, the geophysical and ecological sciences won't permit any personification or spiritualization of what is only a natural system. The living earth evolves to maintain itself as a whole, not to sustain any particular species, no matter how special that species may imagine itself to be. This is a hard lesson for any self-important species to learn, but we must learn it well. Life has proven to be a resilient feature of this planet. Where there is abundant life, however, there is also death and extinction.

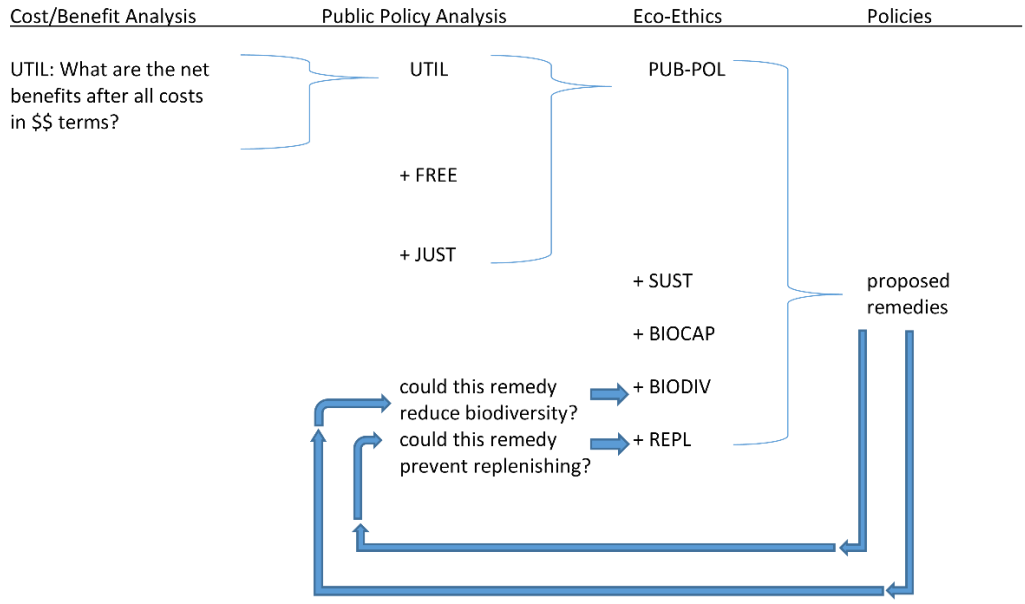
5. Pursuing Eco-Ethics

An eco-ethical policy should result from a process that inserts a utilitarian cost/benefit analyses into an overall public policy analysis that also considers liberty and justice. That resulting public policy analysis must then be checked against the four eco-ethical ideals of SUST, BIOCAP, BIODIV, and REPL in order formulate sound proposals for remedying and repairing ecological degradation. However, the actual implementation of any policy must be monitored for possible problems, particularly cost overruns and consequential impacts on human liberty and equality.

Monitoring Human Impacts: Re-check policy implementations against human liberty and justice, and re-calibrate policies to halt violations of civil rights, civil liberties, and equal treatments.



Monitoring Environmental Impacts: As the implementation of an environmental policy proceeds, longer-term unanticipated impacts must be monitored. Although a properly formulated policy would promote sustainability and biocapacity in the short-term, unpredictable impacts to the longer-term biodiversity and replenishability factors have to be monitored.



6. Deep Ecology

The movement of deep ecology seeks a more radical ethical standpoint than the modest aims of land management and sustainability. “Shallow” ecology maintains the priority of humanity over the non-human world, only concerned with minimizing impacts from environmental damage upon human beings. Shallow ecology is basically a utilitarian approach to applying human-centered and technological solutions to problems affects humans. Deep ecology is not impressed by quick “fixes” that manage to feed billions of people for now, or by planetary urbanization to reduce poverty. These tactics only delay, but cannot prevent, severe environmental damage beyond all repair. Deep ecology aims at a holistic and communitarian strategy for re-integrating humanity within the rest of the earth’s ecosystems, require humans to dramatically scale back their impacts on the environment.

Deep Ecology Principles. Listed from least radical to most radical.

1. The non-human intrinsic value of all lifeforms, bringing humanity down to a co-equal status, so all value is fundamentally relational rather than hierarchical.

2. Biodiversity as an essential value to habitats and ecosystems, not to be sacrificed for more material goods.

3. Biocapacity for all habits and their species, not just the earth’s capacity to keep sustaining all human wants.

4. Eco-degradation is a perpetual problem caused by human activity on this planet, responsible for environment non-sustainability for both humanity and innumerable vulnerable habitats.

5. Excess human population is a perpetual problem on this planet, responsible for environment non-replenishability across the globe.

6. Technological, economic, and ideological systems and structures must be dramatically re-structured to permit the pursuit of sustainability, biodiversity, biocapacity, and replenishability.

Radical Environmental Activism goes further, by accepting the principles of Deep Ecology (above) and then confronting humanity to make faster progress.

7. Any political system that resists the deep ecology agenda (1-6) must be amended or replaced in order to save the planet and humanity.

8. Ethics and politics must be amended to de-prioritize human property accumulation, standards of living, excess material wealth, and unnecessary technology.

9. The pursuit of pro-environmental agendas can legitimately and ethically engage in civil disobedience, destruction of property, and (defensive) force and violence in order to liberate and protect ecologies from human depredation.

Deep Ecology is its most radical form de-prioritizes the welfare, rights, and liberties of humans, making those short-term sacrifice now for the sake of the long-term habitability of this planet. However, ethics itself cannot approve of dismissing violations of ethical ideals. To be just to both the earth and humanity simultaneously, environmental activism must avoid environmental injustice too.

7. Pursuing Eco-Ethics and Climate Justice

Any plan or project for pursuing the four ideals of eco-ethics – sustainability, biocapacity, biodiversity, replenishability – cannot avoid scrutiny from the four ethical principles, precisely because the funding, execution, and consequences of projects will impact humans in disparate ways. Unethical agendas are the ones that disregard human cost or human equality. No project of any scope or scale could possibly presume that impacts on people are quite predictable, uniformly positive, or entirely fair. The public will get taxed; job sectors will be affected; institutions will get transformed; resources will get redistributed; subgroups will suffer disparities of treatment; and varying customs and

traditions will get disrupted. In short, eco-friendly agendas cannot avoid answering to the standards of human rights, procedural law, and social justice.

Justice basically demands harmonization among those treating each other as equals. As Aristotle indicated, justice is treating equals equally and un-equals unequally.

Justice can face in two directions, being either "synchronic" or "diachronic". Synchronic justice only considers matters as they stand at present. Diachronic considers matters past and future as well. Synchronic justice asks, "What can be promptly more equalized, for those less-than-equally treated now?" Diachronic justice asks, "How can greater equalities be secured, for those treated less equally in the past?"

Six modes of justice have distinctive aims and methods.

A. Reciprocity justice is mildly diachronic, with its bargain-centered aim to see that those benefitting from a transaction are those who are proportionally contributing.

B. Retributive justice is quite diachronic, with its violator-centered aim to promptly deliver proportionate harm to the violator.

C. Restorative justice is also diachronic, with its victim-centered aim to re-integrate both victim and violator to their former social status.

D. Distributive justice is more synchronic, with its community-centered redistribution of benefits and burdens towards the advantage of those who are presently disadvantaged.

E. Procedural justice is most synchronic, with its consensus-centered model of deliberations to ascertain veracity, validity, and legitimacy.

F. Civil justice combines features of A-E, with its aim to guarantee that:
(a) law and policy gets community-wide consultation, without vetoing from local or private interests;
(b) law and policy is democratically decided, rather than bureaucratically imposed;
(c) law and policy respects all relevant civil rights and civil liberties.

How might environmental agendas and projects have to deal with moral injustice?

I. Environmental damage can be responsible for moral injustice.

II. Environmental mismanagement can be responsible for moral injustice.

III. Environmental management can be responsible for moral injustice.

IV. Environmental restoration can be responsible for moral injustice.

In general, environmental burdens – whether resulting from bad or better treatment of the environment – typically fall upon those who are already inequitably and unjustly treated by the world. Climate policy illustrates this ethical problem.

Climate mitigation and restoration will impose costs, and those costs won't be perfectly equitable unless precautions are taken. The initial dubious question is raised: "Why should we start distributing climate burdens and costs, when it couldn't be perfectly equitable?" That question expresses that "its better to do nothing" skepticism that conservatively prefers the status quo (letting disaster be tomorrow's problem). This question announces a fallacy, since the current situation is already an unfair and unjust distribution of climate benefits and burdens. The now benefitting from the status quo have profited from past injustices (but they haven't accepted any responsibility).

Climate (In)justice: Those benefitting more from I, II, III, or IV are less likely to be exposed to harms and less likely to pay for these harms. Wealthier countries, and the well-off in those countries, tend to suffer less from climate

disruption where they reside and they don't contribute much to prevent it, especially for prevention in other less-wealthy countries.

To prevent this key Climate Injustice, proposals to satisfy justice can be compared. Each proposal can satisfy one or more of the six modes of justice, but not all of them together, and no straightforward path to climate repair by 2050 looks possible. The primary roadblocks are developing countries and democratic countries.

Proposition One: Those benefitting more from I-IV should be those who pay more for environmental remedies. This applies reciprocity justice. However, this proposition remains unjust. Those benefitting most from environmental repair and restoration are typically among the poorer populations living in less-advantageous parts of the world.

Proposition Two: Those most responsible for contributing to climate disruption should be those contributing most to management and restoration. This applies retributive justice. However, there is no provision for restoring those already harmed from past climate disruptions. Future generations may benefit, but past injustices and present disadvantages are unaddressed, so restorative justice gets overlooked.

Proposition Three: The present and coming burdens of pursuing climate remedies and repairs should be proportionally distributed, mostly among those countries now contributing the most to climate disruption. This applies reciprocity and redistributive justice, and compensations for repairs helps to satisfy restorative justice. However, damage done in the past is ignored, so retributive justice goes unsatisfied.

Discussion. The heavily industrialized countries that did 90% of the climate degradation already (eg 1820 to 2020) won't contribute 90% of the costs on Proposition Three. Furthermore, many of the countries now contributing much to climate damage are still-developing nations (eg India, Iran, Saudi Arabia, Indonesia), and it would be unjust to penalize them now, as they lag behind the GNPs of Europe and America. However, allowing developing nations to continue their carbon energy economies may tip the planet beyond climate recoverability by 2050.

Proposition Four: The urgent necessity for accelerated climate remedies requires the prompt imposition of drastic costs on the top 30-40 energy economies, according to a distribution scheme negotiated among powerful nations. Negotiations could incorporate compensations for past damage and avoid unfair burdens on the least-advantaged nations. However, this scheme will be perceived by many populations as a violation of both procedural justice and civil justice. Democracy is especially resistant to burdening present-day citizens for the sake of future non-existing people who don't have rights or for non-human life that has no rights either. Democracies also tend to vote in accord with current concerns in a *non-sustainable* manner. What the world might be like 50 years from now has nothing to do with a citizen's needs today, especially if redistributions harm a citizen's income or expenses. People in the middle class will not willingly vote for making it more difficult to stay in the middle class. A democracy able to operate by an ideal of *sustainability*, by contrast, would fairly distribute burdens across present *and* future generations

Discussion. Treaties negotiated in closed rooms by powerful countries and imposed on domestic populations will be widely viewed as unjustly tyrannical, or at least as highly undemocratic. Democratic governments, whether they are representative or populist, won't easily accept such treaties and they may reject unpopular aspects, especially costs and burdens placed on citizens. At the least, democratic countries will compare treaties and their burdens against civil rights, equality under the law, due process, and similar checks upon arbitrary government power that are designed to protect citizens and property. However, allowing democratic nations to continue their carbon energy economies may tip the planet beyond climate recoverability by 2050.

Overall, developing nations and democratic nations will probably cling to their carbon energy economies, tipping the planet beyond climate recoverability after 2050. Therefore, it may be reasonably concluded, an Eco-Ethics must ally with planetary agendas for political success despite countries that prefer popular development and populist democracy. Enforceable multinational agreements will be necessary, making it harder for countries to ignore environmental responsibilities.

Proposal: An alliance between ***Eco-Ethics, Eco-Theology of Science,*** and ***Democratic Eco-Politics*** (defined in the next section) is recommended.

8. Eco-Ethics, Theology, and Politics

It should be no surprise that Theology will prove central to crafting and implementing an Eco-Ethics. Eco-Ethics will aspire to a principled and practical stand that appeals to universal legitimacy and planetary devotion, akin to a world religion. It is necessary to start with each discipline's standpoint on religion itself, and to observe how disciplinary alliances can forge opportunities or challenges to an ecological ethics. Eco-Ethics might also acquire religious aspects, such as a sacred view of Earth or devout motivations to take action. Established religions may regard Eco-Ethics as a competitor, or a colleague, so the mediation of interdisciplinary fields are needed.

DISCIPLINES	**What are Religions?**	**How to be Religious?**
PHILOSOPHY		
Debates theories about what is most fundamental and valuable.	Religions are like rival worldviews speculating about ultimate reality.	Contemplate what is truly real and supremely responsible for everything.
HISTORY		
Narrates the course of events and consequences of human deeds.	Religions are like enduring dynasties headed by charismatic leaders.	Believe tales of miraculous events and follow those performing wondrous deeds.
SOCIAL THEORY		
Observes how social relations and organizations operate and succeed.	Religions are like solidarity groups enforcing behavior conformity.	Participate in group practices that orient members' priorities and duties.
THEOLOGY		
Discerns the essential commitments necessary for the religious path.	Religions are like inferior prototypes approaching the one true faith.	Concentrate on the doctrines fostering fidelity to living the spiritual life.
POLITICAL THEORY		
Compares structures of ruling power and standards for legitimate authority.	Religions are like ideological parties contending for civic domination.	Agitate for church control in government and more laws enforcing religious rules.
SCIENCE		
Confirms hypothetical explanations through experimental methods.	Religions are like mass delusions caused by deceptive cognitive biases.	Allow tradition and authority to override rational thinking and scientific facts.

DISCIPLINARY ALLIANCES	**How to think about Religion**
A. History + Philosophy = **Philosophical History**	The developments and blendings of religions over many millennia display trends of reasonable progress with improving ideas about divine qualities and moral ideals.
B. History + Sociology = **Cultural Genealogy**	The diversity and dispersion of religions around the world reflect pathways of cultural adaptation to geographical and ecological opportunities and challenges.
C. Philosophy + Sociology = **Social Ethics**	The relevance and usefulness of religions within any society match needs of social cohesion for preventing public disorder and promoting collective welfare.
D. **Theological History**	The history of the universe and our world is a grand narrative of God's providential plan.
E. **Theological Anthropology**	Human nature is designed for living the kind of good life that God intends for us to have.
F. **Philosophical Theology**	Ideas of supreme reality should be maximally coherent with all knowledge and wisdom.
G. **Political Philosophy**	Justifying an optimal form of government takes into account religious motives and values.
H. **Political Theology**	The best kind of government incorporates religious social ethics and enforces divine law.

DISCIPLINARY ENVIRONMENTALISM	**What are Religious *obstacles* to environmentalism?**
I. Social Ethics + Scientific Ecology = **Eco-Ethics** (sustainability, biodiversity, biocapacity, replenishability)	1. Historically, religions assume nature's wildness and ignore human-caused ecological damage. 2. Philosophically, religions uphold human-centered moral values and duties to other persons. 3. Sociologically, religions retain traditional customs about human-environment relationships. 4. Theological History opposes the scientific worldview and assigns final responsibility to God. 5. Theological Anthropology privileges humanity as superior to everything else on the planet.
	What are Religious *opportunities* for environmentalism?
II. Phil. Theology + Social Ethics = **Universal Religious Ethics**	6. Examine religions to discern a few essential doctrines that fit the ethical ideals of relevance now. 7. Show how religions, if flexibly practiced, can motivate adherence to the best ethical ideals.
III. Univ. Religious Ethics + Eco-Ethics = **Theo-Eco-Ethics**	8. An ethical religion views humans as embedded in, and dependent on, ecological biocapacity. 9. Supreme divinity values future planetary healthiness as much as the future of human flourishing. 10. All peoples should abandon old religions for one ethical and ecology-affirming spirituality.

9. Disciplines on Eco-Science

Scientific Ecology = Ecological/Earth/Climate Sciences have *knowledge* of trends, causes, and consequences of human activity and environmental damage across the planet.

Disciplinary skepticism towards Eco-Science:

Theological History = The history of the universe and our world is a grand narrative of God's providential plan.

Theological Anthropology = Human nature is designed for living the kind of good life that God intends for us to have.

History of Science = Scientific fields always change as their theories are modified and replaced, so no theory lasts for long.

Philosophy of Science = Scientific methods only justify tentative and fallible conclusions, so no theory deserves full credence.

Sociology of Science = Scientific research teams just publish results that reflect intra-group consensus, so no theory is about reality.

Theology of Science = Scientific worldviews simply satisfy the materialist faith of most scientists, so no theory can compel belief.

Politics of Science = Scientific disciplines mainly promote their own prestige and influence, so no theory should dictate policy.

Disciplinary support for Eco-Science:

Eco-Philosophy of Science = A theory independently confirmed by several sciences deserves greater credibility than rivals.
– *versus Pseudo-Science* invented by clever promoters of alternative feel-good notions.

Eco-Sociology of Science = A consensus among scientific fields signals higher trustworthiness than views held by other groups.
– *versus Truth-Relativism* endorsed by interest groups to evade refutation by facts and reason.

Eco-Theology of Science = A common ethos shared among religions reveals the authentic sacred center for planetary devotion.
– *versus Religious-Dogmatism* preached by conservative faiths that fear losing followers.

Political Theories

Hobbesian Politics = Legitimate government protects the main interests of citizens in civil order through unchallengeable power and overwhelming force. All political rights derive from this basic right to be competently governed.

Lockean Politics = Legitimate government defends the common interests of citizens by upholding their fundamental human rights. All political rights to representative government and civic participation derive from human rights.

Pro-Capitalism Politics = Legitimate government promotes and protects the profits of global elites elevated by consumptive *Caloric-Capitalism*, and inflated by non-productive and debt-laden *Casino-Capitalism*.

Pro-Science Politics = Legitimate government prevents pseudo-science, truth-relativism, and religious-dogmatism from interfering with the enactment and enforcement of science-based policies and laws.

Disciplinary Alliances

Social Ethics + Sci. Ecology = **Eco-Ethics**: A core of universal ethical ideals: sustainability, biodiversity, biocapacity, and replenishability.

Eco-Ethics + Pro-Science Politics = **Eco-Politics**: Legitimate government prioritizes the pursuit of ecological goals and agendas through the enactment and enforcement of science-based policies and laws.

Hobbesian Eco-Politics = Legitimate government protects (capitalist) economic stability despite environmental instability through overwhelming power (hard and soft) and global reach. Other rights are subordinate.

Democratic Eco-Politics = Legitimate government defends the welfare of global citizens with environmental health through civic justice and democratic processes. Other political rights must be coordinated with this agenda.