

ENTROPY RULES

The Myth of Human Exceptionalism

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*In three words I can sum up everything
I've learned about life:
It goes on.*

— Robert Frost

*"All that is very well," answered Candide,
"but let us cultivate our garden."*

— Voltaire

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Introduction

The ancient Greeks said that those the gods wanted to destroy they first made mad. By madness they meant hubris — narcissistic extravagance. Human exceptionalism is the conviction that we are not governed by natural laws that apply to the universe. We are the sole exception in nature, therefore superior to everything else. It is our presence that gives the universe meaning.

The belief in human exceptionalism exemplifies our power-driven essence. The myth making creates mythos-driven tribal and national societies and justifies a ruthlessly nature-sacking species. Bewitched by hubris, we privilege racism, nationalism, hierarchy, nepotism, female inferiority, inequality, greed, cruelty, war, the sacking of the planet, and unlimited consumerism. In this century, we are acutely aware of the cruelty and killing capacities we unleash on other species and each other. Some have compared us to a virus in the body of the planet. Destructiveness is at the core of our species' identity.

Ultimately, we have come to believe that we are part of a supernatural realm. We see ourselves as the paragon, focus, endpoint, and meaning of all that exists. We refuse

diminishment to a small portion of nature that contributes to only one of nature's myriad processes. By believing there is a radical break between nature and us, we are trapped in a myth. Lost in human subjectivity, we have constructed an unreal world in our relationships, institutions, and belief systems. The result is detrimental to our lives individually and collectively, and to the planet. We can see this most clearly in our stories, which deny our fragility and comfort us by grandiosely claiming our superiority to everything on our planet, even to the universe.

A significant portion of humanity continues to believe that an eternal soul exists apart from nature and that a God created the world for our use. Even texts on neuroscience, biology, and physics use the concept of emergence to salvage *Homo sapiens*' superiority. The claim is that the mind is separate from nature and that humans have a particular autonomy and ontology. We want to weasel out of our total embeddedness in natural processes to maintain our privileged state.

We give primacy to phenomenology, which considers human subjective experience derived from our sense experiences as the basic data from which all truth is derived. This is a primary example of the arrogance of human exceptionalism, which makes the experience of one species the gold standard for all truth — “Man is the measure of all things.”

Our self-importance is understandable because of our narrow point of view — our *umwelt*. Every cellular creature views the world entirely from its place in its environment,

accessed through its sensory apparatus. The evolutionary niche into which we evolved shapes the meaning we give to the human story. Our short life, limited senses, and evolved conditionings distort our concepts and perceptions. Our belief system is the creation of a small animal on a tiny planet in a virtually infinite universe.

It is science alone that allows us to see ourselves objectively from the outside. With difficulty, we can place ourselves in alien scales of space, among fundamental and unfamiliar forces, within different mental organizations including ancestral forms of life, and within emotions and actions that are abhorrent and inhuman.

We are entirely embedded within matter. We do not stand apart. Our values and self-reflections embodied in stories that separate us from nature should be ruthlessly scrapped as we look at ourselves through the lens of science, particularly physics. Through science, we see ourselves from beyond the tunneled vision of our species. All planetary life is an insignificant part of a cosmic process, which has a well-defined plot, purpose, meaning, and denouement. The real story is not human-centered.

The incomparable predictive accuracy of the laws of quantum mechanics describes the fundamental reality in which we live. Forces and particles make up every part of us. With the insights of science, the door closes on our prior convictions and speculations about who and what we are. They become antiquated interests. Our privileged identity and purpose are undermined — evolution, neuroscience, and physics shatter our illusions of permanence.

Cognitively, science reshapes us. We, and all other cellular creatures, exist only in the molecular world. Our limited boundaries of space and time have been broken. Science has redefined what it means to be human and closes the large gap between us and other animals, let alone other living things, such as plants and trees. The scientific project is now destabilizing societies, religions, and politics. It is only by accepting our real place within nature, described by physics, that we can confront the myths that distort our lives and create chaos.

We require an alteration in our point of view if we are to find a modicum of safety. By relocating ourselves to the scientific reality of our existence, we can achieve safety and give real meaning to our lives. Viewing ourselves enclosed in nature can be a container for our hopes. This change in viewpoint can change our reality, our moral presence, and the institutions we establish to create safety for us, our families, and our neighbors.

A science-based view of human nature and its meaning is truthful and therefore, paradoxically, more human than our just-so stories. Viewing ourselves from a cosmic point of view may lead us to safety within our limits. We must live within the bounds of natural law, away from the self-serving exceptionalism that leads us to cruelty and destructiveness.

In this book, I attempt to derive ethical values from the laws of physics and, by that means, offer an alternative within the limits of natural law to the destructive activities of humans. It is written to counter our central human

claims of what is significant. Science places life (including us) as sub-entities within a much larger picture of the process of the universe, which seeks thermal equilibrium and the lowest energy state. This process requires the breakdown of composite matter. All cellular reproductive creatures, including humans, contribute to it. This process is key and governs and gives meaning to all our human activities.

Within the chapters, I make the following claims:

- The process of the cosmos is the breakdown of matter to release all relativistic energy, which will be devoted to the expansion of the universe. Temperature and energy differences will be resolved to the lowest energy state at a temperature near absolute zero. Humans have significance only as participants in this process.
- The sovereign and certain law of nature governing the breakdown of matter is the law of entropy — the second law of thermodynamics — as it applies to complex objects. It is also described by statistical mechanics applied to single particles. The basic process of the cosmos is the inevitable breakdown of all complex objects into simpler disordered particles and then into energy.
- Life is a chemical process to break down matter and eliminate gradients. This is the purpose of life, and because humans are a species of living things, this is our purpose.

- Along with energy and mass, the other fundamental is information — the laws by which anything and everything relates and how complex entities are created. Algorithms are the basic language on a universal level and are fundamental for the assembly of the human, among all other entities from the most basic to the most complex. This includes the organization of all living things. The script is mathematics.
- On our local species' level, the basic language is verbal, describing the relationships of the individual to what it senses and its relationship to others of its kind, individually and in groups. The script is written. Scientific language is precise, while verbal communication is ambiguous. With the continuing development of artificial intelligence, the scientific language will prevail in the description and direction of the species' life and the verbal will be marginalized.
- Life is the energy of the electron that is released in the process of the separation of molecules. Life is the movement of electrons. Life is matter, not spirit.
- The neuronal complexity of the human brain is more than adequate to process the chemical and photon bombardment of the brain by the environment and to arrive, by repeated experiences linked by neurons, at motor responses that distinguish between what is known and predicted and what is not. Culture is a brain-based process.