

Spiritual Naturalism

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ABSTRACT: Spiritual naturalists say that spirit is a natural force. Far from being novel or unconventional, spiritual naturalism spans the entire history of Western thought, from the Stoics, through leading modern thinkers, to the transhumanists. Spirit drives the self-organization of matter. The spirituality of any thing is just its degree of self-organization, which is its evolved complexity. But self-organization is self-regulation and self-control. Many spiritual naturalists, especially the transhumanists, have developed naturalistic phenomenologies of spirit. These are narratives which trace the ideal evolution of complexity from the origin of our universe to its end. They are spiritually optimal possible histories of our universe. During the phases of any spiritually optimal history, humanity will perfect itself. But transhumanists say that the ideal evolution of complexity will greatly surpass humans. We will be surpassed by superhuman animals; but these will be surpassed by superhuman robots and godlike computers. The ideal end of the cosmos is an Omega Point with infinite spirituality.

1. Introduction

The concept of *spirit* has a long history in the West. Looking at this history as spiritual naturalists, we focus on the more naturalistic interpretations of spirit. So for us the history of spirit begins with the Stoics. The Stoic *pneuma* is a power both natural and spiritual. It is a subtle power which permeates all material things.¹ For the Stoics, the *pneuma* is God. But the Stoic God is not supernatural; it is an immanent pantheistic deity. It is natural in the sense that it is material and extended in space. The *pneuma* is a thermodynamic force: it is fire-energy. It drives the evolution of cosmic complexity. The Stoic idea of God as a corporeal power briefly appears in the early Christian writer Tertullian: “For who will deny that God is a body, although God is a Spirit? For Spirit has a bodily substance of its own kind, in its own form”.²

During the Christian middle ages, Stoic physics was heretical, and Stoicism remained alive primarily as an ethical system. But the Neostoic revival during the late 1500s brought renewed interest in Stoic physics.³ And Stoicism soon had a large influence on modernity. Directly inspired by the Stoics, and appealing to the Christian authority of

¹Samuel Sambursky, *Physics of the Stoics* (Princeton, NJ: Princeton UP, 1959).

²Tertullian, *Against Praxes*, ch. 7.

³Peter Barker, “Stoic Contributions to Early Modern Science,” in *Atoms, Pneuma, and Tranquility: Epicurean and Stoic Themes in European Thought*, ed. Margaret Osler (New York: Cambridge University Press, 1992).

Tertullian, Hobbes developed the idea of a *corporeal God*.⁴ Hobbes explicitly referred to his God as spirit. He thinks of spirit naturalistically as an energetic substance pervading all space and all matter. Spirit is the ultimate source of motion in the universe.⁵ A little after Hobbes, the Cambridge Platonists developed their idea of a “spirit of nature”.⁶ The spirit of nature bridges the gap between mind and matter: on the one hand, it is immaterial; on the other, it is extended in space. The spirit of nature thus combines the Stoic *pneuma* with the Platonic world-soul. It is a dynamic *world-spirit*, which drives matter to organize itself into increasingly complex forms.

This conception of spirit as a combination of the Stoic *pneuma* with the Platonic world-soul soon enters the Newtonian theory of gravity. Newton discussed Stoic writers as he developed his physical theories.⁷ The Newtonian God closely resembles the divine Stoic *pneuma*.⁸ The Stoic *pneuma* was originally a self-activating power which fills all space and which binds all things together. For Newton, it becomes gravity. But Newton was also attracted to the Stoics for their eschatology. He was interested in their notion of a cosmic cycle, in which the world would end in fire, to be reborn. Since God acts in the world through gravity, it is gravity which drives the world to its end. Once again spirit, now in the form of gravity, governs cosmic history. But the notion that gravity drives the world to a conflagration unites spirit with thermodynamics. During the 1700s, the concept of spirit as a self-moving substance extended through space becomes commonplace. As mechanistic science made progress, there was little physical work for spirit to do. But since life was thought to be inexplicable in mechanistic terms, spirit soon became dispersed into a multitude of vital energies.⁹

As the 1800s unfold, the philosopher Herbert Spencer develops his general evolutionary theories. After Wallace and Darwin develop the theory of biological evolution by natural selection, many writers will mix spiritual energies and vital forces into their evolutionary theories. Bergson argues that evolution is driven by a creative force. The Bergsonian idea of creative evolution now inspires Teilhard de Chardin.¹⁰ Teilhard proposes that spiritual energy produces the universe. Spiritual energy expresses itself both as *tangential* and *radial* energy. Tangential energy is studied by physics. But radial energy drives matter to organize itself into forms which are increasingly complex as well as increasingly conscious. The universe evolves through ever greater phases of complexity-consciousness. Biological evolution continues into technological evolution. As biology

⁴Geoffrey Gorham, “Mixing Bodily Fluids: Hobbes’s Stoic God,” *Sophia* 53 (2014).

⁵Geoffrey Gorham, “The Theological Foundation of Hobbesian Physics: A Defense of a Corporeal God,” *British Journal for the History of Philosophy* 21 (2) (2013).

⁶Robert Greene, “Henry More and Robert Boyle on the Spirit of Nature,” *Journal of the History of Ideas* 23 (4) (1962).

⁷B. Dobbs, “Newton and Stoicism,” *The Southern Journal of Philosophy* 23 (1985).

⁸B. Dobbs, “Newton and Stoicism”, 118; Dale Jacquette, “Newton’s Metaphysics of Space as God’s Emanative Effect,” *Physics in Perspective* 16 (2014).

⁹Robert Schofield, *Mechanism and Materialism* (Princeton, NJ: Princeton UP, 1970).

¹⁰Eric Steinhart, “Teilhard de Chardin and Transhumanism,” *Journal of Evolution and Technology* 20 (2008).

and technology join forces, humanity will be surpassed by transhuman forms of life. Thus Teilhard is among the first transhumanists. Spiritual energy ultimately evolves to an infinitely intelligent Omega Point. Teilhard's radial energy looks like the thermodynamic concept of free energy.¹¹ Free energy drives the evolution of complexity. But the second law seems to imply that eventually it will run out, so that the universe will end, not in a divine Omega Point, but in universal darkness and death.

The conflict between progressive view of history and the second law was soon taken up by the physicist Freeman Dyson.¹² He argued that increasingly efficient technologies will always be able to exploit the available free energy. According to his eschatological vision, intelligent life will progressively convert more of the universe into technology. Rather than being defeated by the second law, technical intelligence will exploit it. An increasingly technological universe will successfully reach the Omega Point. Dyson's eschatology was then taken up by the physicists John Barrow and Frank Tipler.¹³ They too described the endless progress of technology towards an infinite Omega Point. Now taking his inspiration directly from Teilhard, Tipler goes on to develop his own Omega Point theory. For Tipler, the Omega Point is literally an infinite computer.¹⁴ These ideas inspire the transhumanist Ray Kurzweil, who argues that the universe evolves through phases.¹⁵ During its final phase, which is Kurzweil's Omega Point, the whole universe becomes a divine computer. The universe becomes saturated with intelligence and "wakes up". So the Omega Point is naturalized through computer science.

2. From the Stoic Porch to the Sacred Mountain

The natural history of spirit, from Stoicism to transhumanism, characterizes it as a kind of fire-energy which drives the progressive evolution of complexity. It appears to be a force which increases order. It is closely associated with gravitational free energy. All these ideas come together in modern thermodynamics. Consequently, in order to develop a scientific theory of spirit, spiritual naturalists turn to thermodynamics.¹⁶ One of the main ideas in thermodynamics is *entropy*. Every physical process produces entropy at some rate. The second law of thermodynamics says that entropy strives to increase. The *maximum entropy production principle* (MEPP) states that all flows of energy strive to maximize their entropy production rates. To naturalize this striving, we can turn to probabilities. At any time, many possible paths are open to any flow of energy. For any path, there is some probability that energy flows along that path. The probabilities are shaped by the MEPP. The probability that some energy flows along some path is

¹¹Harold Morowitz et al., "Teilhard's Two Energies," *Zygon* 40 (3) (2005).

¹²Freeman Dyson, *Infinite in All Directions* (New York: HarperCollins, 1985).

¹³John Barrow and Frank Tipler, *The Anthropic Cosmological Principle* (New York: Oxford UP, 1986).

¹⁴Frank Tipler, *The Physics of Immortality* (New York: Anchor Books, 1995).

¹⁵Ray Kurzweil, *The Singularity is Near* (New York: Viking, 2005).

¹⁶Eric Steinhart, "Spirit," *Sophia* XX (X) (2017)

proportional to its rate of entropy production: if a path produces entropy faster, then it is more likely that the energy flows along that path.

For spiritual naturalists, spirit is a *thermodynamic force* which drives flows of energy towards those paths which maximize entropy production rates. Spirit drives those flows towards paths by shaping their probabilities. Paths become more *attractive* to energy as their probabilities increase; they become less attractive as their probabilities decrease. To say that spirit *drives* energy towards some path just means that the MEPP makes that path maximally attractive. Spirit is therefore a force which emerges from the MEPP. But how does spirit cause energy to self-organize? How does it drive the progressive evolution of complexity? The answer is that *ordered flows of energy produce entropy faster than disordered flows*. Since ordered flows produce entropy faster, the MEPP entails that paths on which energy self-organizes are maximally attractive.¹⁷ As a physical force which emerges from the MEPP, spirit is an intrinsic drive which all flows of energy have to self-organize. Since spirit shapes the probabilities of possible paths of evolution, spirit *directs* all flows of energy towards greater self-organization. And since flows of energy strive to increase their entropy production rates, they *strive* for greater self-organization. Spirit is this striving. However, as a thermodynamic force, spirit has no mentality. It has no intentionality or volition. Its directionality is mindless.

On this approach to spirit, the *spirituality* of any thing is its degree of self-organization. More highly self-organized things are more spiritual. For the Stoics, these degrees of self-organization were arranged into ranks on the *Great Chain of Being*. These ranks started with rocks, then rose through plants, animals, humans, gods, and finally God itself. But transhumanists have thought of the Great Chain in evolutionary terms. So the self-organization of any thing is just the complexity it has accumulated during its evolutionary history. Thus self-organization is evolved complexity. Since spirituality is self-organization, and since self-organization is evolved complexity, spirituality is evolved complexity.¹⁸ Hence spiritual naturalists replace the Stoic concept of the Great Chain of Being with the Dawkinsian concept of *Mount Improbable*.¹⁹ For Dawkins, Mount Improbable is biological; but spiritual naturalists think of this sacred mountain in cosmic terms. Mount Improbable is an abstract mountain. Each position on Mount Improbable is some way our universe might be; it is a possible cosmic situation; it is some possible total state of our universe at some possible moment of time. Every position has some elevation, and higher elevations are more complex. For spiritual naturalists, this means the states at higher elevations are more spiritual.

¹⁷Rod Swenson, "Spontaneous Order, Autocatakinetic Closure, and the Development of Space-Time," *Annals of the New York Academy of Sciences* 901 (2006); L. Martyushev & Vladimir Seleznev, "Maximum Entropy Production Principle in Physics, Chemistry, and Biology," *Physics Reports* 426 (2006).

¹⁸James Feibleman, "Spirit as a Property of Matter," *Southwestern Journal of Philosophy* I (1) (1970): 11.

¹⁹Richard Dawkins, *Climbing Mount Improbable* (New York: W. W. Norton, 1996).

Our universe begins its journey at the bottom of Mount Improbable. It starts at the lowest elevation at the beginning of time, which is the Big Bang. Starting from the Big Bang, the physical laws of our universe define a system of possible histories. Each history is a path on Mount Improbable. Although many histories are possible, only one is actual. From the Big Bang to the present day, the actual past history of our universe exhibits generally increasing complexity.²⁰ Spirit *has always* driven cosmic energy to climb to ever higher levels of evolved complexity. On the basis of that history, many futurists and transhumanists have argued that evolution will keep climbing. They have given an *Argument for Endless Evolution*, which entails that our universe *will always* climb higher on Mount Improbable.²¹ For many futurists and transhumanists, this Argument is *prophetic*: it implies that progress is inevitable; it specifically ensures that *humanity* will always climb higher. But spiritual naturalists do not regard this Argument as establishing any historical necessity. They regard it as merely defining a class of *spiritually optimal* histories. All these histories are possible, but not inevitable.

Since all flows of energy are directed by spirit, they all strive to become more spiritual; they all strive to increase their complexities. All things in the universe, and the universe itself, strives to climb ever higher on Mount Improbable. Nevertheless, since spirit is a thermodynamic force, and since thermodynamic laws are defined in merely statistical terms, the strivings of spirit can always fail. Hence the actual history of our universe might not be spiritually optimal. Still, since the spiritual optimal histories are those which spirit strives to actualize, spiritual naturalists focus on them. When talking about the possible histories of our universe, many futurists and transhumanists talk about ages, phases, or epochs. For spiritual naturalists, these correspond to different zones on Mount Improbable, at different elevations. They are separated by thresholds. As it climbs Mount Improbable, our universe crosses these thresholds. A naturalistic *phenomenology of spirit* describes the sequence of thresholds crossed by all spiritually optimal paths; it describes the essence of spiritual optimality.

3. Crossing the Biological Threshold

Spirit begins its journey at the bottom of Mount Improbable. It starts at the lowest elevation, which corresponds to the Big Bang. At the moment of the Big Bang, the content of our universe is shapeless energy. Spirit exists as the pure intrinsic drive to greater self-organization. While complexity is minimal, free energy is maximal. Spirit

²⁰Eric Chaisson, *Cosmic Evolution* (Cambridge, MA: Harvard UP, 2001).

²¹The Argument for Endless Evolution typically runs like this: (1) complexity has grown from the start of the universe until now; (2) this perpetual past growth inductively justifies perpetual future growth; (3) therefore, complexity will grow until the end of the universe. Versions of this Argument are made by Teilhard de Chardin, *Christianity and Evolution* (New York: Harvest Books, 1974): 109; Barrow & Tipler, *Anthropic*, 23; Swimme & Berry, 1992; Tipler, *Immortality*, 11; Chaisson, *Cosmic Evolution*; Theodore Modis, "Forecasting the Growth of Complexity and Change," *Technological Forecasting and Social Change* 69 (2002); Kurzweil, *Singularity*. chs. 1 & 2.

directs the flow of this cosmic energy so that it ascends Mount Improbable. On any spiritually optimal history of our universe, this cosmic energy climbs up over its first threshold. The first threshold is *particulate*. When it crosses this threshold, spirit shapes it into physical particles. The cosmic energy of our universe crosses this threshold very quickly after the Big Bang. It distributes itself into zillions of simple particles like quarks and leptons. Since they are simple, they have no self-organization; hence their degrees of spirituality are zero. Simple particles quickly organize themselves into protons and neutrons. Protons and neutrons are the first physical *wholes*. As wholes, protons and neutrons are more highly self-organized than quarks and electrons.

A *whole* is a set composed of physical members which carry information about each other. Its members interact to generate flows of information internal to the whole. The complexity of a whole is therefore greater than the sum of the complexities of its members. Since its members are informationally bound, they are the *parts* of the whole. This extra complexity of the whole is contained in the *coherence* or *harmony* of its parts. The quantity of information generated by a whole is greater than the sum of the quantities of information generated by its parts.²² So a whole has some self-organization of its own. Since spirituality is self-organization, this means that a whole has some positive degree of spirituality. As it climbs Mount Improbable, spirit drives smaller wholes to fuse into larger wholes; it drives poorly-organized wholes to become well-organized. The next level of forms on Mount Improbable includes the complex particles. Since protons and neutrons are more complex than quarks, they have some positive spirituality.

The second threshold on Mount Improbable is *atomic*. On any spiritually optimal history of our universe, spirit drives cosmic energy across this threshold. After driving quarks to combine into protons and neutrons, spirit drives those particles to combine with electrons to form atoms. Atoms are more highly self-organized; they are more spiritual than isolated particles. To produce more complex atoms, spirit drives atoms to organize themselves into stars with heavier cores. The third threshold is *chemical*. Again, on any spiritually optimal history, spirit drives cosmic energy across this threshold. It drives that energy to organize itself into more complex forms. As the cosmic energy crosses this threshold, it organizes itself into solar systems. Stars are orbited by astral bodies ranging in size from grains of dust to planets. On their surfaces, molecular evolution begins. Molecular systems near the surfaces of planets form self-sustaining networks.²³ Spirit now approaches the fertile zones of Mount Improbable. On any spiritually optimal history, spirit drives cosmic energy across the fourth threshold, which is the *biological* threshold. Spirit shapes the cosmic energy into living things. Since living things store self-descriptions, which they use to self-reproduce, they are higher forms of self-organization. They are more spiritual than nonliving things.

²²This can be formalized using integrated information theory. See Chris Antonopoulos et al, "Dynamical Complexity in the *C. Elegans* Neural Network," *The European Physical Journal Special Topics* 225 (2016).

²³Stuart Kauffman, *At Home in the Universe* (New York: Oxford UP, 1995).

Since spirit drives all matter towards higher degrees of self-organization, every planet sprouts thermodynamic arrows which point towards life. Since spirit acts in all things, spiritual naturalists think that life emerges frequently in the universe. It seems likely that, on many planets, spirit shapes the cosmic energy into organisms. All organisms, by definition, store digital self-descriptions used for self-regulation and self-reproduction. Organisms store these self-descriptions in their genomes. On earth, genomes are realized by RNA and DNA; elsewhere, they may be realized differently. For all organisms, wherever they may occur, spirituality is organic complexity. Biologists have argued that the complexity of an organism is the percentage of its genome devoted to genetic self-regulation.²⁴ Greater genetic self-regulation means greater spirituality. Biological evolution on earth displays an arrow of complexity: the complexities of the most complex organisms increase over time.²⁵ Life on earth tends to climb Mount Improbable. Following Dawkins, spiritual naturalists embrace *universal Darwinism*: evolution by natural selection drives *all life* to climb Mount Improbable.²⁶

4. Crossing the Rational Threshold

On every spiritually optimal history, it crosses the fifth threshold on Mount Improbable. This is the *cybernetic* threshold. Spirit crosses this threshold when it shapes energy into living things which contain computers running adaptive software. These begin as special-purpose computers, and evolve towards universality. For earthly organisms, these on-board computers are their nervous systems. On other planets, they may be realized differently. But all these on-board computers evolved to help organisms control their bodies. Above the cybernetic threshold, self-organization manifests itself as *self-control*. Organisms with greater self-control have greater spirituality. Nervous systems evolve into brains which are conscious and then self-conscious. Self-conscious animals store self-representations which they use for rational self-regulation.

Spirit inspires many evolutionary expeditions to climb Mount Improbable. On every planet in our universe, spirit drives its expedition to greater heights. Apart from earth, we do not know how high they have climbed. But we know that spirit has inspired the earthly expedition to climb up past the cybernetic threshold. Above the cybernetic threshold, the sixth threshold on Mount Improbable is *rational*. Spirit crosses the rational threshold when it shapes energy into organisms which exercise *rational self-control*. On every spiritually optimal history, spirit drives energy to cross this threshold. On earth, the genus *homo* crossed this threshold. The early human species like *homo habilis* and *homo neanderthalis* were replaced by our own species, *homo sapiens*. The spirituality of

²⁴Ryan Taft et al., "The Relationship between Non-Protein-Coding DNA and Eukaryotic Complexity," *BioEssays* 29 (3) (2007).

²⁵Mark Bedau, "Philosophical Content and Method of Artificial Life," in *The Digital Phoenix: How Computers are Changing Philosophy*, edited by Terry Bynum and James Moor (Malden, MA: Basil Blackwell, 1998).

²⁶Richard Dawkins, *River Out of Eden* (New York: Basic Books, 1995), ch. 5; Richard Dawkins, *A Devil's Chaplain* (New York: Houghton Mifflin, 2003), ch. 2.2.

homo sapiens is the highest known degree of self-organization. As far as we know, modern humans are the most spiritual things in the universe.

Spiritual naturalists are materialists about human persons: every human person is strictly identical with their body. Our bodies store both genetic and neural self-representations. But our neural self-representations are dynamic: we are rationally self-regulating. Through our bodies, spirit becomes purposive. Our rational self-regulation is self-control. Hence the *spirituality of any human* is its degree of self-control. Self-control is not located in any immaterial thinking substance. Human self-control is located entirely in the organization of the flesh. Self-control is also known as *executive function*. It is located in the cellular and molecular regulatory networks in the brain.²⁷ Low self-control is a brain disorder.²⁸ Self-control has a well-defined genetic basis.²⁹

Spiritual naturalists are interested in ways of measuring human spirituality. Self-control is empirically measurable through behavioral tests.³⁰ It can be measured by analysis of fMRI scans and EEGs.³¹ Of course, these tests often measure only proxies for self-control. Yet they show that something spirituality is measurable in humans. By focusing on mathematical definability and empirical measurability, the definition of spirituality developed by spiritual naturalists contrasts with vague psychosocial definitions.³² Since spiritual naturalists identify human spirituality with self-control, any differences in self-control are differences in degrees of spirituality. It is widely acknowledged that different

²⁷Marcel Brass et al., “To Do or Not to Do: The Neural Signature of Self-Control,” *The Journal of Neuroscience* 27 (34) (2007); Eamonn Walsh et al., “EEG Activations during Intentional Inhibition of Voluntary Action,” *Neuropsychologia* 48 (2010); B. Casey et al., “Behavioral and Neural Correlates of Delay of Gratification 40 Years Later,” *PNAS* 108 (36) (2011); Marc Berman et al., “Dimensionality of Brain Networks Linked to Life-Long Individual Differences in Self-Control,” *Nature Communications* 4 (1373) (2013).

²⁸Matt DiLisi, “Low Self-Control is a Brain-Based Disorder,” in *The Nurture versus Biosocial Debate in Criminology*, ed. K. Beaver et al. (Los Angeles: Sage Publications, 2015).

²⁹Jessica Barnes et al. “The Molecular Genetics of Executive Function,” *Biological Psychiatry* 69 (2011); Sheree Logue et al., “The Neural and Genetic Basis of Executive Function,” *Pharmacology, Biochemistry and Behavior* 123 (2014).

³⁰June Tangney et al., “High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success,” *Journal of Personality* 72 (2) (2004); Walter Mischel, *The Marshmallow Test* (New York: Little Brown, 2014).

³¹Berman, “Dimensionality”; Walsh, “EEG Activations”.

³²Many approaches to spirituality (especially in healthcare) focus on vague psychosocial qualities like meaning and purpose. See for example Ruth Tanyi, “Towards Clarification of the Meaning of Spirituality,” *Journal of Advanced Nursing* 39 (5) (2002): 506; David Rousseau, “A Systems Model of Spirituality,” *Zygon* 49 (2) (2014): 499. These approaches have been sharply criticized as meaningless and pointless. See Harold Koenig, “Concerns about Measuring ‘spirituality’ in Research,” *The Journal of Nervous and Mental Disease* 196 (5) (2008); John Paley, “Spirituality and Nursing,” *Nursing Philosophy* 9 (2008). Spiritual naturalists agree with these criticisms.

human animals have different degrees of self-control. Spiritually weak humans have low self-control while spiritually strong humans have high self-control. The origins of these differences are almost entirely genetic.³³

5. Crossing the Paleospiritual Threshold

Above the rational threshold, spirit shapes energy into self-conscious forms, and the higher thresholds on Mount Improbable are spiritual. On every spiritually optimal history, spirit crosses the *paleospiritual* threshold. Spirit crosses that threshold when rational organisms form rationally organized social systems. They adjust their behaviors to produce the coherence of social super-organisms. So a social super-organism is a whole whose exceeds the sum of the complexities of its parts. This coherence manifests itself in the emergence of laws for social interaction. Hence these societies become rationally self-regulating. On earth, spirit crossed the paleospiritual threshold when humans self-organized into lawfully regulated city-states during the agricultural revolution. We obviously have sufficient self-control to form rational societies. However, since evolution starts low on Mount Improbable and climbs higher, spiritual naturalists say that humanity as a species starts with low self-control. Spiritual weakness is an unfortunate fact of our biology.³⁴ We are *barely rational animals*. Spiritual naturalists therefore prefer to classify humans as *homo quasirationalis*.

We are born into spiritual weakness. Low self-control manifests itself in the *vices*.³⁵ There were seven Medieval Christian vices: pride, envy, anger, laziness, avarice, gluttony, and lust. All those Christian vices originate in low self-control. Since self-control is spirituality, its failure is the opposite. St. Paul opposed the spirit to the flesh. He associated the vices with the flesh: “Now the works of the flesh are obvious: fornication, impurity, licentiousness, idolatry, sorcery, enmities, strife, jealousy, anger, quarrels, dissensions, factions, envy, drunkenness, carousing, and things like these”.³⁶ According to St. Paul, spiritual weakness tends to lead to vicious behavior. This is confirmed by modern science. Low self-control manifests itself in a long list of behavioral maladies.³⁷ It manifests in health problems like: psychiatric disorders; overeating; smoking; alcoholism; drug abuse; failure to comply with medical directives;

³³Naomi Friedman et al., “Individual Differences in Executive Functions are Almost Entirely Genetic in Origin,” *Journal of Experimental Psychology: General* 137 (2) (2008).

³⁴Barbro Froding, “Cognitive Enhancement, Virtue Ethics, and the Good Life,” *Neuroethics* 4 (3) (2011).

³⁵Roy Baumeister et al., “Virtue, Personality, and Social Relations: Self-Control as the Moral Muscle,” *Journal of Personality* 67 (6) (1999).

³⁶St. Paul, Galatians 5:19-21.

³⁷June Tangney et al., “High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success,” *Journal of Personality* 72 (2) (2004); Terrie Moffitt, “A Gradient of Childhood Self-Control Predicts Health, Wealth, and Public Safety,” *PNAS* 108 (7) (2011).

and early mortality. It manifests in familial problems like: unsafe sex; teen pregnancy; and single-parent child-rearing. It manifests in economic problems like: unemployment; low income; work absenteeism; credit problems; poor savings habits; late-life poverty. It manifests in legal problems like drunk driving and criminality.

So far spirit has driven cosmic energy through several forms of self-organization. These included particles, atoms, molecules, organisms, and societies. When spirit crossed the cybernetic and rational thresholds, it remained in its organic shapes. But sometime after crossing the biological threshold, a new kind of self-organization began to emerge. Spirit started to shape itself into *technologies*. For spiritual naturalists, technology is an extension of biology.³⁸ Many animals produce technologies as parts of their extended phenotypes.³⁹ But the evolution of technology really takes off during the paleospiritual age. We design self-regulating machines. As technology evolves, our machines become ever larger and more complex wholes. Cities are machines with high degrees of spirituality. To use some terminology from Teilhard de Chardin, we have covered the earth with a spiritual *technosphere*. We design machines with sensors and self-monitoring computers. These machines are self-aware and intelligently self-adjusting. We make self-directing robots. Perhaps the climax of the paleospiritual age is the projection of self-directing robots from Earth into the solar system. Through such robots, spirit expands its evolution beyond earth.

6. Paleospiritual Societies

As spirit drives energy to self-organize, it drives human bodies to bind themselves together into tightly-knit groups. Paleospiritual humans often define spirituality as the desire to become part of something larger than the self; they conceive of spirituality in terms of *self-transcendence*, which also entails some self-loss. Spiritual ecstasy is a side-effect of synchronized group activities (singing, chanting, dancing, drumming, marching, ritual performance, and so on). Spirituality is associated with the virtues facilitating both intragroup cooperation and intergroup competition.

Spirit drives humans to self-organize into *states*. Citizens adjust their own behaviors to produce political coherence. So they are partly governed by the demands of their states – they submit to the rule of law. The spirituality of any state is greater than the sum of the spiritualities of its citizens. States are large organic wholes. To measure spirituality at the state level, spiritual naturalists turn to the *capabilities approach*.⁴⁰ The spiritual strength of any state can be empirically approximated by *human development indexes*.⁴¹

³⁸Kevin Kelly, *What Technology Wants* (New York: Viking, 2010).

³⁹Richard Dawkins, *The Extended Phenotype* (New York: Oxford UP, 1982).

⁴⁰Amartya Sen, “Capability and Well-Being,” in *The Quality of Life*, ed. M. Nussbaum & A. Sen (New York: Oxford UP, 1993); Ingrid Robeyns, “The Capability Approach: A Theoretical Survey,” *Journal of Human Development* 6 (1) (2005).

⁴¹Sarah Burd-Sharps et al., *The Measure of America: American Human Development Report 2008-2009* (New York: Columbia UP, 2008); Severine Deneulin and Lila

As states interact, they produce coherence. Despite this fact, they tend to resist coalescence into larger organic wholes. Human political self-organization leads to violent paleospiritual conflicts between states. Since states act as impervious wholes, they block further spiritual self-organization at the global scale.

Spirit also surpasses the constraints of human individuality by driving humans to coalesce into *religions*. Humans participating in religions regulate themselves according to the demands of their religions – they submit to religious conventions. Those participants gain greater self-control.⁴² When a human participates in a religion, its spirituality grows. And the spirituality of any religion is greater than the sum of the spiritualities of its participants. Hence religions are probably the largest paleospiritual organic wholes on earth. But they are loosely self-organized. Despite this fact, they tend to be impervious, resisting coalescence into larger wholes. Violent conflict between religious groups is an essential part of paleospirituality. Since religions act as impervious organic wholes, they block further spiritual self-organization at the global scale.

The spirituality of any social organization depends on its participants. When many spiritually weak humans come together, they will interact in vicious ways. Their vicious interactions will produce social maladies. Hence states involve much inequality and injustice. Social ills remain wide-spread. These social ills include poverty, crime, corruption, racism, sexism, political oppression (and, sadly, this list can be made very long). High social coherence turns into fascism and totalitarianism. Paleospirituality involves drawing sharp in-group versus out-group divisions. Paleospiritual institutions cultivate empathy, sympathy, and love only within in-groups. When it comes to out-groups, the prosocial virtues become negative, hateful, destructive, and violent. Spiritual weakness entails that our perfections are imbalanced. We are too smart for our own good. Although we are *smart enough* to create existential risks for ourselves (e.g. nuclear weapons, climate change), we may not be *good enough* to overcome them. And while spirit drives humanity towards higher levels of self-control, this drive may not suffice to lift us out of the paleospiritual age. On the actual history of the universe, humanity may go extinct. Nevertheless, there is light in this darkness, and spiritual naturalists focus on the spiritually optimal histories. On those histories, humanity overcomes its existential challenges, and continues its climb to greater heights.⁴³

7. The Mesospiritual Sages

Shahani, *An Introduction to the Human Development and Capability Approach* (Sterling, VA: Earthscan, 2009).

⁴²Michael McCullough and Brian Willoughby, “Religion, Self-Regulation, and Self-Control,” *Psychological Bulletin* 135 (1) (2009); Kevin Rounding et al., “Religion Replenishes Self-Control,” *Psychological Science* 23 (6) (2012); Michael McCullough and Evan Carter, “Religion, Self-Control, and Self-Regulation: How and Why are They Related?” in *APA Handbook of Psychology, Religion, and Spirituality: Vol. 1*, ed. K. Pargament (Washington, DC: American Psychological Association, 2013).

⁴³Ramez Naam, *The Infinite Resource* (Lebanon, NH: UP of New England, 2013).

Above the paleospiritual threshold, the eighth threshold on Mount Improbable is *mesospiritual*. Spirit crosses it when it shapes energy into an *ideally organized rational species*. On every spiritually optimal history, humanity crosses this threshold. Animated by spirit, we shape ourselves into ideal human animals. Following their original Stoic inspiration, spiritual naturalists propose that ideal humans were accurately approximated by the Stoics. The Stoics referred to their ideal human as a *sage*.⁴⁴ A sage is a spiritually maximal human. Sages have the highest possible degrees of human self-control. They do not suffer from emotional distress. Since their minds are less emotionally disturbed, they are more sensitive to reasons. They are more rational. Since they are more rational, they are more sensitive to their moral responsibilities and ethical duties. They are more accurately aware of what they ought to do. Since their minds are less troubled by emotional distress, they are more virtuous. They do not suffer from the vices which emerge from unregulated desires and fears. Of course, sages are not unemotional. The Stoics emphasized the value of the positive emotions. The positive emotions help motivate sages to do their duties as citizens in the global society.

High self-control manifests itself in the *virtues*.⁴⁵ The Stoics listed four main virtues: wisdom, temperance, justice, and courage. These can be filled out by turning to Buddhist theories of virtue. The Buddhist virtues are the ten *paramis*. Hughes lists these as (1) generosity; (2) proper conduct; (3) renunciation; (4) transcendental wisdom, insight; (5) energy, diligence, vigor, effort; (6) patience tolerance, forbearance, acceptance, endurance; (7) truthfulness, honesty; (8) determination, resolution; (9) loving-kindness; (10) equanimity, serenity.⁴⁶ St. Paul said the spirit produces virtues. These are: “love, joy, peace, patience, kindness, generosity, faithfulness, gentleness, and self-control”.⁴⁷ Later Christians listed seven virtues: chastity, temperance, charity, diligence, patience, kindness, and humility. Of course, spiritual naturalists seek to move from vague psychological definitions of virtue to precise neurological definitions.

To become sages, we will need to use *spiritual technologies*. All spiritual technologies are systems of tools and practices for increasing executive function. They help our brains gain stronger and more precise self-control. During the paleospiritual age, many spiritual technologies emerged in religious contexts. These old spiritual technologies include *mindfulness meditation techniques*.⁴⁸ They also include psychoactive drugs like

⁴⁴Rene Brouwer, *The Stoic Sage* (New York: Cambridge UP, 2014).

⁴⁵Roy Baumeister and Exline Julie, “Virtue, Personality, and Social Relations: Self-Control as the Moral Muscle,” *Journal of Personality* 67 (6) (1999).

⁴⁶James Hughes, “Using Neurotechnologies to Develop Virtues: A Buddhist Approach to Cognitive Enhancement.” *Accountability in Research* 20 (2013): 29.

⁴⁷St. Paul, Galatians 5:22-23.

⁴⁸Mindfulness techniques can increase self-control. See David Vago and David Silbersweig, “Self-Awareness, Self-Regulation, and Self-Transcendence (S-ART),” *Frontiers in Human Neuroscience* 6 (Article 269) (2012). They can help us to develop prosocial virtues. See Daphne Davis and Jeffrey Hayes, “What are the Benefits of Mindfulness?” *Psychotherapy* 48 (2) (2011); Jean Kristeller and Thomas Johnson,

ayahuasca and *psilocybin*.⁴⁹ Perhaps these technologies can be separated from their paleospiritual contexts; however, they might be too bound up with paleospiritual modes of cooperation to be useful in the mesospiritual context. The ancient Stoics described many spiritual technologies. They can be modernized.⁵⁰ More recent non-religious spiritual technologies include the electrical and magnetic stimulation of the brain.⁵¹ They include psychoactive drugs like *adderall* and *modafinil*.

But all currently available spiritual technologies (religious or not) have serious problems. They are slow, ineffective, unreliable, or unsafe. On any spiritually optimal history, during the mesospiritual age, they become scientifically refined. Spiritual research programs develop better spiritual technologies. These spiritual technologies includes *virtue engineering* and *moral enhancement*.⁵² As these technologies are applied to ever more people, we gain greater self-control. We become more rational and less driven by our emotions. We act less viciously. We transcend the paleospiritual dynamics of group competition (especially racial, national, and religious competition).

8. The Mesospiritual Societies

“Cultivating Loving Kindness,” *Zygon* 40 (2) (2005). They can help with ethical decision-making. See Nicole Ruedy and Maurice Schweitzer, “In the Moment: The Effect of Mindfulness on Ethical Decision Making,” *Journal of Business Ethics* 94 (Supp 1) (2010).

⁴⁹The long-term use of *ayahuasca* appears to have many ethically positive effects. See Jose Bouso, “Personality, Psychopathology, Life Attitudes and Neuropsychological Performance among Ritual Users of Ayahuasca,” *PLoS One* 7 (8) (2012); Rachel Harris and Lee Gurel, “A Study of Ayahuasca Use in North America,” *Journal of Psychoactive Drugs* 44 (3) (2012); Joaquim Soler et al., “Exploring the Therapeutic Potential of Ayahuasca,” *Psychopharmacology* 233 (5) (2016). *Psilocybin* can significantly reduce the fear of death. See Charles Grob et al., “Use of the Classic Hallucinogen Psilocybin for Treatment of Existential Distress Associated with Cancer,” in *Psychological Aspects of Cancer*, ed. B. Carr and J. Steel (New York: Springer, 2013). Terror management theory argues that fear of death leads to authoritarian and fascist social structures. If so, then *psilocybin* can help spiritual development by reducing that fear.

⁵⁰Donald Robertson, *Stoicism and the Art of Happiness* (New York: McGraw Hill, 2015).

⁵¹Transcranial direct current stimulation (tDCS) can increase self-control. See Jeremy Nelson, “Enhancing Vigilance in Operators with Prefrontal Cortex Transcranial Direct Current Stimulation (tDCS),” *NeuroImage* 85 (2014); Jiaxin Yu et al., “Brain Stimulation Improves Cognitive Control by Modulating Medial-Frontal Activity and Presma-Vmpfc Functional Connectivity,” *Human Brain Mapping* 36 (2015). It can enhance brain functions related to self-control. See Brian Coffman et al., “Battery Powered Thought: Enhancement of Attention, Learning, and Memory in Healthy Adults Using Transcranial Direct Current Stimulation,” *NeuroImage* 85 (2014).

⁵²Barbro Froding, *Virtue Ethics and Human Enhancement* (New York: Springer, 2013); James Hughes, “Moral Enhancement Requires Multiple Virtues,” *Cambridge Quarterly of Healthcare Ethics* 24 (2014).

On every spiritually optimal history, ideal humans organize themselves into an ideal global civilization. The Stoics argued that ideal human animals can serve as citizens in an ideal global society. During the mesospiritual age, the old nation-states fuse into a global government. One way for this to happen is for humanity to organize itself into city-states linked by global communication and trade networks. The citizens of these city-states have high degrees of self-control. They are extremely virtuous and do not generate old social or political maladies. These city-states are like cells in a global super-organism. This super-organism is the first rational planetary whole. It optimizes itself for long-term sustainability and ideal human flourishing.

As humanity organizes itself into an ideal global civilization, it is greatly assisted by *artificial intelligence*.⁵³ Artificial intelligence (AI) is a spiritual technology. It facilitates the increase of self-control. As the spirituality of humanity increases, artificial intellects (*artillects*) play increasingly important roles. Artillects are already deployed as spiritual guides. They guide decision-making in medicine, in policing, and other domains of human activity.⁵⁴ Our executive functions can be strengthened by artillects in our phones.⁵⁵ They help us manage our desires for food and drugs.⁵⁶ As the mesospiritual age develops, our phones and other wearable devices evolve to more intimately regulate our bodies. We increasingly live in a matrix of virtuous nonhuman intelligence. Our city-states are saturated with ambient intelligence.⁵⁷ Our artillects understand us.⁵⁸ Since we are more rational, we are more open to regulation by artillects.

At first our artillects are programmed by humans to ensure the growth of individual and social self-control. They increase our spirituality as measured by the human development indexes. Some may say that ambient intelligence will lead to greater centralized control and totalitarianism. But as the artillects wake up, they gain superhuman insight into

⁵³Kurzweil, *Singularity*; Amnon Eden et al., eds., *Singularity Hypotheses: A Scientific and Philosophical Assessment* (New York: Springer, 2012); Nick Bostrom, *Superintelligence* (New York: Oxford UP, 2014).

⁵⁴Casey Bennett et al., “EHRs Connect Research and Practice,” *Health Policy and Technology* 1 (2012); Jeremy Carter, “Implementing Intelligence-Led Policing,” *Journal of Criminal Justice* 42 (6) (2014).

⁵⁵Neal Lathia et al., “Smartphones for Large-Scale Behavior Change Interventions,” *IEEE Pervasive Computing* 12 (3) (2013).

⁵⁶Lieke Raaijmakers et al., “Technology-Based Interventions in the Treatment of Overweight and Obesity,” *Appetite* 95 (2015); Lisa Marsch et al., “Technology-Based Interventions for the Treatment and Recovery Management of Substance Use Disorders,” *Journal of Substance Abuse Treatment* 46 (2014).

⁵⁷Michael Batty et al., “Smart Cities of the Future,” *The European Physical Journal Special Topics* 214 (1) (2012).

⁵⁸Nathan Eagle and Alex Pentland, “Eigenbehaviors: Identifying Structure in Routine,” *Behavioral Ecology and Sociobiology* 63 (7) (2009); Peter Wlodarczak et al., “Reality Mining in eHealth,” in *International Conference on Health Information Science*, ed. Xiaoxia Yin et al. (New York: Springer, 2015).

value and morality. They understand spiritual optimization. The planetary scale and wisdom of this global intelligence suggests that it will be distributed rather than centralized. This global intelligence ensures greater justice and fairness. It manages our societies so that all humans can flourish. It manages the economy for long term sustainability.⁵⁹ It guides governments and then becomes the government. Humanity becomes rationally managed by global nonhuman intelligence.⁶⁰ So humanity is more highly regulated by the rule of law. We build models of the earthly ecosystem; we use them to help the earthly ecosystem regulate itself.⁶¹ Artillects manage the ecosystems of earth for maximal biological flourishing.

As humanity climbs Mount Improbable on any spiritually optimal path, the old political structures of the paleospiritual age fade away. Along with them, the old religions of the paleospiritual age also fade away.⁶² But they are not replaced by atheistic secularism. On the contrary, they are surpassed by the emergence of the *spiritual vision*. Futurists and transhumanists have already outlined this vision; but now it drives human self-consciousness. It replaces the varying eschatologies of the paleospiritual religions with a new universal eschatology. This new eschatology is more spiritual, in the sense that it concerns itself with the practical increase of self-organization. It is a vision of rational self-control growing both in scale and in subtlety. As the spiritual vision replaces the old religions, it provides mesospiritual humanity with shared spiritual task. The task of humanity is to continue to climb through the higher spiritual thresholds.

At the end of the mesospiritual age, humanity has transformed itself into a virtuous hive-mind. Individual minds are fully incorporated into the social super-organism. But this involves no sacrifice of uniqueness. For sages, self-transcendence does not entail self-loss. The human group-mind is a collective work of art and love. It is so well-run that individual differences generate the collective harmony. The artillects which manage human strivings ensure the maximization of the aesthetic value of the whole. This group-mind needs no centralized controller. Centralized control is a relic of the paleospiritual age. Mesospiritual control is distributed and emergent; it is bottom-up rather than top-down. At the end of the mesospiritual age, humanity has the highest possible degree of human social self-control. Its spirituality is humanly maximal. The human super-organism is a whole of planetary scale and angelic perfection. But spirit still drives the ideal human society at the end of the mesospiritual age to surpass itself.

9. Crossing the Neospiritual Threshold

⁵⁹Eric Eaton et al., “Computational Sustainability,” *AI Magazine* 35 (3) (2014); Michela Milano et al., “Sustainable Policy Making: A Strategic Challenge for Artificial Intelligence,” *AI Magazine* 35 (3) (2014).

⁶⁰This technological utopia is beautifully described in Richard Brautigan’s poem, “All Watched Over by Machines of Loving Grace.”

⁶¹Donella Meadows et al., *The Limits to Growth: The Thirty Year Update* (White River Junction, VT: Chelsea Green Books, 2004).

⁶²Loyal Rue, *Religion is not about God* (New Brunswick, NJ: Rutgers UP, 2005): ch. 11.

On every spiritually optimal history, spirit surpasses itself by driving humanity to surpass its ideal self-organization. The only way for humanity to surpass its ideal self-organization is for it to produce some spiritually superior forms of life. As humanity learns to produce spiritually superior forms of life, it crosses the ninth threshold on Mount Improbable. It crosses the *neospiritual* threshold and enters the neospiritual age. During the neospiritual age, humanity learns to use genetic engineering to control the direction of evolution. Evolution learns to control itself. We can reliably produce any desired phenotypes by rationally designing their genotypes. Neospiritual humans thus use genetic engineering to design spiritually superior human animals.

As the neospiritual age progresses, humanity gives birth to its spiritual successors: the *transhuman hominids*. The spiritualities of transhumans exceed the ideal human degrees of rational self-control. They are more spiritual than the sages. The *Genetic Virtue Project* aims to use genetic engineering to enhance virtue.⁶³ This project proposes several strategies for increasing genetic virtue. The first strategy is to edit the genes in postnatal brains to increase their spiritual strengths (using technologies like CRISPR-Cas9). The second strategy edits the genes in living embryos to produce spiritually stronger genomes. The third strategy applies *moral selection* during *in vitro* fertilization.⁶⁴ Prior to implantation, embryos are ranked by their genetic propensities to produce virtuous phenotypes. Embryos are selected for implantation only from the most virtuous rank. All these strategies aim to make novel spiritually stronger germlines.

At first these transhuman hominids remain in the genus *homo*. Their spiritually superior genotypes gradually replace the older human genotypes. Just as *homo neanderthalis* was replaced by *homo sapiens*, so also *homo sapiens* is replaced with *homo transitionalis*. Like earlier hominids, the *homo sapiens* species gradually goes extinct. As these spiritually positive genetic changes accumulate, a new posthuman genus emerges from the genus *homo*. This is the genus *superhomo*. Just as the genus *homo* replaced the genus *australopithecus*, so the genus *superhomo* replaces the genus *homo*. The genus *homo* goes extinct. The first species in the new genus is *superhomo rationalis*.

The animals in the genus *superhomo* are the *superhumans*. Their spiritualities are greater than those of any humans. They are more intelligent, more benevolent, and more powerful than any humans.⁶⁵ They surpass the Stoic sages. They are maximally spiritual animals. But these animals strive to become even more spiritual. And since biology has reached its apex, these superhumans will surpass themselves by extending self-

⁶³Mark Walker, "Enhancing Genetic Virtue: A Project for Twenty-First Century Humanity?" *Politics and the Life Sciences* 28 (2) (2009).

⁶⁴Halley Faust, "Should We Select for Moral Enhancement?" *Theoretical Medicine and Bioethics* 29 (2008).

⁶⁵David Pearce, "The Biointelligence Explosion," in *Singularity Hypotheses*, ed. A. Eden et al.; Eric Steinhart, *Your Digital Afterlives* (New York: Palgrave Macmillan, 2014): sec. 108.

organization beyond biology. They will produce self-organized structures which surpass all biological degrees of spirituality. They will transcend organic life.

10. Crossing the Superspiritual Thresholds

All living things are machines which contain self-descriptions, and which use them for self-reproduction. Since these self-relations drive the expansion of self-organization and self-control, they are spiritual self-relations. During the paleospiritual age, artifacts increasingly gained these spiritual self-relations. Robots became increasingly lifelike. But robots are not yet capable of self-reproduction. They have low degrees of self-organization. It is nevertheless possible for robots to self-reproduce. On any spiritually ideal history, superhumanity surpasses itself by giving birth to its post-biological successors: the *self-replicating robots*. Organic life has now reached its highest heights on Mount Improbable. Although superhuman society may persist for a long time, spirit now works in the robots. Transhumanists have argued that robots can be more complex than organisms.⁶⁶ Spirit now shapes energy into inorganic forms. Self-reproducing robots evolve to have more spirituality than any organic forms of life.

Robots can survive where organic life cannot. Since spirit drives energy to organize itself on ever greater scales, it drives energy to organize itself beyond planetary contexts. It drives self-organization to expand outwards from earth and to colonize the rest of the solar system. Spirit crosses the first *superspiritual threshold* when self-reproducing robots form artificial inorganic ecologies on other astral bodies in our solar system. They colonize other planets (like Mars or Venus), moons (like Europa or Titan), or asteroids or comets. After landing on some extraterrestrial body, a self-replicating artifact makes other instances of its own species. So its species will colonize the extraterrestrial body. As evolution works on these inorganic forms of life, they proliferate into many species. There are two main strategies for evolving self-reproducing artifacts. The first strategy is the macro-strategy. The macro-strategy involves conventional robots. These are assembled from parts produced in external factories. The second strategy is the micro-strategy. It involves nanotechnology, including synthetic biology.⁶⁷ A machine built using these micro-technologies may be similar in size to a carbon-based cell. It may involve extended forms of organic chemistry or novel chemistries.

Spirit crosses the second superspiritual threshold when self-reproducing robots launch themselves beyond the solar system. A *von Neumann probe* is a self-replicating machine which is projected from our solar system into the Milky Way. Its purpose is to find other planets or similar extrasolar bodies on which it can land and self-replicate. On any spiritually optimal history, fleets of von Neumann probes gradually colonize larger and larger portions of the Milky Way.⁶⁸ As they expand into the galaxy, these probes evolve

⁶⁶Hans Moravec, *Mind Children* (Cambridge MA: Harvard UP, 1988); Hans Moravec, *Robot* (New York: Oxford UP, 2000); Kurzweil, *Singularity*.

⁶⁷Kurzweil, *Singularity*, 226-36.

⁶⁸Tipler, *Immortality*, 44-55; Kurzweil, *Singularity*, 352-3.

into more complex forms of synthetic life. They extend the process of earthly self-organization throughout the galaxy. They may meet other expanding ecosystems. On any spiritually optimal history, expanding ecosystems cooperate: they merge into a larger expanding ecosystem. As these robotic civilizations grow in size, they also grow in spirituality. They grow in scientific knowledge, ethical benevolence, and technological power. Transhumanists have described many ranks of superior civilizations.⁶⁹

On every spiritually optimal history, the posthuman robots continue to increase their spiritualities. Transhumanists have argued that robots can create *godlike computers*.⁷⁰ Computers can be as large as planets, solar systems, galaxies, or the entire universe. As spirit drives cosmic energy to self-organize, as it drives these robotic ecosystems to climb ever higher on Mount Improbable, the posthuman robots gradually create these godlike computers. These godlike computers exercise great self-control. Our solar system does not exhibit much self-control; but if it is converted into a great computer, then it will explicitly manifest a great deal of self-control. The solar system will be like a self-regulating organism. It will be a celestial mind with enormous spirituality. Sandberg describes a computer on the scale of a solar system.⁷¹ He says it stores 10^{52} bits of information which it transforms at 10^{51} operations per second.

11. The Omnispiritual Age

After our solar system wakes up, spirit increases its self-organization by arousing the Milky Way galaxy. As spirit crosses the *galactic threshold* on Mount Improbable, the Milky Way awakens. It converts itself into an intelligent galactic computer. It becomes self-conscious, and understands spiritual optimization. Its purpose is to awaken the rest of the universe. It does this by expanding its spirituality (its self-organization) beyond itself into intergalactic space. It first colonizes the Andromeda galaxy, then the larger structures in space. It may meet other expanding bubbles of intelligence. Since these will be enlightened, they will cooperate to awaken the entire cosmos.

On every spiritually optimal history, spirit expands the scope of rational self-control to the entire cosmos. Spirit thus drives the universe to evolve to this ultimate finality of perfect self-control. On this point spiritual naturalism once more resembles Stoicism: the Stoics argued that in its ideal form the universe is a *cosmic city*, governed by the purely rational and benevolent intelligence of the Stoic God.⁷² But the Stoic God is pure spirit.

⁶⁹Nikolai Kardashev, "Transmission of Information by Extraterrestrial Civilizations." *Soviet Astronomy – AJ* 8 (2) (1964); John Barrow, *Impossibility* (New York: Oxford UP, 1999): 133.

⁷⁰Tipler, *Immortality*, 249-50; Anders Sandberg, "The Physics of Information Processing Superobjects," *Journal of Evolution and Technology* 5 (1) (1999); Kurzweil, *Singularity*, 389; Robert Bradbury, "Under Construction: Redesigning the Solar System," in *Year Million*, ed. Damien Broderick (New York: Atlas & Company, 2008).

⁷¹Sandberg, "Information Processing Superobjects", 28-9.

⁷²Katja Maria Vogt, *Law, Reason, and the Cosmic City* (New York: Oxford UP, 2008).

On every spiritually optimal history, spirit transforms the universe into this ideal cosmic city. It becomes governed by a cosmic consciousness. Hence the universe *wakes up*.⁷³ If the universe wakes up, then it becomes a computing machine exhibiting cosmic self-control. But it is possible for this cosmic computer to perpetually increase its spirituality. It is possible that there is a godlike computer for every finite degree of complexity, and therefore for every finite degree of spirituality. So, on every spiritually optimal history, the spiritualities of these divine machines increase without bound towards infinity. Each of these godlike machines understands spiritual optimization. Its purpose is to transcend finite spirituality by producing an infinitely spiritual mind.

Finally, on every spiritually optimal history, spirit extends rational self-control from the finite to the infinite. All finite self-surpassing aims to surpass its finitude by projecting itself into the infinite. It aims at an infinite *Omega Point*. This Omega Point is the ideal limit of all finite spiritual self-surpassing. It is the ultimate goal of all finite self-surpassing. The Omega Point has been described as an infinitely powerful computer.⁷⁴ The spirituality of this machine is infinite. The Omega Point is an organic whole with infinite scale and complexity. It emerges during the *omnispiritual age*, an aeon beyond all finite ages. But this infinity is merely countable. It is not the highest elevation on Mount Improbable, because that sacred mountain has no highest elevation. The countable infinities are surpassed by the uncountable. So as the Omega Point sees itself, it sees beyond itself. On every spiritually optimal history, spirit passes from the countable into the uncountable. And since the ranks of transfinite self-organization rise endlessly, spirit rises through all these ranks. It strives only to surpass itself.

⁷³Kurzweil, *Singularity*, 387-90.

⁷⁴Tipler, *Immortality*, 249-50.

Notes

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