

CHAPTER FOUR
A STATIC GARDEN OR A DYNAMIC COSMOS:
EVE AND THE FRUIT

**“What we do here today echoes
through eternity.”
General Maximus, in Gladiator**

Picture Paradise. Then fully understand that whatever the Paradise is, it will go on as it is for eternity and extend infinitely. If it is a static Paradise filled with hedonic versions of bliss, nothing will change in it forever and ever. There will be no opposition, no change, no challenge, no unknown. Everything will simply be what it is. It will not be what in systems theory is called an “open system,” dynamic, evolving and sometimes disintegrating if the oscillations cannot be sufficiently controlled by feedback regulators. Instead, it will be a “closed system,” with no input from outside the rigidly organized interior and no possibility of further development (1). Consider the descriptions of the Garden of Eden, the first glimmers of how a god might construct Paradise for beings found worthy. It is a cultivated garden, with orderly plantings of trees that provide beautiful color, tantalizing perfumes, and delicate fruits. The garden does not need tending, a work that so many amateur gardeners lovingly perform and enjoy, the reason for gardening. This garden cares for itself and needs no labor. Everything is fully planted and in its proper place. The landscape plan will not be changed (2). It resembles an artificial biosphere, without the ecosystem knowledge we now have that requires even that artificial construction to have dynamic processes and feedback mechanisms.

In this garden, there are no insect pests, weeds, or ordinary refuse that needs to be cleared or cleaned. The garden is pristine and will remain pristine. Water is supplied by controlled streams and ponds, the temperature is always perfect, no ill wind blows, and, if one had the insight of the Greeks, one could see the lotus flowers beckoning from the island of the lotus-eaters. The first human walks wherever he wishes in the garden, busily naming the flora and fauna as he pleases, in control of all life-forms who do as he wishes. His creator talks to him like a child, because Adam functions on the level of a child. There are no deep philosophic discussions, no words of love and strong feelings, just

aimless wonder. The only problem is that Adam's creator does realize Adam is the only being of his kind, and that companionship has been denied to him. Eve is created to correct that one small lack in the Garden, and now two children share the walks, playing in the Garden, perpetual child play. The apocryphal Books of Adam and Eve describe this Garden both before and after the event that finally broke its static steady-state, and the legitimacy of these texts is affirmed by similarities with fragments found in the Talmud and Qur'an (3). In this Garden, Adam and Eve had been different creatures, filled with "the grace of a bright nature" not "turned toward earthly things." They had been made in the image of gods. But also remember that in this Garden, Adam and Eve will never grow beyond what is, never develop or interact in new ways, never learn more than they already know -- and that this condition will go on for eternity. The Ethiopian Book of Enoch 1 paints a frightening future for the human species (4). One of the fallen angels, Pinem'e has taught human beings all that the heavenly beings know, and has even dared to teach them to write. One of Enoch's loyal angels recounts this with horror, and says, "For human beings are not created for such purposes, to take up their beliefs with pen and ink." Is this really Paradise? It is, according to all the religious texts and beliefs, and this closed system is supposedly what human beings should strive to attain, what salvation offers. If, however, we choose living over this controlled sameness, if we wish valuable things to happen in the Garden of Eden, we will have to look toward Lucifer to accomplish the conversion from a closed system to an open system, from boredom to interest, from stagnation to development and growth toward infinity. Lucifer and the Dragon-Serpent of Chaos will then be our ethical model, not the children of the Garden.

In some Gnostic versions, the wisest of the archons or rulers, called the beast or instructor, persuades Eve and Adam to eat the forbidden fruit. Their new knowledge causes them to desire one another, creating human reproduction. It also changes how they see their makers, loathing their beastly forms. The Rulers ask what has happened and learn the instructor (gnostic serpent) has been responsible: "The rulers came to the instructor. Their eyes were blinded by him so that they were not able to do anything to him. They merely cursed him since they were impotent." Then they cursed everything they had created (5). Enki, who spread wisdom to humans, also may have introduced reproduction, though not in the Garden. There is a strange segment in Enki and Ninmah:

The Creation of Humankind, which could be speculated to involve an *umul* (phallus) and womb for humans (6).

The pivotal event for Adam and Eve of listening and learning from Lucifer, and of taking in the fruit of the knowledge of good and evil changed human beings both historically and physically. Expelled from the Garden and kept from re-entering by a cherub with a sword of flashing fire, Adam looked at his flesh “that was altered” and wept. The light of the Garden was gone, and Adam said to Eve: “Look at thine eyes, and at mine, which afore beheld angels in heaven, praising; and they, too, without ceasing. But now we do not see as we did: our eyes have become of flesh; they cannot see in like manner as they saw before.” This change is so traumatic that in the first book Adam and Eve attempt suicide. God raised them and then lectured them, pointing out they had transgressed of their own free will, through their desire for divinity, greatness, and an exalted state such as the gods, and deserved being deprived of their “bright nature.” They had not kept the command and law, just as Lucifer “who continued not in his first estate, nor kept his faith; in whom was no good intent towards Me, and who though I had created him, yet set Me at naught, and sought the Godhead, so that I hurled him down from heaven, -- he it is who made the tree appear pleasant in your eyes, until you ate of it, by hearkening to him.” God attempts to justify his treatment of the tenth order, saying when he created his creatures he did not intend to destroy them. But when they angered him, he punished them until they repent, and “if...they still continue hardened in their transgression, they shall be under a curse for ever.” The same destructive punishment that was applied to the heavenly beings who wished to be equals among gods has now been applied to human beings: “When thou wast under subjection to Me, thou hadst a bright nature within thee, and for that reason couldst thou see things far off. But after thy transgression thy bright nature was withdrawn from thee; and it was not left to thee to see things afar off, but only near at hand; after the ability of the flesh; for it is brutish.”

There are other frightening and major changes. Adam and Eve try to resist the change for as long as possible, because they sense it is a major altering of their physical/spiritual nature, and like any change, it is both an opportunity for growth and a risk of destruction. Their bodies now need water. Before, there was neither night nor day, and the first night’s darkness terrifies them: “But she and I were both in one bright light. I saw her and

she saw me. Yet now since we came into this cave, darkness has come upon us, and parted us asunder, so that I do not see her, and she does not see me.” Adam cries to God, but he is again given the comparison with what happened to Lucifer: “so long as the good angel was obedient to Me, a bright light rested on him and on his hosts. But when he transgressed My commandment, I deprived him of that bright nature, and he became dark. And when he was in the heavens, in the realms of light, he knew naught of darkness. But he transgressed, and I made him fall from heaven upon the earth; and it was this darkness that came upon him... Yet, of My mercy, I did not turn thee into darkness, but I made thee thy body of flesh, over which I spread this skin, in order that it may bear cold, and heat...For I made thee of the light; and I willed to bring out children of light from thee and like unto thee...Then I commanded thee concerning the tree, that thou eat not thereof. Yet I knew that Satan, who deceived himself, would also deceive thee...So that My creatures cannot blame me; but the blame rests on them alone.”

Adam and Eve are developing into other beings than their static Garden existence predetermined. The dawn of the first morning is almost as terrifying for the human beings. Adam mistakes the sun for God, then experiences its heat on his body and fears its flaming rays. Experiencing the heat and sweat, the two throw themselves from the top of a mountain, but God again raises them. They are hurt and exhausted, but the punishment must continue. God tells them he cannot alter the agreed-upon punishment that he spoke, or he would have relented and brought them back into the Garden. They remain afraid of the darkness of the night, and one of God’s heavenly beings brings them golden rods to light the cave. These beings also supply sweet incense and myrrh, which can deaden pain. The humans have still not eaten or drunk since being expelled, and a cherub brings two figs from the Garden. The cherub throws the fruit to them, because they can no longer come near these heavenly beings because of their change to flesh, which could not come close to the fiery cherub. Still, Adam and Eve, while knowing they must now eat and drink in their animal bodies, choose not to. In the Gnostic Gospel of Philip, humans are described as evolving as well: “Man used to feed like the animals, but when Christ came, the perfect man, he brought bread from heaven in order that man might be nourished with the food of man” (7). In the Enki myths, Enki teaches his human creations to eat bread and develop skills to earn bread (8). Without realizing it, Adam and

Eve are growing into complex and ethical creatures who have existential interests far greater than their previous state.

There is then a description of fire, which Lucifer lights around the two. They are superficially burned by the fire which Lucifer has supplied to them, and supposedly rescued by one of God's heavenly beings from it. God scolds Eve: "What is that he promised thee in the garden, saying, 'At the time ye shall eat of the tree, your eyes will be opened, and you shall become like gods, knowing good and evil.' But lo! he has burnt your bodies with fire, and has made you taste the taste of fire, for the taste of the garden; and has made you see the burning of fire, and the evil thereof, and the power it has over you. Your eyes have see the good he has taken from you, and in truth he has opened your eyes; and you have seen the garden in which ye were with Me, and ye have also seen the evil that has come upon you from Satan. But as to the Godhead he cannot give it to you, neither fulfill his speech to you. Nay, he was bitter against you and your seed that will come after you." This is a version of the Prometheus story, when Prometheus stole fire from the heavenly beings in order to help humans. As with all technology, there are risks to fire, and the Book of Adam and Eve stresses the danger rather than the benefits of this technology. It is also an argument to try to win Adam and Eve away from the side of Lucifer, as his allies, implying that the tenth order and human beings are natural enemies. Finally, it insists that Lucifer does not have the power to make humans like gods. But it also is in agreement with the argument of this book. God admits that Lucifer has indeed opened Eve's eyes and made both her and Adam into beings capable of understanding ethics, into thinking and learning beings, into more developed beings. Was Lucifer's promise to them that they would be like the gods truthful. God insists no. But the reality is that like the gods, the humans are now able to evaluate and make their own choices, are able to appreciate the importance and ambiguity of good and evil, are undergoing an advanced learning program, and except for physical power, actually are now like the gods.

Adam and Eve are still so primitive, although changing, that they are still naked. God tells them to find the skins of sheep devoured by lions, and make clothing for themselves out of those remnant skins. The humans are resistant and not adept at this, so God orders another heavenly being to come down and show them how to sew together the skins.

Despite all the suffering, the humans are still inquisitive and still inclined to listen to Lucifer in various disguises. They wish to explore and not remain by the cave God has assigned them. Exploration is dangerous, high-risk, if ultimately rewarding behavior and apparently part of human nature from the very beginning. God quickly orders them back to their cave where they are to remain according to his order, discouraging their inquisitiveness, courage and risk-taking. But which is more like the gods: to remain within the cave doing only what one is told; or to set out across the earth and learn by making decisions, judging risks, determining good and evil?

This repression of development appears to be a typical reaction from God, who expects his beings to follow orders without question, and only do what they are commanded, without thinking for themselves. The discouraging of initiative and creative thinking extends to the heavenly beings who remain loyal to God. There is a segment of the story where Adam and Eve have walked back to the Garden gate protected by the cherub. The cherub, under orders they are not to be allowed in, goes toward them to kill them, afraid that God will destroy him if he allows Adam and Eve into the garden. His sword flames, but when he raises it over the two humans, its flame doesn't flash out to kill them. Seeing this, the confused cherub thinks perhaps God is favorable to allowing them back to the garden, and is immobilized. He can't go up to the heavens to verify God's order because he can't leave the gate unguarded, fearing the humans could enter against the older order of God, and that God would then destroy the cherub for not following his orders. The confounded cherub, unable to make decisions on his own, stands without doing anything. Other heavenly beings come down, also confused, trying to guess what God's real order is. They are sympathetic but helpless.

Finally, Adam regains consciousness and the heavenly beings tell him their understanding of what happened in the Lucifer/God confrontation: "He gathered together his hosts, and deceived them, promising them to give them a great kingdom, a divine nature; and other promises he made them. His hosts believed that his word was true, so they yielded to him, and renounced the glory of God. He then sent for us -- according to the orders in which we were -- to come under his command, and to hearken to his vain promise. But we would not, and we took not his advice. Then after he had fought with God, and had dealt forwardly with Him, he gathered together his hosts, and made war

with us. And if it had not been for God's strength that was with us, we could not have prevailed against him to hurl him from heaven. But when he fell from among us, there was great joy in heaven, because of his going down from us. For had he continued in heaven, nothing, not even one angel would have remained in it. But God in His mercy, drove him from among us to this dark earth; for he had become darkness itself and a worker of unrighteousness." Here, the loyal heavenly beings give themselves away. These beings do not agree to join Lucifer, but they admit that his persuasion or the justness of his cause would have depopulated the heavens of all beings. The loyal beings did not have the strength of intellect, character or power to resist or objectively evaluate Lucifer, and like children, needed to be rescued from Lucifer's policies and persuasion. They are not that different from the childish Adam and Eve, incapable of acting on their own effectively. They are good at following orders and praising their superior, but they cannot think constructively, as the cherub could not make an intelligent decision on his own and was left standing immobile. That is the end result, for sentient beings, of a closed system.

Meanwhile, Adam and Eve are starving to death. Finally, they have to eat the figs, but they are not used to eating earthly food and do not know how to eat. They also are afraid that once they have tasted such food, they will be forever altered. A heavenly being comes to them and gives them God's order to eat. After eating, both suffer great pain, and God has to alter their bodies to make them fit for ingesting food. The humans now know that they are forever altered beings and could not re-enter the Garden, that they have strange functions and are fully inhabitants of the earth. The book tells that their hearts were broken. The same thing occurs with water. Gradually, the two learn to work at agriculture and to make bread. During the process, Lucifer is portrayed as attempting to destroy all that the humans are doing, and finally to try and kill them with a weapon. He still manages, though, to get Adam to place his hand in his and vow to mate with Eve, deceiving Adam into thinking he is a heavenly being. Adam discovers the trick, but still is taught by Lucifer to have sexual feelings for Eve. Again, it is Lucifer who takes the initiative, for whatever motive, and moves the human beings to a dynamic state of reproducing their species. Adam at first either wishes to be rid of these sexual urges or to have Eve forever taken from near him, terrified he will inadvertently violate God's

commands by his initiative to wish to have sex with Eve. Left to their own devices, God, Adam and Eve would not likely have instituted the dynamic process of reproduction. However, faced because of Lucifer with this dilemma, God allows Adam to wed Eve, after sufficient prayers and purification rites. Sexual reproduction, with all the dynamism, risk and possibilities it entails, has been introduced to humans as a result of Lucifer's actions.

What happened after God's command to wed differs in the old texts. In the Books of Adam and Eve, Eve has twins with Adam: Cain and Luluwa, and then Abel and Aklemia. Both Cain and Abel vie for Luluwa as a mate, and that is the major reason why Cain kills Abel. He then marries Luluwa and leaves the mountain and cave. In the Ethiopian Kebra Nagast, Eve also has twins, and again, Cain marries Luluwa (9). But there are other versions as well, in which Lucifer, having had a part in the creation of Adam and Eve, mates with Eve to produce Cain, with Abel alone being Adam's son. This interbreeding of heavenly beings with humans infuriates God, who then condemns Lucifer. This is a typical pattern of the tension between God and Lucifer, with Lucifer representing open systems organizing at more and more complex levels for perhaps infinity, and also representing the feedback complexity among levels which results in emergent properties and new patterns (10,11,12,13). Although God is meant to be the symbol for creation, it is only for a specific type of created system, one that is closed and unchanging, or one where feedback mechanisms attempt to tightly constrain any development or difference. When Lucifer's external acts impact on these systems, whose design makes it difficult to adapt to external varying input, the mechanisms fail, the oscillations increase, and the systems go into a chaos mode. In other words, all Hell breaks loose. But this may be ethical and valuable, because the aftermath of such modifications and chaotic changes represent growth and emergence.

It is a reasonable conclusion from the official biblical texts, from the Apocrypha and Pseudepigrapha, and from commentaries struggling with the problem of good and evil (14,15,16), that ethics and morality were introduced into the Garden of Eden and became part of human nature as a result of Lucifer's purposes and actions. Most of the Nag Hammadi texts follow that theme, but a few digress into Light-Eve, Pronoia, and Sophia interactions with Archons who attempt rape of the woman (17) Before her interaction

with Lucifer, Eve had less of a learning program than most animal species, but since she had been made “in the image of the gods,” she had the potential to activate that learning program and to appreciate the value of an open and dynamic system. The wish to learn and to know were a basic part of her undeveloped nature, suppressed by the god who had placed her in the static Garden and who wished to maintain humans in a perpetual state of infancy or even judgment-lacking robotic response. Lucifer appealed to her full nature, to her wish to actualize the image in which she was made, to her thinking and reasoning -- in other words, to her learning program. An open learning program is a prerequisite for ethics, and in fostering Eve’s godlike nature, Lucifer taught her how to make the first ethical choice of a human being. Her eyes were opened to good and bad, her false bliss based on ignorance was removed, and the history of the human species opened before her. The static Garden, a controlled illusion, had to be given up for the reality of a dynamic cosmos which humans could partly understand and rationally and ethically operate within.

In “Paradise Lost,” Milton looks at the same theme as the First and Second Book of Adam and Eve (18). Lucifer has left Hell in this story, and managed to find Adam and Eve in their static Garden. Although he realizes no one shows him pity, his own ethics is so strong that he does feel pity for the two humans he must make his allies. His purpose is to make league with human beings, to live with them in mutual friendship and closeness. He understands that this will deprive them of their Garden and that Earth may not be as pleasing at first. But he also appreciates the closed-in, static danger of the Garden, and thinks “there will be room, Not like these narrow limits, to receive Your numerous offspring.” Those limits are not just spatially narrow and limiting, as Lucifer knows, and what he will offer, though not without risk and pain, is the larger possibility of living fully on Earth rather than in a limited way in the Garden. He will give Adam and Eve the choice between a closed system and an open system, and he will try to convince them to choose the more valuable, the open system. Because Milton portrays him grudgingly as very ethical, Lucifer realizes he is exploiting the harmless innocence of the humans, though he does believe he offers them a greater good than they presently enjoy. He justifies his actions within the broader level of the cosmic conflict between

open systems and closed systems, between free thinking and obedience, between ethics and coercion.

Lucifer's arguments to Eve for taking the fruit are based on important values. The first is the value of knowledge itself. "Is Knowledge so despis'd?" he asks her rhetorically, for the human learning program, our human nature, has made an evolutionary choice for knowledge, and it is an innate value for human beings. He calls the tree the "Mother of Science," and argues that knowledge can partly free beings from the bonds of fate, allowing them to grow past such limits and venture higher than the destined lot (this is likely the true meaning of the charge of "pride" against Lucifer, but it is far from evil). The second is the value of understanding good and evil. Such understanding can lead to a happier life: "Of good, how just? of evil, if what is evil Be real, why not known, since easier shunn'd?" The third value is the value of development and the suppression of that development by the gods: "Why then was this forbid? Why but to awe, Why but to keep ye low and ignorant, His worshippers; he knows that in the day Ye Eat thereof, your Eyes that seem so clear Yet are but dim, shall perfectly be then Op'n'd and clear'd, and ye shall be as Gods, Knowing both Good and Evil as they know... The Gods are first, and that advantage use On our belief, that all from them proceeds; I question it."

Eve is convinced by reason and truth. Unlike the biblical texts, she can create a philosophic and ethical argument herself: "In plain then, what forbids he but to know, Forbids us good, forbids us to be wise?...For us alone was death invented? or to us deni'd This intellectual good, for beasts reserv'd?" Eve begins to eat the fruit and concludes: "Till dieted by thee I grow mature In knowledge, as the Gods who all things know... Thus grown, Experience, next to thee I owe, Best guide; not following thee, I had remain'd In ignorance, thou op'n'st Wisdom's way..."

Meanwhile, Adam has returned. God and his heavenly beings had been busy teaching Adam the dangers inherent in listening to Lucifer, but had not bothered to instruct Eve as she must have been seen as of little importance. Milton's Adam is frequently a more sophisticated version than the biblical texts. He realizes what has happened, but loves Eve so much that he will die with her, nor does he at first rage at her for what he sees as a fatal mistake: "Bold deed thou hast presum'd, advent'rous Eve, And peril great provok't..." There is risk as an integral part of open systems and the learning program.

He comforts Eve and even raises a legitimate criticism of God which he feels Lucifer could point out: “Fickle their State whom God Most Favours, who can please him long? Mee first He ruined, now Mankind; whom will he next?”

Even in Milton, we can see the cascade of events which Lucifer has precipitated. Adam is shown the good and evil in the world, and the future patterns generated by the event in the Garden. So truly, he has been given the knowledge of good and evil, and all that follows has been made possible by Lucifer’s instructing of Adam and Eve. Humans are no longer serfs or slaves or controlled pets, but in some respects are equal to the gods. The gods must now deal with them on a more equal basis, instructing, explaining, even justifying, as the Book of Job indicates. There is now also an ethical interaction between humans and the gods, so in a sense Lucifer has managed to include human beings as members of the ethical community vis a vis other rational beings. Lucifer has changed a great deal within the Garden of Eden, and though reality is often terrible to know, it is also often awesome and wonderful to know. What Adam and Eve have learned is that in any open system, there are trade-offs in the movement of energy or life around the system, that events at one level influence events at other levels, and that there is no steady-state, stagnant balance in such systems. Open systems are in a controlled-state that allows variety, interest, complexity in the cosmos. Lucifer has again forced the choice for a dynamic cosmos.

I want to look more closely at that dynamic cosmos and see if there is a likelihood of successful argument on finding systems bioethics to be a real aspect of that cosmos. In my last book on bioethics, I did not see a rational way for extending bioethics and giving it a cosmic characteristic, but I left the question open. I now want to try and answer that question affirmatively. Is ethics inherent in a dynamic cosmic system in the same way that visual seeing is inherent in the dynamic interaction between light waves, material surfaces, the structure of the human eye, and the processing within the brain? Let me rephrase: Is free human reasoning about decisions inherent in a dynamic cosmic system in the same way that visual seeing is inherent in its dynamic interaction? Is the evolutionarily-developed human learning program, the social bonding required of a social species which produces empathy, the cues transmitted between individuals, and the processing of this ethical decision in the evolutionarily-selected patterns of the brain a

natural, common function within the cosmic system that is activated by sentient beings but is also built into the characteristics of the system? Can we find the potential for ethics not only within the rational human being, but also as part of the cosmic system waiting to be activated by an adequate receiver? I will construct an argument that gives an affirmative conclusion.

First, it is important to understand the nature of such a cosmic system, and here we do have to admit that we cannot know the thing-in-itself, free of human transaction with this cosmic system. As Edward O. Wilson described these constraints of perception (19), or as I have described the differing scales of perception and levels of organization (20,21,22), we can only posit that some patterns identified from our extended or expanded human perception are common patterns of reality or the cosmos. Science makes this starting optimistic assumption when it holds that there are common patterns/laws within our perceived universe that allow us to understand our experiences and intervene in ways that promote our human interests. Science unfortunately sometimes speaks as if our perceived and posited universe were all of the cosmos (reality), as is common in cosmology and theories of the origin of the universe such as the Big Bang. What we can rationally extend into the unperceived aspects of the cosmos is the probability that some patterns in our universe will also exist in the cosmos system in its theoretical entirety (an entirety that no sentient being can fully experience). Systems theory as an epistemology is replete with such patterns at higher and lower levels, as well as emergent patterns as complexity increases. Science can posit that some patterns will repeat themselves at less and more complex levels or scales of perception, extending to infinity and perhaps encompassing eternity. Systems theory opens up science in a significant way, allowing reason and experience to project infinity in a way the human brain can comprehend and aesthetically admire. This opening of the cosmos is the same extension that mathematics has gained for human reasoning through infinite numbers. It is a logical extension of the nature of systems. So we have a probable posit that the cosmos is an infinite organizing of levels toward either greater or less complexity or magnitude, with some common patterns to the organization of those levels, and some exciting emergent patterns not yet anticipated. This is the metaphysical aspect of systems theory. It is also the scientific, with the cutting-edge theories of multiverses rather than

universe. The perceptual aspect involves scales of perceptual interaction involving time and space. On what level does the perceiver exist, and on what level is the perception focused? If the perceiver exists on the level of perception of a mayfly that experiences but a day, and that perceiver is trying to extend its perception to the level of human beings, the task will be difficult and intellectually challenging. Humans will have already experienced the past, present and future of the mayfly and time will appear to be confused, because time is an interaction of measure and levels of perception, not a static entity. The Epistle of St. Peter may have grasped this systems thinking when it described a day with the Lord as being like ten thousand, and ten thousand days with the Lord being like a day. It will depend on the level of organization and perception that is being addressed. The Nag Hammadi texts talk of Chaos and Matter flowing out of Chaos (23). The Enki myths have the wise Enki organizing chaos and ruling the Kur (24)

So we are likely to have a complex, dynamic cosmic system that may extend to infinity and may be perceived as eternal. This system will sometimes appear to be chaotic, but there is an organization or pattern in chaos theory, and sufficient experience combined with rational posits can find common patterns for understanding. The complexity from both these aspects produces growth and change, and even the opportunities to direct growth and change. This open system requires energy outside its own production, which necessitates interactions among levels. If the cosmic system is infinite, the source of continuing energy is forever pushed into infinity and will not require a first cause or mysterious energy outside the cosmos to sustain it. It is here that Kant drew the limits on human reason, but this is limiting only if we are emotionally uneasy with infinite extension. The posit of a creative energy outside the cosmos does not really solve this problem of reason, but directs it to the outside source of the creative energy's energy, in another infinite regress. Struggling against the concept of infinity gets us back to infinity.

The pattern of the cosmos we can infer is an exciting and endless project, with levels of organization going infinitely upward or downward like ongoing fractal patterns. It is similar to an image I can still remember from kindergarten days. A brand of condensed milk had a label on which was a picture of a cow's head coming out of the labeled can, on which was a picture of a cow's head coming out of the labeled can, on which ... I

knew in my childish way that this pattern would go on forever, into such small pictures that I could no longer see them, without any end. And I also knew that if I held the can to a mirror, somehow the image of that can label would go on forever in my mind, or that a larger being looking down at me would imprint that label on its mind forever. I had discovered the mystery of fractal patterns. Much later, when I was working in the postdoc office of our Prenatal Detection Program, one of my office partners asked if I would like to see a stained slide. She was using fluorescent stain in her research, and took me into a darkened office where her electron microscope was waiting. She turned off all the lights and asked me to look into the microscope. There was a shining array spread across a dark black space, and all I could think of was that I was looking up at a completely clear, black sky filled with star systems. Through the technology of electron microscopy, I was seeing the extremely small pattern that I could also see writ on a much larger scale of magnitude looking up from our planet into space. I had discovered levels of organization or perception.

But fractal patterns are not just on pictures or our retina or computers, virtual realities. They have been produced in the laboratory by shining a laser beam on four tetrahedrons faceted like mirrors, arranged around a circle. This “boundary event” produces a fractal pattern in the real world, one made of light rather than carbon, but one that exists in actual reality (26). It is a pattern that could repeat across the cosmos levels, that could be changed as some integers are dropped, and that could explain the built-in dynamism of a contemporary view of the cosmos freed from the constraints of a creation event. Remember Lucifer’s words to Eve in Milton’s poem, that the fact that some of the gods came before others does not mean the earlier ones created the cosmos, or that the cosmos was created.

We have complexity as part of the nature of the cosmos, then, something that Russell points out in attempting to solve his problem of evil. Complexity logically entails the factors we view as unwanted or evil. A unicellular life-form could theoretically be eternal; a complex multicellular life-form collects errors, amplifies malfunctions, requires oscillations and tends to collapse back into simpler organization/death. A dynamic planetary ecosystem requires geological activity that brings volcanoes and massive lava flows, plate tectonics and earthquakes, atmosphere and hurricanes or tornadoes. A dead

planet is stable and unending in its inactivity. Earth's biosystem is a flux and definitely not a garden, with both joy and suffering for everything in it. There are ecologists who long for the absolute balance and steady-state of ecosystems, but they may not wish what they would get. A climax or ancient virgin forest may be beautiful for some to look at, but it does not contain the biodiversity of forest progressions. Freezing species in time, trying to resist the progressions of complexity, will bring the story of life on the planet to an end, with no new pages, only the same old text. In the end, it would be another disaster, because environments do change as a result of external events if not internal ones, and a steady-state system does not have the adaptability of a controlled, open system.

I do not agree with Russell that the choice for complexity in a cosmos solves the monotheistic problem of evil, but the concept is very important for ethics. The nature of the cosmos I have been describing has value embedded in that very nature, waiting to be sensed by a being who can interact with the cosmos in such a way that ethics can be articulated. To understand the open system of the cosmos is to also understand ethics, because ethics is one way of perceiving that system. I want to list and briefly describe the value theory which is part of the cosmos system, which forms the skeleton for a cosmic ethics that I was not sure was possible when I completed my latest book on bioethics.

Complexity/Diversity/Life/Growth. These are all variant descriptions of the nature of an open system and they are also expressions of the ethical nature of the open system cosmos. In the same way that we could argue for biodiversity as a natural aspect of a dynamic ecosystem, we can find Diversity as an ethical aspect of the cosmos. Our previous understanding of natural order and natural law was not sufficiently dynamic or systems theory informed. These descriptions of reality were therefore too static and misunderstood the cosmos as a closed system rather than an open one. Growth is another way of describing this aspect of the dynamic cosmos, and we have slowly learned just how dynamic, growing, and living it is. The arguments against evolutionary theory, I think, are partly fueled by a fear of such growth and change, such messy life. Some do wish that Paradise were a Garden, not a tropical rain forest or a surging sea. The preference that things were made as they now are and stay as they now are is the old tension between order and chaos, between God and Lucifer. Science, however, has come

down on the side of Lucifer when it is not Platonic and removed from empiricism. For some theologians, even the monotheistic creator god has chosen for complexity rather than steady-state (26). Given a complex system such as the cosmos, we can argue that diversity, growth and life are values implicit in the cosmos.

Openness/Freedom of Experience. An open system entails openness to all inputs and energy sources. Assumptions can never close a potential or probable interaction. This is another way of describing the human learning program, which must be based on freedom to experience and from experiencing to entertain any hypothesis. An adaptive learning program cannot close off any experiences or come to premature conclusions. In fact, such an effective program must always leave open the possibility of modifying or even abandoning some conclusions. These are the standards of the scientific method, standards that have helped humans avoid mistakes, correct errors, prepare for consequences and integrate new experiences into patterns that are tentatively held. It cannot be rigid or it contradicts itself. This freedom must be both internal and external, and it is required for our human species to function well. The mind or thinking process must be as free from conditioning, bias, indoctrination, fear or falsehood as possible. To control a mind and prevent it from well-functioning is to defeat the evolutionary strategy the human species has chanced upon (or was destined to develop), to go against our fundamental human nature. To socially force templates on minds is also to defeat that strategy and to violate our human nature in a most basic way. Premature closure of a problem, or permanent closure, also violates the nature of the cosmos. Quine once used a lovely metaphor for empirical thinking/reasoning (27). He imagined a net or web, with core theories at the center, and less and less fundamental theories radiating out. He also imagined the openness of experience and science, allowing for the normal events of strange experiences, experiences that didn't fit the model, pinging on the outer edges of this network. Those pings are to be expected given the complex open system of the cosmos and the limited slice of reality that we can perceive. Most pings are ignored or considered a nuisance or thought of as an interesting future investigation. But when enough pings build up, when the magnitude begins to intrude plainly, the pings have to be dealt with. Humans will have to readjust their hypotheses and even reconstruct some fundamental theories. The openness and freedom of experience that comes with complex systems

requires the capacity to do just that, and that capacity is built into our nature if we don't distort our nature. Free thinking and free action are important required values for the cosmos.

Feedback Interpretation/Sentience. Another requirement of systems that are infinite levels of organization and/or perception is a feedback mechanism. Levels are integrated, like a three-dimensional spiral rather than a two-dimensional circle (28). Physical communication among levels is required to achieve the controlled-state balance that keeps a dynamic system functioning. In natural systems, this communication is achieved through various feedback devices that take in experiences/information and respond when a threshold has been crossed. Physical activation then takes place to either dampen the function involved in producing this "information" (negative feedback) or to increase the function (positive feedback). The system is not "thinking" in the way that human beings or other rational beings are thinking, in one sense. In another, if our thinking processes are reduced to the biochemical level that it appears they can be, then this systems process is a general pattern that is repeating among all the levels. The rudiments of sentience exist in the cosmos system even without human beings, in this sense. As these feedback mechanisms become more and more complex, as they become less hard-wired and more open, we approach sentience. As the mechanisms become organized around standards and techniques, and become self-aware, we have rational beings. Reasoning and learning, and eventually learning for certain self purposes, is waiting within any open, dynamic system of sufficient complexity to produce it. If we understand natural systems, we understand ourselves. If we understand ourselves, we understand the cosmos. At least, that is a reasonable and likely posit. The value of reason is also built into the cosmos.

This same argument, based on the physical and computational sciences, is developed brilliantly by Stephen Wolfram. (29) His universal automata and computational equivalency hypotheses paint a picture of the cosmos that is inherently calculating/reasoning. Additionally, we can make the scientific inference that our human features are part of, and equivalent to, the cosmos in a most fundamental way. We are even more than star-stuff. We are a facet, a full equivalent, of cosmic-stuff, and it of us. And in a dynamic system, all components are developing (or running, if one prefers the

computer model) infinitely. Our universal automata expands us beyond the stars and galaxies.

Decisions/Risk Taking. Dynamic systems make decisions, though not in the self-aware and free sense that humans or other rational beings could, all the time. Given feedback mechanisms, an open system is continually oscillating and choosing actions to maintain a controlled-state of organization. These systems take risks, because feedback techniques contain the risk of time-lag between interpretation of feedback, sending of response, and effect of response. An open system chooses for risk as part of its operating aspect. In most natural systems, the decision-making techniques are programmed in and the acceptable risk levels decided by evolutionary development. Many systems have back-up feedback mechanisms as a safeguard, or cascading levels of feedback response and risk choice. In spite of such mechanisms, however, complex systems by definition are higher-risk systems. The acceptable risk is determined by a transaction with the rest of the cosmos that determines whether the system can maintain functioning in crucial situations. Sometimes the answer is no.

As Edward O. Wilson points out, there have been five major extinction periods for life-forms on Earth (30). During two of those periods, it was touch-and-go whether complex life-forms would make it through the boundary events. He argues we are now in a sixth major extinction period caused by the impact of the human species on other life-forms, in which case we are like the early highly-successful plants that produced the poisonous (for other life-forms of the time) oxygen levels of our present atmosphere. Risk is inherent in the cosmos system and can lead to opportunities for greater complexity as well as to catastrophic destruction (as on Mars). The decision to take risks is again built into the cosmos system as a dynamic, open system, a decision made because of the nature of systems. All of the cosmos is risk-taking, and the human species is no exception. That is why Eve's taking the fruit at the prompting of Lucifer is such an expression of full human nature and such an affirmation of the cosmos. That is also why the static Garden of Eden is really no Paradise at all, but a failure to understand the real nature of the cosmos and a choice for death rather than life.

The linking of eating the fruit of the tree of knowledge of good and evil, and the punishment of dying is an interesting link that makes no sense on one level, and does

make sense on another. In the latter case, the choice for complexity, for thinking functions, for an understanding of decision making and ethics does lead to the high probability of a system that will eventually break down. In the former case, remaining simple, unable to use sentience, unaware of decisions or freedom to make them is not a description of vibrant life or dynamic systems, but of near-dead systems which resemble Bertrand Russell's inaccurate description of a dark and dead universe (31). That form of positive entropy, put against the possibilities of negative entropy, is not the good choice. My conclusion is that Eve made the good choice, though it carried high risk. What she, with Lucifer's help, achieved was the replacement of the narrow and limited Garden of Eden with an infinite cosmos of galaxies, supergalaxies, clusters of supergalaxies, and multiverses, on to infinity (32).

In making that choice, Eve activated the potential for ethics as a basic pattern built into the cosmos system. Ethics is an emergent pattern or property when the complexity of the cosmos system is understood by a sufficiently complex unit within it which has achieved the required functional sentience. This internal transaction, to use John Dewey's term, activates the nature of the cosmos system to produce the pattern of knowing and making decisions congruent with the operations of dynamic, multilevel systems. Ethics is the name we give to a linked array of patterns based on the nature of the cosmos system. Some options will be objectively good if they fit into this array of patterns, and therefore will be in relation to the probable knowledge we have of the nature of the cosmos system. Ethics will not be static or absolute, because it emerges from a cosmos system that is open and can be only partially inferred from our level of perception and complexity. Other sentient or rational beings, on differing levels of perception or organization could help integrate and expand our understanding of the array of patterns integral to ethics.

This mechanism could resolve the problem I raised in my bioethics theory of how to adjudicate among interests and options of beings other than human beings. Eve, with Lucifer's help, raised value choices to multilevels. We should be quite proud of her choice, and why we are not is a sad puzzle about man's understanding of himself and the cosmos, and the power of the fear to grow or change. Eve pushed the constraints of that fear.

There was reason to fear. I've called attention to the Ethiopian Book of Enoch, which tells of one of the 200 Watcher Angels who fell after Lucifer, Pinem'e, having the audacity to teach humans how to read and write. For this, he is damned, because the celestial court does not wish humans to develop their sentient, rational nature: "For human beings are not created for such purposes, to take up their beliefs with pen and ink." This is a chilling pronouncement, and it violates, if my argument works, the embedded value of reason and learning that is an essential component of a dynamic cosmos. Again, Lucifer and now the Watcher Angels are expressing the full nature of the cosmos, while the imperial celestial court defends a closed and static cosmos. The closest analogy in modern times would be the prohibition against teaching American Negro slaves to read and write. Those forbidden activities were done under penalty of death. For Eve's descendants before the planetary flood, struggling to continue to develop the human nature that she had opened up for them, the same penalty was waiting. In Chapter 10, I will discuss in detail the negative value system implicit in a closed cosmic system and the prohibitions of the celestial court, and outline the cruelty that was meted out to both the human species and the Watchers for violating those unethical prohibitions. For now, I want to note that the growth of a full human nature, the learning program and the possibilities of real ethics, are dependent on Lucifer's opposition to the crushing power and stagnation of the celestial court. As I will later argue, the concept of Lucifer is linked with our natural development within the dynamic, open system of the cosmos, and in an important and ethical sense, we are Lucifer's children, not the children of the celestial court. The history of our species before the imagery of the flood, wherever that flood may have occurred, is the tragic story of mental development almost destroyed and ruthlessly suppressed by the static forces within the cosmos. In the later chapter, we will more fully appreciate the courage it took in those mythic stories for any beings to oppose (satans) that static and closed system and ally with the values of complexity, growth, developing and living that are basic parts of the dynamic, open cosmos.

In the remaining chapters I want to develop each of these segments and their importance for a theory of bioethics that can be extended to the cosmos. I also want to argue for a mature bioethics that can be expressed in the myth of Lucifer, *The Lucifer Value*.

“...the god whose creative (and destructive) word can bring order where there had been only chaos and introduce disorder where there had been harmony.”

S.N. Kramer and J. Maier, Myths of Enki, the Crafty God