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Co-Sustenance: An Alternative to Stewardship

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GEORGE FOX EVANGELICAL SEMINARY

CO-SUSTENANCE: AN ALTERNATIVE TO STEWARDSHIP

A MASTER'S THESIS SUBMITTED TO THE SEMINARY FACULTY IN
CANDIDACY FOR THE DEGREE OF MASTER'S OF DIVINITY

BY

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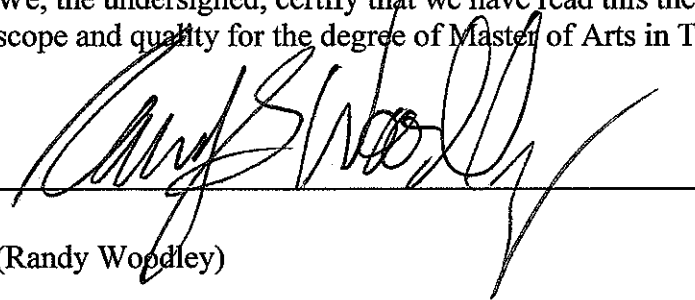
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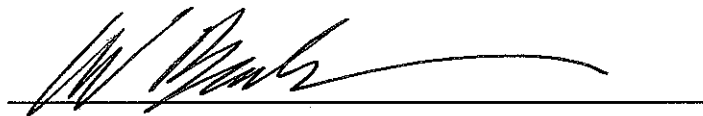
Presented by: Matt Addis

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We, the undersigned, certify that we have read this thesis and approve it as adequate in scope and quality for the degree of Master of Arts in Theological Studies.



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ABSTRACT

Title: CO-SUSTENANCE: AN ALTERNATIVE TO STEWARDSHIP

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This thesis is concerned with the current ecological realities and the inability of current stewardship construct's to adequately address these problems. This study addresses the underlying weaknesses of current articulations of stewardship theologies. It also engages with the scientific theories that form the basis for stewardship theologies, as well as those theories that might offer alternative narratives for ecological and biotic understandings. This study also addresses the underlying ethical realities of current ecological crises. Finally this thesis seeks to offer an alternative to traditional Christian understandings of the relationship of humanity to nature.

Chapter one introduces the reader to the current understanding of stewardship models. It also seeks to address those pertinent criticisms of stewardship models, particularly as they pertain to ecological realities. This chapter also seeks to address particular scriptural interpretations pertaining to stewardship.

Chapter two attempts to introduce the reader to alternative scientific theories, of both evolution and biotic influence. It also engages with criticisms of traditional Darwinianism as well as purely geological understandings of evolution. This chapter also introduces the Gaian hypothesis.

Chapter three introduces the ethical implications presented by new scientific theories presented in chapter two. It also introduces several particular stories of modern ecological and ethical struggles. Along with this it seeks to address the underlying philosophical and governmental challenges of modern ecological care.

Chapter four introduces the concept of Co-Sustenance more fully. It also looks at several modern struggles of farming that highlight the current ecological struggle, as well as highlighting several insights for the adaptation of Co-Sustenance thinking.

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Chapter 1

Stewardship

It is no secret that the issues surrounding the environment have been awakening more and more within human consciousness over the last few decades. Environmental degradation coupled with the rise of cataclysmic natural disasters has alerted Earth's community to the need for reevaluations of the relationship between humanity and the rest of creation. The response by the Christian community has been slow and incapable of addressing the scope of the current situation. However, overwhelmingly, their response has been to reengage with their own history and scriptures and attempt to reread their story in an attempt to find a more environmentally friendly reading of both the text and tradition. As Dr. Clare Palmer states, "The search for this new language and conceptuality is difficult and complex, yet fundamental to the way in which humans act in the world."¹ This quest for new, or rather, redefined old language has led the majority of thinkers to return to the concept of stewardship in new ways.

The rise of environmental engagement by Christianity can be largely attributed to their reaction to an article written by Lynn White Jr. In his article, White attacked Christianity as the major contributor in the foundations that led to the current environmental struggles.

Especially in its Western form, Christianity is the most anthropocentric religion the world has seen. Christianity, in absolute contrast to ancient paganism and Asia's religions (except, perhaps, Zoroastrianism), not only established a dualism of man and nature, but also insisted that it is God's will that man exploit nature for his proper end.²

¹ Clare Palmer, "Stewardship: A Case Study in Environmental Ethics." *Environmental Stewardship*, 63.

² Lynn White Jr. "The Historical Roots of the Ecological Crisis." 189

White's attack forced the Christian community to respond and much of the development of concepts like stewardship can be traced back to this point. Many felt that White's article led them to ask two crucial questions: "Does the Bible authorize exploitation of the created order? And second, is Christianity an anthropocentric religion?"³ It is these questions that has in large part led to the formation of stewardship theology, and for the majority of Christians the questions raised by White can be easily boiled down to a single question: Has Christianity failed in its biblical mandate to "till and keep" the soil or has there been a radical misunderstanding of humanity's place within the created order? Christians of all stripes have sought to answer these questions.

When it finally began to engage these questions more seriously, the Evangelical community surmised that it was largely a failure by Christians to practice what they had preached that led to current environmental struggles. With this in mind, they sought to reengage with scripture and to attempt to put Christianity back on course with the vocation they had long neglected, the vocation being that of steward. Steward has been defined by many within the Christian community as "a biblical term that refers to a manager who is responsible for the goods and property of another."⁴ David Rhoads believes this term can be "applied in its most original and fundamental meaning to refer to our human responsibility to care for the Earth itself (Gen 1-2)."⁵ Rhoads finds himself squarely in the middle of the first camp in his response to White's queries saying, "Our human failure to be responsible stewards of Earth has led to the current ecological

³ Ken Gnanakan, "Creation, Christians, and Environmental Stewardship." 110.

⁴ David Rhoads, "'Stewardship of Creation'" 335

⁵ Ibid., 335.

crises.”⁶ He goes on to apply the moniker of environmental stewardship to humanity, whom God has given dominion over the fish of the sea, the birds of the air, and the animals of the land (Gen 1:1-2:4).⁷ Rhoades, like many others who respond to White in this way, believes that a correction in regards to stewardship vocation requires a different understanding of scripture. As such he points out that it is a distortion of the dominion mandate that has led to exploitation by humans of nature. He points out that the Hebrew word meaning dominion does not mean, “to dominate” as it has historically been interpreted but is better interpreted as “to take responsibility for”, which he describes as being akin to “a ruler [being] responsible to assure the well being of those in the realm.”⁸ With this different definition in mind Rhoads imagines the first creation story from Genesis as one where “human beings were created last, not as the so-called "crown of creation," but in order to exercise responsibility for the wellbeing of the garden Earth.”⁹ He then takes this retelling further describing the Genesis 1 narrative as a defining motif for humanity where “exercising responsibility as part of God's creation is the main reason humans were created. As such, being stewards of creation is foundational to what it means to be human.”¹⁰ This hermeneutic leads Rhoads to emphasize that Genesis 2 reasserts and goes further in defining the vocation of environmental steward. He insists that, like in the first creation story, the Hebrew is misunderstood, claiming that the interpretation of the mandate to “till and keep” the land has at best been misleading. For Rhoads a rereading shows “the Hebrew word for ‘till’ is a word used to depict the service

⁶ Ibid., 335.

⁷ Ibid., 335.

⁸ Ibid., 335.

⁹ Ibid., 335.

¹⁰ Ibid., 335-6.

that a slave gives to a master. And the Hebrew word for ‘keep’ means to preserve for future generations. Hence, the mandate "to serve and to preserve" the land places human beings not in a hierarchical position over creation but in a position of service to it.”¹¹ This reimagining of the relationship of the steward to the rest of creation is a vital one and is reasserted by Rhoads when he claims that “creation was made for its own sake.”¹² The Genesis story points out that God called each part of creation good, prior even to humanity being created. There is clearly within the text an insistence that God wishes for all of creation to prosper, rather than humanity only. This reading leads Rhoads to declare, “There is a foundational reverence we need to bear toward all of life for its own sake, because it is God's creation and it is filled with God s glory.”¹³

Unfortunately this understanding of the relationship between humanity and creation has been severely underemphasized which has led instead to a universalizing of a dangerous stewardship model that institutes a hierarchical model alternative to the biblical text. In light of this, stewardship becomes another tool that legalistically entraps humans into particular functions, defended by new and exciting exegesis, rather than freeing humanity to lead lives of love, service, and sacrifice for and to the other.

Theologian Richard Bauckham comments on the shortcomings of universalizing the concepts of stewardship. “The totalizing interpretation of the Genesis dominion is typically modern in its aspiration to reject all limits on human power and activity, to

¹¹ Ibid., 336

¹² Ibid., 336

¹³ Ibid., 336

throw off all the constraints of nature, to remake the world according to human design, to become in fact some kind of god over the world.”¹⁴ According to Bauckham,

When the idea of human stewardship of the Earth was first used in the seventeenth century, especially by the lawyer Matthew Hale, it went with a very high view of the need for human intervention in the rest of creation for creation’s good. Nature would run horribly wild if humans were not there to keep it in order. For many environmentally minded Christians today, on the other hand, stewardship is mainly a matter of preserving creation from human damage to it—letting nature be itself, intervening only to protect, not to improve it. Stewardship is about preserving, not changing.¹⁵

While Bauckham fails to acknowledge that even a protective stance by humanity can be an unethical and unhelpful ideology as is the case with the establishment of many of America’s national parks where Native peoples were forcibly removed from land in order to “protect” it, he does draw his reader into recognizing how stewardship can be misused and the need for critical engagement with the ideas put forth by the many stewardship proselytes. He believes that while the concept stewardship can avoid “the themes of domination, exploitation and re-creation that fueled the modern project,”¹⁶ it does however, “retain the purely vertical relationship. This by no means simply invalidates it, but it is a limitation that suggests that the stewardship model by itself could be a perilously one-sided model for a relationship so complex as the human relationship to other creatures.”¹⁷ This is an incredibly important critique from within the Evangelical community itself. Far too often the methods of adopting biblical answers to current struggles or catastrophes result in solutions that are far too narrow in scope while

¹⁴ Richard Bauckham *The Bible and Ecology: Rediscovering the Community of Creation*, 6.

¹⁵ Ibid., 8.

¹⁶ Ibid., 11.

¹⁷ Ibid., 11.

assuming far reaching, if not universal, solutions to complex and difficult realities. As Bauckham points out, and rightly so I believe, the idea of stewardship might be a helpful one but it is far from a singular solution to the issues proposed by our current environmental situation.

In much the same way that Bauckham engages the concept of stewardship from within the ranks of evangelicalism, Lutheran pastor and theologian H. Paul Santmire offers his own thoughts and concerns about the current state of stewardship from his experience of more than 45 years of ministry, many of which was spent as a parish priest. His insight is key in understanding how local communities can rethink their relationship with creation. Santmire believes that the current thinking in regards to stewardship are largely a response by the Christian community to recent environmental issues such as the Gulf oil spill. He sums up well what he believes the current line of thought concerning stewardship to be.

This is the logic of that construct in its current cultural expressions: We must manage the natural resources of our planet much more wisely than has been our wont. We must urgently work for a sustainable global society, which veers away from consumerist plundering and poisoning of the earth and the poor of the earth. Are not we American Christians, in particular, providentially positioned, precisely in this respect, in view of our longstanding experience with the construct of stewardship, to make a critical and creative contribution to our global society in crisis?¹⁸

This summation is in my mind precisely on point. It acknowledges that the response is in large part one of compassion and born out of a sense of responsibility. It also recognizes the reality that for many the main questions and concerns are ultimately human centric as

¹⁸ H. Paul Santmire. "From Consumerism to Stewardship: The Troublesome Ambiguities of an Attractive Option" 332-33

well as the solutions which are being sought. Santmire also acknowledges the goodness in this stance admitting that he would take “wise stewardship instead of mindless consumerism any day.”¹⁹ Santmire makes it clear that he disagrees with the many critics who would deem Christianity and position that is inherently ecologically bankrupt. He believes that in many respects it is in fact ecologically rich. He does however, “think that the construct “stewardship” brings with it a number of liabilities.”²⁰ And also asserting “we can do better than “stewardship of creation,” biblically speaking.”²¹

Santmire’s first, and I believe one of the more vital, criticisms concerning stewardship concerns what he perceives to be a general hesitancy to criticize the concept itself, particularly in the parish setting. He dubs this hesitancy the yes-only tendency lamenting the fact that “Often, it appears, when professors at denominational schools or pastors of large “successful” congregations are asked by church publishers or denominational stewardship offices to write books on the subject, they dutifully do so, usually with enthusiasm, rarely raising questions about whether the stewardship idea has any downside.”²² Santmire claims, out of his extensive experience, that often within church circles when there is disagreement about stewardship the line of thought falls on one of two sides. Either the church should engage in what is thought of as “wise-use” practices for the sake of current economic concerns or the church should engage in those same practices for the sake of the poor around the world, of course there are also congregations choosing not to engage environmentally at all. Regardless, Santmire points out that this wise-use dichotomy “is predicated on assumptions that are inherently

¹⁹ Santmire “From Consumerism to Stewardship” 333.

²⁰ Ibid., 333.

²¹ Ibid., 333.

²² Santmire, “From Consumerism to Stewardship” 334

anthropocentric and managerial in character, and frequently seem to betray little concern for nature in itself.”²³ This last point seems to draw the main line of distinction concerning all attempts as stewardship; the needs of the humans in any given community are raised to a level of concern, which effectively nullifies any concerns for non-human life.

Further criticism of the concept of stewardship can help to rightly place us in our current context. Clare Palmer offers many key insights into the shortcomings of such theologies and hermeneutics. “For many, both Christians and non-Christians, stewardship, it seems, has solved the problem of re-examining the way in which humans relate to the rest of the natural world.”²⁴ Palmer believes this is not the case. She suggests, “that the use of stewardship can represent an easy retreat to a comfortable concept, which avoids coming to terms with deeper philosophical and theological issues inextricably interwoven with the environmental crisis.”²⁵ Palmer acknowledges that stewardship proponents have not had negative intentions and that its use as an ideology has not been without positive effect. She does however, “suggest that it is inadequate, and that the context from which it arises is an inappropriate one when considering the place of humanity in the natural world at the present time.”²⁶ From this perspective Palmer seeks to reengage with the scriptural texts from which the Christian community derived theologies of stewardship. Palmer recognizes that in a broad sense occasions arise where humanity’s role in the created order could be described as one of steward. In Genesis 2,

²³ Ibid., 334.

²⁴ Clare Palmer, “Stewardship: A Case Study in Environmental Ethics.” in *Environmental Stewardship: Critical Perspectives, Past and Present* ed. By R.J. Berry, 64

²⁵ Ibid., 64.

²⁶ Ibid., 64.

for example, Adam is instructed by God to “till and keep” the garden. For many, Palmer admits, this story of a man being made responsible for the wellness and fertility of an ecosystem sounds like stewardship as we have come to know it. However, it might also be said that Adam is rather a singular gardener in this story. “The contents of the garden seem to have been chosen for the gardener’s pleasure; and the animals created solely to keep him company. This elevates humans to a position where steward seems a rather inappropriate expression.”²⁷ Furthermore, Palmer wishes to acknowledge a broader understanding of humanity’s relationship to the land, drawing on more than just one example from scripture. Palmer asserts that even if we could clearly draw from the account of Genesis 2 a concept such as stewardship other places in scripture offer a very different picture.

One significant passage concerning humanity’s relationship with nature may be found in Job 38-41, God’s reply to Job out of the whirlwind. Here, God is ‘watering a land where no man lives, a desert with no-one in it’. God is directly involved with the land and has no gardener. Humanity is irrelevant. Its position is neither to have dominion over the land, nor to tend and dress it. The animals are also completely independent of humanity...not made to be human companions, nor even made with humans in mind. They live their own lives.²⁸

For Palmer this passage, and others like it, offers a key insight for humanity: “There is no single attitude to the natural world in the Old and New Testaments as different perspectives and historical periods are represented.”²⁹ As such, I return to my previous claim, it is dangerous, as well as dishonest, to claim one singular biblical perspective concerning humanity’s relationship to creation. It is also unhealthy. The true wealth of

²⁷ Ibid., 65.

²⁸ Ibid., 65.

²⁹ Ibid., 65.

the scriptural witness to humanity's place in this world does not reside in our ability to ascertain a singular relationship by which all of humanity, past, present and future might abide, but rather in the multitude of voices and perspectives to which the accounts of the biblical writers witness to.

It is vital to recognize that the multiplicity of voices must include that of nature. To return to the thoughts of Paul Santmire again a rejection of nature's voice has become a very central problem within the concept of stewardship. Santmire sees in the text from Genesis 2 an emphasis on engaging, serving and protecting nature as an end in itself. Sadly ““The themes of serving nature as an end in itself and wondering at nature, also as an end in itself, are simply bypassed, if not excluded, by the kind of anthropocentrism that the idea of stewardship of creation typically takes for granted.”³⁰ Because of this very anthropocentrism and its inherent silencing of the non-human parts of creation Santmire argues very strongly against further use of the stewardship construct, offering what seems to be a very apropos pastoral instruction.

“The time may come, to be sure, the “right time,” a historic *kairos* for the church, when the teachers and preachers and other leaders of the church may simply have to decide to say *no* across the board: to argue theologically at the grass roots level that “stewardship” has totally lost its usefulness, that it is unambiguously a sign of the church's cultural captivity, and that it should therefore be publicly rejected and abandoned, even in the arena of church fundraising. That would be a challenging undertaking, given the fact that stewardship has become such a major theological industry in virtually all denominations. So I am arguing that, for immediate purposes, we should restrict the use of the construct, not abandon it altogether.”³¹

³⁰ Santmire, “From Consumerism to Stewardship” 334.

³¹ Santmire, “From Consumerism to Stewardship” 337.

Santmire's instruction leads one to search for alternatives in the discussion, ones that hopefully articulate a grander and more inclusive vision for humanity's relationship with the entirety of creation. One such vision is articulated by Dr. Randy Woodley.

Dr. Woodley, as a legal descendant of the United Keetoowah Cherokee tribe, might also be identified as a member of a community whose voice has been ignored in the current environmental conversations. However, he offers I believe, one part of that vision which Santmire and others hope for. In his recent book *Shalom and the Community of Creation: An Indigenous Vision* he describes both the current condition of the relationship between humanity and creation as well as hope for a way forward. He begins his book acknowledging the current state of affairs. "Today, the relationship between human beings, plants, and animals has been damaged tremendously and we are just now beginning to count the cost of abusing the precious gifts that the Creator has so abundantly supplied."³² Dr. Woodley describes this relationship as one of harmony and he believes we are very much out of harmony. Borrowing from the Old Testament Dr. Woodley identifies this harmonic relationship as one of shalom and he rightly suspects that the road to shalom will be lit by reengaging with the silenced voices acknowledging "A renewed understanding of living out shalom on earth, and the equivalent constructs found among indigenous peoples, is our path to restoring harmony in the world."³³

For many in the western world the idea of stewardship is largely an economic one, as in the wise-use concept Santmire described. The very language of steward is derived from scripture and describes one who handles the property of a distant

³² Randy Woodley, *Shalom and the Community of Creation: An Indigenous Vision*. 9.

³³ *Ibid.*, 9

landowner. This has driven many in America to identify themselves as either good or bad stewards of God based solely on how they use their own wealth and resources. Kelly S. Johnson has followed this line of thought by describing in detail the principles of modern stewardship. She concluded her study by recognizing that “frequently associated with these principles is the expectation that the person who uses wealth in accord with God’s intentions will be rewarded with an increase in wealth.”³⁴ She asserts that church leaders such as John Wesley perpetuated these principles giving them the singular focus of money management. She alludes to the parable of the talents when she quotes Wesley as saying that money was “that precious talent which contains all the rest.”³⁵ This overly singular focus by many in western society, which places the impetus for proper stewardship within the bounds of rightly using what, you own, is predicated on the belief that God *owns* everything. This has lead, in practice, for many parishioners to “take it for granted that God has indeed given them the assets they now own and the wisdom to know how to use, profit from, and in some measure, share what is rightfully theirs.”³⁶ These conclusions, it seems, can only be arrived at within a certain economic system, in our case a capitalistic one. The distinction that must be made here and one that Dr. Woodley makes abundantly clear is the difference between a worldview based on God as owner/landlord and one based on God as creator/sustainer.

“Creation (what God did and continues to do daily) and the carrying out of shalom (what we are to do daily) are inextricably interwoven. We have the opportunity

³⁴ Kelly S. Johnson, *The Fear of Beggars: Stewardship and Poverty in Christian Ethics* (Grand Rapids: Eerdmans, 2007), 84.

³⁵ Ibid., 84.

³⁶ Santmire, “From Consumerism to Stewardship” 336.

each day to participate in God's shalom activities."³⁷ For Dr. Woodley stewardship is intimately connected to creation and its creator. This relationship is the dominant motif in his thinking and the dominant motif he ascribes to an indigenous worldview. There is no need for an economic description of the God-creation relationship within this worldview and therefore it is one from which the western church has much to learn.

One of Dr. Woodley's main concerns concerning the creator/creation relationship is about how scripture is used to mislead and misunderstand humanity's proper place within our context. As we have already seen many church leaders believe that the word steward itself is a strongly biblical one leading us to understand the economic relationship we have with the one who "owns it all." For Dr. Woodley, as well as many others, scripture offers an alternative or parallel narrative. As has already been stated the term steward can and often does lead to an understanding of creation as valuable only to the extent that it is useful to humanity. However, the biblical writers have a much broader view. The writer of Job for example implores his reader, "But ask the animals, and they will teach you; the birds of the air, and they will tell you; ask the plants of the earth, and they will teach you; and the fish of the sea will declare to you. Who among all these does not know that the hand of the LORD has done this? In his hand is the life of every living thing and the breath of every human being."³⁸ This passage seems strange to the ears of one with a worldview that precludes one from seeing in nature anything other than inanimate objects. If one's understanding of the relationship between humans and animals, birds, and fish is purely economic it would be easy to miss the reciprocal nature of the intimate connection that actually exists in this relationship. To those ears Job's

³⁷ Woodley *Shalom*, 43.

³⁸ Job 12:7-10 NRSV

proclamation would seem foolish. Dr. Woodley believes “To Job, the animals, birds, fish, and the earth are all alive.”³⁹ He goes on, lamenting that “So often people jump to accusations of animism or anthropomorphism when these kinds of scriptures are discussed, but according to the Scriptures, not only are the animals made from the same earthly clay as humans, but the same sacred breath in humans also resides in creation.”⁴⁰ These worldviews as well as these readings of scripture go a long way in defining understandings of stewardship or shalom as Dr. Woodley would say.

Dr. Woodley believes that the first discourse between God and creation is always present within creation itself. This reality leads him to believe in the power and wisdom, which has been present in times past, as well as its power in our own time. Dr. Woodley does not say “that we should all “live *in* the past,” that is to say, to live as if we are in another time, I am saying that we should not live as if the past has no bearing or reference to the here and now.”⁴¹ The Native American community offers a well of wisdom concerning everything to which current conceptions of stewardship aspire. Primary among these is a concept present in many if not most of Native American communities, the concept of the Harmony Way. “Among Native Americans the Harmony Way is not a philosophy; it is a whole way of being and doing life.”⁴² The difference being that while philosophies are often attainable by pure belief, the Harmony Way is far more tangible, much like, as Dr. Woodley points out, shalom.⁴³ Within many communities the symbol

³⁹ Woodley, *Shalom*, 50.

⁴⁰ Ibid., 50.

⁴¹ Woodley, *Shalom*, 76.

⁴² Woodley, *Shalom*, 87.

⁴³ Ibid., 87-8.

for the Harmony Way is visualized as a circle. Canadian Cree theologian Stan McKay describes its significance:

It is the symbol for the inclusive caring community, where individuals are respected and interdependence is recognized. In the wider perspective it symbolizes the natural order of creation in which human beings are part of the whole circle of life. Aboriginal spiritual teachers speak of the re-establishment of the balance between human beings and the whole of creation, as a mending of the hoop.⁴⁴

This symbol and understanding of balance and relationship is inherently connected to a way of life that recognizes God as creator first and foremost. The importance of harmony and balance is a wholly different way of engaging environmental imbalance. Dr. Woodley believes “the list of tribes whose overall life-ways promote a similar view of harmony could possibly include every North American Native tribal group.”⁴⁵

It is vital in our rethinking of “stewardship” to engage in this shift from God as owner to creator. One very important byproduct of this shift is a renewal of the relationship between humanity and creation. This relationship is in some part the balance Dr. Woodley describes. The myths and stories of our past can be extremely helpful in teaching us ways we might endeavor to restore the balance. For example, “The Journey of to become a Shaman”⁴⁶ explores the ecological-social relationships and the changes that occur in it over time.

Listen!

⁴⁴ James Treat, *Native and Christian: Indigenous Voices on Religious Identity in the United States and Canada*, 55.

⁴⁵ Woodley, *Shalom*, 89.

⁴⁶ The complete text and analysis of this myth is found in Darrell Addison Posey, “The Journey of a Kayapo Shaman,” *Journal of Latin American Indian Literature* 6, no. 3 (1982): 13-19.

Those who become sick from strong fevers lie in death's position; they lie as though they are dead. The truly great ones, the truly strong person who is a *wayanga*, shows the sick how to leave their bodies. They leave through their insides. They pass through their insides and come to be in the form of a stone. Their bodies lie as in death, but beyond they are then transformed into an armadillo. As an armadillo, they assume good, strong health and they pass through the other side, over there (pointing to the east).

Then they become a bat and fly—ko, ko, ko, ko, ko ... (the noise of flying).

Then they go further beyond in the form of a dove. They fly like a dove—ku, ku, ku, ku ... (the sound of a dove's flight). They join the *wayangas* and all go together.

"Where will we go? What is the way? Go to the east, way over there." Ku, ku, ku, ku...

And way over there is a spider's web... Some go round and round near the spider's web and they just sit permanently. The true and ancient shamans must teach them how to fly through the web. But those who have not been shown how, try to break through the web and the web grabs their wings thusly (the narrator wraps his arms around his shoulders). They just hang in the web and die. Their bodies are carried by their relatives and are buried without waiting, for the spider's web has entangled them, wrapped up their wings, and they are dead.

Those who have been caused to know themselves, however, go round the spider web. They sit on the mountain seat of the shamans and sing like the dove—tu, tu, tu, tu...

They acquire the knowledge of the ancestors. They speak to the spirits of the animals and of their ancestors. They know (all). They then return (to their bodies). They return to their homes. They enter and they breathe.

And the others say: "He arrived! He arrived! He arrived! He arrived!" And the women all wail: "ayayikakraykyerekune."

(And the shaman says) "Do not bury me, I am still alive. I am a *wayanga*.

I am now one who can cure: I am the one who smokes the powerful pipe. I know how to go through my body and under my head. I am a *wayanga*."

This story illustrates the important work that shamans do in the Kayapo community to learn the secrets of the animals, armadillos, bats, doves, and to share this with the community. "The basis of this work is to maintain a balance between animal energies and human energies. Eating the meat of, coming in contact with, or even dreaming about animals can cause an imbalance in these energies...the Kayapo respect both plants and

animals, since their energies are keys to the health of their own society.⁴⁷ The balance of these energies is of great concern to the Kayapo. Recently many of the Shamans in the community have been troubled by ethnobotanical research in their area. Their concern was for the many plants that were taken pressed and dried for study. They were concerned for the plants' energies. As the quantities of plants taken grew the *wayanga* asked "Has anyone ever consulted the plants?"⁴⁸

The Kayapo offer an understanding of shalom and of a harmony way and while it is difficult for western observers to understand it is imperative that this vision be seen by all. In the Gospel of Matthew Jesus claimed that wherever two or three are gathered he would be there. I have always understood this text to be concerned with church attendance. In light of the wisdom of the Kayapo I am inclined to not only remove this text from the confinement of a church building but also from the confinement of humanity. The energies that are present and mingling between birds, fish, beasts, and humans must invite God's presence. And this presence is the small part of shalom that we feel and can work for here and now.

This interpretation of Holy Scripture might seem to some to be an unhelpful or even heretical stretch. However, I believe that this stretching, and perhaps a bit more stretching, is necessary to shake the hold, which certain western worldviews hold over humanity, particularly regarding their view of creation. It has been the project theology to create a system containing God, humanity, and nature. For the purposes of many conclusions which theology sought it was necessary to ascribe separateness to these three

⁴⁷ Darrell Addison Posey, "Intellectual Property Rights and the Sacred Balance: Some Spiritual Consequences from the Commercialization of Traditional Resources, in *Indigenous Traditions and Ecology*, 7-8.

⁴⁸ *Ibid.*, 9.

categories. This distinction presents itself in the stewardship constructs. For modern understandings of stewardship to work God operates as the distant landlord separate from humanity who acts as the steward and keeper of a separate nature, which exists to serve humanity's needs. The separateness of God, humans, and nature is crucial to a stewardship model. Most likely any new construction concerning the relationship both God and humanity have to nature would necessitate an undoing of this separateness.

Perhaps not the first, but certainly one of the earliest, reasons for the distinction of God, humanity and nature concerned a theological battle with some who believed in one of many types of pantheism. In one way or another pantheism describes the belief that God *is* everything and everything *is* God. I do not find this belief helpful and it seems to me as fraught with complications as stewardship is as well as being unhelpful for the purposes of this paper. *Panentheism*, however, seems to me to offer many helpful opportunities and succeeds where other thoughts have failed.

Roughly described panentheism is the thought that everything is *in* God. Stewardship constructs provide an example of western theology's desire to maintain and focus on distinctions between creation and God, pantheism seeks to unify all things and focus on the oneness, destroying any distinctions, panentheism seeks to focus on the relationships between God and creation, acknowledging the uniqueness while highlighting the relatedness. Many of the authors and thinkers described here have recommended a move away from stewardship toward fresh constructs. It is my belief that panentheism can be very helpful in this pursuit.

While panentheism is mostly defined as the belief that everything is *in* God for the purposes of reimagining stewardship it seems to me that it could be better described

as everything *with* God and God *with* everything. God's presence, rather than the separateness previously described, would radically change the relationship between humanity and nature. Instead of the separateness stewardship describes, God's presence in the midst of this relationship creates and mutually nurturing connection, what Dr. Woodley would describe as shalom.

There have been and are many theological and philosophical concerns expressed which prevented panentheism or any concepts like it from being more widely adopted in the west. That is not the case in other societies and cultures, particularly indigenous communities. The relatedness or connectedness of all things is a concept widely held and believed within Native American groups. The most popular of these ideas is the Sioux notion of *mitakuye oyasin*.

A translation of *mitakuye oyasin* would better read: "For all the above me and below me and around me things." That is, for all my relations...it is this understanding of inter-relatedness, of balance and mutual respect of the different species in the world, that characterizes what we might call Indian people's greatest gift to Amer-Europeans and to the Amer-European understanding of creation at this time of world ecological crisis.⁴⁹

This Sioux concept captures the spirit of Panentheism and the hope contained therein. Dr. Woodley recognizes the potential for learning and growth from this concept pointing out the "possibility of once again becoming the family we already are."⁵⁰ This shift in thinking away from separateness towards relatedness offers hope as well as a path forward. When we recognize "humanity's dependence upon the earth, we allow ourselves renewed opportunities for sustaining our planet and for finding fresh prospects for

⁴⁹ Clara Sue Kidwell, Homer Noley, and George E. Tinker, *A Native American Theology* 51. Quoted in Randy Woodley, *Shalom and the Community of Creation* 81.

⁵⁰ Woodley, *Shalom* 81

developing food, water, and renewable energy.”⁵¹ While the history of western thought is riddled with alternative concepts such as panenthesim, the taboo nature of many of them leaves them woefully inadequate to form a new and complete alternative to stewardship, which now seems an absolute necessity. However, as the voices of those non-western groups become louder the basis for new constructs and language will become clear.

The concept of stewardship must be replaced if humanity is to take a major role in addressing current ecological crises. This is particularly vital for the church, which has formed so many of the philosophical basis for human-centric bias pertaining to human-creation relationships. Humanity must reexamine its role and relationship to nature. This new idea must be informed by the voices of those who have been ignored in the past. It must be concerned with describing the way all things are related rather than separate. And finally religious folk must emphasize God as creator to a much larger degree. Perhaps this new concept could be described as co-sustenance, where God, humanity, and nature all act as co-sustainers.

⁵¹ Ibid., 81

Chapter 2

Stewardship and Gaia

The scientific community is rich with resources that offer communities of faith substitute narratives and motifs by which to explore the relationship between humanity and the rest of the created order, particularly when searching for alternatives to ideas of dominion and stewardship. Perhaps none have been as imaginative or exciting as the theory put forward by James Lovelock entitled the Gaia hypothesis.

At the height of the Cold War's space race Dr. Lovelock was engaged by NASA scientists to assist in the pursuit of proofs of life on Mars. This endeavor led Dr. Lovelock to ask several vital questions, particularly "How can we be sure that the Martian way of life, if any will reveal itself to tests based on Earth's life style."⁵² This single question might be seen as the basis for the next forty years of Lovelock's research and findings. Simply put Dr. Lovelock came to believe that the entire biota system was responsible for the stabilization of the Earth's atmosphere and could manipulate its environment to create optimal conditions for the flourishing of life. He posited, "organisms and their material environment evolve as a single coupled system from which emerges the sustained self-regulation of climate and chemistry at a habitable state for whatever is the current biota."⁵³

Prior to Dr. Lovelock's assertion:

...most geochemists regarded the atmosphere as an end-product of planetary outgassing and held that subsequent reactions by abiological processes had determined its present state. Oxygen, for example, was thought to come solely from the breakdown of water vapour and the escape of hydrogen into space, leaving an excess of oxygen behind. Life

⁵² James E. Lovelock, *Gaia: A New Look at Life on Earth*, 2.

⁵³ James E. Lovelock, The Living Earth. *Nature* 426: 769-70.

merely borrowed gases from the atmosphere and returned them unchanged.⁵⁴

Contrary to this Lovelock developed a contrasting view, which “required an atmosphere which was a dynamic extension of the biosphere itself.”⁵⁵ As such, in Lovelock’s view the entirety of living matter, from bears to bacteria, constituted a single living entity which was capable of manipulating the entire atmosphere and more importantly the power and influence of this whole was far beyond that of its constituent parts.⁵⁶ To this end Lovelock’s proposal is a radical *reshaping* of evolutionary theory rather than an undoing of it. At its heart the Gaia hypothesis claims “that organisms do not merely adapt to the environmental conditions they find themselves in but actively shape them.”⁵⁷ As opposed to the geological theories concerning the Earth’s ability to sustain life Gaian believers assert the importance of the biological influence not over and against but alongside the geological ones, much like Native traditional knowledge, which says, we shape and are shaped by the land. The difference might seem miniscule but it is clear “that a planet with life becomes more akin to a biological composition than a geophysical body: biological and geological forces merge, and a new kind of entity—a geophysiology—is born.”⁵⁸

The influence that life has on its environment becomes greater as it spreads and multiplies. The effects while at first are limited to single ecosystems quickly become global in scale. Gaian thought builds on the understanding of what are known as feedback loops in nature. These feedbacks are occurring constantly and act as a sort of cause and

⁵⁴ Lovelock, *Gaia*, 7.

⁵⁵ Ibid., 7.

⁵⁶ Lovelock, *Gaia*, 9.

⁵⁷ Eileen Crist, “Intimations of Gaia” in *Gaia in Turmoil*, 315.

⁵⁸ Ibid., 315.

effect for all living organisms. Changes to an environment that are detrimental to those organisms that produced them are often self-limiting while changes that are more beneficial often prove to encourage those organisms that caused them, other things being equal. In light of this Gaian logic claims “when organisms drive environmental variables toward uninhabitable conditions, the growth of those organisms is likely to be eventually suppressed while organisms that enhance habitability, especially for themselves, are selected for.”⁵⁹ If this logic holds true as you scale up to the level of the biosphere, considering the multiplicities of environment altering organisms, it is perceivable that environment enhancing life, as a complex and interchanging whole, contributes to the overarching hospitableness of planet earth and all organisms therein.⁶⁰

Early in its life many proponents of the Gaia theory used the metaphor of “superorganism” for planet Earth. This was in large part due to the belief that the biota as a whole shaped the conditions for life on the planet to be most suitable for life. Based on this metaphor many began to compare the biosphere to a beehive, whose conditions including temperature and humidity are closely monitored and altered to be hospitable for bees by the bees themselves. As such for Gaians the whole biota is responsible for the shaping of the hospitability of the environment for life. While this metaphor was only briefly used it offers one key insight that Gaian thought offers to evolutionary theory: life, once in progress, has always evolved within the setting created by life. To put it another way:

All life forms are evolved expressions of an ancestral form,
and that they may participate in co-creating and sustaining
a particular range of environmental conditions—within

⁵⁹ Ibid., 316.

⁶⁰ Ibid., 316-17.

which they survive and often flourish—seems intuitively probable, even if a scientific specification of how exactly this emerges is, now or perennially, elusive.⁶¹

Based on fossil records it has been shown that from life's beginning on this planet, 3.8 billion years ago, to present time the climate of our planet has changed very little. However, over the same period it is also clear that the energy output of our sun, the surface of Earth, and the composition of Earth's atmosphere have all varied significantly. A study of the chemical composition of our atmosphere "bears no relation to the expectations of steady-state chemical equilibrium. The presence of methane, nitrous oxide, and nitrogen in our atmosphere represents violation of the rules of chemistry to be measured in tens of orders of magnitude."⁶² On a scale this large a disequilibria such as this would suggest that our atmosphere is not just a biological product but also a biological construction. "The climate and the chemical properties of Earth now and throughout its history seem always to have been optimal for life."⁶³ The likelihood of this being a chance occurrence is unfathomable.⁶⁴

Many Gaian scientists believe that no event more crucially illustrates Gaia's capacity to self-regulate in response to external forces than that of Earth's maintenance of surface temperatures given the Sun's 25 percent increase in luminosity from the Archean to present times.⁶⁵ Modern climatic theory would claim that due to this low energy output from the Sun the Earth should have been more of a frozen planet than one on the verge of creating new life. If in fact you could turn down the Sun's luminosity 25% the Earth

⁶¹ Ibid., 318.

⁶² Lovelock, *Gaia*, 10.

⁶³ Ibid., 10.

⁶⁴ Ibid., 10.

⁶⁵ Eileen Crist and H. Bruce Rinker, One Grand Organic Whole in *Gaia in Turmoil*, 6.

would cool so much that the oceans would freeze.⁶⁶ However, records of certain sedimentary rocks that could only have been formed by flowing water on the surface of the planet have been dated as old as 3.8 billion years ago. Along with these records there are also fossil remains of bacteria from more than 3 billion years ago. With all of these records in conjunction with each other it is highly likely that at least a portion of the planet was able to sustain both life and liquid water with 25% less energy output from the Sun.⁶⁷ Conversely, without the Earth's staggering ability to dispense CO₂ from the atmosphere it is almost certain that the global temperature of Earth would be some 35 degrees hotter today.⁶⁸

In his earliest work Lovelock's assertions were seen as nothing but an extreme hypothesis. More recently however it has grown into a more respected theory which when understood properly offers an alternative to the pessimistic understanding of nature as an unwieldy force needing subduing by humans. The most prominent mechanism with regards to tuning Earth's temperature has been the slow process of removing the greenhouse gas CO₂. The process of this removal is a clear indication of the strategic partnership between living and nonliving forces, the consequences of which has yielded a scenario favorable to life overall.⁶⁹

Carbon dioxide is removed by rainfall that chemically reacts on land with calcium-silicate rock to form the soluble compound calcium bicarbonate, eventually flowing seaward. The chemical reaction is known as rock-weathering—or, in Gaian terms, biologically enhanced rock weathering

⁶⁶ Andrew Watson. "Gaia" in *New Scientist*. July 1991, Vol. 48, p. 2.

⁶⁷ Stephen H. Schneider. "Debating Gaia" in *Environment*. May90, Vol. 32 Issue 4, p. 7.

⁶⁸ Crist, *Intimations of Gaia*, 317.

⁶⁹ Lovelock, *Gaia*, 12.

because the reaction is amplified, by several orders of magnitude, by soil (a biological phenomenon), plants, and other organisms.⁷⁰

This, however, is only one small part of the CO₂ reduction story. When the carbon molecules reach the seas, organisms called coccolithophores and other marine creatures, which they use in the construction of their exoskeletons, consume them. Upon their death these organisms' exoskeletons fall to the oceans floors. Through geological processes a portion of that carbon ultimately returns to the atmosphere as CO₂. However the net result of this process over time results in the reduction of greenhouse gases and ultimately balances the increasing output of the sun's energy.⁷¹ This story concerning a small part of Earth's beautiful and intricate interplay of sun rays, soil, rocks, rain, rivers, oceans, micro-organisms, and marine life helps to illustrate just how integral life is when it comes to shaping our environment.

A second, and somewhat lesser, example of Gaian assistance is that of repair. Proponents suggest that the relative lack of peacefulness in the natural order requires the regulation that Gaia offers. One such example is the regular bombardment of the Earth by fragments of rocks from space. While few actually make it to the Earth's surface there are some big enough to survive the trip through Earth's atmosphere. Scientist's estimate that once every 100 million years a planetesimal hits the Earth. When this happens dust and gas is shot into the atmosphere, as high as 15 kilometers, and blocks the Sun around most of the planet, which can wipe out large populations of species.⁷² It is estimated that the Earth has been hit several times by planetesimals, the most recent of which is believed to

⁷⁰ Crist and Rinker, *One Grand Organic Whole*, 6.

⁷¹ Pieter Westbroek, *Life as a Geological Force: Dynamics of the Earth*,

⁷² Watson, "Gaia" 2.

have wiped out the dinosaurs roughly 65 million years ago. However, while often-entire species can be made extinct by these cataclysmic events life survives. In particular, after the extinction of the dinosaurs, on a geological time scale, new species appeared very quickly and replaced those who had become extinct.⁷³ This has led many supporters of Gaian theory to argue for the hypothesis based on these facts from Earth's history.

They say it shows the joint system of life and the environment on Earth is both robust and able to repair itself quickly. Though biological control of the global environment may break down immediately after such a disaster, life rapidly regains control after these events and begins to regulate again.⁷⁴

The Gaia hypothesis underwent a long evolutionary process before it became what it is today. Initially it was a highly criticized hypothesis, particularly in the scientific community. At the time of Lovelock's initial writings on this topic the scientific community had been operating on 400 year old assumptions that the universe was most certainly mechanistic and that descriptions of its actions could not be poetic in the least. Lovelock's assertions broke both of these rules, bringing into the fold a more animistic option while drawing, at least linguistically, on more ancient descriptions of Earth. Eventually very good scientific work was done to lead many into a more respectful relationship with Lovelock's theory, but he definitely introduced new parameters, while stretching the old ones, into the overall discussion.⁷⁵

In his earliest writings Lovelock proclaimed quite boldly that the biota is very much in control of ordering and keeping the planets conditions "habitable, stable, and

⁷³ Ibid., 2.

⁷⁴ Ibid., 2-3.

⁷⁵ Crist and Rinker, One Grand Organic Whole, 7.

even optimal for all life.”⁷⁶ This early definition became known as strong Gaia, and while it is still articulated in some nonscientific arenas, it is almost universally downplayed in “scientific literature for both conceptual and empirical reasons.”⁷⁷ This earliest articulation received its strongest criticism from within the neo-Darwinian evolutionary camps.⁷⁸ Roughly, their contention was that notions of “atmospheric homeostasis by and for the biosphere”⁷⁹ might imply teleology, or a guided hope or endgame, which would imply very much conscious thoughts and motivations by non-conscious beings. A very convincing response was given to this concern by a computer model experiment by Lovelock, along with Andrew Watson, carried out called Daisyworld, which showed that “self-regulation can occur without teleology in a feedback system of life coupled to its nonliving environment.”⁸⁰

Daisyworld is a computer model that contains a hypothetical planet much like our own in a galaxy much like our own orbiting a star much like our own. On this hypothetical planet there are two species of plants, black daisies and white daisies. The black daisies absorb sunlight and as such flourish in the earlier evolutionary times when the sun’s rays are lesser. The white daisies reflect the sunlight and consequently flourish as the sun’s rays become stronger. Within the model the average surface temperature without the daisies would grow linearly as the sun became hotter all-else being equal.

⁷⁶ Ibid., 7.

⁷⁷ Ibid., 7.

⁷⁸ See R. Dawkins, *The Extended Phenotype*. Oxford: Oxford University Press, 1983. and W.F. Doolittle, Is Nature really motherly? *CoEvolution Quarterly* (spring): 58-63, 1981.

⁷⁹ J.E. Lovelock and L.M. Margulis. “Atmospheric homeostasis by and for the biosphere: the Gaia Hypothesis” in *Tellus* 26:2-10, 1974.

⁸⁰ Timothy M. Lenton and Hywel T.P. Williams, “Gaia and Evolution” in *Gaia in Turmoil*

However, in the Daisyworld model the surface temperature was constant due to the interplay of the biota of the planet, with the black daisies thriving in the beginning followed by a period of a balanced mixing and ending with thriving white daisies.⁸¹ This model was wholly unique in furthering the Gaian cause.

The creation of Daisyworld *in silico* was a landmark moment in Gaian science. Its power did not lie in modeling the Earth but in representing conceptually and mathematically that a living mechanism on a planet—provided its global effects reinforce the benefits of its local effects—can literally tune a planetary variable such as temperature in an automatic, nondeliberate, and morally neutral (requiring neither collaboration nor competition) manner.⁸²

This Gaian perspective uniquely harmonizes with the already well-received Darwinian approach. The Daisyworld convincingly shows how the biota, not only evolves individually in a competitive way, but also has “a global impact as a consequence of its abundant products and processes of metabolism, nutrition, respiration, and behavior.”⁸³ These effects ultimately lead to an Earth in a state much different from one in which no life occurs.

While the Daisyworld model offers a strong response to the accusations of teleology within the Gaia hypothesis it has not succeeded in completely ejecting this criticism from the conversation. As the idea of Gaia has developed it has become crucial, from a scientific perspective, to show how Gaia operates without a “mind” or intention of its own. Gaian proponents response to teleological implications have centered on the central Gaian understanding of feedbacks. As such Gaian scientists have argued that organisms evolutions do not occur “*in order to* control their physical and chemical

⁸¹ A. Watson and J. Lovelock, “Biological homeostasis of the global environment: The parable of Daisyworld. *Tellus* 1983 35b: 284-89.

⁸² Crist and Rinker. “One Grand Organic Whole”, 9.

⁸³ *Ibid.*, 9-10.

environments.”⁸⁴ These by-products are inevitable and can end up having both beneficial and negative consequences. It is merely Gaian belief that the more beneficial consequences will be longer lasting. The evolution of organisms creates effects that feed back on the organisms themselves and any other organisms affected by these feedbacks either adapt or perish. Here it is beneficial to revisit the Earth’s variable surface temperature. Life has not so much contributed to the creation of a habitable global climate but it has contributed creating a global climate that was then inhabited by organisms, which were able to evolve within those very specific parameters. These very organisms evolved in a setting at least partly driven by the lives and effects of their ancestors. This very maintenance, regardless of whether it is Gaia’s self-regulation, is very much a self-reinforcing occurrence. Life, in fact, keeps itself going. This feedback system has led many Gaians to point out the redundancy of the idea of teleology. The sustaining capabilities of life do not need to be collaborative or purposeful in order for environmental feedbacks to be beneficial. Darwin himself recognized these feedbacks in the case of earthworms.⁸⁵ He observed that through the process of passing through, digesting and excreting earthworms are creating and enriching the very soil in which their food, plants, grow. It is not necessary to demonstrate teleological intent or collaboration to understand the obvious benefits of this process. The earthworm is being neither selfish nor collaborative in this most basic of life functions.⁸⁶

⁸⁴ Crist. “Intimations of Gaia”, 318

⁸⁵ Charles Darwin, *The Formation of Vegetable Mould, Through the Actions of Worms with Observations on Their Habits*. Quoted in Eileen Crist, “Intimations of Gaia”, 319.

⁸⁶ Crist, “Intimations of Gaia”, 319.

The Gaian perspective has never strayed from central Darwinian claims that life adapts according to natural selection. However, much of the criticisms of Gaia from Darwinian perspectives have come from a branch, Neo-Darwinianism that, from a Gaian perspective, views natural selection too one-sidedly. This oversight has led to an overarching belief in the passivity of living organisms, which feeds strongly into a dominion stewardship myth, in which they are little more than powerless bystanders just surviving in an environment that is concerned little with whether they live or die. One such critic, James Kirchner, claims, “the environment and its life forms will always *appear* well suited to each other, whether or not the environment is in any sense adjusted to life’s requirements.”⁸⁷ For Kirchner natural selection is clear, it is only those organisms that fit well into their natural conditions that are able to persist. This criticism hinges on what some believe to be one of the strongest early criticisms of Gaia, that of circular reasoning in the proving of Gaia. In 1988 the American Geophysical Union held a conference entirely dedicated to the Gaia theory, at which James Kirchner was one of the presenters. It was a massive gathering of experts from every possible scientific field and the majority of the participants attended in order to disprove and discredit this new and floundering theory once and for all. It was even dubbed by some to be “the Great Gaia Showdown.”⁸⁸ Among the many challenges presented was the idea of circular reasoning as a pivotal flaw in Gaia thinking. The challenge proposed “Lovelock prove[ed] the existence of Gaia by the truth of an environment hospitable for life, and the truth of an hospitable

⁸⁷ James Kirchner, “The Gaia Hypothesis: Fact, Theory, and Wishful Thinking”, *Climatic Change* 52: 392, 2002.

⁸⁸ Lawrence E. Joseph, *Gaia: the Growth of an Idea*, 74.

environment by the existence of Gaia.”⁸⁹ Lovelock responded to this criticism quite easily it would seem. He pointed out that given the reality of the planet’s surface temperature and the stability over such a vast period of time the proof is in fact not circular. Lovelock believed, and believes, that the existence of Gaia is proved “by the truth that without active and continuous intervention over the past 3.5 billion years an environment hospitable to life would not exist.”⁹⁰ This retort seems straightforward enough and appears to have answered this criticism appropriately. However, a further question arises from this point that will hopefully bear much fruit when looking at further ethical or even theological implications of a scientific theory like Gaia. Within any new scientific theory presented the reality of proof will always rear its head and in the minds of many circular reasoning “is often necessary to show that the theory is legitimate.”⁹¹

Lovelock himself raises this reality in a somewhat revealing assertion:

I don’t really care whether the Gaia Hypothesis is right or wrong, so much as whether it causes one to ask valuable questions. This is where science has really gone off the rails in recent years. Science is never right or wrong absolutely. This is a dreadful misconception. It’s always making guesses and trying to refine them.⁹²

The search for truth about how and why our planet operates the way it does rather than another way is full of both good and bad guesses made by well-intentioned intelligent people followed by years of work determining the legitimacy of the guesses made. This is true of the scientific community, the ethics community, and the theological community. It behooves us all to encourage this guesswork.

⁸⁹ Ibid., 77.

⁹⁰ Ibid., 78.

⁹¹ Ibid., 79.

⁹² Ibid., 79. This passage is taken from one of Lovelock’s presentations at the AGU conference.

Another important criticism comes from Richard Dawkins who claims “The Gaia theory thrives on an innate desire, mostly among laypeople, to believe that evolution works for the good of all. Profoundly erroneous.”⁹³ Gaian scientists respond to this criticism by pointing out that the variables that bring about life are far too inextricably linked in the biological world, as a product of or largely modified by it. As such, “it may make more sense to regard the environment as life’s extended phenotype, than to conceptualize the environment as a straightforward independent variable that molds life.”⁹⁴ Stephen Clark responds by showing the logical side of a Gaian theory of evolution, “Creatures that do not mind about the health of their environment leave few descendents, for their health and survival depends upon the health of the whole of which they are a part.”⁹⁵ Many believe that resistances to Lovelock’s reformulation of evolution are more ideological than scientific, “whether that ideological attachment is rooted in self-interest or in attachment to the idea that scientific description must be hard and unpleasant in order to be true.”⁹⁶

In the concluding chapter of *Gaia in Turmoil* Eileen Crist describes the essence of the biosphere as three interconnected qualities: diversity, complexity, and abundance. For her these three qualities are the very tendencies of life.⁹⁷ Unfortunately these qualities are under attack by the lifestyles that have been created by humanity. The extinction of species and the ever homogenization of crops and livestock are destroying the diversity

⁹³ Quoted in Joseph, *Gaia*, p. 56.

⁹⁴ Crist and Rinker, “One Grand Organic Whole”, 10-11.

⁹⁵ Stephen R.L. Clark, 'Gaia and the Forms of Life', in Robert Elliot and Aaron Gare (eds.), *Environmental Philosophy* (University Park: Pennsylvania State Press, 1983), pp. 182-97 (185).

⁹⁶ Grant Potts, “Imagining Gaia: Perspectives and Prospects on Gaia, Science and Religion”, *Ecotheology* 8.1 2003, 34.

⁹⁷ Crist. “Intimations of Gaia”, 328.

and complexity life has and does seek to create. And the destruction of environment undermines the very abundance that has sustained the evolutionary cycles. Gaia offers a new way of understanding our planet and insights we gain from listening will have far reaching implications, not just for science but for ethics, theology and our very ways of life.

Much like the Sioux concept *mitakuye oyasin*, the Gaia theory can help to form the basis for a non-stewardship approach to the environmental concerns. For people of faith who are seeking alternatives to stewardship models Gaia can prove to be a fruitful scientifically based argument. Theologian Richard Bauckham believes this to be true. “If James Lovelock is right about Gaia, I see no difficulty at all in seeing the self-regulating Earth system as part of the order of creation within which humans must live. *Of course* it can do the job better than we can: God has designed it to do so.”⁹⁸ Gaia recognizes not only the interrelatedness of all things but also the mutual dependence. This dependence forces those who continue to adhere to a strict stewardship model to humble themselves in light of the work of other life forms in sustaining their lives. Clare Palmer acknowledges this reality. “It would be foolish to claim that humans are not the dominant species at present existing on the planet. However, this is not evidence that humanity has been in some theological or even philosophical sense ‘set apart’ as manager or governor, God’s representative on earth.”⁹⁹ She defends this claim by pointing out a very Gaian fact namely that humanity has less regulatory effect on the world’s environment than deep-sea

⁹⁸ Richard Bauckham *The Bible and Ecology: Rediscovering the Community of Creation*, 7.

⁹⁹ Clare Palmer, “Stewardship: A Case Study in Environmental Ethics.” in *Environmental Stewardship: Critical Perspectives, Past and Present* ed. By R.J. Berry, 71.

algae. She continues suggesting, “that our control is only partial and that we must see it in the perspective of the many things we do not know and perhaps will never know. It is surely the case that when humans admit their partial knowledge they will take their responsibilities more, rather than less, seriously.”¹⁰⁰ This is the lesson, which Gaia can help bring us to, particularly concerning human agency. Gaia does not seek to undermine the effect which humanity must recognize they have, rather it can enlighten humanity to the many cases of effect and regulation to which we are woefully ignorant.

In the opening chapter of this paper we discussed the theological significance of a co-sustenance model based on the relationship of God, humanity, and nature rather than their separateness. An important aspect of this switch is a proper understanding of these three parts. For centuries, both theologically and philosophically, each was described and defined in large part by its separateness from the other two. If a new model of co-sustenance is to be articulated the descriptions and definitions must be altered accordingly. The Gaia theory is vital to an understanding of nature, primarily because the Gaia theory articulates nature differently than other scientific theories of the past have.

Dr. Nicola Hoggard-Creegan recognizes the lessons Gaia can teach us concerning stewardship and co-sustenance. For Dr. Creegan the concepts of dominion and humanity have given humanity a false illusion that they alone are in control, “that at any stage and at any point more human ingenuity and more human control will solve the problems we now face.”¹⁰¹ Dr. Creegan sees this as almost a grammatical mistake emitting from the grammar of words like steward and dominion. In contrast to this Dr. Creegan believes

¹⁰⁰ Ibid., 72

¹⁰¹ Nicola Hoggard-Creegan, “Gaia and God-Models and Metaphors” in *Stimulus* Vol. 18 No. 4 November 2010 50.

Gaia offers alternatives helping “us to see what is only hinted at in the early chapter of Genesis, that a higher level of complexity rules, and will protect life even if it means judgment on humanity as a whole.”¹⁰² Dr. Creegan’s conclusion is that Gaia raises many urgent questions that are difficult to answer. However, one conclusion is apropos to discussions of co-sustenance: “Gaia gives us hints of God, for the existence of homeostasis at a level beyond the human being is consistent with God’s providential love and care of all life.”¹⁰³ This is the same lesson learned from the Sioux and from many other places, Gaia is speaking to the truth present in many places.

In his article concerning different perspectives of Gaia Grant Potts highlights the work of theologian Anne Primavesi. Primavesi articulates an important idea she developed out of the Gaia theory, namely autopoiesis. “The term [autopoiesis] refers to the dynamic, self-producing and self-maintaining network of production processes within live organisms.”¹⁰⁴ Applying this term to humanity she suggests that humans view themselves “as metabolic systems, and are, from this perspective, networks of chemical and energetic trans- formations.”¹⁰⁵ Potts summarizes the key distinction of Primavesi’s thought by pointing out that “an organism’s ability to produce a membranous boundary that does not completely segment the organism from the environment but rather limits the chemical and energetic transformations that maintain distinction”¹⁰⁶ allows the autopoietic relationship to occur. This very relationship and the “membranous boundary” of the space between is an apt description of a Gaian understanding of the God, human,

¹⁰² Ibid., 50.

¹⁰³ Ibid., 50.

¹⁰⁴ Anne Primavesi, *Sacred Gaia* (London: Routledge, 2000), p. 2.

¹⁰⁵ Ibid., 2.

¹⁰⁶ Grant Potts, “Imagining Gaia: Perspectives and Prospects on Gaia, Science and Religion”, *Ecotheology* 8.1 2003, 36.

nature relationship. There is certainly a distinction of these three but it cannot be articulated without emphasizing the relationship as well. Primavesi observes:

*As observers, we distinguish two structures that can be considered operationally independent of each other: living being and environment. But between them there is, at the same time, a necessary structural congruence in which the evolution of the organism and environment merges.*¹⁰⁷

The distinguishing of the structures is vital, but equally important is the recognition of the congruence of the structures' relationship. For Gaia as well as for Primavesi these observations affect the view of evolutionary theory, for the purposes of this paper it is important to point out the emphasis on cooperation rather than competition, relationship rather than separateness. For her own part Primavesi has largely rejected a theory of natural selection opting for the term "natural drift" instead. This term "accentuates the fact that, in an autopoietic system, evolution is not a goal-seeking process. Its causes are accidental, in the classic sense of contingent rather than intended to produce a certain result."¹⁰⁸ Potts highlights the importance of this move pointing out how "this radically undermines a narrative that places humanity as the end of a grand striving through evolution, and leads Primavesi to share deep ecology's commitment to extending dignity and freedom to the non-human as well as the human world."¹⁰⁹ This commitment acknowledges the responsibility of cooperation not only from human to human but also human to non-human.

The Gaia theory has many and varied implications for a theology of co-sustenance. Primarily Gaia offers a space for science and religion to continue the

¹⁰⁷ Primavesi, *Sacred Gaia*, 3.

¹⁰⁸ Primavesi, *Sacred Gaia*, 47.

¹⁰⁹ Potts, "Imagining Gaia", 36-7.

conversation amidst ever-changing language and concepts. Primavesi believes this when she claims that theology itself must become an earth science. “In this, she presents a call not merely for a conversation *between* science and religion, but a conversation in which science and religion mutually contribute to new understanding.”¹¹⁰

¹¹⁰ Ibid., 43-4

Chapter 3

Ethical Implications of Co-Sustenance and The Gaia Hypothesis

While models of stewardship teach a truncated version of individual responses to environmental degradation, i.e. reduce, reuse, recycle, Gaia helps us to see that there are larger implications.

Perhaps the ultimate value of Gaia lies in the fact that it prompts us to envisage our world in a novel, challenging, and inspirational way, as the burgeoning literature around it attests. The question as to whether or not the theory is "true" is, in the end, secondary to whether it helps us link justice and peace to the integrity of all creation. Gaia, I believe, can help us forge this still fragile but necessary nexus, as long as we remain aware of both its evocative power and its grave limitations.¹¹¹

The Gaia hypothesis was first introduced and has been defended to present time by its authors as a scientific theory; one that James Lovelock believes has been sufficiently defended by means of the scientific method. Although many might disagree for any number of reasons, Lovelock's hypothesis, if nothing else, has proven its staying power over the previous decades. As such, the theory has been co-opted by philosophers, environmentalists, theologians, and many others who endlessly appropriate its implications. To this end the Gaia hypothesis has become an important aspect of current Environmental ethics circles and debates. Before fully diving into that world it is important to place Gaia's progenitor into the story.

Amongst the many who flocked to Lovelock's theory were environmentalists who believed they had found natural allies to their efforts. Neither James Lovelock nor Lynn Margulis proved to be very good or helpful bedfellows to the ecological movement. A

¹¹¹ Stephen B. Scharper, "The Gaia Hypothesis: Implications for a Christian Political Theology of the Environment" in *Cross Currents*. Summer 1994, 219.

major reason for this “distancing lies in the minimal place the human holds in the overall Gaia theory.” Lovelock and Margulis believed, and believe, that Gaia’s self-regulation moves and operates independently of human interests.¹¹² Gaia, as Lovelock perceived it, would not privilege one being over all others. Lovelock himself writes rather bluntly about many key issues facing the environment today. He addresses pollution not as the destruction of Gaia but rather he contends that “the very concept of pollution is anthropocentric and it may even be irrelevant in the Gaian context.”¹¹³ He points to the fact that “pollution” has been an effect of evolution throughout the entirety of life on earth. Early in the biosphere, Lovelock contends, pollution existed as the first entities to successfully use zinc produced mercury as a byproduct and shortly after Gaia produced microorganisms, which broke down the mercury.¹¹⁴ In response to the appearance of his lack of concern for humanity he claimed his work “is not primarily about people and livestock and pets; it is about the biosphere and the magic of Mother Earth”¹¹⁵ Because of his neglect of humanity Lovelock also failed to recognize the socio-economic effects of pollution. In response to the DDT and pesticide controversy raised by Rachel Carson and others Lovelock claimed that he had faith that DDT “will probably be more carefully and economically employed in future.”¹¹⁶ His ignorance was proven as chemical companies posted revenue gains by selling to the global south the year after several of their products were banned in North America.¹¹⁷

¹¹² Ibid., 210.

¹¹³ Lovelock, *Gaia: A New Look at Life on Earth*, 110.

¹¹⁴ Ibid., 27-28.

¹¹⁵ Ibid., 112.

¹¹⁶ Ibid., 115.

¹¹⁷ Scharper, “The Gaia Hypothesis,” 211.

Many have pointed to Lovelock's dismissal of environmental concerns as proof of sciences' subjectivity and limitedness. Stephen Scharper contends that Lovelock was and is too enthralled by his own theory to consider evidence contrary to some of his claims. Scharper believes that as convinced as he was "that Gaia was robust and all controlling, Lovelock had difficulty admitting that the pesky unfeathered bipeds of the human race could significantly injure it."¹¹⁸

More recently Lovelock has acknowledged that pollution is a problem, although he is primarily concerned with the depletion of the ozone layer and fails to address other damage caused by pollution. In 2006 Lovelock published a book, *The Revenge of Gaia*, in which he outlines several policy changes and technological advances he believes must be made, particularly in the west. Foremost amongst his policy recommendations is his insistence for a large-scale transition to nuclear energy.¹¹⁹ While addressing the issue of energy he fails to address any of the side effects of such a transition such as "waste disposal, weapons proliferation, terrorism, and affordability for developing countries."¹²⁰ Also strange among Lovelock's suggestions is his proposal for what he calls a "sustainable retreat."¹²¹ This suggestion involves the creation of cities in colder regions and higher altitudes, to preempt the warming of the globe, where the majority of people would live. This suggestion also involves a complete transition from agricultural land use to the creation of large forests and is predicated on the creation of a large-scale

¹¹⁸ Ibid., 212

¹¹⁹ James Lovelock, *The Revenge of Gaia*

¹²⁰ Karen Litfin, "Principles of Gaian Governance: A Rough Sketch" in *Gaia in Turmoil*, 209.

¹²¹ Lovelock, *The Revenge of Gaia*

laboratory-based food production system.¹²² As odd as this submission is perhaps his most problematic proposal is one which would create an “enforcement body for restoring Gaia’s health that would be controlled by the wealth[iest] countries.”¹²³ Clearly Lovelock possesses no understanding of the destructive capacity of colonialism, as he seems to desire to limit those who are least responsible for our environmental situation while maintaining the authority of those who are most responsible. It is clear that if any ethical conclusions are to be drawn from the many implications of the Gaia hypothesis they must come from any place but the mind of Dr. James Lovelock.

Historically, particularly in the west, the basis for any environmental ethic was utilitarianism. Any value that the earth possessed was to be found in its usefulness to humanity. This is the dominant motif adopted by western Christianity, both historically and to a large part presently. This ethos was also the underlying idea for the conquest and colonization of non-European peoples. As such it is historically accurate to claim that any abuse of the land also included an abuse of the people living on the land. It might be helpful to engage with an example from our own time of the effects of a utilitarian perspective on the land and those who inhabit it.

“American Indian requests for religious use of the site must be submitted in writing at least two business days before the planned visit. The request should include specific descriptions of the area to be visited, and should be submitted by enrolled members of federally recognized tribes.”¹²⁴ Upon first reading these words one might feel certain they were spoken in the distant 19th century, a hard reminder of the treatment that

¹²² James Lovelock, “Our Sustainable Retreat,” in *Gaia in Turmoil*, 23.

¹²³ Litfin, “Principles of Gaian Governance”, 209

¹²⁴ Mt. Graham Coalition, “Permit to Pray?” (press release) Aug 13, 1998.

Native communities faced as the newly founded United States expanded westward. It is shocking, however, to find that the University of Arizona submitted this list of requirements in 1998.

This specific case involves the placement of two telescopes on a mountain in the southwestern United States. These two telescopes would be an addition to the Mt. Graham International Observatory. The battle for Mt. Graham has many sides, the Apache community, the scientific community, the education community, and the Catholic Church. Along with these there are special interest groups and various financially motivated groups on either side of the argument, as well as a multitude of press releases and statements from across the spectrum including the University of Arizona, the Apache leadership, and the Vatican. It is incredibly complex and contentious.

It has been more than a decade of opposition by the Apache community and “30 or more national and international environmental groups.”¹²⁵ Two telescopes have already been constructed on Mt. Graham, one by the Vatican and the other by the Max Planck Institute. Several more have been proposed and planned by the University of Arizona and it is this newest installation that has become the crux of recent fighting.

The site in question, Mt Graham, is located in the Sonoran Desert and rises to a height of 10,700 ft. It is literally an oasis in the midst of a desert. As one of the state’s largest mountains it possesses more life zones and vegetative communities than any other solitary mountain in North America. Unfortunately though for the mountain itself and all the biota present it is also the most useful area for the “advancement” of research for the

¹²⁵ Ibid., 20.

scientific community. One animal present on these mountains slopes is the Mount Graham Red Squirrel, which is the species most threatened by the universities present project, the Columbus project, which, by the way, is an apt name for a project that in so many ways is continuing the colonialist excursions of the projects namesake. The Red Squirrel should be protected under the Endangered Species Act, as there are fewer than 300 left in the world, but sadly, it is not. If successful the Columbus Project would lead to the destruction of 25% of a unique 472-acre virgin spruce fir forest.¹²⁶

Along with its ecological significance to the region Mt. Graham is also vitally central to the Apache community and its religious practices.

Mt. Graham is the chief, the most important sacred mountain. The Mountain is home of the Mountain spirit and other sacred beings which gave creation, guidance, strength, knowledge and direction to the Apache people by way of *Dzil nchaa si an*. He comes to teach the Apache men and women to sing special spiritual words that help them to acquire the power to become medicine men and women. This is our religion, these are our traditions. The Apache relationship with the mountain includes showing respect to the things we have discovered in revelations, or that the mountain has given to us. We Apache must retain Mt. Graham as a sacred mountain in order to follow our religion.¹²⁷

These words spoken by Franklin Stanley Sr., San Carlos Apache spiritual leader, outline perfectly the Apache approach to this conflict.

The history of the relationship between the Apache and American colonizers and settlers is as tenuous and contentious as any tribe in North America. After years of resistance to incursions into their land and forced reservation existence the Apache people were led into multiple rebellions. The rebellions lasted until September 4th, 1886 where at Skeleton Canyon a weary Geronimo and people gave themselves up. They spent

¹²⁶ Ibid., 21.

¹²⁷ David Webster, "Apaches Protest 'Project Columbus' on Arizona Mountain," *Catholic New Times* (Toronto), Sept. 22, 1991.

years being carted all over the US until 1894 when they were sent to Fort Sill in Oklahoma where the once great chief Geronimo died as a prisoner of war in 1909.¹²⁸

Over a century later the Native community would feel the affects of colonization once again, this time in the guise of scientific pursuits, as the settler community ignored once again both the religion of the Apache and the sacredness of Mt. Graham. It is important to point out at this stage that the settler community, when attacking the lives of poorer communities or when abusing the eco-systems or natural resources, must tell another story casting a more positive light on their pursuits. In the case of Mt Graham Observatory the University of Arizona claimed, “with the tens of millions of dollars in mirror contract orders would mean more money for the university and jobs to boost the local economy.”¹²⁹

It is also clear that the perpetrators of these myths have been at all times knowledgeable about their intentions to remove the Apache people once again. While some claim ignorance anthropologist Elizabeth Brandt explains that telescope investors hired “an expert—who had never worked with the Apache and who never spoke to a living Apache—to downplay the evidence.”¹³⁰ Brandt goes on to explain, “The elders mentioned that Mt. Graham was sacred, and they recounted military engagements and other activities taking place there.”¹³¹ However, as important as this history was to the tribe “telescope proponents have been biased toward the built environment, wanting to see extensive ruins, a temple or a church, or perhaps a burning bush as evidence of

¹²⁸ Laduke, *Recovering the Sacred*, 24-25.

¹²⁹ Elizabeth A. Brandt, “The Fight for Dzil Nchaa Si An, Mt. Graham,” *Cultural Survival Quarterly*, Vol. 19, No. 4 (Winter 1996), p. 56.

¹³⁰ *Ibid.*, 56.

¹³¹ *Ibid.*, 56.

‘sacredness,’”¹³² Brandt wisely points out that the Apache traditions have always emphasized less impact on their physical environment and she adds “It is worth recalling, also, that Apaches have had to spend much of the last three centuries hiding from people who wanted to kill them.”¹³³

For their part the tribal leadership has made their position both consistent and public. There have been four separate tribal council resolutions from the San Carlos Tribal Council. They have been supported and encouraged in their resistance by the National Congress of American Indians and the International Indian Treaty Council. These efforts have not been in vain; in fact they have been extremely helpful. Over two-dozen potential financial or academic partners, including the Smithsonian Institute, Harvard, Michigan State, and the University of Pittsburgh, have abandoned the development and publically criticized the proposal.¹³⁴ I believe it is incredibly important to recognize how many different individuals and organizations have stood against this expansion. This resistance is not the work of just one fringe group; many have raised the banner. One such voice is Peter Warshall, who just so happens to be a biologist at the University of Arizona and a former Fulbright scholar. He argues, “Basically the University [of Arizona] is a pariah. It has done everything possible to avoid the law, rather than following it. There is no controversy to that. Rather than...trying to embrace the law, they have, you might say, taken the low road.”¹³⁵

¹³² Ibid., 56.

¹³³ Ibid., 57.

¹³⁴ Laduke, *Recovering the Sacred*, 26.

¹³⁵ John Dougherty, “Star Gate,” *Phoenix New Times*, Vol. 24, No. 25 (June 16-22, 1993), p. 4

Warshall's words are more than vindicated when you take into account that the University has spent well over a million dollars towards lobbying efforts to secure exemptions from any number of cultural, religious, and environmental protection laws. Among these are the Endangered Species Act, The National Historic Preservation Act, the National Forest Management Act, the National Environmental Policy Act, and the American Indian Religious Freedom Act. In particular the university was able to secure 3500 acres from a congressional wilderness designation.¹³⁶ Prime telescope real estate at the peak of Mt. Graham was set aside by congress for use by the University. It seems likely that with allies such as Senators John McCain and Dennis DeConcini the University will be able to achieve the majority of its ends.¹³⁷

It has been quite a battle with the Apache's newest enemy, the university but perhaps the oldest enemy, at least in modern times, comes from half a world away. The Vatican has become an extremely vocal opponent to all efforts to protect Mt. Graham.

We are not convinced by any of the arguments thus far presented that Mt Graham possesses a sacred character which precludes responsible and legitimate use of the land...In fact, we believe that responsible and legitimate use of the land enhances its sacred character...The Vatican Observatory would like to learn about any such genuine concerns of authentic Apaches...Since no credible argument has been presented, the Vatican will continue with the construction and operation of the advanced Technology Telescope on Mt. Graham.¹³⁸

The Vatican has consoled itself by the thought that those opposed to their efforts must not be "authentic Apaches." Rather than genuinely opening themselves up to criticism and

¹³⁶ LaDuke, *Recovering the Sacred*, 26.

¹³⁷ *Ibid.*, 27.

¹³⁸ George V. Coyne, S.J., "Statement of the Vatican Observatory on the Mount Graham International Observatory and American Indian Peoples," University of Arizona, Exhibit B, *Apache Survival Coalition et al. v. U.S. et al.*, University of Arizona, intervenor, CIV, NO 91-1350 PHX-WBC, April 6, 1992

dialogue, the colonizers in effect rendered any voice of opposition insignificant at best. Feeling threatened they then lashed out at the very straw men they themselves had created. The Vatican representatives made ludicrous claims that those opposing the observatories weren't themselves Apache but were merely using the Apache to score political points. According to those representatives these individuals "manipulated the Endangered Species Act. These ideologues now seek to manipulate American Indians. No mountain is as sacred as a human being, and there is no desecration more despicable than the use of a human person for self-serving purposes."¹³⁹ It is hard to stomach these accusations especially in light of the numerous resolutions by the San Carlos Apache Tribal Council, particularly this one from a 2001 resolution:

The American Indian Religious Freedom Act guarantees Indian people unimpeded access to such sacred sites and locations...The proposed destruction of this mountain will contribute directly to the destruction of fundamental aspects of the spiritual and cultural life of the Apaches¹⁴⁰

Clearly the Vatican has rather selective hearing when it comes to criticism.

Years ago the placement of telescopes was determined entirely by scientific qualifications. Unfortunately, now many different organizations can obtain observatories for far lesser motivations, such as "self-aggrandizement. It's got nothing to do with science, technology and truth or the best use of tax payers' money."¹⁴¹ Unfortunately this beautification project will bring large financial and professional gain for the university. Luckily for them they have had the power and clout to bring the telescopes to their

¹³⁹ Coyne, "Statement of the Vatican Observatory."

¹⁴⁰ San Carlos Apache Tribe, resolution JN-01-04, June 5, 2001.

¹⁴¹ Dougherty, "Star Gate."

school. This is particularly impressive in light of the fact that there are 37 better observatory sites in the United States.¹⁴²

The colonial project, while inherently classist, has been driven by the powerful structures of religion, particularly Christianity in our part of the world. While our religious institutions have perhaps become more lenient and gracious in some social realities, they are as evil as ever when consumed with the defense of colonial ends. To these ends the Vatican has been resolute in its stance. In reference to Apache religious beliefs Reverend Charles Polzer claimed, “As an ordained priest and trained theologian as well as historian and anthropologist, I know that anthropological appeals to this court regarding the sacredness of Mt. Graham to the Apaches is little more than a preposterous misuse of academic status and the poorest manifestation of sound methodology.”¹⁴³ It is interesting to note that according to Polzer his expertise concerning his own religion automatically makes him an expert in commenting on Apache beliefs. Fortunately for Polzer, his religion’s understanding of methodology is universal and therefore the Apache understanding can submit itself to his and learn the true path.

Continuing this approach with a statement that has oft been repeated in defense of Christianized colonial efforts the Vatican Observatory maintains “it is precisely the failure to make the distinctions [between insignificant nature and spiritual human beings]

¹⁴² Steve Yozwiak, “Worst Spot Chosen for UA telescope,” *Arizona Republic*, June 15, 1993.

¹⁴³ “Affidavit of Father Charles W. Polzer, S.J.,” University of Arizona, Exhibit C, *Apache Survival Coalition et al. v. U.S. et al.*, University of Arizona, intervenor, CIB NO 91-1350-PHX-WPC, April 2, 1992.

that has created a kind of environmentalism and a religiosity...which must be repressed with all the force that we can muster.”¹⁴⁴

All of these accounts paint a clear picture of the evil powers that exist for the destruction of the environment and socially constructed groups of people. In amongst all the data and figures about climate change and rising sea levels it is easy to forget that mostly these issues are about people and the land where they live. In closing I'll leave you with the words of Apache elder Franklin Stanley which I believe sum up, in a way, the connection between classism and environmental protection:

If you take away Mt. Graham from us, you will take our culture. You have killed many of us. You killed my grandfather. You have tried to change us, you forced me to go to your schools. But still I treat you with respect. I do not go to your church and hold my services. Why do you come and try and take my church away and treat the mountains as if it was about money instead of respect? Nowhere else in the world stands another mountain like the mountain you are trying to disturb. On this mountain is a great life-giving force. You have no knowledge of the place you are about to destroy.¹⁴⁵

This story of the Apache's struggle against the utilitarian ethic, which is used in seeking to destroy their holy places, exemplifies the need for another basis of an ethic, one supported by the Gaia Hypothesis and based on the principle of co-sustenance. This shift in basis is becoming more and more vital because amidst all the uncertainty concerning the future of environmental degradation one thing is certain, all members of the earth community will not feel effects of land destruction equally, the poor of the world will feel the brunt of the suffering. Pramod Parajuli points out that there is

¹⁴⁴ George V. Coyne, S.J., “Personal Reflections upon the Nature of Sacred in the Context of Mt. Graham International Observatory,” May 1992 (unpublished).

¹⁴⁵ Brandt., 56.

“unmistakable convergence between the nature of ecological extraction from a specific ecoregion and the degree of ethnic subordination within it.”¹⁴⁶

This reality is in no small part due to the colonialistic economic structures put in place by the western world to facilitate monetary relationships between the developing world and itself. During the earliest days of European exploration and conquest explorers were armed with charters and Papal bulls granting them permission, from both God and country, to claim as their own any lands they encountered in their travels which were not already under Christian control. This “laid the juridical and moral foundations for the colonization and extermination of non-European peoples.”¹⁴⁷ Earlier we looked at Theologian Richard Bauckham’s belief that stewardship concepts were first introduced to explain and defend humanities desire to manipulate creation for both their own desires and for creations own good. A similar motivation was put in place to support the colonizing activities of those 15th century European explorers. According to Walter Ullmann “The pope as the vicar of God commanded the world, as if it were a tool in his hands; the pope, supported by the canonists, considered the world as his property to be disposed according to his will.”¹⁴⁸ As such, it was the predominant belief of European peoples that God had ordained their use and subjugation of both the land they discovered and any inhabitants therein, who weren’t baptized Christians of course. Unfortunately, many eco-ethicists believe this practice is still occurring and it is still largely based in utilitarian understandings of stewardship and land use.

¹⁴⁶ Pramod Parajuli, “Learning from Ecological Ethnicities: Toward a Plural Political Ecology of Knowledge” in *Indigenous Traditions and Ecology*. 560.

¹⁴⁷ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge*, 2.

¹⁴⁸ Walter Ullman, *Medieval Papalism*; quoted in Vandana Shiva *Biopiracy*, 1.

Much like the 15th century the rationale and language used to justify dangerous land-use practices is religious in nature. However, in our own time the economic language has become much more prevalent and persuasive in justifying those dangerous land-use practices. John Locke's pivotal 17th century work *Two Treatises of Government* laid much of the groundwork for how capitalistic societies would regard land and nature going forward. This work was particularly important as it represents a post-enlightenment shift in reasoning which, while alluding to God, bases most of its conclusions on reason. Whereas in earlier centuries land was deemed the property of Europeans based on divine right, determined by Royal or Papal authority, according to Locke one's property rights were determined by labor.

God, who hath given the world to men in common, hath also given them reason to make use of it to the best advantage of life and convenience...yet being given for the use of men, there must of necessity be a means to appropriate them some way or other before they can be of any use, or at all beneficial to any particular man...The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men.¹⁴⁹

Locke makes several assumptions, many similar to those made by proponents of the stewardship model. Firstly, he proposes his belief that nature's primary purpose is to be beneficial to humanity. For Locke this beneficial relationship can only be achieved through humanities manipulation of nature, which we have seen has been justification for the expulsion of native peoples from their lands throughout the history of colonization.

¹⁴⁹ John Locke, *Two Treatises of Government* 111-112

Secondly, is his belief that this manipulation is itself the method by which one establishes property rights. This establishment by the labor of an individual nullifies any claim another might have on the piece of nature he has labored on. Both of these assumptions have led to innumerable ecological and ethical tragedies.

Vandana Shiva sees the effects of Locke's dangerous assumptions playing out in her home country of India, as well as many other developing countries. She cites the influence of GATT or the General Agreement on Tariffs and Trade, originally signed in 1947 and most recently modified in 1994. One aspect of these agreements is the establishment of international property rights protection. According to Shiva, Trade Related Intellectual Property Rights or TRIPs, which were established by GATT, represent a continuation of Eurocentric colonization of both the land and the people of that land. For her, "the land titles issued by the pope through European kings and queens were the first patents"¹⁵⁰ while presently "through patents and genetic engineering, new colonies are being carved out. The land, the forests, the rivers, the oceans, and the atmosphere have all been colonized, eroded, and polluted."¹⁵¹ For Shiva the underlying justification for this theft falls at the feet of John Locke. His articulation of the path to property establishment legitimized the freedom to steal from land occupiers by merely "laboring" on their land. Shiva points out the brilliance of this articulation in its ability to limit any recourse a host people might have pointing out how "returning private property to the commons is perceived as depriving the owner of capital of freedom. Therefore, peasants and tribespeople who demand the return of their rights and access to resources

¹⁵⁰ Shiva, *Biopiracy*, 3.

¹⁵¹ *Ibid.*, 5.

are regarded as thieves.”¹⁵² This relationship, established centuries ago, between colonized and colonizer was predicated on and has intentionally created a scenario, which is both ecologically and ethically unsustainable. The theory of Gaia shows us the possibilities present in creation to sustain and encourage the continuation of life and the proper environment for life. Stewardship models of colonialism and land use have torn down these environments creating many more conditions for death rather than life.

Many Gaian ethicists identify the need for a non-western approach to environmental ethics. J. Baird Callicott recognizes that “the temporal scale of global climate change makes the necessity for a shift from an individualistic to a sociocultural moral ontology even more obvious.”¹⁵³ He points out how this is already present in “the temporal horizons of moral deliberations among the Iroquois—who considered the effect of present choices out seven generations.”¹⁵⁴ Indigenous philosophy has always recognized the interconnectedness that it took 500 years for western science to deduce. If westerners are going to become wise rather than just knowledgeable they are going to have to listen. They are going to have to open the discussion to include voices who have been ignored or silenced for far too long.

Our Native American culture has been strip-mined by the European’s Judeo-Christian ethic. It is clear to indigenous peoples that we are dealing with a desperate society trapped inside a crumbling mythology...Indians know how to play games with nature. Europeans—Whites—have been at odds with nature for many centuries. The Man vs. Nature argument is a contrived dichotomy with ancient roots in Christianity, Descartes and Francis Bacon. What you end up with is a race of people trapped by myth, striving to claw its way back to

¹⁵² Ibid., 3.

¹⁵³ J. Baird Callicott, “From Land Ethic to Earth Ethic: Aldo Leopold and Gaia Hypothesis” in *Gaia in Turmoil* 189

¹⁵⁴ Ibid., 189.

Eden against ever-growing odds. The project of nature is ongoing, we are part of it, yet the European continues to set himself outside of it...Non-Indians will never have Western eyes so long as they cling to the Man versus Nature dichotomy.¹⁵⁵

The ethos of European cultures is drastically different from those of Indigenous communities the world over, and this is never more evident then when observing the way each culture interacts with nature. I in no way mean to universalize Indigenous experience or thought, there are obviously a multiplicity of both from one tribe or country to another. However, I do believe that it is fair to draw out main themes from Indigenous peoples that identify the majority of them as the antithesis of the ways of much of white culture. It is my hope to point to several of these main beliefs that lead to a very different ethic, particularly in dealing with creation/nature, an ethic that has hints of Gaia as well as wisdom much older than James Lovelock.

To put it quite bluntly “Native Americans *are* the environment—the environment *is* us!”¹⁵⁶ This claim stands in sharp counter distinction from Lovelock’s belief that Gaia stands quite apart from humanity. It also stands in opposition to much of western thought, which considers humanity’s place above creation. This claim represents what some would call “an indigenous model of wholeness, where people and place, matter and spirit, nature and culture are interrelated in a dynamic process.”¹⁵⁷ As it turns out inner

¹⁵⁵ Mandan tribal attorney Raymond Cross quoted in Paul VanDevelder, “A Coyote for all seasons,” *Native Peoples*, fall 1998, 45, 46, 48.

¹⁵⁶ Corbin Haney, Indigenous Environmental Network, Ninth Annual Protecting Mother Earth Conference, Buckskin Camp, California, 2-5 August 1998.

¹⁵⁷ Tirso A. Gonzales and Melissa K. Nelson “Contemporary Native American Responses to Environmental Threats in Indian Country,” in *Indigenous Traditions and Ecology*, 496.

connectedness of all things was not discovered by James Lovelock in the 1960's. It has been a vital underlying reality for indigenous peoples' worldview for thousands of years.

“My land is mine only because I came in spirit from the land, and so did my ancestors of the same land. My land is my foundation.”¹⁵⁸ This claim, which in truth might have been uttered by any number of indigenous persons, explores the depths to which each person within this particular worldview personally connects to the land from which they are born. Pramod Parajuli, who is actively involved in ethno-ecological struggles in his home country of Nepal as well as India, has signified people connected to the land in this way as ecological ethnicities. For Parajuli “ecological ethnicity refers not only to about 500 million indigenous populations of the world, but also to peasants, fisherfolk, forest dwellers, nomadic shepherds, and a host of other people who share similar predicaments”¹⁵⁹ least of which is “being marginalized in the process of...the global motion of capital.”¹⁶⁰ These ethnicities, which Parajuli describes, exemplify an ethic and way of life, which while it is harmonious with Gaian thought and co-sustenance, also is rather distinct in our current context. This distinction is quite Gaian in that these groups “maintain the rhythm of circularity and regenerative cycles of nature's economy.”¹⁶¹ According to Parajuli they achieve this rhythm by “cultivating appropriate cosmovisions, observing related rituals, and practicing prudence in the ways they care

¹⁵⁸ From James Galarrwuy Yunupingu, as quoted from the Australian Catholic Social Justice Council's “Recognition: The Way Forward,” in *Native Title Report: January-June 1994* (Aboriginal and Torres Strait Islander Social Justice Commissioner, Canberra, Australian Government Publishing Service, 1995).

¹⁵⁹ Pramod Parajuli, “Learning from Ecological Ethnicities” 560.

¹⁶⁰ *Ibid.*, 560.

¹⁶¹ *Ibid.*, 560.

about nature, nurture nature, and in turn are nurtured.¹⁶² This description of a way of life more than adequately describes the non-western emphasis required for a more Gaian, co-sustenance model of ecological interaction. The temptation for those within a capitalist or stewardship framework would be to dismiss these communities as extraordinary or incomparable. However,

There is nothing romantic or exceptional about their worldviews or practices. What might seem exceptional in our eyes is that among them, nature cannot be distinguished from everyday production and consumption, livelihoods and survival, rituals and festivals, inhabitation, or a sense of place. What is in nature is directly experienced and lived.¹⁶³

The danger for those of us on the outside of these communities is to romanticize their very existence and minimize the wisdom there in. Parajuli offers an option for appreciation of the logic of these communities, which he hopes, would avoid both the “rampant hit-and-run ethic of environmental modernization or its antithesis, the fencing off of wilderness areas from human use.”¹⁶⁴ He suggests the notion of a “moral ecology of nature use.”¹⁶⁵

There are several key components of Parajuli’s suggestion, which make it a very fertile landscape as well as an excellent partner to both Gaian and co-sustenance models. Firstly, for Parajuli moral ecology of nature use recognizes that “nature is simultaneously real, collective, and discursive.”¹⁶⁶ Consequently both the theory and conversation concerning the natural world must be “naturalized, socialized, and deconstructed

¹⁶² Ibid., 560.

¹⁶³ Ibid., 560.

¹⁶⁴ Ibid., 571.

¹⁶⁵ Ibid., 571.

¹⁶⁶ Ibid., 571.

accordingly.”¹⁶⁷ As such it is vital that we give sufficient thought to all the aspects of the human-nature interface, including the physical and socio-cultural dimensions. This will necessitate balancing our view by identifying nature’s very real physical attributes and tendencies while also recognizing the social and cultural constructs used to classify and clarify nature. All of this must be done while avoiding classic bifurcations of anthropocentric or biocentric significations.¹⁶⁸

Secondly, Parajuli acknowledges the vast difference between the ways in which an ecological ethnicity might use and alter a landscape and the ways a capitalist mode of economy would. Parajuli is quick to point out that ecological ethnicities certainly alter and significantly change their environment. They do not however, alter the very base of the ecosystem itself, as do biotechnologies and molecular sciences with gene-mapping or DNA alteration. For Parajuli, “nature, plants, and animals, and other entities belong to a socioeconomic community subject to the same rules as humans.”¹⁶⁹ He points out that voices ranging from Lakota thinker Winona LaDuke to Afro-Colombian peasants speak of continuous birth as the indicator of good life and as a sign of the balance between humanity and the natural world.¹⁷⁰

Thirdly, it must be understood that the relationship between humanity and nature is both mutual and nurturing. Parajuli points out how his mother and friends in Nepal speak of hospitality as an art between *dharma* and *punya*, or good and bad deeds. For them the complex interplay of humans and nature “is embedded in three acts *chalam* (use

¹⁶⁷ Ibid., 571.

¹⁶⁸ Ibid., 571-72.

¹⁶⁹ Ibid., 572.

¹⁷⁰ Ibid., 572.

it), *jogam* (preserve it), and *bachham* (protect it).”¹⁷¹ This interplay is not static but moves and changes according to the situation. For indigenous people in America, nature is integral to the human experience. Lakota thinker Vine Deloria expresses this thought:

If we could imagine a world in which human concerns were not the primary value, and we observed nature in the old Indian way, we would observe a plant (or a bird or animal) for a prolonged period of time. We would note what time of year the plant began to grow and green out; when it blossomed; when it bore fruit; how many fruit and seeds it produced; what animals and birds ate the fruits and when during maturation process they appeared; what colors its leaves and fruits took on during various parts of the growing season; whether it shed its leaves and needles and what birds and animals make use of them; and many other kinds of behavior of the plant. From these observations, we would come to understand both the plant and its life stages. By remembering the birds and animals who made use of the plant—and when they did so during the calendar year and when in terms of their own growth cycles—we would have a reasonable idea of how useful the plant would be for us.¹⁷²

The final point for Parajuli is the importance of locality in the rethinking of environmental interaction. Independent communities have the capacity to engage and discover the reality of their ecosystems, as every ecological ethnicity does. Out of this last point Parajuli offers a key insight to any project, Gaian, co-sustenance, or otherwise, which hopes to engage afresh with environmental concerns. There is *no* universal model for the moral ecology of nature use. “Local agriculture, forestry, or medicinal knowledge involves a context-specific, improvisational capacity rather than a coherent indigenous knowledge system among all ecological ethnicities. The knowledge is grounded on the

¹⁷¹ Ibid., 572.

¹⁷² Vine Deloria, “If You Think About It, You Will See That It Is True,” *Revision* 18, no. 3 (1996): 42.

local experience of use rather than on a cognitive system of logic and coherence.”¹⁷³ As such it is only possible to speak of local models of land use and interaction.

Parajuli and others offer guidelines by which we might construct a far more helpful model of co-sustenance. In the next chapter we will outline this new model.

¹⁷³ Pramod Parajuli, “Learning from Ecological Ethnicities”, 573.

Chapter 4

Co-Sustenance

The theory of stewardship as it has been articulated is woefully lacking in its ability to fully engage the reality of our current ecological situation. As such it has become vital to imagine and articulate a more helpful and effective vision. Theories such as the Gaia Hypothesis offer a broader lens from the scientific community through which to view the created order. Exploring the ethical implications and interplay of our harmful approaches to the environment thus far helps to create perspective from which to act going forward. All of these voices in the conversation will hopefully lead to a model of life that can be more inclusive and all encompassing, a model I call Co-Sustenance.

The first tenant of Co-Sustenance is that it is concerned with community rather than control. In her treatment of the stewardship model Dr. Clare Palmer points out the central role that money plays in its articulation. As such, stewardship becomes the process by which one accumulates resources, i.e. money, and then rightly uses those resources as he or she sees fit. This approach is largely about control of one's environment. The key failure of this concept she points out is that "money is, obviously, a human invention, created by us and for us ...but the natural world around us is not a human creation. It does function outside human society."¹⁷⁴ In keeping with the model of Co-Sustenance Palmer expresses her belief that "everything that lives must use other, living and non-living materials in order to survive. Humans, of course, must do this

¹⁷⁴ Clare Palmer, "Stewardship: A Case Study in Environmental Ethics." in *Environmental Stewardship: Critical Perspectives, Past and Present* ed. By R.J. Berry, 72-3.

too.”¹⁷⁵ A key difference between stewardship and Co=Sustenance is that stewardship believes these materials are there solely for this use, by humans, while Co-Sustenance recognizes the interdependence without needing to create a hierarchy of control but rather sustains the communal nature of this reality. This very hope inspires Dr. Palmer:

We may not have the regulatory effect on the world’s environment of the deep-sea algae, for instance, but we are capable of causing vast environmental devastation. I am suggesting that our control is only partial and that we must see it in the perspective of the many things we do not know and perhaps will never know. It is surely the case that when humans admit their partial knowledge they will take their responsibilities more, rather than less, seriously.¹⁷⁶

Co-Sustenance can hopefully inspire this sense of humility within humanity to seek community rather than control.

Gaian thought also offers insights into the construction of a community model of engagement. David Abrams points out that “by demonstrating that organic life is reciprocally entangled with even the most inorganic parameters of earthly existence, Gaia theory complicates any facile distinction between living and nonliving aspects of our world.”¹⁷⁷ Once this distinction is complicated in this way Abrams believes that Gaia offers a way of shifting the very seat of information and thinking. ““By shifting the locus of intelligence from the human interior to the encompassing biosphere, such a way of speaking offers a corrective to contemporary assumptions that dramatically overlook the thorough dependence of human culture upon the continued creativity and flourishing of the more-than-human natural world.”¹⁷⁸ This shift Abrams speaks of is the very shift Co-

¹⁷⁵ Ibid., 73

¹⁷⁶ Ibid., 72.

¹⁷⁷ David Abrams, “In the Depths of a Breathing Planet: Gaia and the Transformation of Experience.” in *Gaia in Turmoil*, 221.

¹⁷⁸ Ibid., 224.

Sustenance wishes to make from control to community. This distinction lies at the very heart of Gaian thinking Lynn Margulis herself claimed “life did not take over the globe by combat but by networking”¹⁷⁹

Dr. Woodley also offers insight into the shift from control to community. He points out that often our religious or spiritual engagement with creation revolves around one question, whether or not God created all of this. For him a much more vital question is how we should live in the midst of God’s creation. “Is the world made for us or are we made just as one part of the creation? We must be careful how we answer because there may be a tendency for those who view creation primarily in a utilitarian way, to also view other people in a utilitarian way.”¹⁸⁰ Will we seek to live in community or will we continue to seek only control and dominance?

Dr. Woodley shares a story from his own life that relates to our current struggle.

A Cherokee elder once told me, as he was commenting on how often our young people use smoke to cleanse themselves these days, that in the old days they used a cedar fire only two or three times a year to cleanse themselves. Then he paused, thought about it, and said, “Come to think of it, I think you guys need it a lot more now than we used to.”¹⁸¹

Our own time is filled with the darkness brought about by centuries of wrong relationship with each other and with creation. One small path on the journey out of this mess is a strong shift towards a communal understanding of our relationships to all living and non-living creation.

¹⁷⁹ Stephen B. Scharper, “The Gaia Hypothesis: Implications for a Christian Political Theology of the Environment” in *Cross Currents*. Summer 1994, 210.

¹⁸⁰ Randy Woodley, *Shalom and the Community of Creation: An Indigenous Vision*. 57.

¹⁸¹ *Ibid.*, 69.

The evolutionary myth describes the a process that unfolded over billions of years in which single celled organisms developed as amphibious beings into multi cell organisms and eventually made landfall leaving their watery home behind. This beautiful story is reflected in the journey of every human born into this world from the joining of sperm and egg to the growth in the amniotic fluid to the birthing day when we all step onto land for the first time. All of creation is connected in a reciprocal relationship and it is long past time that the theology of the west matched this reality.

The second tenant of Co-Sustenance is the recognition of the interrelatedness of justice for the earth and justice for the peoples connected to a particular place. For many within Christian settings stewardship has established a model by which people might engage with and properly use the resources within nature. In large part the criticisms of stewardship, particularly the ones addressed in the first chapter of this paper, have been concerned with the effect our practices have had on the natural order itself. However, there have been many voices recently, such as Vandana Shiva, which have recognized the connection between ecological destruction and the injustice against local communities.

The work by those in the environmental justice movement has been monumental in establishing this line of thinking. Within the United States it is believed that this movement started in Warren County in North Carolina. In 1982 the state decided to install a landfill in the town of Afton, more than 84% black, to dispose of PCB (polychlorinated biphenyls) contaminated soil. This decision led to a large-scale protest that resulted in over five hundred arrests.

These protests prompted a study by the U.S. General Accounting Office, *Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities*. This study revealed that three of the four off-site, commercial

hazardous waste landfills in the U.S. Environmental Protection Agency's Region 4 (composed of eight southern states) happen to be located in predominantly African American communities, although African Americans made up only 20 percent of the region's population. The protestors of Warren County put the term "environmental racism" on the map.¹⁸²

This event was seen as a watershed moment and led, in no small part, to a gathering in 1991 called the First National People of Color Environmental Leadership Summit, which some have called the single most important event in the history of the environmental justice movement.¹⁸³

Much like the need has arisen within the church to adjust the theological language away from stewardship the community of Warren County, and many others like it, coined the phrase environmental justice to address their specific situation. Environmental justice is concerned with the plight of the poor who are often forced to engage the "false choice between having, on the one hand, no jobs and no development and, on the other hand, risky low-paying jobs and pollution."¹⁸⁴ This scenario forces communities into a form of economic blackmail having to choose between themselves and their well-being or the well-being of their local environment.

The environmental justice movement challenges toxic colonialism, environmental racism, and human rights violations at home and abroad. Groups are demanding a clean, safe, just, healthy, and sustainable environment for all. They see this not only as the right thing to do but also as the moral and just path to ensuring our survival.¹⁸⁵

¹⁸² Robert D. Bullard, *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*, 20.

¹⁸³ Ibid., 20.

¹⁸⁴ Ibid., 42.

¹⁸⁵ Ibid., 42.

There is a connection between plight of the poor and disenfranchised around the world and the environmental degradation that is destroying the earth. While theologies like stewardship have blinded many in the church from seeing this reality there is hope in the form of communities like those in Warren County. The church need only open its eyes and join in the fight.

The third tenant of Co-Sustenance is concerned with the sustenance of life and of an environment capable of sustaining life. This idea is inspired by the Gaia Hypothesis, which states that, the earth as a unified system is constantly adapting to create optimal conditions for life to flourish. “This system is the fruit of organic forces that are highly coordinated by the system itself. Gaia has, in effect, created herself, not in a random manner, but actually in an objective-seeking fashion. This is suggested by the fact that the system is highly stable and can maintain its equilibrium despite internal and external dilemmas.”¹⁸⁶ The stability of the Gaian system is consistently at risk by the practices of humankind.

The 20th century saw the creation and subsequent rise of large-scale use of herbicides and genetically modified crops. One such herbicide was glyphosate, which was first patented and sold in 1974 by Monsanto. This particular herbicide “has helped revolutionize farming by making it easier and cheaper to grow crops. The use of the herbicide has grown exponentially, along with biotech crops.”¹⁸⁷ A recent NY Times article addressed some concerns farmers were facing when employing this technological marvel. The primary concern for many of the farmers and scientists cited in this piece

¹⁸⁶ Stephen B. Scharper, “The Gaia Hypothesis: Implications for a Christian Political Theology of the Environment” in *Cross Currents*. Summer 1994, 210.

¹⁸⁷ http://www.nytimes.com/2013/09/20/business/misgivings-about-how-a-weed-killer-affects-the-soil.html?pagewanted=1&_r=0

was the health of the soil when this product is used. The article looked at two fields where corn is grown not far from each other, one where the herbicide was used and one where it was not. In the field using herbicide farmers reported the soil to be quite compact and found the removal of plants to be quite difficult without the use of tools, once removed they also found the root system to be incapable of maximizing nutrient exchange. In the field without glyphosate the plants could be removed by hand from much healthy soil revealing a more robust root system.¹⁸⁸ The article quotes Robert Kremer, a scientist at the United States Agriculture Department, who states “Because glyphosate moves into the soil from the plant, it seems to affect the rhizosphere, the ecology around the root zone, which in turn can affect plant health.”¹⁸⁹ A plants root system is quite complex and draws on bacteria, fungi, and minerals in the soil. Because glyphosate bonds to the minerals in the soil it actually ends up competing with the plant for nutrients and studies have shown that glyphosate actually alters the mix of bacteria and fungi in the soil itself which compromises the plant roots ability to perform necessary processes.¹⁹⁰

The article also focused on local farmer, Mike Verhoef, who used his fields for a combination of biotech corn and soybeans as well as conventional wheat, regularly rotating the crops. Problems with the soil became evident quite quickly. As before he noticed a hardening of the soil necessitating larger equipment. He also noticed that his wheat yields were reduced by half over time. “It took me that long to figure out what was going on,” Mr. Verhoef said. “What I was using to treat the traited corn and soy was

¹⁸⁸ Ibid.

¹⁸⁹ Ibid.

¹⁹⁰ Ibid.

doing something to my soil that was killing off my oats.”¹⁹¹ After this realization Mr. Verhoef switched back to conventional crops and has since seen a rise across the board in crop yield relative to his neighbors biotech crops.

Farming practices introduced by genetically modified technologies have created environments in which sustainability is impossible. While Gaia seeks to create an environment where life might perpetuate life our practices have created an environment where crops create profit for certain companies.

These few tenants can hopefully create a framework out of which a shift away from stewardship towards Co-Sustenance is possible. The work of environmental justice and ecological sustainability is already well underway. Hopefully a shift in theological understanding will enable people of faith to engage in new ways with these movements. There are many who have already begun to articulate this new path. Dr. Woodley expresses such a path:

Regardless of whether one counts days or millennia in Genesis chapter 1, humans are still the final characters to show up in the story. Coming in last place should give us all pause for creaturely humility. We should realize that everything created was not made primarily for human happiness. Obviously, creation was enjoyed prior to our arrival. Consider the fact that there are places in the depth of the oceans, on the highest mountains, and deep in space that human beings have never seen and likely never will. Such unreachable places seem to be reserved for the Creator’s enjoyment — and for other beings in creation — but not for humans. Creation exists for far more than our pleasure. In fact, if things continue down the road they are on, it will be easy to imagine a world operating in its fullness, but without the human beings that once inhabited it. Our anthropocentric worldviews can hardly bear the thought of the world not revolving around us. Though it should be said again, like all the other parts of creation, humans have an important place of connectedness to, for, and with creation. Part of our role is that of a protector and restorer of creation. I suggest we take our role more seriously if we are to

¹⁹¹ Ibid.

continue living on this planet.¹⁹²

A new and varied understanding of relationships between humanity and creation, such as the one presented by Dr. Woodley, as well as theological and ecclesiological shifts will move people of faith into new positions out of which they may act, in creative and effective ways, to enact real change concerning ecological crises. Co-Sustenance models will facilitate action born out of a desire to engage and cooperate with nature resulting in ways of living, which benefit all of God's creation, as well as those creatures yet to come.

¹⁹² Woodley *Shalom*, 53-54.

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