

**The Challenges of Worldview Transformation:
'to rethink and refeel our origins and destiny'**

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Lynn White threw down the gauntlet and challenged Christianity with directly or indirectly fostering the conditions that have led to Eurowestern ecological decline. Rejoinders either refuted or endorsed the indictment that Christianity is complicit in systemic ecological deterioration. To some extent this has been a useful debate, although initially the stances were frequently defensive, accusatory, or apologetic.

White published the infamous *The Historical Roots of our Ecologic Crisis* in 1967 in the journal Science. It was short, and in five pages of print he attempted to cover the history - and critique - of Western science, technology, and, religion in light of an emerging ecological crisis: hardly a judicious or achievable task. It was full of generalizations, simplifications, and homogenized and idealized historical accounts. White was neither a theologian nor a specific expert on Christian history. Yet it caught the attention of many, for decades, and has become an emblem of positions, critiques and research directions.

Why did many Western Christians react viscerally and defensively to the challenge that some Christian beliefs and cultural commitments may be flawed, or dangerous? People use White to discuss if religion is to blame, or not, for ecological ruin. Yet White raises the questions in a thoughtful manner. He was asking about assumptions, beliefs, and attitudes that operate within the cultural orientation influenced by Christianity. He roots the crisis in foundational Christian assumptions of Eurowestern cultures: anthropocentrism and progress for example, as these have seeped far beyond the parameters of “Christianity” and are culturally endemic in the post Christian world. He was wary of technological solutions: “More science and more technology are not going to get us out of the present ecologic crisis until we find a new religion, or rethink our old one. As a beginning we should try to clarify our thinking by looking, in some historical depth, at the presuppositions that underlie modern technology and science” (White, 1967: 1206). Thus he invited a rethinking at the level of cultural dynamics and beliefs. White was asking people to consider the cultural impact of the operative Christian worldview. Yet, this was an uncomfortable inquiry.

Many have written about White’s objections to aspects of Christianity. There were several responses suggesting White poorly characterized Christianity, or simply in a limited manner. The range and extent of reception of White is available in several publications (Whitney, 2015: 396 -410). My view is that White raises the question of the role of worldviews, and worldview transformation, which is the main topic of this chapter, based in White’s proposition that ‘we must rethink and refeel our nature and destiny’ (White, 1967: 1207).

Transparency in using terms such as ‘religion’ or ‘Christianity’ is essential. My stance is that there is no religion or Christianity, outside of the innumerable historical forms, over centuries and settings. There are countless beliefs, understandings and perspectives of adherents. Any

institutional or authoritative interpretations of Christianity is circumscribed at best, given the multiple historical and existing traditions, varied preoccupations, the different conceptions of the relationship between religion and culture, and the diverse emphases on and assumptions about the bible, dogma, tradition, and contextual concerns. These also change greatly over time and place. The variations are limitless. For those who study and interpret Christianity, there are distinct starting points, hermeneutics, objectives, ethical commitments, priorities and fundamental questions. Thus, my comments are broad-spectrum, being applicable to some, but not all, contexts, denotations and expressions of 'Christianity'.

White's Challenge

White wrote "The victory of Christianity over paganism was the greatest psychic revolution in the history of our culture." (White, 1967: 1205) It was this earlier psychic / spiritual revolution, initiated by Christian beliefs, that was part of White's argument. He claimed that, over a few centuries, there was a psychic shift that changed the cultural religiosity from an animistic worldview to one where nature was void of spirit (corroborated by Oelschlaeger, 1991: Merchant, 1992: Plumwood, 1993: Duprés, 1995). This occurred at the level of 'the common people', he stated. He goes on to say that "Christianity is the most anthropocentric religion the world has seen." This launched myriad debates. Today, the strong anthropocentrism within Christian tenets is widely recognized. Ecotheologians have had to recognize the Christian emphasis on humanity's transcendence over the natural world and the thrust to desacralize this world (Pearson, 2001:51). The debate continues about what to do with this anthropocentric fulcrum that is throughout the Christian theological scaffold.

White was opposing elements of the operative Christian-influenced worldview: anthropocentrism, arrogance, human transcendence and sovereignty over nature. White saw that science and technology were tethered to this worldview, where the natural world held no intrinsic value. White, rightly or wrongly, blamed Christian axioms for fostering and sustaining an image of the natural world as having solely utilitarian worth. Herein lays the foundation of the ecological crisis. White's challenge was predominately cultural, although it was taken up as a challenge to Christian legitimacy and veracity. Defensive theologians often missed this distinction.

However, White was not interested in Christian verities, or theological disputes. In *Historical Roots* he described some Christian axioms he saw as causal to ecological decline and the accompanying cultural indifference. In an article that appeared two months after *Historical Roots*, White was accused of not considering the biblical mandate of stewardship, and that what passes in the name of Christianity is not truly 'Christian'. White's rejoinder was this: "The historical impact of Christianity has depended not on what we individually, at present, think, Christianity should have been, but rather upon what the vast "orthodox" majority of people who called themselves Christians, have, in fact, thought it was" (Feenstra et al, 1967: 737). White was interested in habits of thought, daily practices, and unexamined presuppositions that undergird one's existential orientation. He exposed and criticized the normative beliefs that are woven into the collective or social consciousness and activities of Christian influenced societies. It is the interaction between beliefs, worldviews and cultural praxis that he was highlighting. In short, he

raised the question of worldviews, and what ecological impact these had on the world or Earth. He foresaw that without a worldview transformation and accompanying cultural shifts, the ecological future would be bleak.

The emphasis, or enduring significance of White, is precisely the question of what allows for such deep cultural shifts to occur, and how to foster a worldview that is a ‘democracy of all God’s creatures’: a phrase he appreciated from Francis of Assisi. This can occur only with a profound reevaluation of human presence with the natural world, a rejection of human transcendence over nature, and a conscious shift to ecological values: a cultural transformation. He proposed Francis of Assisi because the latter professed an ecological worldview that could influence a cultural transition.

White challenged Christianity to address the ingrained religious bias against the natural world that is now embedded in cultural assumptions and orientations. He was focused on the attitudes, values and cultural underpinnings out of which human activities occur. There is no dispute that Eurowestern cultural expansion and direction is formed by Christian ideas. In *Historical Roots* he wrote that the growth of technology and science

“...cannot be understood historically apart from distinctive attitudes toward nature which are deeply grounded in Christian dogma. The fact that most people do not think of these attitudes as Christian is irrelevant. No new set of basic values has been accepted in our society to displace those of Christianity. Hence we shall continue to have a worsening ecologic crisis until we reject the Christian axiom that nature has no reason for existence save to serve man” (White, 1967: 1207).

He asks where we will find the guidance to address an ecological crisis that is deeply rooted in worldviews and cultural dynamics. He writes: “What shall we do? No one yet knows. Unless we think about fundamentals, our specific measures may produce new backlashes more serious than those they are designed to remedy” (White, 1967: 1204). Given the difficulty of responding to any serious ecological issues from White to the present, a span of almost fifty years, I tend to think White is correct: that a fundamental collective rethinking, worldview evaluation, and cultural reorientation are necessary. In my view, few scholars have picked up this gauntlet of White and immersed themselves in these questions in depth. However, even if some agree that a radical cultural reorientation is necessary, what could be the pertinent theoretical and analytic categories through which one ascertains and thinks through such a claim? How would this be put in motion? And what does it mean to think about ‘fundamentals’, or worldviews?

Worldviews

There are multitudes of past and presently operative worldviews. The concept of a ‘worldview’ is tackled by several research fields. Generally, the term *Weltanschauung* - worldview - taken from Kant’s *Critique of Judgement*, 1790, is a key reference for the word. The meanings, however, have been derived from extensive sources over centuries. It comes under many guises, such as in Karl Mannheim’s *Ideology and Utopia* (1936), C. Wright Mills notion of a sociological imagination (1959) or Thomas Kuhn’s epistemological paradigm shifts (1962), or

Victor Turner's liminal passages (1967).² Contemporary meanings come from numerous disciplines. From Ninian Smart's theory and philosophy of religion based in a worldview approach (1983), Michael Polanyi's changing interpretative frameworks, Val Plumwood's dissection of patriarchy worldviews - and dozens more - to current work in anthropology and biosemiotics, the mission to describe and define a worldview is undertaken by many. Myriad approaches and definitions exist, with no consensus.³ "Worldview is a useful vague notion that facilitates communication in multi-disciplinary and multi-cultural contexts in many marvelous ways," writes Robert Cummings Neville. However, he continues, "when thinkers assign precise meanings to the notion of worldview, and when these precise meanings differ, communication often breaks down" (Cummings Neville, 2009: 233).

David Naugle traced various philosophical and Christian pathways of the term in *Worldviews: The History of a Concept* (2002.) Others depict the varieties, and the current disintegration, of stable worldviews as discussed in *Worldview Flux: Perplexed Values for Postmodern Peoples* (Norwine and Smith, 2000). Cornelius Castoriadis and Charles Taylor use the term 'a social imaginary' to convey the same. The most comprehensive work on worldviews has come from *The Worldviews Group*: a multidisciplinary European research group from humanities and science who have initiated in depth studies of the components, explanations and functioning of worldviews.⁴ Their motivation stems from the seemingly growing ineffectiveness of most societies to address escalating social and ecological problems. They observe multiple levels of fragmentation, and connect this to an inability to maintain a coherent worldview in the fast-paced pluriform, information saturated, hyper-mobile, and epistemic postmodern world. Their goals are to find ways to move from fragmentation to integration (not homogenization) of the multiplicity of global worldviews. It is a sophisticated project that has originated comprehensive and detailed analyses of worldview(s), in several publications.

Among countless ways to parse out and explicate the aspects of worldviews, Cummings Neville suggests that a worldview is a cultured set of signs for orienting intentional behavior that has five spectra: scale, sophistication, valuation and moral projects, identity, and, commitment, each of which he carefully explains. Efforts by *The Worldviews Group* to define worldviews takes anywhere from forty to four hundred pages. In general, the reflection on worldviews reveals a complex and relational tapestry of intertwining ideals, beliefs, practices, values and influences. Simply defined, worldviews are an amalgam of the visions, ideas, ideals and practices that interweave to produce cultural values, governance systems and social identities. Worldviews are the way we imagine life and our lives together to produce the quality of our communities, the questions we raise, and the moral principles that we choose.

Worldviews, equivalent to social imaginaries here, combine the cultural-symbolic levels - the ideological superstructures - that reflect and sanction the social, economic, political and religious orders (Ruether, 1993). These social imaginaries operate underground, meaning that they are inconspicuous, often unidentified. They act as general presuppositions or beliefs about what is truthful, real and worthy. Worldviews or social imaginaries are created over time and are the result of intentional and unintentional decisions, events and consequences. Without consistent reflection and critique, ideological assumptions become sedimented in a society, and

inaccessible. Such concealed or unexamined aspects of worldviews are carried forward, and inconspicuously inform future concepts, discussions and actions (Dalton, 2009).

In *Historical Roots*, White was addressing the Eurowestern cultural worldview, heavily influenced by Christianity. He did not do this in depth, but rather pointed to a direction of analysis of the developing ecological crisis, that has since borne much fruit. The research into connections between worldviews and ecological issues is staggering, in spite of the imprecision of a stable definition of worldview. Since White, it is crystal clear that ecological issues are entangled as much within cultural ideologies and worldviews as within economics, technology, science, social organization and ecological management. For much of the past twenty to fifty years, many people have addressed ecological issues by examining and critiquing the history, contours and limits of this Eurowestern social imaginary. The work involved extensive ideological excavation by historians, deep ecologists, environmental philosophers, ecofeminists and those working on the ideals and theories embedded in the social imaginary that has led to vast ecological ruin in the name of progress (Eaton, 2005).

It is not accurate to claim that human societies live according to a worldview as a set of beliefs. Humans live within worldviews. The idea that one can substitute one worldview for another is misleading. These are not cognitive maps: we are embedded and entangled within them. The shift from one worldview to another is neither straightforward nor well understood, especially at a societal level. To grasp the extent of the challenge posed by White, a segue into the symbolic processes that give rise to worldviews indicates that worldview transformation is a convoluted process.

Symbolic Consciousness and Worldviews

Within the evolution and development of the hominid species emerged the capacity to navigate the world symbolically and then to live via a symbolic consciousness. The formation of a self-reflexive consciousness that could function symbolically and sustain the capacity to co-ordinate images, thoughts, emotions, intuitions and insights was acquired over millennia. It exists in many animals in the form of communication or language, developing with potency in primates and *Homo sapiens*. The processes that led to communication, signs, representations and imagery - all foundational to language and symbolic consciousness - remain opaque. Research into the development of symbolic consciousness, the affective dimensions, and the complex inter-relations among symbol, language, emotion and thought process and worldviews is both intriguing and, at times, speculative.⁵ It is now assumed that the formation of symbolic consciousness and artistic representation is older, more complex, and involves more species than previously assumed.⁶

The use and development of tools requires the capacity to imagine, and indicates a nascent form of symbolic consciousness, otherwise the rock is just a rock. As suggest John. W. Dixon, even the faint shadow of images and artefacts reveals that experiences were transmuted into a system of images to cope with and demarcate the exigencies of life (Dixon, 1996:49). It is within the move from consciousness to self-consciousness that the development of symbolic psychic

structures took place. There is a complex weave, not fully understood, among active imaging – imagination - experiencing the world, and a symbolic rendering of the experiences. This symbolic mode of being is the *modus operandi* of humans. A symbolic consciousness is the way humans process and navigate the world. It is not through or with symbols or images that we think and comprehend. It is within symbols.

Although the dynamics of symbolic functioning can be dissected into aspects involving external realities of culture and context, and internal realities of emotions, cognition and ideation, all of which are embedded in identity formation and a sense of self, this renders a superficial, even false, understanding. These facets are inter-related in ever-moving exchanges. Activities, contexts, events and symbolic processes are inseparable, interwoven and enmeshed within the very structures of human consciousness and behaviours. Further, they operate within an indivisible personal and social weave. There are many avenues into the functional dimensions of symbolic activities that include affect and somatic theories, which will be discussed below.

This notion that worldviews are more than cognitive maps is very important. Most research addresses the concept, content or architecture of a worldview, and neglects to consider the evolutionary process and internal dynamics that evolved such that humans live within symbols and worldviews, not using symbols. Symbolic consciousness is a more nuanced actuality than cognitive analyses. Current work in mind-brain associations, imagination and cognition interactions, somatic studies, language acquisition, and biosemiotics are addressing this aspect of humans as a symbolic species: “*homo symbolicus*” than *homo sapiens*. In addition, the interplay among a rapport with the natural world, the social dynamics, and particular events is active and fluid. Not only does this reveal how very difficult the work of worldview transformation is, but also that worldviews are an external manifestation of internal personal and social symbolic processes that defy a precise portrayal. White’s proposition that we must rethink and refeel our nature and destiny becomes more multifaceted.

An example will illustrate levels of this entanglement. Some suggest that the rapport between the Earth from which *homo sapiens* emerged and the development of symbolic self-consciousness is the key to the origins of *homo symbolicus* (Dixon, 1996; Berry 1988, Lewis Williams, 2002,2005; Van Huyssteen 2006). Earth symbolization is considered to be the earliest systematic representation of the world. The depth of relationship between humans and the natural world would have been astonishing, evoking, by necessity, representation. Caves, vistas, storms, seasons, other animals, and the elements of air, water, fire, and Earth formed human sensibilities, consciousness and self-consciousness. Humans had no *techne* to control, and minimal ability to distance themselves from, such powers and immensities. This is the bulk of *homo sapien-symbolicus* history.

Potent experiences of the natural world induce a blend of material, mythic, emotional and psychic facets that require mediation, representation and expression. For example, experiences of caves are often described in terms of intimacy, intensity, envelopment or interiority. The experience of ‘the immensity of the forest’ is common, yet is a multi-layered and perplexing interior involvement. Gaston Bachelard devoted much of his life to analyzing such occurrences

(1964).⁷end note format He perceived that it is an immensity felt while in the forest and described as ‘of the forest’, but experienced within our self-consciousness. We interpret the forest as emanating other dimensions than the material. We *feel* this immensity within ourselves, although describe it as ‘out there’ in the forest. For Bachelard, the imagination and associated symbolic expressions are able to enlarge indefinitely the images and sensations of immensity. Thus the experiences increase in their interior presence and power. The ascribed (often understood as derived) meaning is entangled with our emotional, imaginative, symbolic and cognitive apparatus and responses. If these experiences are interpreted as revealing something mysterious or sacred - the place, presence, and activity – it is perceived to emanate a sense of ‘otherness’, and affirmed as such, within us.

Bachelard used the term the material imagination to show the dialectic between the material world and limitless capacity of the human imagination. Bachelard, sought to explain the affective, rather than the less impressive intellectual/cognitive activity of material experiences: “It is not *knowledge* of the real which makes us passionately love it. It is rather *feeling* which is the fundamental value” (Kaplan: 1972: 4). In a similar vein, Charles Peirce wrote about the rational, progressive and instinctual dimensions of the mind (Halton, 2007: 45-77). Peirce claimed that the rational is the most recent in evolutionary development and hence the most immature. The instinctive impulses, sentiments, dreaming, imagination, memory - the community of passions - are the more mature. The rational mind requires this community of passions for optimal functioning. Parallels can be drawn to the immeasurable interconnectedness affirmed within new materialism, and what Jane Bennett calls a ‘vibrant matter’ that affirms scientifically these insights and intuitions (Bennett, 2010).

From symbolic consciousness to worldview is another step. Given that humans live within symbolic renderings of the world, the many modalities or facets of worldviews tends towards a coherent imaging of self, life and world. Every culture develops a representation of the world as intelligible and coherent. The form is as a narrative. There is accumulating evidence that humans, individually and collectively, generate and live within narratives: that narrative is the ‘information and navigation’ structure of the mind. This is, of course, not a new idea; however there seems to be new evidence to support it. Jonathan Gottschall makes a compelling case that humans are ‘the story telling animal’ (Gottschall, 2012). With verifications from evolutionary biology, psychology and neuroscience, he shows a multiplicity of ways in which humans are always living within and reconstructing experiences in narratives (Gottschall, 2012:99).⁸ These narratives are the cognitive, communication, education, and, classification mode of humans, as a species: *fabulam narraturus humana*. This storytelling mind, as researchers call it, is “allergic to uncertainty, randomness and coincidence. It is addicted to meaning. If the storytelling mind cannot find meaningful patterns in the world, it will try to impose them” (Gottschall, 2012: 103). These stories are not subject to the categories of fact or fiction: they are worldviews. A further observation is that “story is the counterforce to social disorder, the tendency of things to fall apart. Story is the center without which the rest cannot hold” (Gottschall, 2012:138). This last point resonates with the analysis of *The Worldviews Group*.

So much more can be developed on each of these points. Hopefully it is clear that the symbolic mechanisms of the human mind are the bases of worldviews, formed as stories nested in stories. Thus the interior landscape of navigating and interpreting life engenders symbolically linked activities, which are embedded in social narratives. These are shaped into systematic symbolic and collective representations of the world: a worldview. This is the meaning of 'story' in this context: a deeply internalized - personal and social - coherent representation of the world that can be shared and learned.

I suggest that whatever religions are, they are the most comprehensive symbolic and systematic rendering of human experiences of the life-world, hence the most complex stories, worldviews, or social imaginaries. White sensed that religions are profoundly implicated in the ecological crisis. The challenge from White is this: 'Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not. We must rethink and refeel our nature and destiny' (White, 1967:1207). To my mind, this is the most significant insight in White's essay.

Religion, Ecology and Worldview Transformation

Of the many initiatives to attempt to not only analyze the religious roots of the ecological crisis, but also to remedy it, the spectrum is wide. All the work following White in revising, reinterpreting and reimagining Christianity is astonishing. An ecological reconstruction of Christianity is enroute. Methodologies are multiple. Ecotheology has become a comprehensive reform of Christianity, as well as a new expression (Conradie, 2013).

Furthermore, the field of religion and ecology has matured into a substantial force in both academic study and religious practices. For some the goal is to retrieve re-evaluate and reconstruct religious traditions to find insights for ecological stewardship. For others, it is evident that religions themselves are in transition. Increasing attention is paid to operative assumptions and values, knowledge production, power, symbolic consciousness, and postcolonial and postmodern epistemologies. A lucid definition of 'religion' is now difficult. Due to the magnitude of the ecological crisis, as well as to knowledge of religious pluralities, evolution, Earth sciences, physics and cosmology, religions are provoked into reinterpreting themselves. Both epistemological revolutions and ecological transformations are pushing religious traditions towards an Earth-based or planetary, in addition to global, visions to enable communities to live within the limits of the natural world. Religions are best considered as worldviews, as it is in this way they function.

White predated the field of religion and ecology, by decades. Yet his intuition of the depth of the crisis, and the worldview imbroglio, was quite accurate. Thomas Berry, a contemporary of White, also saw the layers and magnitude of the crisis, including the issue of worldview, or story. Berry wrote:

The deepest crises experienced by any society are those moments of change when the story becomes inadequate for meeting the survival demands of a present situation. Such,

it seems to me, is the situation we must deal with in this late twentieth century (Berry, 1988:xi).

Berry shared similar concerns to White: that the shift from an animistic to anthropocentric worldview has been ecologically devastating; that Christianity developed a thoroughly anthropocentric bias; that Christianity shaped the dominant worldview and orientation of Eurowestern cultures: that some Christian tenets are ecologically blameworthy, that religions needed to be engaged if any remedy is to succeed: that science and technology will not provide a remedy, and: the extent of the ecological crisis is far more severe than many realize.

One difference lies in the radicality of their solutions. White proposed the standpoint of Francis of Assisi, as well reflections on Christian ethics and an expansion of compassion. In 1978, White wrote: “Ecology, as it is now developing, provides us with new religious understandings of our own being, of other beings, and of being” (White, 1978: 107). Berry thought through these new religious understandings in light of ecology, evolution and cosmology, and re-presented these with the goal of cultural change and worldview transformation. Berry wrote:

...our secular, rational, industrial society, with its amazing scientific and technological skills, has established the first radically anthropocentric society and has thereby broken the primary law of the universe, the law of the integrity of the universe, the law that every component member of the universe should be integral with every other member of the universe and that the primary norm of reality and of value is the universe community itself with its various forms of expression, especially as realized on the planet Earth (Berry: 1988: 202).

Berry proposed a ‘new story’: a reinterpretation and transposing of religions into a new horizon of meaning of cosmological and evolutionary processes. Berry’s contribution, which took a lifetime of study, brooding and acute perspicacity, is a composite of science, mythos, poesies and ethical orientation, and was offered as a worldview remedy (Eaton, 2014).⁹

Berry picked up the gauntlet of White (although without references to or seemingly any knowledge of White), and proposed a worldview from which Eurowestern cultures could ‘rethink and refeel our nature and destiny’.

The process of worldview transformation and cultural change is one that Berry studied extensively, from the works of Giambattista Vico, Carl Jung and many others. While in China, Berry observed the cultural shifts occurring at the beginning of the cultural revolution of Mao Tse Tung (which was achieved by an orchestrated worldview shift infusing cherished symbols in a new cultural story, with novel meanings and orientations). For Berry, discerning how communities function within narratives, and that cultures change involves stories, he recognized the need to foster a new ecological-cultural story. Such a ‘story’ would include what is known of the universe and of Earth, because that is the most appropriate horizon from where to understand humanity, to shift worldviews with a new orientation towards human Earth relations, which could counter the assault on the biosphere. For Berry this necessitates religions - as culturally orienting stories - but within a more comprehensive worldview. Much has been written by and

about Berry, and his proposal. The strengths and limits of his ideas are not as relevant here as that Berry shared similar analyses as White, and offered a radical religious remedy to ‘rethink and refeel our nature and destiny’.

There are other theories of social change gaining traction. Two additional efforts concerning worldview shifts are germane. The first is work that extends outward to a planetary level. Since White, ecological deterioration has increased. It is clear that most nation states are politically and ideologically ill equipped to address ecological problems, often due to global economic entanglements. Eurowestern security states are engulfing democracy, with enigmatic links to the ‘war on terror’. Sectarian violence is increasing. These are facilitating a global escalation of violence, a proliferation of arms and militarized states. The counter reaction is to cultivate a global ecological democracy. Terms such as inclusive democracy, global ecological citizenship, biospheric egalitarianism and global biodemocracy are surfacing around the world. *The Earth Charter, Democracy for Life, South Asian Dialogues on Ecological Democracy*, and from Cochabamba, the *Universal Declaration of the Rights of Mother Earth* are but four examples of an ecological democracy as proposed by White. In general these share an ethical appeal and vision for the common good of humanity, while diminishing an anthropocentric bias and strengthening the notion of a planetary ecological community. A third component of most is a commitment to peace, with an increasing interest in nonviolent resistance. Climate change protests, demonstrations and political activism is one form of ecological democracy.

There are debates to be had, such as the consequence of emphasizing vision, values and ethics over politics and economic power relations and structures. Issues of national sovereignty as well as global environmental citizenship are far from being determined theoretically or engaged practically. New governing structures are required, but how these will come about is uncertain at best. Discussions that speak of planetary visions, or ‘humanity’ tend to homogenize and obscure marginalised and dissimilar people and communities. This reinforces power asymmetries or structural injustices intact. The juxtaposition of the unity and diversity within ‘humanity’ is challenging. Nevertheless, the point is that these efforts manifest recent efforts to rethink and refeel our nature and destiny’ (Eaton, 2014).

The second worldview effort probes inward to depths of human interior dynamics. From religious studies there is considerable work in cognitive sciences, embodied knowing, empathy and attachment theories, and emotion and affectivity studies.¹⁰ These, as well as somatic learning and embodied intelligibility schemas are active fields of research concerning religious motivations and experiences. Studies indicate that human knowing is differentiated, multifaceted and intertwined, shifting the emphasis from rationality to embodied affectivity and relationality (Boesel and Keller, 2009). Attachment and embodiment theories are further developing explanations of how humans acquire a communally intelligible world (Sheets-Johnstone, 2008:184).

Social theories draw extensively from Judith Butler’s notions of power, identity and her ‘matrix of intelligibility’ to underscore the cultural constructions of identity as well as their mutability (Butler, 1990). Identity theorists also suggest that people encompass fluid, hybrid-embodied identities, interwoven with somatic memories and affect, within an interflow of tactility,

movement and emotions. Identities are steadied in embodied narratives providing coherence and intelligibility. New ideas or narratives often *feel* foreign, unfamiliar and wrong. When there is no sensory experience with them they are rejected. If we construct identities, meaning and worldviews through senses and affectivity more so than thought, this is a valuable insight into personal and communal transformation (Eaton, 2014).

Recent work in biosemiotics asks the question of ‘mindedness’ and how meaning emerges in biological systems such as the mind-brain interface. However, the more these questions are investigated, the more the puzzle multiplies. Unlike neurophilosophy, which bases itself on how the brain works, biosemiotics considers that mindedness evolved from, and remains tethered to, the natural world. In *The Origins of Mind*, numerous authors research and explore the biological mechanisms of meaning making processes of the mind (Swan: 2013). One outcome is that whatever we imagine conceptual frameworks to be along with our ideas about the world, there is nothing straightforward about the associated internal processes. As discussed, previous research into worldviews and their transformations have been steadily extended into realms beyond cognitive maps and narrative cultural/personal structures to those related to symbolic processes, imagination, identity formation, emotions, somatic interactions and psychic development. Biosemiotics adds a dimension to this that immediately complexifies the project of rethinking and refeeling our nature and destiny.

From biosemiotics, the implications are that the evolution of the symbolic consciousness and worldview production cannot be considered outside of natural processes: that representation and meaning making is derivative of intricate, interconnected, and as yet unidentified biological processes. Assuming the evolution of the capacity to develop worldviews is a process of natural selection, to transform a worldview must be linked to these same processes. This opens up an entire new pathway to grapple with the development of worldviews and worldview transformation.

Conclusion

One of the enduring significance of Lynn White’s essay is the need for deep cultural transformation. The question remains of how cultures change their overall orientation. Worldview studies have shown that cultural change requires a worldview change. There are myriad pathways to travel in attempting to comprehend this process. Intellectually it is a multidisciplinary venture, and continues to be only partially understood. This chapter has explored a few pathways of worldview transformations. The overarching theme here is that, whatever the area of study, it is necessary to understand the symbolic and narrative modes of human representations of the world. This symbolic consciousness is the means through which humans live, and shape, the world and the Earth. This must be taken seriously if human communities are to develop ecological worldviews, and ‘rethink and refeel our nature and destiny’.

¹ *The Challenges of Worldview Transformation: To Rethink and Refeel Our Origins and Destiny*, in *Religion and Ecological Crisis*, eds. Todd LeVasseur and Anna Peterson. New York: Routledge and Taylor and Francis, 2017, p. 121-137.

² See also Paul Ricoeur, *Lectures on Ideology and Utopia* (New York: Columbia University Press, 1986: _____, "Ideology and Utopia," *From Text to Action: Essays in Hermeneutics II* (Evanston: Northwestern University Press, 1991), p. 308-235. Other terms such as social consciousness, cognitive or reality maps, big picture thinking, cosmology, sacred canopy, social or ecological imaginary and undoubtedly others.

³ For a list of publications on Worldview see David Naugle's web page: <http://www.leaderu.com/philosophy/worldviewbibliography.html>.

⁴ *The Worldviews Group* consists of Diederik Aerts (theoretical physics), Bart De Moor (engineering sciences), Staf Hellemans (sociology), Hubert Van Belle (engineering sciences) and Jan Van der Veken (philosophy). Their web site lists some of their publications: http://www.vub.ac.be/CLEA/dissemination/groups-archive/vzw_worldviews/ They also publish in other groups on aspects of worldviews.

⁵ This understanding of symbolic consciousness comes from several sources: Terrence Deacon, biological anthropologist: *The Symbolic Species: The Co-evolution of Language and the Brain*. New York: W. W. Norton, 1998); John W. Dixon, theologian who studied the symbolic dimension of religions consciousness, especially the emergence of Neolithic awareness, (*Images of Truth: Religion and the Art of Seeing*, Atlanta: Scholars Press, 1996); Theologian Wentzel van Huyssteen and the Gifford lecture series (*Alone in the World? Science and Theology on Human Uniqueness* 2004); Anthropologist David Lewis Williams, (*The Mind in the Cave, Consciousness and the Origins of Art*, 2002); Stanley Greenspan, and Stuart Shanker, *The First Idea: How Symbols, Language, and Intelligence Evolved from Our Primate Ancestors to Modern Humans* (Cambridge; de Capo Press, 2004).); and anthropologist John E. Pfeiffer, (*The Creative Explosion: An Inquiry into the Origins of Art and Religion*, 1982).

⁶ See Richard Klein and Blake Edgar, *The Dawn of Human Culture: A Bold New Theory of What Sparked the "Big Bang" of Human Consciousness*. New York: John Wiley and Sons, 2002. There is little agreement on when, where, how and which version of hominids began to manifest creative and symbolic thinking. See also John Noble Wilford, "When Humans Became Human," Published: February 26, 2002. <http://www.nytimes.com/2002/02/26/science/when-humans-became-human.html?pagewanted=all> Accessed September 8th, 2015.

⁷ Bachelard stellar book, *The Poetics of Space*, describes in depth how humans interact with spaces via the imagination, symbolic consciousness and interiority. Gaston Bachelard, *The Poetics of Space*, translated by Maria Jolas (Boston: Beacon Press, 1964)

⁸ Gottschall makes a further case that humans, of all ages, prefer fiction to fact. As well, the story telling brain, especially the left hemisphere activities, will fabricate a story rather than leave something unexplained, as seen with spilt brain subjects.

⁹ There are countless contributions using cosmology and evolution as a basis of an ecological narrative or framework for some form of worldview shift and change in cultural orientation.

¹⁰ For example, see the European Society for the Study of Science and Theology. The conference for 2014 is entitled Do Emotions Shape the World? <http://esssat2014.edicypages.com/>

Works Cited:

Barad, Karen. 2007. *Meeting the Universe Half-Way: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke University Press.

Bennett, Jane. 2010. *Vibrant Matter: a political ecology of things*. Durham, NC: Duke University Press.

Berger, PL. 1967. *The sacred canopy: elements of a sociological theory of religion*. New York: Doubleday.

Berry, Thomas. 1988. *Dream of The Earth*. San Francisco: Sierra Club Books.

Boesel C. and C. Keller. 2009. *Apophatic Bodies: Theology, Incarnation, and Relationality*. New York, NY: Fordham University Press.

Castoriadis, Cornelius. 1998. *The Imaginary Institution of Society*, translated by Kathleen Blamey, Cambridge Mass.: MIT Press, (originally published in French in 1975).

Clark, John. 2004, "**A Social Ecology: An Ecological Imaginary**", <http://raforum.info/spip.php?article1050&lang=fr>

Connolly, William. 2013. "The 'New Materialism' and the Fragility of Things," *Millennium Journal of International Studies*. vol. 41 no. 3, p. 399-412

Conradie, Ernst. 2013. "Contemporary Challenges to Christian Ecotheology: Some Reflections on the State of the Debate after Five Decades". Paper delivered at the Ecumenical Institute of Bossey, Switzerland, May.

Cummings Neville, Robert. 2009. "Worldviews," *American Journal of Theology and Philosophy*, Vol 30, No. 3, p. 233 -243.

Dalton, Anne Marie. 2009. "Communion of Subjects: Changing the Context of Questions About Transgenic Animals", *Worldviews: Global Religions, Culture and Ecology* 13, 1-11.

Deacon, Terrence 1998. *The Symbolic Species: The Co-evolution of Language and the Brain*. New York: W. W. Norton.

Dixon, John. 1996. *Images of Truth: Religion and the Art of Seeing*. Atlanta: Scholars Press.

Dupré, Louis. 1995. *Passage to modernity: An essay in the hermeneutics of nature and culture*. New Haven: Yale University Press.

Eaton, Heather, ed. 2014. *The Intellectual Journey of Thomas Berry: Imagining the Earth Community*. Lanham: Lexington Press.

_____. 2014. "Where do we go from Here? Methodology, Next Steps, Social Change" in *Christian Faith and the Earth: Current Paths and Emerging Horizons in Ecotheology*, eds. Ernst M. Conradie, Sigurd Bergmann, Celia Deane-Drummond, Denis Edwards. London: Bloomsbury T & T. Clark, p.195 -218.

_____. 2014. "Global Visions and Common Ground: Biodemocracy, Postmodern Pressures and The Earth Charter" in *Zygon: Journal of Religion and Science*. vol. 49, no. 4 December p.917-937.

_____. 2011. "An Ecological Imaginary: Evolution and Religion in an Ecological Era", in *Ecological Awareness: Exploring Religion, Ethics and Aesthetics*. eds. Sigurd Bergmann and Heather Eaton. *Studies in Religion and the Environment, Vol. 3 / Studien zur Religion und Umwelt*, Bd. 3. Berlin: LIT Press, p. 7 -23.

_____ and Hornborg, Anne Christine. 2009. "Ritual Time and Space: A Liminal Age and Religious Consciousness", *Religion, Ecology and Gender: East-West Perspectives*, Sigurd Bergmann, Yong-Bock Kim (Eds.) (*Studies in Religion and the Environment/Studien zur Religion und Umwelt*) Münster-Hamburg-Berlin-Wien-London-Zürich: LIT p. 79 -90.

_____. 2007. "The Revolution of Evolution", *Worldviews: Environment, Culture, Religion* 11, 1, Spring, p. 6-31.

Feenstra, Ernest, Lynn White, Jr., Renato Baserga, Cesare Emiliani and Shale Niskin. 1967. "Christian Impact on Ecology ". *Science, New Series*, Vol. 156, No. 3776, May 12, p. 737.

Gottschall, Johathan. 2012. *The Storytelling Animals; How Stories make Us Human*. New York" Houghton, Mifflin Harcourt Publishers.

Greenspan, Stanley and Shanker, Stuart. 2004. *The First Idea: How Symbols, Language, and Intelligence Evolved from Our Primate Ancestors to Modern Humans*, Cambridge Mass.: Da Capo Press.

Halton, Eugene. 2007. "Eden Inverted: On the Wild Self and the Contraction of Consciousness," *The Trumpeter* 23, 3, 45-77.

Kaplan, Edward. 1972. "Gaston Bachelard's Philosophy of Imagination: An Introduction", *Philosophy and Phenomenological Research* 33, 1, 1-24.

Klein, Richard and Blake Edgar. 2002. *The Dawn of Human Culture: A Bold New Theory of What Sparked the "Big Bang" of Human Consciousness*. New York: John Wiley and Sons.

Kuhn, Thomas. 1970. *The structure of scientific revolutions*. Chicago : University of Chicago.

Lewis-Williams, David. 2002. *The Mind in the Cave: Consciousness and the Origins of Art*, New York: Thames and Hudson.

_____. 2005. *Inside the Neolithic mind : consciousness, cosmos, and the realm of the gods*. London : Thames & Hudson.

Mannheim, Karl. 1936. *Ideology and Utopia: An Introduction to the Sociology of Knowledge*. Translated by Louis Wirth and Edward Shils. New York: Harcourt, Brace & World, Inc.

Merchant, Carolyn. 1982. *The Death of Nature: Women Ecology and the Scientific Revolution*. New York: Harper and Row.

Mills, C. Wright, 1959. *The Sociological Imagination*. New York, Oxford University Press.
Naugle, David. 2002. *Worldview: The history of a concept*. Grand Rapids, MI: Wm. B. Eerdmans Publishing Co.

Norwine, Jim and Johathan Smith. 2000. *Worldview Flux: Perplexed Values for Postmodern Peoples* Lanham, Md. : Lexington Books.

Oelschlaeger, Max. 1991. *The idea of wilderness: from prehistory to the age of ecology*. New Haven : Yale University Press.

Pearson, Clive. 2001. "On Being Public about Ecotheology" *Ecotheology* 6 .

Pfeiffer, John. 1982. *The Creative Explosion: An Inquiry into the Origins of Art and Religion*, New York: Harper & Row.

Plumwood, Val. 1993. *Feminism and the mastery of nature*. London: Routledge.

Radford Ruether, Rosemary. 1991. "Ecofeminism: Symbolic Connections Between the Oppression of Women and the Domination of Nature", (Loy H. Witherspoon Lecture in Religious Studies), Charlotte: University of North Carolina, 1-17, (reprinted in: C.J. Adams (ed.), *Ecofeminism and the Sacred*, New York: Continuum 1993).

Smart, Ninian. 1983. *Worldviews: Cross-cultural Explorations of Human Beliefs*. Scribner's, New York.

Soper, K. 2009. "Unnatural times? The social imaginary and the future of nature" *Sociological Review*, Vol. 57 nSUPPL. 12 01, p. 222-235

Polanyi, Michael. 1958. *Personal knowledge: towards a post-critical philosophy* Chicago: University of Chicago Press.

_____. 1974. *Scientific thought and social reality; essays by Michael Polanyi*. New York : International Universities Press.

Sheets-Johnstone, M. 2008. *The Roots of Morality*. University Park: The Pennsylvania State.

Swan, Liz Stillwaggon. 2013. *Origins of Mind*. Dordrecht : Springer.

Taylor, Charles. 2004. *Modern Social Imaginaries*, Durham: Duke University Press.

Turner, Victor. 1967. *The forest of symbols : aspects of Ndembu ritual*. Ithaca, NY: Cornell University Press.

_____. 1974. *Dramas, fields, and metaphors; symbolic action in human society*. Ithaca NY. Cornell University Press .

van Huyssteen, Wentzel. 2004. *Alone in the World? Science and Theology on Human Uniqueness*, Grand Rapids, MN: Eerdmans.

White, Lynn Jr.. 1967. "The Historical Roots of Our Ecologic Crisis." *Science, New Series*, Vol. 155, No. 3767. Mar. 10, p. 1203-1207.

_____. 1978. "The Future of Compassion," *The Ecumenical Review*, Volume 30, Issue 2, p. 99-109.

Whitney, Elspeth. 2015. "Lynn White Jr.'s 'The Historical Roots of Our Ecologic Crisis' After 50 Years." *History Compass* 13/8, p. 396-410.