Chapter 23
Lynn White Revisited: Religious and Cultural Backgrounds for Technological Development

Martin Meganck

Abstract Since the beginning of the awareness of the environmental crisis, studies have tried to trace back the historical and ideological roots of industrial evolution. Many of these studies indicated elements of the Judeo-Christian tradition as at least co-responsible. Some 40 years later, this chapter overviews some strands of the discussions these studies have provoked, especially concerning the alleged anthropocentrism of Judaism and Christianity and their disenchanting attitude toward nature. These traditional ideas are confronted with insights from Marcel Gauchet's philosophy of religion, with inputs from other religions, and with empirical data from recent surveys.

Keywords Disenchantment of nature • Anthropocentrism • Judaism • Christianity • Hellenism

Introduction

When did it all begin? While environmentalists often refer to Rachel Carson's *Silent Spring* (1962) as "the real beginning" of the environmental movement, philosophers studying environmental and technology issues mostly choose the 1967 article "*The Historical Roots of our Ecologic Crisis*" (written by the American historian Lynn White) as a point of reference, at least in the historical sense, and often also as to the ideas developed in it. Both for Carson and for White, important precursors can be indicated, so that coining their texts as "starting points" is somewhat artificial.

M. Meganck, Ph.D. (✉)
Industrial Engineering Department, Katholieke Hogeschool Sint-Lieven, Ghent, Belgium

Centre for Science, Technology and Ethics, KU Leuven, Belgium
e-mail: martin.meganck@kahosl.be

S.H. Christensen et al. (eds.), *Engineering, Development and Philosophy*,
Philosophy of Engineering and Technology 11, DOI 10.1007/978-94-007-5282-5_23,

Yet both writers had novelties in their statements which helped legitimize their reputation, and the mere fact of the frequent referrals to their texts is significant in itself. Carson's book evoked the possibility of human activities pushing environment to the limits of its carrying capacity for sustainable life – an idea later taken up in *Limits to Growth* (Meadows 1972) and more recently in mathematical models used to predict combined environmental, climatologic, demographic, and economic evolutions. Lynn White took up arguments from the realm of discussions about religion, culture, and technology but placed them in the context of the raising awareness of the environmental crisis, where they sounded as an accusation against the Judeo-Christian roots of Western culture. With religion coming into play, White seems to have touched a very sensitive nerve, and his article gave rise to a multitude of comments, interpretations, and criticisms (White 1973; Mitchell et al. 2006).

The Ideas Behind "The Historical Roots of Our Ecologic Crisis"

White's article emphasizes first of all that "modern technology and modern science are distinctively Occidental" (White 1967, p. 1204). This is not meant to deny achievements in, for example, China or the Arabic world; on the contrary, many technological innovations had their historical roots in Eastern cultures and were – in successive movements – imported from the East. Yet, throughout the Middle Ages already, the Occident saw scientific and technological development exceeding that in the Orient. In order to understand this development, White wanted to examine some of the "fundamental medieval assumptions and developments," adding "Human ecology is deeply conditioned by beliefs about our nature and destiny – that is, by religion" (ibid., p.1205). And for Western Europe, religion mainly means Christianity, which cannot be properly understood without also referring to its Judaic roots. And Christianity (especially in its Western form) is, according to White, "the most anthropocentric religion the world has seen" (ibid.).

For illustrating Christianity's anthropocentrism, White refers to the story of creation that Christianity inherited from Judaism. In Gen 1:26–28, mankind is created as an "image of God" and receives the mission to "fill the earth and subdue it" and to rule over the animals. In Christianity moreover, the special nature of mankind is reemphasized by God's incarnation in Christ: what more can one want as a proof of the God-likeness of man? Furthermore, Western versions of Christianity developed the tradition of "natural theology": the study of the created nature itself was a legitimate way of understanding the Creator. For many historically important scientists, their scientific work was intricately linked to faith and theology. White mentions here Roger Bacon, Galileo Galilei, and Sir Isaac Newton (ibid., p. 1206).

The history of Christianity is not univocal in this respect, though. Christian churches of Byzantine or Orthodox tradition tend to be more contemplative and hence less inquisitive or active. And even in the history of the Western Catholic church, there are figures like Saint Francis who "tried to substitute the idea of equality of all

creatures, including man, for the idea of man's limitless rule of creation" (ibid., p.1207). Although Saint Francis is in this sense atypical for the Western Christian tradition, White proposes him as a "patron saint for ecologists" (last sentence of White's article).

The thesis of Judeo-Christian anthropocentrism as a dominant cause for mankind's impact on the environment is the most discussed aspect of White's text. Minteer and Manning (2005) distinguish some other themes that could lead to further discussion. Human interference with the environment is almost self-evidently described as an "inherently negative disruption of some sort of preexisting and static ecological order" (Minteer and Manning 2005, p. 167). But the idea that the "natural state" of the environment is equilibrium can severely be questioned. Or, the suggestion that in an older model of agriculture, man was in close contact with nature, whereas modern agriculture brings disruption and alienation. White also seems pessimistic about democracy's possibility to deal with the environmental crisis. And finally, White does not consider the possibility of milder forms of anthropocentrism, where nature would be less subject to exploitation.

Old Wine in New Wineskins?

White was not the discoverer of the theme of anthropocentrism in Christianity and of the desacralization of nature in monotheistic religions like Judaism and Christianity. For centuries, philosophers and theologians had been mentioning these characteristics while examining the link between Christianity and scientific or technological development. Van der Pot (1985, pp. 38–39) considers the English scientist Robert Boyle as the first author to point out that "[T]he veneration, wherewith men are imbued for what they call nature, has been a discouraging impediment to the empire of man over the inferior creatures of God". And in the 4th Century AD already, Saint Gregory of Nyssa wrote that "to conclude the Creation, man was introduced: not contemptuously subject to the latter, but from his very beginning dignified to be king over what is subordinate to him" (Van der Pot 1985, p. 48).

In the beginning of the twentieth century, several authors developed this theme further. Among them is the German sociologist Max Weber in his elaborate study of the historical and ideological roots of science, technology, and capitalism (Van der Pot 1985, p. 39). He indicated that where the relationship between humans and nature is dominated by magic, rationalization of human actions (like in economy and technology) is severely inhibited. Judaism, on the contrary, is characterized by a hostility against magic, and Christianity (especially in its ascetic protestant tendencies) inherited this attitude. Other thinkers coming to similar conclusions include Max Scheler and Arnold Gehlen.

Considering these precursors, it may seem surprising that White's article elicited so much discussion. In fact, the basic ideas behind it were not new in themselves.

But until then, they had mainly been linked to the occurrence of scientific and technological progress and in this respect endowed with a predominantly positive connotation. White, however, uses language with negative connotations: he puts the discussion in a context of *crisis*. Human interactions with nature are not just use or even domination but end in *exploitation*, and to the extent that the ecologic effects are out of control, he considers Christianity to *bear a large burden of guilt*. It seems that this accusatory tone contributed to a large extent to the eagerness with which many commentators started discussing, confirming, or refuting White's theses (Hawkin 1999).

Add to that the fact that the environmental problem in itself was a relatively new theme on the public agenda. Rachel Carson had set the tone in indicating certain forms of pollution as threatening for the future of mankind – and nature. The oil spill of the Torrey Canyon in 1967 (as one of the very first major environmental accidents) was very effective in visualizing the possible threats of large-scale industrial operations. Other themes like the limited availability of raw materials, or the possible impacts on climate, got at the time little or no attention, or had yet to be discovered (Zweers 1991).

Dominion Terrae: Disenchantment of Nature Combined with Anthropocentrism

According to Wildiers (1989) and Boersema (1991, p. 31), all human thinking about a deeper meaning of life has a "metaphysical triangle" as its backcloth: it has to find a proper positioning for man, nature, and the Divine (see Fig. 23.1). The triangle allows visualization of the mutual relationships between the corners of the triangle. The distance and the elevation of the corner "God" can be an indication for the degree of transcendence of God above nature and/or man. In a pantheistic view, the corners for "God" and "nature" (and man?) would coincide and merge. In worldviews in which man is considered as a creature like nature, "man" and "nature" will be on a same horizontal line, and this line being shorter the more man is merely seen as part of nature. Triangles in which the position of "man" is elevated above "nature" would then be symptomatic for a worldview in which man is not merely a creature like the rest of nature but is endowed with some degree of divine dignity.

It can be useful now to take this "metaphysical triangle" as a framework for visualizing and discussing the ideas raised in White's article. The "dominion terrae" idea, which places humans in a dominant position compared to nature, can be seen as a combination of anthropocentrism (resulting from the privileged relationship between God and man) and disenchantment of nature. For each of these sides of the metaphysical triangle, verses from the very first chapters of Genesis can be used as illustrations (and foundations?) of these attitudes. But scholarly methods in exegesis lead to results that seem less conclusive.

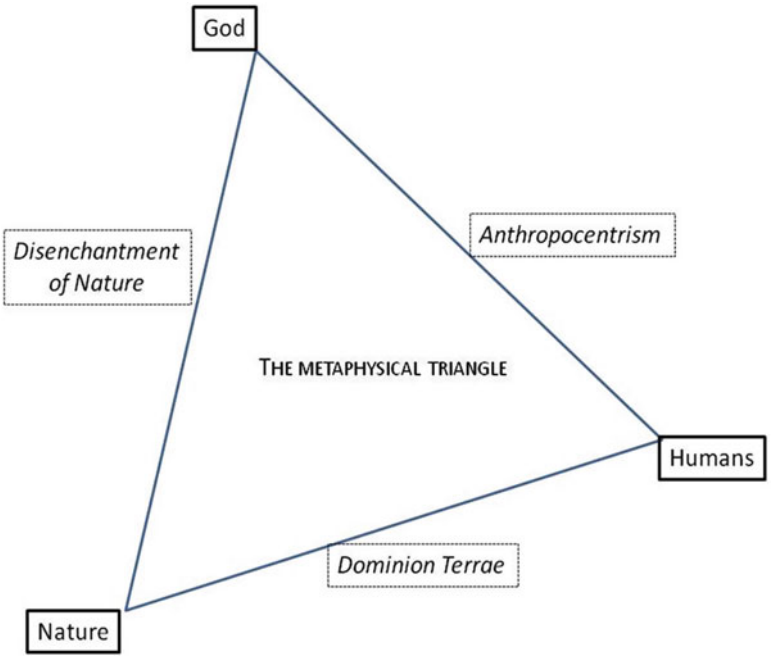

Fig. 23.1 The metaphysical triangle

Biblical Backgrounds: A First Reading

White himself links Christianity's attitude toward environment directly to the stories of creation which Christianity inherited from Judaism. He did not enter into the details of the text, however. Exegetic studies seem to support White's view at first but give a more nuanced image in the end. In Genesis 1:26–28, man's mission in the world is expressed with words like "subdue" and "have dominion":

> Then God said, "Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth." So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them, and God said to them, "Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth."
>
> (Gen 1:26–28, Revised Standard Version (RSV))

Genesis 2:18–20 is also often interpreted as establishing man's domination over nature (or at least, over the animals), especially in view of the power that is given to words and the significance of name giving in Semitic cultures. "So out of the ground the Lord God formed every beast of the field and every bird of the air, and brought them to the man to see what he would call them; and whatever the man called every

living creature, that was its name"(RSV). In Genesis 2:15, however, man's mandate over nature takes a different tone: "The Lord God took the man and put him in the garden of Eden to till it and keep it" (RSV). Other versions translate the second half of this verse as *to dress it and to keep it* (King James Version), *to cultivate it and keep it* (New American Standard Bible), or *to work it and take care of it* (New International Version).

One way to examine the correctness of the anthropocentric interpretations of these texts is to refer to the original Hebrew text. In Gen 1:26–28, the Hebrew words indicating man's relationship to the animals and the earth are *radah* and *kabash*. *Radah* has significations in the field of treading or squeezing, like one does with grapes in order to make wine. In the context of hostility among humans, *radah* has a meaning of domination, and it is also used to express the sovereign power of kings. *Kabash* has connotations in the field of warfare (subjection of the defeated) or slavery (to enslave). With the evocation of these significances, man is indeed placed in a position of dominion and power over nature (Wénin 2007, p. 41, Hoge 1991).

Gen 2:15 however uses the words *'avad* and *shamar*. Significances of *'avad* are to be found in the field of work: to cultivate the ground, to build, to serve, and even to worship or to honor (when used in a religious context). *Shamar* has meanings in the field of watching over something, guarding or preserving. These words do thus not have the same connotation of violence or power as compared with the words used in Gen 1:26–28 (Mitchell et al. 2006).

Biblical Backgrounds: Widening the Interpretive Background

Whereas the first circle of meanings of the terms appearing in the Biblical stories of creation has a rather obvious tendency, some theologians extend the field of associations, thus opening a much wider range of possible interpretations. For example, Kanayankal (2009, pp. 67–95) gathers a set of comments associating the meanings of *radah* and *kabash* with royal authority (eventually conferred upon mankind by God). But the tradition of "kingship" in the ancient Near East is loaded with ideals of wisdom, justice, righteousness, and taking care of the well-being: in "conjugation with a vision of just governance in which oppression is actually crushed" (Kanayankal, p. 80). An interpretation in this sense would bring the scope of even such dominant words like *radah* and *kabash* closer to the language used in Gen 2:15.

Kanayankal continues his work by elaborating the theme of *Sabbath* in biblical tradition. With Sabbath, the human attitude of dominion and activism is mitigated by moments of withdrawal, rest, and reorienting toward God. Gulick (1991, pp. 187–188) points out that the *covenantal relationship* between God and humans is often seen as essential in the Bible. The "rainbow covenant" between God and Noah (Gen 9:9–10) includes the animals within its purview and was often used as a symbol when the World Council of Churches adopted *"Justice, Peace, and the Integrity of Creation"* as a working theme in the early 1990s (De Tavernier and Vervenne 1990). Yet Gulick concludes that the Sinaitic covenant is essentially

between God and humans and that nature appears above all as *a resource, a potential punishment, or a gift*. Also the Ten Commandments (Deut 5), or the shortened ethics outline in the Gospel ("You shall love the Lord your God […] and your neighbor as yourself" (Lc 10:27)), do not explicitly mention nature as an object of human care or responsibility.

Others interpret the abovementioned verses in Gen 1–2 in terms of a *stewardship*. God does not give creation to man in property, with the full discretionary powers this would entail. God remains the real owner of creation, and man has to account for the way nature is treated. The idea of a *co-creatorship* has also been put forward: when God created man in his image and gave him a divine mandate, God's creatorship is with that mandate co-transferred upon mankind. Creation was thus not complete on the 6th day, and human history can be seen as the continuation or completion of creation. Similarly, though slightly different, human work (although originally presented as a punishment) has been interpreted as a way of *restoring the original paradise* from which man had been expelled after the original sin, well aware of the "eschatological reserve": the fundamentally utopian character of the Kingdom of God.

Preliminary Conclusion

It is quite easy to find Biblical references strengthening White's view when he points to the Judeo-Christian tradition as a historical background for Western anthropocentrism. Genesis 1 can be read as a story in which the Jewish tribes, with their nomadic background, position their God as a creator above the other, nature-bound gods of the sedentarized surrounding peoples (the beginning of monotheism). The Old Testament is also very critical in distinguishing God's real prophets from alleged prophets who engage in magic practices and evoke the spirits of nature. And throughout the texts, the relationship between God and his people appears as special and privileged compared to the position of nature. There are places where the beauty and wonders of nature are described and praised (like in Job 38–42); and yet even in these instances nature primarily serves as a signal of God's might and transcendence. So in Psalm 8, the praise of nature's beauty finally results in an accentuation of man's privileged position:

> When I consider Your heavens, the work of Your fingers,
> The moon and the stars, which You have ordained;
> What is man that You take thought of him,
> And the son of man that You care for him?
> Yet You have made him a little lower than God,
> And You crown him with glory and majesty!
> You make him to rule over the works of Your hands;
> You have put all things under his feet,
>
> (Ps 8:3–6, New American Standard Bible)

Mitigations of this anthropocentric view rely on theological connotations linked to the interpretive contexts in which the Bible can be put, such as the harmony-oriented images of the covenant or of a "Kingdom of God."

Anthropocentrism and Disenchantment of Nature in Christianity

Relying on the foundational texts for a tradition is but one way of understanding that tradition. It has to be completed by an analysis of the *Wirkungsgeschichte*. At some stages in the development of a tradition, the foundational texts are referred to explicitly. This may especially occur on moments of crisis, either to go "back to the roots" (with sometimes a fundamentalist reading of the texts) or in a movement of *aggiornamento*, trying to reinterpret the texts in the new circumstances. Reconstructing and reinterpreting the development of a tradition inevitably occurs in a combination of selective and constructive movements, and it is a challenge to do this in full respect for intellectual honesty.

Browsing Through History

Browsing through the history of Christianity and Western intellectual life, examples of an anthropocentric and disenchanting attitude are legion. A few examples:

- Fathers of the Church, commenting on God's incarnation in Christ, see herein also a divinization of man. So, for example, Saint Augustine (354–430): "Factus est Deus homo, ut homo fieret Deus." (*Sermo 13 de tempore*, PL39, 1097): "God became man, so that man could become God."
- On biblical grounds, Saint Thomas Aquinas (1225–1274) accepted that humans would kill animals. And where he yet wanted humans to refrain from cruelty against animals, he gives as a reason that this is "to turn the mind of man away from cruelty which might be used on other men, lest a person through practicing cruelty on brutes might go on to do the same to men" (*Summa Contra Gentiles* III, 112, trad. V. Bourke).
- There seem to have been a multitude of factors that lead to the condemnation for heresy of Giordano Bruno (1548–1600) (Rowland 2008). Some of them had to do with philosophical or theological orthodoxy, and his general rebellious attitude certainly did not help to placate the controversies. One of the difficulties was his pantheism: the idea of an inseparable unity between the infinite God and the infinite universe was found incompatible with catholic dogmas concerning, for example, sacraments and transubstantiation, which can only hold if the material world is seen as fundamentally disenchanted. Similarly, Pietro Redondi (1985) considers Galileo's trial to be inspired more by catholic sacramentology being threatened by his atomistic physics, rather than by the more commonly known cosmological disputes.
- In Descartes' dualism between *res cogitans* and *res extensa*, animals are on the merely material side; his view on animals is often resumed in the image of the *bête-machine*; man on the contrary is described as "*maîtres et possesseurs de la nature*" (masters and owners of nature) (*Discours de la méthode (1637)*).

- Francis Bacon (1561–1626) saw nature as something which was to be conquered, be it by obeying (in this case: studying) it: "Natura non nisi parendo vincitur" (*Novum Organon*).

Occasions where nature is valued more positively seem scarce by comparison. White already drew the attention to the figure of Saint Francis of Assisi (1182–1226): in a culture where fundamentally dualistic heresies like bogomiles and cathars saw material nature as emanations of evil, Francis' attitude wanted God's creation to be honored, including in its material expression.

It was not until the 1960s that environmental care emerged as a theme of public concern and discussion in society at large. The churches made no exception to this. One of the first mentions of ecology as a theological theme in Catholicism seems to have been the speech of Paul VI to the FAO, in which he urges mankind to "dominate its domination" (Nieme Kadiamonoko 2011, p.182). Other loci are the abovementioned campaign "Justice, Peace, and the Integrity of Creation" of the World Council of Churches in the 1990s and in the Catholic Church John Paul II's Encyclical *Centesimus Annus* (1990, n 37), which states

> At the root of the senseless destruction of the natural environment lies an anthropological error, which unfortunately is widespread in our day. Man, who discovers his capacity to transform and in a certain sense create the world through his own work, forgets that this is always based on God's prior and original gift of the things that are. Man thinks that he can make arbitrary use of the earth, subjecting it without restraint to his will, as though it did not have its own requisites and a prior God-given purpose, which man can indeed develop but must not betray. Instead of carrying out his role as a co-operator with God in the work of creation, man sets himself up in place of God and thus ends up provoking a rebellion on the part of nature, which is more tyrannized than governed by him.

In the *Catechism of the Catholic Church* (1992, articles 2415–2418), care for animals and nature is mentioned as a comment on the 7th (in other churches: 8th) commandment, "you shall not steal," where inappropriate use of natural resources is interpreted as a sin against the universal destination of the goods of the earth, including the interests of future generations.

Philosophical Backgrounds: The Greek Connection

In White's article, Christianity was mainly linked to Judaism as its historical background. However, it is often indicated that the Hellenistic culture which prevailed in the Mediterranean area in the first centuries of Christianity had a large influence in molding the young spreading religion. Influences of Greek philosophical currents can be found in the New Testament and in the writings of many of the Fathers of the Church. The political structure of the Roman Empire was also in the background when the hierarchical structure of the Church was canvassed.

Boersema (1991) is one author who has drawn attention toward the influences of Greek philosophy on two important moments of Christianity. A *first Hellenization* took place during the initial spreading of Christianity, due to a combination of

anti-Judaic feelings in some tendencies of young Christianity itself and the overwhelming presence of the Hellenic culture in the Mediterranean area. A *second Hellenization* is to be found in the late Middle Ages and during the Renaissance, with the rediscovery of the old classic texts (often via their Arabic translations). Be it in different forms and proportions, Platonic, Aristotelic, and Stoic traditions all recognize a hierarchical order in the cosmos, with man being at the top of that order (Aristotle) or being the main purpose of it (Stoa). Hierarchical thinking (also present in the *dominion terrae* idea) can be traced back both to Aristotelic and Platonic traditions. To the extent that it is in the "nature" of plants and animals to be at the service of mankind (Aristotle) and that "nature" is a "telos" with a normative meaning in his ethics, human use of plants and animals is accepted. Traditions rooted in Plato often accept a separation of a natural and some supernatural level. The dualistic body/soul anthropology in Christianity seems practically absent in Old Testament Judaism; one of the protagonists of this anthropology was Saint Augustine, under neoplatonic influences. Even the idea of monotheism, which is usually linked to the triad of Judaism-Christianity-Islam, had its adherents in pre-Christian Hellenistic thought: Ferguson (2010, p. 184) reports how Eudorus of Alexandria (1st century BC) developed his own interpretation of Pythagorean and Platonic ideas, resulting in the idea of an all-transcending One.

Disenchantment as an Inherent Trait of Christianity

The contemporary French philosopher Marcel Gauchet incorporated a philosophy of religion into his political philosophy. In his book *Le désenchantement du monde* (1985), he describes a specific kind of dynamics which seems present in "higher religions" in general and in Christianity in particular. This dynamics finally leads to *la sortie de la religion*. "*Sortie*" is used in a rather ambiguous sense: it indicates the disappearance of religion (religion leaving the floor) but also the result of religion (what comes out of religion).[1]

Religion, according to Gauchet, primarily deals with the principle of heteronomy, otherness, and dispossession of oneself in favor of the "beyond." In primal religions, transcendence is not experienced "spatially" but temporally. The gods surround humans in their living world but link them to the primordial past (Cloots 2008, pp. 9–11). Around 5000 BC, the state arose as a level of authority between the gods and the humans: the beginning of a movement in which power and politics inserted a growing distance between the gods and man. The temporal distance from primal religions turns into an ontological and spatial distance. Finally, in what Gauchet calls "higher religions," the gods are expelled from earth and are seen as completely

[1] In the English version of Gauchet's book, *The Disenchantment of the World*, "sortie" is translated as "departure"; this translation however does not fully render the ambiguity of the original French "sortie" (Cloots 2008, p.7).

different in an ontological sense. In Judaism, this "ontological duality is deepened into a real separation, through monotheism and creationism" (Cloots 2008, p. 12). Further, withdrawal of God from the world progressively enhances man's autonomy and independence. The paradoxical conclusion of this is that the greater the gods are, the more man is free (Gauchet 1985, p.64).

In Christianity, there is a specific logic through which this greater autonomy develops further (Cloots 2008, pp. 14–20):

- Christianity is a religion of *revelation*: God reveals himself, through history, but also through creation itself: God can be known through the "book of nature." The emphasis on transcendence is mitigated by *incarnation*: if God became man in Christ, this gives a proper dignity to the world. The religion itself indicates the world as a place of relevance, of concern. And as salvation passes through incarnation, the mission of changing the world is bequeathed to man. The notion of incarnation makes that Christianity never settles in neither mere submission nor escapism (although some movements in Christianity occasionally flirted with these attitudes). The world is a serious thing, requiring active attention.
- Finally, Christianity is a religion of *interpretation*. We do not know the *ipsissima verba* of Christ; we do have four gospels, which are interpretations already. And throughout the history of Christianity, that interpretation continues, either by *magisterium*, by tradition, or by *sensus fidelium*. The possibility of heresies, schisms, reformations, and dissidence seems congenital to Christianity. Hence, intellectual work is always part of dealing with revelation, thus stimulating autonomous thinking, philosophy, and eventually science.

At this point, it is no wonder that Christianity eventually leads to its own "sortie": it will have to submit to the ideas of reasonableness and humaneness. It accepts a full separation of the realm of the gods and the realm of worldly (political) authority ("Give to Cesar what belongs to Cesar, and to God what belongs to God" (Lc 20:25)). Whereas modernity is usually seen as a threat for religions, Gauchet describes modernity also as a result of religion.

Lynn White, as a historian, based his thesis mainly on his reading of history and on his recognizing a thread from early Judaism to the times of industrialization. Theologians, exegetes, and Church historians reworked his ideas, often finding elements confirming White's intuition as well as elements mitigating, contextualizing, or criticizing it. Gauchet's political philosophy of religion gives another, more philosophically constructed carrying canvas for White's intuition.

More than Anthropocentrism and More than Christianity

Two more threads are to be examined concerning the validity of White's thesis:

- Are there any other aspects of Western civilization which can be relevant for this discussion (besides the anthropocentrism/disenchantment debate)?

- What about other cultures? Can the observed similarities and differences between Judeo-Christian versus other cultures account for the differences in attitudes toward nature and in development of industry?

Time, Progress, and Work

From White's paper, the ideas of anthropocentrism and disenchantment of nature were distilled as the key elements in his search for the historical roots for the ecologic crisis. Almost casually, without really developing it, he also mentions the understanding of "*time*" in Judeo-Christian tradition as "*nonrepetitive and linear.*" In cultures with a static or cyclical view of time, the idea of "progress" is hard to conceptualize. In the most dominant currents of Greek philosophy, the idea of a linear progress of history is virtually absent. Time is instead primarily seen as static (in philosophies where "real change" is impossible) or cyclical (either in agrarian cultures or in philosophies where the perceived cyclical movements of the stars and planets are dominant in the experience of time). And even if occasionally there is some kind of linear experience of time, it is only perceived as the distance elapsed between the past and the present; there seems to be no spontaneous extrapolation of this movement toward the future (Van der Pot 1985, p. 30). Nomadic cultures on the contrary tend to have another experience of "history," with both a past and a future. The originally nomadic backgrounds of early Judaism are hence often referred to as the source of the linear, unstoppable, and future-oriented experience of time in the three monotheistic religions. Early Christianity was moreover strongly influenced by the idea of an imminent "end of times" which prevailed in the Judaism from which it originated. The apocalyptic vision in Mt 25 (the "final judgment") thereby instilled a sense of urgency and stressed the importance of the very material earthly life.

Even within a linear experience of time, a variety of views existed. Is there a beginning of time (i.e., $t=0$: Big Bang, the moment of creation) or not (i.e., time coming from $-\infty$)? Will time or history come to an end (either physically – the Big Crunch – or at least culturally, as in Teilhard de Chardin's "point Ω," or the "classless society") or will time continue forever (until $+\infty$)? Until recently, scientists even theorized about the possibility of an oscillating universe, with the singularity of a "Big Crunch" immediately leading to a new "Big Bang."

In a culture with a future-oriented vision of time, the idea of (inevitable?) progress can develop: an idea of progress that has, in the Western world, almost self-evidently (except in primitivistic views of culture) been identified with technological growth. The 1972 book "*Limits to Growth*" was one of the first to fundamentally question the possibility of permanent growth.

Besides the progress-oriented vision of time, the development of a positive attitude toward *work* is among the causes mentioned for explaining technological development in the Western world. In Greek philosophy, a negative view on manual work prevailed. In Judaism, work appeared mainly as a "fact of life" which had to be accepted, even if there was always the reminiscence of Gen 3:19, in which labor

appears as God's punishment for the original sin. In Christianity, a gradual evolution toward a better acceptance of labor can be found: from the "Ora et Labora" of the Benedictine tradition to the development of a real work ethos (attributed by Max Weber to certain currents in Protestantism). Even without the specific work ethos in itself, the Protestants' belief in the right and the ability of individuals to form their own judgment in religious affairs had its parallel in scientific matters. Van der Pot (1985, pp. 90–91) illustrates the connection between scientific and industrial development and the early Protestantism by pointing out the disproportionate number of religious nonconformists or protestants among entrepreneurs in England and Wales around 1770, the founding members of the *Royal Society for the improvement of natural knowledge* in London in 1660, and the foreign members of the *Académie des Sciences* in Paris between 1666 and 1883. Although one must always be aware of the difficulty in establishing a causal relationship between cultures in general and the currents that are part of these cultures (e.g., is Protestantism a cause or a consequence of the changing times?), these considerations about the rise of Protestantism can help answer the question of why it took about a millennium for that scientific-industrial development to lift off, especially if technological development and our dealing with nature are tributary to Judeo-Christian tradition, and Christianity became a dominant factor in Western culture during the early Middle Ages already.

Confrontation with Other Cultures

Islam is undoubtedly the religious movement which has most kinship with Judaism and Christianity. All three are religions of revelation, having in common many figures and stories in their fundamental texts. The Qur'an (e.g., 7:45 and 15:26) refers to creation in very similar terms as the Jewish and Christian Bibles. Additionally, Avicenna and Averroes are but two of the important philosophers and scientists of the flourishing Persian and Arabic cultures, at the moment of the Middle Ages in the West.

However, the *dominion terrae* idea is far less distinct in Islam. The idea that the earth is Allah's gift to man, and that man is called to rule over nature as Allah's representative, is not unknown to Islam (Van der Pot 1985, p. 501 and p. 1081). But this idea found a strong counterpart in a current in which the eleventh–twelfth century philosopher al-Ghazzali played a major role, who found that "every attempt to take power over the world by science or techniques must be seen as an offense against Allah's omnipotence" (translated from Van der Pot 1985, p. 43). With the idea of "submission" being present in the very meaning of the word "Islam" itself, the distance between man and Allah in the metaphysical triangle (Fig. 23.1) is much larger than in, for example, Christianity (Gauchet 1985, p. 93, see also Cloots 2008, p.15). Allah's overwhelming presence is such that nothing (no form of political power, no form of knowledge) can be seen as "purely secular and divorced from the ultimate goal of human existence" (Van der Pot 1985, pp. 43–44).

A common feature among many Asian philosophies and spiritualities, on the other hand, seems to be the absence of a deity which would be conceived as a person possessing all desirable human qualities on a supereminent level: no overarching, supernatural, omniscient, omnipotent, and willing superrationality. Instead of a separation between the profane and the divine, a sense of harmony and interconnectedness prevails. The idea of opposing and tearing apart the corners of the "metaphysical triangle" would there be perceived as quite artificial. Spiritualities including a form of reincarnation further confirm the idea of a fundamental unity between mankind and nature. Man is not positioning himself against nature but within nature. The aspiration to dominate the world – allegedly so typical for Western cultures – would in *Buddhism* be tempered by the conscience of the "impermanence and insubstantiality of life" (Henning 2002, p. 15), or by the desire to transcend "the illusions of the self" (Cloots 2008, p. 15). With compassion, moderation, and humility as its "Three Jewels," *Daoism* has no place for the idea of human domination either. The ideal human action is *wu wei*: non-coercive activity (compared by Nelson (2004) with Heidegger's *Gelassenheit*). Man is not to impose him/herself upon the world but to live in attunement with it (Rai et al. 2009, p.13).

Although this exploration of Eastern spiritualities is far too short to render their full nuances and significances, the contrast with the Western attitude of rational exploration and manipulation of the world is obvious. The breakthrough of a Western-style industrialization in, for example, contemporary India and China is hence seen by many as a rupture with traditional local values.

The Empirical Turn

Excerpting ideas, intuitions, and logic in religious or philosophical ideologies is one thing, while finding out what people really think may be something different. Minteer and Manning (2000), Manning (2003), Minteer (2007), and de Groot (2010) conducted empirical research on the attitudes of people regarding nature and environment. The Canadians Minteer and Manning identified a range of 17 "types of environmental ethics," brought together in five clusters. On the extreme ends of the scale, there are an anti-environmental attitude (nature is seen as a source of physical threats or of spiritual evil) and radical environmentalism (considering all living things as interconnected, valuable, or carriers of rights). In between these extremes lie attitudes of benign indifference, utilitarian conservation, and the stewardship idea. De Groot's research took place in the Netherlands, France, and Germany. She too started with a set of images of the human/nature relationships, and statistical analysis of the study responses revealed however that it was better to rearrange and slightly redefine the clusters. She came to a subdivision in which the human/nature relationship could be described as "master," "guardian," "partner," and "participant," with "guardianship" being a more ecocentric variant of the traditional "stewardship" idea. It appeared that almost all respondents (91%) agreed with the guardianship image, followed by "partnership" (52%), "participation" (28%), and "mastership" (15%).

One of de Groot's conclusions is thus that the mastership idea, although generally described as being typical for the Western world (and often commented on, like in White's and this chapter), and although discernible in major religious and philosophical theories, is not supported by the majority of the population. In fact, virtually all respondents recognized nature to have some intrinsic value. Yet these views are held by individuals and are not always reflected in the attitudes of organizations and institutions, which often concentrate on economic utility. "The tapestry of our life is, to a large degree, woven by institutions and many of these fail to recognize and exploit the public basis for nature-friendly institutional action" (De Groot 2010, p.120).

Conclusion

Perhaps the turmoil caused by Lynn White's 1967 article was partly due to the accusing tone he used. From a historian, one can expect a descriptive study, starting from his or her reading of the facts, causes, and consequences in the line of history. By translating "roots" or "causes" in terms of "guilt," White struck a normative tone, which made some authors rush to the defense of the accused, even if the factual information gathered by White was little new in itself.

Secondly, even indicating discrete events as causes for a situation can be a risky task; interpreting a millennia-long tradition, with all the currents and evolutions it has undergone, inevitably limps by being selective and constructive at the same time. One can indeed see a thread of activism, anthropocentrism, and disenchantment of nature through the Judeo-Christian tradition. And yet, that same tradition was also associated with moments of awe in front of nature, withdrawal and rest instead of work, and awareness that salvation cannot just be produced but must be received. The same tradition which is linked to progress and activism has also been accused of conservatism and obscurantism. Christianity is the religion of Saint Francis as well as Inquisition; of liberation theology as well as strict ritual fundamentalism. Yet, by its dominant position in Western history, it cannot be denied that Christianity has played a role in the development of the actual society. Gauchet saw modernity and enlightenment as an offspring of Christianity itself, and the industrial revolution is undoubtedly rooted in the same movement of gaining confidence and claiming liberty in religious, political, and economic matters. In Christianity, the imperative to actively take care of others and taking suffering seriously are elements that should prevent it from sliding into either escapism or mere submission (although both tendencies were certainly present at times).

At least in Western Europe, the situation of religions has changed drastically the last few decades. In many countries, traditional Christianity is shrinking, leaving the room for a largely secularized society. In other countries, a revival of religions can be noticed. And the mixture of cultures by migration (as well intra-European as from abroad) is far from stabilized. Finally, the worldwide awareness of globalization, with its political, economic, technological, environmental, and cultural aspects, complicates and intensifies the challenge of investigating and reflecting on the ways cultures influence, adopt, and adapt new situations.

Acknowledgements The author thanks professors Yanming An (Clemson University), Hans Ausloos (Université Catholique de Louvain), and Bénédicte Lemmelijn (Katholieke Universiteit Leuven) for their willingness to provide useful information for this study.

References

Boersema, J.J. 1991. Eerst de jood, maar ook de Griek. In *Op zoek naar een ecologische cultuur. Milieufilosofie in de jaren negentig*, ed. Wim Zweers, 27–56. Baarn: Ambo.

Cloots, A. 2008. Modernity and Christianity. Marcel Gauchet on the Christian roots of the modern ways of thinking. *Milltown Studies* 61: 1–30.

De Groot, M. 2010. *Humans and nature. Public visions on their interrelationship*. Ph.D. thesis, Radboud Universiteit, Nijmegen.

De Tavernier, J., and M. Vervenne (eds.). 1991. *De mens hoeder of verrader van de schepping?* Leuven: Acco.

Ferguson, K. 2010. *Pythagoras*. London: Icon Books.

Gauchet, M. 1985. *Le désenchantement du monde. Une histoire politique de la religion*, Bibliothèque des Sciences Humaines. Paris: Gallimard.

Gulick, W.B. 1991. The Bible and ecological spirituality. *Theology Today* 48(2): 182–194.

Hawkin, D.J. 1999. The disenchantment of nature and Christianity's 'burden of guilt'. *Laval Théologique et Philosophique* 55(1):65–71, also at http://id.erudit.org/iderudit/401215ar

Henning, D.H. 2002. *A manual for Buddhism and deep ecology*. Available at www.buddhanet.net/pdf_file/deep_**ecology**.pdf

Hoge, D.R. 1991. Judeo-Christian values and the ecological crisis. In *The place of the person in social life*, eds. P. Peachey, J. Kromkowski, and G.F. McLean, Council for Research in Values and Philosophy, Cultural Heritage and Contemporary Life, Series I: Culture and values, vol. 6, Chapter 17. Washington, DC: Council for Research in Values and Philosophy, available at: http://www.crvp.org/book/Series01/I-6/chapter_xvii.htm

Kanayankal, S.M. 2009. *Beyond human dominion. An appraisal of the ecological and ethical implications of the Sabbath in reconsidering the theology of creation*. Ph.D. thesis, Faculty of Theology, Katholieke Universiteit Leuven, Leuven.

Manning, R.E. 2003. Social climate change: A sociology of environmental philosophy. In *Reconstructing conservation: Finding common ground*, ed. B.A. Minteer and R.E. Manning. Washington, DC: Island Press.

Meadows, D. 1972. *De grenzen aan de groei. Rapport van de Club van Rome.* Het Spectrum, Utrecht/Antwerpen. Translation of: *The limits to growth. A report for the club of Rome project on the predicament of mankind*. New York: Universe Books.

Minteer, B.A. 2007. On Sustainability, dogmas, and (new) historical roots for environmental ethics. In *Sustainable food production and ethics*, ed. W. Zollitsch, C. Winckler, S. Waiblinger, and A. Haslberger, 21–25. Wageningen: Wageningen Academic Publishers.

Minteer, B.A., and R.E. Manning. 2000. Convergence in environmental values: An empirical and conceptual defense. *Ethics, Place and Environment* 3(1): 47–60.

Minteer, B.A., and R.E. Manning. 2005. An appraisal of the critique of anthropocentrism and three lesser known themes in Lynn White's 'the historical roots of our ecologic crisis. *Organization and Environment* 18(2): 163–176.

Mitchell, C.B., E.D. Pellegrino, J.B. Elshtain, J.F. Kilner, and S.B. Rae. 2006. *Biotechnology and the human good*. Washington, DC: Georgetown University Press.

Nelson, E.S. 2004. Responding to heaven and earth: Daoism, Heidegger and ecology. *Environmental Philosophy* 1(2): 65–74.

Nieme Kadiamonoko, L. (2011). *Fondements théologique et philosophique de l'impératif d'exister de l'humanité.* Ph.D. thesis, Faculty of Theology, KULeuven.

Rai, J.S., D. Amarbayasgalan, M. Darryl, and T. Celia 2009. *Universalism and Ethical Values for the Environment*. Draft Report 4.1 of 20 August 2009. Ethics of energy technologies in Asia and the Pacific Project. Bangkok: UNESCO.
Redondi, P. 1985. *Galilée hérétique*. Paris: Gallimard.
Rowland, I.D. 2008. *Giordano Bruno: Philosopher/Heretic*. Chicago: University of Chicago Press.
Van der P., and J.H. Jacob. (1985). *Die Bewertung des Technischen Fortschritts. Eine Systematische Übersicht der Theorien*. 2 Vols. Assen: Van Gorcum.
Wénin, A. 2007. *D'Adam à Abraham, ou les errances de l'humain*. Paris: Les Éditions du Cerf.
White, L. 1967. The historical roots of our ecologic crisis. *Science* 155: 1203–1207.
White, L. 1973. Continuing the conversation. In *Western man and environmental ethics. Attitudes toward nature and technology*, ed. I.G. Barbour, 55–64. London: Addison-Wesley.
Wildiers, M. 1989. *Kosmologie in de westerse cultuur*. Kapellen: Pelckmans.
Zweers, W. (ed.). 1991. *Op zoek naar een ecologische cultuur. Milieufilosofie in de jaren negentig*. Baarn: Ambo.