



Lynn White Jr. and the greening-of-religion hypothesis

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Abstract: *Lynn White Jr.'s "The Historical Roots of Our Ecologic Crisis," which was published in Science in 1967, has played a critical role in precipitating interdisciplinary environmental studies. Although White advances a multifaceted argument, most respondents focus on his claim that the Judeo-Christian tradition, especially Christianity, has promoted anthropocentric attitudes and environmentally destructive behaviors. Decades later, some scholars argue contrarily that Christianity in particular and the world's predominant religions in general are becoming more environmentally friendly, known as the greening-of-religion hypothesis. To test these claims, we conducted a comprehensive review of over 700 articles—historical, qualitative, and quantitative—that are pertinent to them. Although definitive conclusions are difficult, we identified many themes and dynamics that hinder environmental understanding and mobilization, including conservative theological orientations and beliefs about the role of divine agency in preventing or promoting natural events, whether the religion is an Abrahamic tradition or originated in Asia. On balance, we found the thrust of White's thesis is supported, whereas the greening-of-religion hypothesis is not. We also found that indigenous traditions often foster proenvironmental perceptions. This finding suggests that indigenous traditions may be more likely to be proenvironmental than other religious systems and that some nature-based cosmologies and value systems function similarly. Although we conclude White's thesis and subsequent claims are largely born out, additional research is needed to better understand under what circumstances and communication strategies religious or other individuals and groups may be more effectively mobilized to respond to contemporary environmental challenges.*

Keywords: nature religions, religion and ecology

Lynn White Jr. y la Hipótesis del Enverdeamiento de la Religión

Resumen: *"Las Raíces Históricas de Nuestra Crisis Ecológica" de Lynn White Jr., publicada en Science en 1967, ha tenido un papel crítico en la precipitación de los estudios ambientales interdisciplinarios. Aunque White promueve un argumento multi-facético, la mayoría de los lectores se concentran en su declaración de que la tradición "judeo-cristiana", en especial el Cristianismo, ha promovido actitudes antropocéntricas y comportamientos destructivos del ambiente. Décadas después, algunos académicos argumentan lo contrario, que el Cristianismo en particular y las religiones predominantes en el mundo en general se están volviendo más amigables con el ambiente, una perspectiva que denominamos "La Hipótesis del Enverdeamiento de la Religión". Para probar ambas declaraciones llevamos a cabo la revisión de más de 700 artículos - históricos, cualitativos y, especialmente, cuantitativos - que son pertinentes para las declaraciones. Aunque obtener conclusiones definitivas es complicado, nuestro análisis de las investigaciones existentes ha identificado muchos temas y dinámicas que entorpecen el entendimiento y la movilización ambiental, ya sea que la religión estudiada sea de tradiciones abrahámicas o cuyo origen esté en Asia. En un balance, las investigaciones revisadas apoyan el empuje a la tesis de White pero no a la Hipótesis del Enverdeamiento de la Religión. También encontramos documentan que las tradiciones indígenas generalmente promueven percepciones proambientales. Esto sugiere que las tradiciones indígenas son más susceptible de ser proambientales que otros sistemas religiosos, y que algunas cosmologías y sistemas de valores funcionan de manera similar.*

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Aunque concluimos que la tesis de White y las afirmaciones subsecuentes han sido confirmadas, se requieren investigaciones adicionales para entender de mejor manera bajo cuáles circunstancias y estrategias comunicativas los individuos y grupos religiosos u otros pueden ser movilizadas más efectivamente en respuesta a los retos ambientales contemporáneos.

Palabras Clave: religiones de la naturaleza, religión y ecología

Introduction

In March 1967, *Science* published “The Historical Roots of Our Ecologic Crisis” by historian Lynn White Jr. It became one of the journal’s most cited articles (by 2016, 924 citations in the Web of Science’s core collection and 4600 citations in Google Scholar’s collection). Although he also discussed the role of technological innovations in medieval times, it was White’s hypothesis about the role of religion in environmental decline that created a decades-long furor. Specifically, White contended that Western scientific and religious ideas, working in concert, precipitated the ecological crisis, and these ideas continue to influence environment-related attitudes and behaviors, even in the increasingly secular world. These ideas included Christianity’s “implicit faith in perpetual progress” (White 1967: 1205) and especially its anthropocentrism and disenchantment of nature.

White argued that this anthropocentrism was established in early Judaism and expressed in the Hebrew Bible: “man named all the animals, thus establishing his dominance over them” (White 1967: 1205) and God made the world “explicitly for man’s benefit and rule” because only humanity “is made in God’s image” (White 1967: 1205). The disenchantment could be traced to the wider monotheistic antipathy toward pagan animism, which led Christians to eradicate sacred groves as “idolatrous because they assume spirit in nature” (White 1967: 1206). White further averred, “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). White thought Buddhism and Animism could promote proenvironmental behaviors, but that they were too alien for most Westerners, who could more easily find inspiration in St. Francis of Assisi, who expressed a love and reverence for nature. (White [1967: 1205] proposed him “as a patron saint for ecologists”).

Perhaps in response, in 1979, John-Paul II (1979) declared Francis the patron saint of “those who promote ecology.” Thirty-five years later, Cardinal Jorge Mario Bergoglio, when elected Pope in March 2013, selected Francis as his papal name, signaling proenvironmental intentions. Soon afterward, in May 2014, Francis I convened a workshop on environmental sustainability that included prominent scientists, which was followed in June 2015 by an encyclical, *Laudato si’ (Praise Be to You): On Care for our Common Home*, in which he

insisted that the world community should accept and act on the scientific consensus regarding the harms and risks of anthropogenic environmental change. At many points, Francis I appeared to be responding directly to White’s criticisms.

Because White’s critique was published in *Science*, his conclusions were highly influential. The environmental essayist Wendell Berry (1993: 93–94) noted, “the culpability of Christianity in the destruction of the natural world, and the uselessness of Christianity to any effort to correct that destruction, are now established clichés” among many environmentalists, which the Sierra Club’s executive director Carl Pope also acknowledged (Pope 1998). Some Christians responded, however, by asserting that their traditions enjoined good environmental stewardship; others acknowledged some complicity and sought to reform their traditions (Hessel & Ruether 2000). Additionally, some religionists from other traditions likewise set out to make their traditions more environmentally friendly. Observing these developments, some claim Christianity and other religions are becoming more environmentally friendly or, at least, are taking important steps in this direction (Tucker & Grim 2001; Tucker 2003; Gottlieb 2007; Grim & Tucker 2014; Sponsel 2012, 2014). Such hopes were expressed in a 2014 article in *Science* claiming that the initiatives undertaken by Francis I were highly significant (Dasgupta & Ramanathan 2014). Two U.S. national public opinion surveys conducted in 2015 (one shortly after Francis I visited the United States to promote his encyclical) showed a significant increase in agreement that anthropogenic climate change is occurring and that action is warranted, especially among American Catholics and evangelicals (Maibach et al. 2015; Mills et al. 2015). Yet, surveys following news events often capture short-lived opinion shifts, so it is premature to predict that Francis I will have a long-term influence on Catholics’ views of climate change.

Little of the post-White ferment has involved scientific inquiry into whether and if so to what extent and why religions hinder or promote proenvironmental behavior. And, the highest quality scientific studies have not received as much attention as journalistic and anecdotal reports of environmental mobilization by religious individuals and groups. Nor has there been a systematic survey of the scientific studies. We therefore conducted a comprehensive review of over 700 qualitative and quantitative studies that address White’s thesis and assertions

that began to emerge in the 1990s that the world's religious traditions are becoming more environmentally friendly, a claim Taylor (2011) aptly termed the greening-of-religion hypothesis. Given the large volume of material we reviewed, in this article, we have focused on Christianity in the United States in our assessment of White's original argument and of claims that Christianity is becoming more proenvironmental.

Methods

Our comprehensive review resembles a disciplinary annual review, such as by Rudel et al. (2011) and Pellow and Brehm (2013). It began in 2012 when Taylor searched citation databases for research related to the keywords *religion, spirituality, ecology, nature, Lynn White, anthropocentrism, environmentalism, nature religion, wilderness, biodiversity, environmental beliefs, environmental attitudes, environmental religions, environmental behaviors, environmental movements, and conservation* and topics that tap into experiences in nature, such as biophilia, awe, wonder, affect, emotion, and connection. In 2013, we used a snowball technique with the initial search as a starting point to look for additional, relevant research among the citations found in the articles initially reviewed. Eventually, we had a database of over 700 articles. During subsequent meetings and communications, we organized the articles by the genre and method; type of religion or religion-resembling social phenomena under scrutiny; date of data collection; location of the subjects; sample size (if applicable); and the researcher's findings.

We discerned 4 broad types of findings: the religion under examination promotes environmental understandings and concern; the religion diminishes such understandings and concern; the religion has no such effects; or evidence is ambiguous or otherwise inconclusive. With regard to the genre and method, we identified 4 main types: hortatory and normative; historical or anecdotal; qualitative or ethnographic; and quantitative or empirical. The hortatory and normative articles purport to explain the proper understanding of a religious tradition while exhorting readers to ethical behavior that coheres with the supposedly proper understandings. Much of this literature is also apologetic, arguing that the writer's tradition is environmentally friendly. Because such articles are unscientific, we did not consider them in our analyses.

The historical and anecdotal articles purport to illuminate whether some or all of the world's religions are becoming environmentally friendly. These articles typically examine statements made by religious organizations or individuals or the efforts of those religious groups who are incorporating environmental sustainability into humanitarian aid programs. Such writings often indirectly pose the questions that the qualitative or ethnographic and quantitative or empirical studies address scientifically.

Qualitative or ethnographic researchers, through interviews and fieldwork, gather insights and a high level of confidence about the dynamics observed and how to understand them. Such researchers often make reasonable suppositions based on observed patterns. But without empirical research methods, including through random selection of research subjects, associations cannot be reliably established and specific hypotheses cannot be proven.

Quantitative or empirical, randomized studies, through survey research and other methods that randomly select respondents, provide a powerful means to test specific hypotheses and make generalizable claims—if and when the data warrant such conclusions. During our comprehensive review, therefore, we were especially interested in quantitative studies.

Assessing White's Thesis and the Greening-of-Religion Hypothesis

A number of anecdotal and historical sources demonstrate that there has been some environmental mobilization among Christians in the United States (Fowler 1995; Kearns 1997; Shibley & Wiggins 1997; Hessel & Ruether 2000; McDuff 2010; Kearns 2012; McDuff 2012; Wilkinson 2012; Johnston 2013; Veldman et al. 2014; Stoll 2015). Many of these authors, however, make generalizations about the extent of greening that is unwarranted given the evidence mustered. Fewer scholars studied whether religion promotes indifference or hostility to nature, perhaps due to a belief that Lynn White was correct, although B.T. and B.Z. have analyzed the ways some Christians resist understandings that their religious ethics should prioritize environmentalist priorities (Taylor 2010: 194, 203–205; Zaleha & Szasz 2014; Zaleha & Szasz 2015).

There is much anecdotal evidence in support of White's thesis, which focused especially on the Genesis creation story as the source of Christian anthropocentrism and the desacralization of nature. White did not, however, carefully consider the tendency of religious people to attribute environmental changes to divine favor or disfavor, a dynamic that is especially strong with religions, such as Christianity, which stress the sovereignty of God. Such beliefs are rooted in the earliest scriptures of the Abrahamic traditions, including when God instructed Noah to build an ark and then destroyed all but one mating pair of the world's creatures in a flood (Genesis 6–9); tormented the Egyptians with fires, pestilence, frogs, and locusts; parted the Red Sea as a means to liberate the Israelites from Egypt (Exodus 7–14); and promised environmental favors or punishments for those who would obey or disobey, respectively, the 10 commandments (Leviticus 26; see also 2 Chronicles 7:13–14). In concert with such beliefs, many religious leaders and politicians have blamed natural catastrophes on disobedience to

God (Steinberg 2006 [2000]) while contending that repentance is the way to prevent or ameliorate them (Mersereau 2013). A related view is that because God created and controls nature, it is arrogant to think that human beings can significantly damage it, a position exemplified by U.S. Senator James Inhofe (2012), who drew on such a view when calling science documenting anthropogenic climate change a “hoax.” An interview-based study of evangelical Christians in Texas showed that such ideas are common (Carr et al. 2012) and are promoted by Evangelical theologians such as Donald Holdridge (2016).

White also did not analyze Christian notions of an imminent apocalyptic end of the world, likely because such ideas became more prominent through books and motion pictures advancing such ideas that were released after he wrote his famous article (Lindsey 1970; LaHaye & Jenkins 1995; Kearns 2011). Taken together, beliefs in God’s sovereignty, including over end times, led many Christians to be skeptical of scientists they thought were denying the truth of the biblical creation narrative (Veldman 2014; Rosenau 2015). An ethnographic study of conservative Christians in Georgia showed, moreover, that another barrier to environmental concern and action was reluctance to be associated with environmentalists, whom they consider to be spiritually dangerous pagans or deviants promoting abortion and homosexuality (Veldman 2014). Survey research showed similar dynamics (Ellingson et al. 2012). These themes and dynamics were not mentioned by White, but they hinder environmental understanding and adaptation among some Christians.

With regard to the specific claims made by White, efforts to test his thesis empirically did not begin until the mid-1980s. The earliest White-inspired studies sought to test whether anthropocentric religious beliefs that God had given humanity dominion over the earth and other organisms is a key driver of environmentally destructive attitudes and behaviors.

Hand and Van Liere (1984) confirmed and complicated White’s thesis. In their study, which included Episcopalians, Methodists, Presbyterians, unspecified Protestants, Catholics, Lutherans, Baptists, and Mormons, they found beliefs that God had given humans dominion or mastery over nature varied considerably among Christians. More so than denominational differences, however, they found that the categories of conservative and liberal were more predictive of dominion views of nature. Those affiliated with religiously conservative traditions (e.g., Baptists and Mormons) were more likely to endorse the idea of a God-given mastery over nature than were individuals involved in liberal denominations (e.g., Episcopal and Methodist). The authors concluded that some religious groups express and promote a “mastery-over-nature orientation,” but others have “a value orientation compatible with the demands of a limited world” (Hand & Van Liere 1984: 568).

Kanagy and Willits (1993) subsequently questioned White’s emphasis on the significance of a dominion view of nature for predicting environmental attitudes and behaviors. Previous studies had presented ambivalent findings and had mostly emphasized environmental attitudes rather than environmental behavior, they argued. They found that the greater the church attendance, the less proenvironmental attitudes were present. Nevertheless, some Christians also agreed that humans are part of rather than the rulers of nature and that people should preserve the balance of nature and limit growth to sustain the environment (Kanagy & Willits 1993: 676).

Woodrum and Hoban (1994) examined the effect of standard measures of religiosity, most notably biblical literalism, on dominion beliefs. In a telephone survey of 332 North Carolina residents, they found that dominion beliefs were widespread and significantly linked to low levels of environmental knowledge, particularly among respondents with little formal or environmental education. But they did not find that those who subscribed to literal belief in Genesis were more supportive of the dominion beliefs than others.

Other early surveys examined whether beliefs in the bible were associated with environmental concerns. A general telephone survey of 300 adult residents in Oklahoma by Eckberg and Blocker (1989), for example, showed that belief in the bible was associated with antienvironmental attitudes, beliefs, and behaviors. They also found that respondents who identified with the Jewish and Christian traditions scored lower on their environmental protection index than those who did not. A subsequent study by Greeley sought to expand Eckberg and Blocker’s research, which had been confined to Tulsa residents, by using data from the 1988 General Social Survey (GSS). Greeley confirmed that biblical literalism correlated with low environmental concern. He also concluded that nonbelievers (agnostics, atheists, and doubters) supported environmental spending more than theists (Greeley 1993). When comparing Catholics and Protestants, however, Greeley found that Catholics exhibited higher levels of environmental concern. This difference, he surmised, was due to differing understandings of God’s attributes, which Greeley (1993: 24) examined through a “Grace Scale” in which a “gracious worldview” was defined by images of God as “Mother, Spouse, Lover, Friend.” Catholics with a high gracious worldview were just as likely as non-Christians to support environmental spending (Greeley 1993). Moreover, adherence to greater political and ethical liberalism diminished the negative relation between religious adherence and environmental concern (Greeley 1993).

The next wave of empirical scholarship, from the mid-1990s, expanded the types of religious beliefs and denominational traditions under consideration. Several large surveys showed religion-related variables to be weak or insignificant predictors of environmental concern.

Kanagy and Nelsen (1995) compared 3 U.S. religious traits—regularity of church attendance, whether respondents identified as born again (a marker of evangelicalism), and personal religiosity. The degree of personal religious experience was rated by relative agreement with the statements about the importance of prayer, belief in divine judgment, whether miracles happen, subjective feelings of the presence of God, and strength of belief in God's existence (Kanagy & Nelsen 1995; Boyd 1999). The markers of relative environmental concern were based on willingness to support proenvironmental governmental action and self-identification as an environmentalist. Kanagy and Nelsen (1995) concluded that religious variables did not predict an environmentalist orientation.

In an analysis of the 1993 GSS, Boyd (1999) found that religious factors were weak predictors of environmental attitudes. Other analyses of these data showed an association between antienvironmental attitudes and Christian theology but concluded that this was confounded by a proenvironmental effect with religious participation in general (Eckberg & Blocker 1996). This finding was likely because the different religious groups were insufficiently differentiated. But in this case, the negative influence of theology appeared to stem from dominion beliefs, although the authors stated that the data left them uncertain of whether such beliefs were based on biblical or political views (Eckberg & Blocker 1996).

In another U.S.-based study that analyzed a national survey, Wolkomir et al. (1997b) found that neither biblical literalism nor reported salience of religion (namely, its importance to respondents in daily life) was associated with antienvironmental behavior. Moreover, when controlling for strength of dominion theology, salience had a positive effect on environmental behavior. Another study led by Wolkomir, this time focusing on variance of environmental concern among denominational subcultures of Christianity, concluded (contra White) that theological dominion beliefs were not significantly correlated with environmental views (Wolkomir et al. 1997a).

Some survey studies show both positive and negative relationships between Christian traditions and environmental orientation, depending on the particular theological beliefs and religious commitments examined. Guth et al. (1995), for example, drew on 4 data sets in their 1995 review, including the large-sample 1992 American National Election Study. They found that “conservative eschatology, religious tradition, and religious commitment” were negatively associated with environmental concern, whereas “conservative eschatology [was] by far the strongest religious predictor of environmental perspectives” (Guth et al. 1995: 364). The authors concluded that evangelicals are less environmentally concerned than Catholics and that of the subject groups surveyed “those outside the Judeo-Christian religious tradition—secular Americans—are the most pro-environment” (Guth et al. 1995: 377).

Tarakeshwar et al. (2001) found similar results in a study of the Presbyterian Church in the United States: theological conservatism was associated with less concern for the environment, and views of the “sanctification of nature” (in which nature has “sacred qualities” or is “a manifestation of God”) were correlated with greater proenvironmental beliefs and intentions. A broad study drawing on the 1993 International Social Survey Programme, which focused on populations in the United States, Canada, Great Britain, and New Zealand, showed no significant differences between Christians and non-Christians in terms of environmental concern in general (Hayes & Marangudakis 2000). But there were inter- and intradenominational differences and less environmental concern correlated with fundamentalist Christian religious beliefs. They acknowledged, however, that the research design precluded further conclusions regarding denominational variation (Hayes & Marangudakis 2000). Hayes and Marangudakis (2000) also found that in 3 of the 4 countries studied, Protestant liberals were less likely than non-Christians to adopt proenvironmental stances. Their overall conclusion was that religion was a weak and inconsistent predictor of environmental attitudes across countries.

As alarm about anthropogenic climate change increased, more researchers began to focus on the possibility that religion influences understanding and effective responses to it. In 1988 and 1999, for example, Djupe and Hunt (2009) conducted a 2-stage survey of clergy and members of congregations in the Episcopal Church and the Evangelical Lutheran Church of America. They found that members and clergy held proenvironmental views and concluded that “religious beliefs have little to no effect once social communication is controlled” and “a Christian worldview is not incompatible with holding pro-environmental views” (Djupe & Hunt 2009: 681). Their conclusions, however, could not be widely generalized because the denominations surveyed were among America's most liberal. Nevertheless, the study reinforced others that indicate liberal Christians tend to support environmental protection. In another study, Djupe and Olson (2010) drew on a larger sample that included 2 surveys—the first polling clergy in Ohio and South Carolina, the second involving a large national survey—they found a negative relationship between Christian beliefs and environmental concerns and a sharp divide between liberal and conservative Christians with regard to environmental values.

Two particularly impressive studies drew on the large data set generated by the GSS. Drawing on data in a 1993 survey, Sherkat and Ellison (2007) sought to reconcile the sometimes contradictory findings from previous studies by focusing on multiple variables which they thought the earlier studies had failed to adequately consider (Sherkat & Ellison 2007). They found that membership in conservative congregations and church participation

drove political conservatism, which in turn encouraged views questioning the seriousness of environmental problems (Sherkat & Ellison 2007). They also found conflicting results regarding the effect of religious variables on private and public environmental actions. Church participation had a positive influence on environmental behaviors such as recycling and car-pooling that were not related to public policies, but such participation, by promoting political conservatism, had a negative impact on policy-focused environmental activism (Sherkat & Ellison 2007). Sherkat and Ellison (2007) concluded that stewardship beliefs have a positive, indirect influence on environmental views because they bolster beliefs about the significance of environmental problems and that beliefs in the inerrancy of the bible, however, negatively influence proenvironmental political action.

Drawing on the 2010 GSS, Clements et al. (2013) analyzed environmental attitudes and behaviors among Christians. They found that Christians reported lower levels of environmental concern than non-Christians and concluded that the “presumed greening of Christianity has not yet translated into a significant greening of pro-environmental attitudes, beliefs, and behaviors of rank-and-file Christians in the U.S. general public” (p. 85). Moreover, they “found no clear evidence of a green Christianity among rank-and-file Christians in the general public” and that the patterns of how Christianity related to environmental concern were “quite similar to those from earlier decades, which documented that U.S. Christians were less pro-environmental than non-Christians, all other things equal” (Clements et al. 2013: 97). Clements et al. (2013: 97) were among the first to analyze ethnicity. They concluded that “while there are no statistically significant differences in environmental concern among Mainline Protestants, Catholics, and Evangelical Protestants, . . . Black Protestants are less willing to pay or sacrifice for the environment and perform fewer private environmental behaviors” than white mainline Protestants.

In a second analysis, Clements et al. (2014) compared the 2010 GSS data with that of the earlier survey in 1993. Their objective was to assess whether differences had emerged during the time that had elapsed between the 2 surveys. They concluded that “the patterns of our results are quite similar to those from earlier decades, which documented that self-identified Christians reported lower levels of environmental concern than did non-Christians and nonreligious individuals” (p. 373). Although they found evidence of “some greening among evangelical Protestants, especially relative to mainline Protestants, between 1993 and 2010” (p. 373), they did not consider the role that a major economic recession that began in 2008 may have played in these findings (Kahn & Kotchen 2011).

In another study, based on a data set including over 55,000 respondents (the 2010 Cooperative Congressional Election Study), Arbuckle and Konisky (2015) ana-

lyzed subgroups within religious traditions in more detail than is typically the case. They teased out religious affiliations and commitment and found that, although there is significant variation within and between denominations, Evangelical Protestants were the least environmentally concerned compared with other Christians, and the greater the religiosity of Protestants (of all sorts) and Catholics, the less environmental concern was expressed relative to those who are less religious or not religiously affiliated. This was not, however, the case with Jews. Arbuckle and Konisky (2015) also found, as have many other studies, that other factors play a role in relative environmental concern. Liberals and Democrats were more concerned than conservatives and Republicans; younger and better educated individuals were more concerned than older and less educated individuals; and women, minorities, and low-income individuals were more concerned than men, whites, and relatively affluent individuals about climate change. The main conclusion was that Christianity remained an important and usually negative factor even when other variables were significant. Arbuckle and Konisky (2015) also concluded that their study provided evidence in favor of Whites’ dominion thesis (although dominion theology was not directly evaluated) and that, although they shared the same religious lineage and creation stories, Jewish individuals, especially Reformed and Conservative ones, were more environmentally concerned than Christians and those not religiously affiliated. The data led the researchers to suggest that the more respondents read the bible literally, the less environmental concern they typically express.

This was a plausible suggestion and it is indirectly consistent with results of research conducted by the Barna Group of Evangelical Protestant pollsters, who compared the environmental views among different groups of Christians in the United States with those of the wider public. One of these studies showed that “Christians—like most other Americans—are open to environmental concerns, but these issues tend to be relatively minor top-of-mind concerns” (Barna Group 2008). This study also showed that 89% of Christians and 85% of churchgoers had never heard of “creation care,” an expression that environmentally concerned Christians have increasingly used as shorthand for the idea that there is a religious duty to be good stewards of creation (Barna Group 2008). Moreover, most churchgoers had not heard sermons enjoining environmental protection (64%) (Barna Group 2008). Another study illuminated why: clergy are reluctant, even in liberal churches, to speak up about environmental problems for fear of alienating and losing parishioners (Szasz 2015).

Another Barna Group (2007) study showed that there is considerably less concern about “global warming” (33% of American Evangelical Christians considered “global warming” a “major problem” compared with 59% of mainline American Christians and 69% of atheists and

agnostics) and less willingness to spend money on environmental protection than among other segments of the U.S. population. The Barna Group (2015) also found that evangelical Christians continue to place a low priority on environmental issues. For them, the economy and abortion ranked high as priority issues (at 69% and 67%, respectively), whereas 16% considered environmental issues to be of high priority (Barna Group 2015). Another study helps explain the lack of environmental urgency among these religionists. It documented the prevalent expectation of an imminent apocalypse among many conservative American Christians (Barker & Bearce 2013).

In 2014, the Public Religion Research Institute released a methodologically sophisticated study on religion and climate change in the United States (Jones et al. 2014). Based on a random probability sample of >3000 respondents, the study's size made it possible to illuminate the beliefs and attitudes of large religious groups as well as some smaller populations and subgroups, such as American Jews and Christians of different traditions and ethnicities. Forty-six percent of Americans agreed that biosphere warming is anthropogenic, whereas another 24% thought that the world was warming but not because of human activities. Jews, Hispanic Catholics, and those who did not express a religious affiliation held a majority that concurred with the consensus science (66%, 61%, and 57%, respectively). Fifty percent of all Americans were concerned about climate change, whatever they thought about its origins. There were also significant correlations between conservative Christian theology and climate-science skepticism. Certain doctrines, including biblical end times expectations, were influential; 49% of Americans and 77% of Evangelical Protestants attribute natural disasters "to 'end times' as described in the bible," which is especially interesting because fewer, 46%, attribute climate change to human activities (Jones et al. 2014: 23). In line with other polls, white evangelical Protestants were far more likely to be skeptical about theories of anthropogenic climate change, whereas black Protestants and Hispanic Catholics were more likely to expect that climate disruption would negatively affect them and others like them and to support action to prevent such impacts than white Catholics and Protestants (Jones et al. 2014: 15). Jones (2014) noted, however, that the relatively high level of concern was among foreign-born rather than U.S.-born Catholic Hispanics, who were comparable to the American public as a whole (Jones 2014).

Discussion

A year after White's article was published, geographer Yi Fu Tuan (1968) challenged White's view that Western religious cultures were more prone to destroy their environments than Asian and ancient ones. (For subse-

quent debates, see Callicott and Ames [1989] and Kellert [1995]). In an article published in *Science*, Louis Moncrief (1970) argued that White overemphasized the role of religion and underemphasized nonreligious social and economic variables that have contributed to the environmental crisis. He also asserted that widespread environmental degradation in Asia casts doubt on White's view that Asian religions harbor more environmentally beneficent beliefs than Western ones (Moncrief 1970; cf. Whitney 1993).

Given the complexity of social and environmental systems, it is important to avoid overemphasizing any variable that might contribute to environmental degradation (Minteer & Manning 2005). It is indeed reasonable to wonder whether White's insistence that the Jewish and Christian traditions bear a large share of responsibility for the environmental crisis overstated the role of religion in general and the religious traditions he targeted in particular. That White did not provide every qualification and nuance that might have been made in a more detailed study, however, does not mean the main thrust of his argument is invalid. Our review of the empirical research since he published his argument suggests that he was on the right track and that religion does influence environmental attitudes and behaviors.

White was not just making a historical argument, however; he was making an ethical and religious one, urging Westerners to reject anthropocentrism, take inspiration from St. Francis, and even create "a viable equivalent to animism" (White 1973: 62). In his own way, White (1978) promoted reverence for life and, indeed, for everything in the Universe that he believed God created. And after White, increasing numbers (if yet distinct minorities) of Christian individuals and groups have sought to do just that. White deserves credit for precipitating much of the soul-searching and religious environmentalism that has emerged since *Science* published his argument.

Worldview transformation is underway around the world as a means to greater proenvironmental policies and behaviors (Taylor 2010). Some Christians are involved in promoting environmental concern and action within their communities. Yet, extant research indicates that White's critique continues to have explanatory power even though he did not identify all of the themes and dynamics that hinder Christian environmentalism. Christians may agree with statements that they should be good environmental stewards, but such concerns are often obviated by other variables. This may be because environmental concerns are at best, for most, a low priority.

Although many have been effusively positive in response to Francis I's proenvironmental exhortations and supposedly growing influence, given the many themes that appear to hinder environmental concern among Christians worldwide and that previous statements regarding environmental responsibilities by religious elites have not significantly influenced individual

congregations and parishioners, we do not yet know whether Francis I's efforts on the environmental front will bear long-term fruit (Vidich & Bensman 1968: 234–235; Szasz 2015: 163–164). The first survey in the United States after Francis I issued his 2015 environmental encyclical, for example, did not bode well for his agenda: it showed a precipitous drop in his popularity (70–59%), which was especially steep among Catholics and political conservatives, presumably because the environmental and social justice causes he was promoting are highly controversial (Swift 2015). Perhaps further tempering the findings of the 2015 surveys that showed a modest increase in concern about climate change among U.S. Christians, results of a study released in early 2016 showed (again) that the least religious individuals express the greatest concern about climate change, whereas the most religious individuals demonstrate the least concern (Roser-Renouf et al. 2016).

This much our research makes clear: claims or hopes that religions are coming (or might come) to the environmental rescue deserve careful, rigorous, ongoing, critical scrutiny (Taylor 2015).

White's (1967: 1207) most provocative claim may have been, "Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not." If this worldview-focused hypothesis is plausible, and we think it is, then it merits more, rigorous, mixed-methods research to determine whether and under what circumstances and through what sorts of communicative strategies religious perceptions and beliefs (and entirely secular worldviews as well) can most effectively promote ecologically and socially adaptive biocultural systems. As White recognized decades ago, the stakes could hardly be higher.

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