



Terry M. Gray

Pronuclear Environmentalists: An Introduction to Ecomodernism

Terry M. Gray

Ecomodernism is a protechnology environmentalist movement spearheaded by the Breakthrough Institute. Ecomodernists are concerned with typical environmentalist concerns: climate change; air and water pollution; carbon-free energy; pesticide, fertilizer, and antibiotics pollution; and mass extinctions. Antinuclear is usually on the list but not so for ecomodernists. Ecomodernists advocate technological solutions to these issues and promote nuclear power as a low-carbon, small-land footprint and a high-density energy source to replace fossil fuels and to meet a growing global demand for energy (2 to 3 times current use by the end of the century). Ecomodernists also advocate high-yield mechanized food production and the concentration of human populations into urban areas to make room for more wild environments for other creatures. This article introduces the reader to ecomodernism and pronuclear environmentalists and urges Christians concerned about creation care to consider ecomodernism as an approach consistent with their Christian faith.

Keywords: ecomodernism, nuclear power, Pandora's Promise, environmentalism, pronuclear, creation care, Ecomodernist Manifesto, small modular reactors, Anthropocene

The environmentalist movement that I grew up with in the 1960s and 1970s was firmly antinuclear—with regard to both nuclear weapons and nuclear energy. Since its founding in 1971, Greenpeace has been antinuclear weapons (the “peace” of Greenpeace) and extends that opposition to nuclear power which it calls “dirty, dangerous, and expensive.” Greenpeace cites potential nuclear power plant disasters like Chernobyl and Fukushima Daiichi, the problem of nuclear waste, nuclear weapons proliferation, and the expense of building nuclear power plants as reasons to oppose nuclear power.¹ The National Resource Defense Council, while acknowledging the possible benefits of nuclear power with respect to CO₂ emissions, expresses practical opposition to nuclear power.² The Union of Concerned Scientists, Friends of the Earth, Sierra Club, Rocky Mountain Institute, and other environmentalist groups have similar antinuclear views.³

Imagine, then, the cognitive dissonance when you hear of environmentalists who are full-throated supporters of nuclear power. The argument is quite simple. The risks of nuclear power are small compared to the risks of supplying an ever-growing global energy demand with fossil fuels and accompanying CO₂ emissions that lead to global warming and climate change. Nothing is more dangerous than climate change. Two aspects of this view that are controversial in their own right are (1) that renewable energies (wind, solar, hydroelectric, geothermal, biofuels) will not be able to displace fully fossil-fuel-based energy, even over the long term, and (2) that nuclear energy is not nearly as risky as we think.

Terry M. Gray earned his PhD in 1985 in molecular biology from the University of Oregon. He now teaches chemistry at Colorado State University. Since the early 1990s, the ASA website has benefited immensely from his expertise and attention. He currently is serving as the president of the ASA Executive Council.

Article

Pronuclear Environmentalists: An Introduction to Ecomodernism

I first encountered this argument in the 2013 documentary *Pandora's Promise* which featured the stories of a number of environmental and antinuclear activists who had changed their mind on the nuclear energy issue.⁴ These included the following:

- Stewart Brand, editor of the *Whole Earth Catalog*.⁵
- Gwyneth Cravens, former antinuclear environmentalist and author of the 2007 book *Power to Save the World: The Truth about Nuclear Energy*.⁶
- Mark Lynas, British climate change activist, who has also changed his mind about genetically modified organisms (GMO).
- Richard Rhodes, historian and author, who has advocated strongly against nuclear weapons.
- Michael Shellenberger, one of *Time* magazine's 2008 Heroes of the Environment and cofounder with Ted Nordhaus of the Breakthrough Institute. Shellenberger now heads up Environmental Progress, a pronuclear activist organization. He has recently published *Apocalypse Never: Why Environmental Alarmism Hurts Us All*.⁷

Pandora's Promise also describes the alleged dangers of nuclear power and attempts to answer them. It focuses on the exaggerated dangers of low-level radiation, the low volumes of nuclear waste and how it is currently stored safely, and new reactor designs with passive safety features. It highlights that nuclear power is low carbon and that it is able to meet the needs of a growing global demand for energy that might triple or quadruple by 2100 as the undeveloped world catches up economically with the developed world.

These individuals represent a new protechnology and prohuman environmentalism. The environmentalism I grew up with was rooted in Rachel Carson's *Silent Spring*, Paul Erhlich's *The Population Bomb*, Barry Commoner's *The Closing Circle*, The Club of Rome's *The Limits to Growth*, and similar books.⁸ The solutions to our environmental woes were to reduce the human population and the impact of humanity on the planet. Rather than being protechnology, this style of environmentalism had a back-to-the-garden feel to it, ramped up by a back-to-nature hippy movement (think Iron Butterfly's 1968 hit, "In-A-Gadda-Da-Vida"⁹). The planetary boundaries hypothesis of the Stockholm Resilience Centre

is a contemporary expression of this style of environmentalism, more worried about the limits of the planet and the negative impact of humanity.¹⁰ Ten planetary boundaries are now recognized: (1) stratospheric ozone depletion, (2) atmospheric aerosol loading, (3) ocean acidification, (4) biogeochemical flows (nitrogen and phosphorus), (5) freshwater use, (6) land system changes, (7) biosphere integrity and extinctions, (8) climate change, (9) chemical pollution, and (10) the release of novel entities.

At the same time, 1970 Nobel Peace Prize winner Norman Borlaug was using genetics, fertilizers, pesticides, and irrigation in his Green Revolution to feed the world and support a growing human population that is now nearly eight billion people.¹¹ The contrast between these two approaches to managing the world is found in *The Wizard and the Prophet* (2018) by Charles C. Mann.¹²

Doomsday environmentalism was deemed a dead end by activists Michael Shellenberger and Ted Nordhaus. They founded the Breakthrough Institute in 2003, and their 2004 essay "The Death of Environmentalism" was published shortly thereafter.¹³ In 2015 came the "Ecomodernist Manifesto."¹⁴ Shellenberger, Brand, and Lynas from *Pandora's Promise* are all contributors and initial signatories. Robert Stone, the director of *Pandora's Promise*, is also a signatory. Ecomodernism fully embraces modern technological solutions to issues relating to human well-being, development, and environmentalism. The "Ecomodernist Manifesto" is pronuclear, and its signatories are strongly in the pronuclear environmentalist camp.

Decoupling is one of the key ideas of ecomodernism. Decoupling refers to the separation of economic growth and development from environmental impact. Human well-being (even of a nearly eight billion human population) and development (absence of poverty; long lifespans; education; basic economic, political, and religious liberties) can occur without destroying the environment by utilizing more-intense and less-polluting forms of energy production, food production, and freshwater use. One of the mantras is to concentrate the human impact to make more room for wild nature. This is

sometimes referred to as “wilding.” Ecomodernists see these trends as already happening as a result of urbanization and the mechanization of agriculture. As of 2007, human beings crossed the threshold of over 50% of the population living in urban areas. Today that percentage is 55% and is expected to be 67% by 2050. The percentage is even higher in more-developed countries.¹⁵ Only 1–3% of the world’s land mass is taken up by cities.¹⁶ More mechanized, intense, and efficient agriculture supports these cities. Whereas subsistence farming means you grow food for you and your family, only a few workers today feed much of the world. The “Ecomodernist Manifesto” notes:

The growth of cities along with the economic and ecological benefits that come with them are inseparable from improvements in agricultural productivity. As agriculture has become more land and labor efficient, rural populations have left the countryside for the cities. Roughly half the US population worked the land in 1880. Today, less than 2 percent does.¹⁷

The “Manifesto” also notes that intensification of agriculture is good for the environment:

These improvements have resulted not only in lower labor requirements per unit of agricultural output but also in lower land requirements. This is not a new trend: rising harvest yields have for millennia reduced the amount of land required to feed the average person. The average per-capita use of land today is vastly lower than it was 5,000 years ago, despite the fact that modern people enjoy a far richer diet. Thanks to technological improvements in agriculture, during the half-century starting in the mid-1960s, the amount of land required for growing crops and animal feed for the average person declined by one-half.¹⁸

The “Ecomodernist Manifesto” disputes the planetary boundaries hypothesis except in three areas—climate change, accompanying ocean acidification, and stratospheric ozone depletion.¹⁹ Eliminating CO₂ emitting energy sources is a goal of ecomodernists. Thus, they are in line with nearly all environmentalists in wanting to move away from fossil fuels and promote zero-carbon solutions, including renewables such as wind, solar, hydroelectric, and geothermal. But ecomodernists strongly advocate nuclear power and even fossil-fuel use with carbon capture, utiliza-

tion, and sequestration (CCUS) technologies. While wind and solar move us in a zero-carbon direction, the land use and environmental impact of these technologies are of concern. Nuclear is favored because energy intensity is so much greater. The US Department of Energy estimates that land use requirements for a 1 GW nuclear power plant is 1 square mile, whereas to produce the equivalent in a wind farm requires 360 square miles; in a solar PV system, 75 square miles.²⁰ And these numbers for wind and solar need to be multiplied by 3 or 4 to account for differences in capacity factor. Wind farms and solar farms do not allow for as much wilding because of the large land use footprint.

What about the negatives that have historically been associated with nuclear power—questions of safety, nuclear waste, cost, and weapons proliferation? What has changed to turn some environmentalists into pronuclear advocates? Foremost is the perceived relative danger of CO₂ emissions from fossil-fuel combustion to meet the world’s energy needs. Global warming and climate change are now thought to be significantly more dangerous than any of the dangers of nuclear power.

But there are other factors as well. Next generation nuclear reactors promise passive safety features that would avoid the cause of nuclear accidents at Chernobyl or Fukushima Daiichi. Most of the current fleet of nuclear reactors involve pressurized water as the main reactor coolant. If the cooling system fails, pressurized water overheats and decomposes into hydrogen gas, resulting in an explosion that damages the containment facility and releases radioactive material into the environment. Next generation reactors use molten salt, molten elemental sodium, or pressurized helium as the coolant. If power to the active cooling systems fails, the reaction eventually stops on its own because of the heat transfer properties of the coolant molten salt, molten metal, or pressurized helium.²¹

Nuclear waste is still a serious concern. Currently, waste is safely stored on-site and the total volume is now considered relatively small (in the US, occupying the space of 55 gallon drums stacked three high on a single football field).²² The Yucca Mountain

Article

Pronuclear Environmentalists: An Introduction to Ecomodernism

nuclear waste storage facility was cancelled by the Obama administration's Department of Energy administrator Steven Chu, in part because of a growing belief that there are better things to do with nuclear waste than to bury it in an underground storage facility. Reprocessing the fuel instead of one-time use and using transuranic elements as fission fertile material are becoming more feasible ways of reducing nuclear waste.²³

Small (60–100 MW) modular nuclear reactors (SMR), such as those being licensed by NuScale Power, are addressing the costs by using a standard design and factory-assembled reactors that can be transported to the reactor site by rail or truck.²⁴ The nuclear weapons proliferation danger remains, but international treaties and UN-based inspections have led to an uneasy peace.²⁵ In the minds of some, the urgency of addressing climate change overrules the concerns about weapons proliferation given these treaties.

There are other environmental problems addressed by ecomodernists using technology. Fresh water can be produced by desalination of ocean water instead of depleting aquifers and other freshwater sources. Desalination is an energy-intensive process, but that energy demand can be met using nuclear power.²⁶ Feedlots, tissue culture production of meat, and artificial meat stand in contrast to open pasture grazing which is a land-use demanding and antiwilding approach to meat production.²⁷ Managed aquaculture produces abundant food, but unlike open seas fishing, it does not deplete wild fisheries.²⁸

What should a Christian think of the “Ecomodernist Manifesto”? It appears to come from a humanistic and secular perspective. Some might perceive a techno-salvationism. The “Manifesto” ends with this:

We value the liberal principles of democracy, tolerance, and pluralism in themselves, even as we affirm them as keys to achieving a great Anthropocene. We hope that this statement advances the dialogue about how best to achieve universal human dignity on a biodiverse and thriving planet.²⁹

While one can make an appeal to these sorts of principles from a Christian perspective, the “Manifesto” has the feel of a secular religious creed rather than

Christianity. One could easily imagine that the original signers of the “Ecomodernist Manifesto” would be very comfortable with the Humanist Manifesto I, II, or III³⁰ and happy to do without religion at all.

Four aspects of the Christian faith, however, lead me to think that the “Ecomodernist Manifesto” can be enveloped by a broader Christian perspective and perhaps fully embraced by Christians.

1. The commandment to love your neighbor
2. Creation care
3. The idea of stewardship
4. The eschatological direction from garden to city

One does not have to be anti-God, antisupernatural, and antirevelation to be prohuman. Christians believe that humanity is made in God's image and that all people have dignity as a result of bearing that image. The commandments are summarized by “love God” and “love your neighbor.” A children's catechism used in my tradition answers the question “Who is your neighbor?” with “All my fellow men are my neighbor.”³¹ Galatians 6:10 says, “Therefore, as we have opportunity, let us do good to all people, especially to those who belong to the family of believers” (NIV). The desires of ecomodernism to see a thriving humanity, the elimination of poverty, good health, long lives, and peace between nations are also desires of Christians. From this point of view, humanism is fully compatible with Christianity. It could even be argued that ecomodernism's prohuman form of environmentalism aligns more closely with Christianity than traditional environmentalism. The American Scientific Affiliation (ASA) acknowledges this prohuman perspective in its own faith statement. “We recognize our responsibility ... to use science and technology for the good of humanity ...”³²

Creation care is based on the earliest instructions given to humanity as recorded in the Bible. Genesis 2:15 says, “The Lord God took the man and put him in the Garden of Eden to work it and take care of it” (NIV), “cultivate and keep” (NASB), “dress and keep” (KJV), and “cultivate and guard” (GNT). Psalm 24:1 says, “The earth is the Lord's and everything in it.” Environmentalism is not a pagan

religion that makes an idol of the earth (although it could be turned into that). Caring for creation is part of humanity's calling. We do not own the earth; we steward it for its true owner, God. Thus, ecomodernism's goal of minimizing the human footprint (in a prohuman manner) while maximizing the natural environment is compatible with Christianity. The ASA's faith statement recognizes this idea as well. "We recognize our responsibility ... to use science and technology for the good of ... the whole world."³³

Stewardship is key here. We are to work (dress, cultivate) the earth. Ecomodernism fully recognizes the effect that human beings have had on the planet. The term "Anthropocene" has been adopted by ecomodernists to refer to the present geological age because of this impact. At first glance, it appears that the human effect is negative and harmful to creation—no doubt true to some extent. But working/cultivating/dressing creation becomes the very means to preserve it. High-tech solutions not only meet the needs of humanity, but they also solve problems that were created by previous "solutions."


Stewardship means using the resources and the minds that God has given to us in order to accomplish our earthkeeping (and other) tasks. The Bible does not have us merely living in the Garden of Eden doing subsistence agriculture. Humanity was called to fill the earth and subdue it (Gen. 1:28) and to create culture. In a sense, creation was not finished—in partnership with human beings, God continues to develop and to create his world. Science, medicine, engineering, agriculture, the arts, commerce, leisure, philosophy, and theology are all post-Garden of Eden endeavors.³⁴ Much culture building is linked to city building. In the parable of the talents, what became of the steward who merely buried what was given to him? The master expected something productive to be done with what he handed to the stewards, and commended the two who showed gain. Condemnation came to the one who merely preserved what he was given (Matt. 25:14–30).

Ecomodernists' use of technology to solve social and environmental problems is fully compatible with the stewardship motif of Christianity. Of course, in Christianity, technology is not our salvation, only

God is. But human knowledge, resourcefulness, and innovation to make the world, including the natural world, a better place are gifts from God and part of our stewardly tasks as Christians.

Finally, what is the arc of history according to a Christian perspective? The Bible begins in a garden, but appears to end in a city. While Christian theology has envisioned a supernatural return of Christ to bring final and full justice and peace to the earth, there are strands of Christianity that see the beginnings of the kingdom of God at the time of Jesus coming in the flesh and especially at the time of his resurrection. This kingdom grows throughout the present age before the return of Christ. But this growth is not just in terms of the missionary activity and growth and influence of the church. It includes culture building to the glory of God by Christians and non-Christians alike. Progress in the well-being of humanity is part of this kingdom work. Advances in science, medicine, technology, and agriculture are all gifts from God, especially when received with thanksgiving (1 Tim. 4:4–5). Dutch theologian Abraham Kuyper famously said,

Oh, no single piece of our mental world is to be hermetically sealed off from the rest, and there is not a square inch in the whole domain of our human existence over which Christ, who is Sovereign over all, does not cry, "Mine!"³⁵

Christianity is not just about worship services, devotions, and private ethics.³⁶ It is about all areas of life. When scientists, engineers, and technologists use their minds, and the resources found in creation, to accomplish good, it is to the glory of God and to the furthering of his kingdom. Ecomodernists point to a great Anthropocene as the eschatological goal. Christians point to a different eschatological goal brought about by the Second Coming of Christ. Nonetheless, there is overlap between the two, and Christians can partner with ecomodernists to do the work God is calling us to do. 

Notes

¹Greenpeace, "Nuclear Energy," accessed September 29, 2020, <https://www.greenpeace.org/usa/ending-the-climate-crisis/issues/nuclear/>.

²NRDC Policy Basics, "Nuclear Energy," Natural Resources Defense Council, February 2013, accessed September 29,

Article

Pronuclear Environmentalists: An Introduction to Ecomodernism

2020, <https://www.nrdc.org/sites/default/files/policy-basics-nuclear-energy-FS.pdf>.

NRDC is not opposed in principle to nuclear power, and acknowledges its beneficial low-carbon attributes in a warming world but we take seriously the significant safety, global security, environmental, and economic risks that use of this technology imposes on society. This demands stringent regulation of the complete nuclear fuel cycle, beginning with the mining and milling of uranium and ending with the final disposal of radioactive wastes. Until these risks are properly mitigated, expanding nuclear power should not be a leading strategy for diversifying America's energy portfolio and reducing carbon pollution. NRDC favors more practical, economical, and environmentally sustainable approaches to reducing both U.S. and global carbon emissions, focusing on the widest possible implementation of end-use energy-efficiency improvements, and on policies to accelerate the commercialization of clean, flexible, renewable energy technologies. (p. 1, boxed text)

³Union of Concerned Scientists, "Nuclear Power & Global Warming," May 22, 2015, updated November 8, 2018, accessed September 29, 2020, <https://www.ucsusa.org/resources/nuclear-power-global-warming>; Damon Moglen, "Nuclear Power Is Not a Viable Solution for Green New Deal," Friends of the Earth, accessed March 22, 2021, <https://foe.org/projects/nuclear/>; Sierra Club, "Nuclear Free Future," accessed March 22, 2021, <https://www.sierraclub.org/nuclear-free>; and Amory Lovins, "The Nuclear Illusion," 2008, Rocky Mountain Institute, accessed March 22, 2021, <https://rmi.org/insight/the-nuclear-illusion/>.

⁴Robert Stone, *Pandora's Promise*, feature-length film, 1:26:38, from Robert Stone Productions, 2013, accessed March 18, 2020, <https://robertstoneproductions.com/project/pandoras-promise/>.

⁵Stewart Brand, *Whole Earth Catalog* (1968–1998).

⁶Gwyneth Cravens, *Power to Save the World: The Truth About Nuclear Energy* (New York: Alfred A. Knopf, 2007).

⁷Bryan Walsh, "Heroes of the Environment 2008: Ted Nordhaus and Michael Shellenberger," *Time*, September 24, 2008, accessed March 22, 2021, http://content.time.com/time/specials/packages/article/0,28804,1841778_1841779_1841804,00.html; and Michael Shellenberger, *Apocalypse Never: Why Environmental Alarmism Hurts Us All* (New York: HarperCollins, 2020).

⁸Rachel Carson, *Silent Spring* (Boston, MA: Houghton Mifflin, 1962); Paul Ehrlich, *The Population Bomb* (New York: Macmillan, 1968); Barry Commoner, *The Closing Circle: Nature, Man, and Technology* (New York: Random House, 1971); and Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth* (Falls Church, VA: Potomac Associates, 1972).

⁹Iron Butterfly, "In-A-Gadda-Da-Vida," YouTube video, 17:02, recorded at Ultrasonic Studios in Hempstead, Long Island, NY, May 27, 1968, <https://www.youtube.com/watch?v=UIVe-rZBcm4>.

¹⁰"The Nine Planetary Boundaries," Stockholm Resilience Centre, Stockholm University, accessed October 2, 2020, <https://www.stockholmresilience.org/research/planetary-boundaries/planetary-boundaries/about-the-research/the-nine-planetary-boundaries.html>. This list has now been expanded to ten.

¹¹Ronald L. Phillips, "Norman E. Borlaug 1914–2009," *Biographical Memoirs* (Washington, DC: National Academy

of Sciences, 2013), accessed March 22, 2021, <http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/borlaug-norman.pdf>.

¹²Charles C. Mann, *The Wizard and the Prophet: Two Remarkable Scientists and Their Dueling Visions to Shape Tomorrow's World* (New York: Alfred A. Knopf, 2018).

¹³Michael Shellenberger and Ted Nordhaus, "The Death of Environmentalism: Global Warming in a Post-Environmental World," June 16, 2010, <https://thebreakthrough.org/articles/the-death-of-environmentalism>; and Michael Shellenberger and Ted Nordhaus, "The Death of Environmentalism: Global Warming Politics in a Post-environmental World" (2004), accessed March 23, 2021, https://s3.us-east-2.amazonaws.com/uploads.thebreakthrough.org/legacy/images/Death_of_Environmentalism.pdf.

¹⁴John Asafu-Adjaye et al., "An Ecomodernist Manifesto," April 2015, accessed March 23, 2021, <http://www.ecomodernism.org>.

¹⁵Hannah Ritchie and Max Roser, "Urbanization," September 2018; last revised November 2019, accessed September 30, 2020, <https://ourworldindata.org/urbanization>.

¹⁶Asafu-Adjaye et al., "An Ecomodernist Manifesto," 12.

¹⁷Ibid.

¹⁸Ibid., 13.

¹⁹Ibid., 10; and Linus Blomqvist, Ted Nordhaus, and Michael Shellenberger, "The Planetary Boundaries Hypothesis: A Review of the Evidence," The Breakthrough Institute, June 11, 2012, <https://s3.us-east-2.amazonaws.com/uploads.thebreakthrough.org/legacy/blog/Planetary%20Boundaries%20web.pdf>.

²⁰Office of Nuclear Energy, "3 Reasons Why Nuclear Is Clean and Sustainable," US Department of Energy, March 31, 2021, <https://www.energy.gov/ne/articles/3-reasons-why-nuclear-clean-and-sustainable>.

²¹For an ongoing discussion of progress on various technologies, see <https://www.energy.gov/ne/office-nuclear-energy>, accessed March 23, 2021.

²²Stone, *Pandora's Promise*.

²³Kevin Bullis, "Q & A: Steven Chu," *MIT Technology Review*, May 14, 2009, accessed March 23, 2021, <https://www.technologyreview.com/2009/05/14/213138/q-a-steven-chu/>.

²⁴"NuScale Power Completes Second Energy Exploration (E2) Center at Center for Advanced Energy Studies' in Idaho Falls, Idaho," *Businesswire*, August 31, 2021, <https://www.businesswire.com/news/home/20210831005069/en/NuScale-Power-Completes-Second-Energy-Exploration-E2-Center-at-Center-for-Advanced-Energy-Studies%E2%80%9999-in-Idaho-Falls-Idaho>.

²⁵"Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," Office for Disarmament Affairs, United Nations, accessed March 23, 2021, <https://www.un.org/disarmament/wmd/nuclear/npt/>.

²⁶Cheryl Katz, "Can California Desalinate Its Way out of a Drought? New Technologies Promise Lower Costs and Fewer Environmental Impacts," The Breakthrough Institute, July 16, 2014, accessed March 23, 2021, <https://thebreakthrough.org/articles/can-california-desalinate-its-way-out-of-a-drought>.

²⁷Tali Perelman, "Tasty Enough to Dethrone Beef? Breakthrough Reviews the Impossible 2.0 Burger," The Breakthrough Institute, April 29, 2019, accessed March 23, 2021, <https://thebreakthrough.org/food/meat>.

²⁸Marian Swain, "Series: Plenty of Fish on the Farm," The Breakthrough Institute, April 13, 2017, accessed March 23, 2021, <https://thebreakthrough.org/issues/food/series-plenty-of-fish-on-the-farm>.

²⁹Asafu-Adjaye et al., "An Ecomodernist Manifesto," 31.

³⁰"Humanism and Its Aspirations: Humanist Manifesto III, a Successor to the Humanist Manifesto of 1933," American Humanist Association, accessed October 1, 2020, <https://americanhumanist.org/what-is-humanism/manifesto3/>.

³¹Christian Education and Publications, *Catechism for Young Children* (Montgomery, AL: PCA Christian Education & Publications, 1972), Q&A 77.

³²ASA Statement of Faith, "What Does the ASA Believe?," accessed October 2, 2020, <https://network.asa3.org/page/ASAbeliefs>.

³³Ibid.

³⁴See, for example, Albert M. Wolters, *Creation Regained: Biblical Basics for a Reformational Worldview* (Grand Rapids, MI: Wm. B. Eerdmans, 1985), 35-41. They are also post-Fall endeavors. This does not necessarily make the culture-making or the cultural products inherently evil.

Much of the Christian engagement with culture is sorting out the God-honoring direction vs. the God-rebelling direction. See Wolters, chapter 5, "On Discerning Structure and Direction."

³⁵Abraham Kuyper, "Sphere Sovereignty," 1880 Inaugural Lecture, Free University of Amsterdam, in *Abraham Kuyper: A Centennial Reader*, ed. James D. Bratt (Grand Rapids, MI: Wm. B. Eerdmans, 1998).

³⁶Tim Keller, "Let's Read Keller (8): Abraham Kuyper Did Not Say 'There Is Not a Square Inch in the Whole Domain of My Personal Devotions and Churchgoing over Which Christ Does Not Cry: Mine!,'" *The Christian Scholar*, July 20, 2014, accessed October 4, 2020, <https://thechristianscholar.wordpress.com/2014/07/20/lets-read-keller-8-abraham-kuyper-did-not-say-there-is-not-a-square-inch-in-the-whole-domain-of-my-personal-devotions-and-churchgoing-over-which-christ-does-not-cry-mine/>.

ASA Members: Submit comments and questions on this article at www.asa3.org→RESOURCES→Forums→PSCF Discussion.

Young people are leaving the faith in record numbers and at a record speed.

One of the reasons is the issue of origins. Many view Christianity as anti-scientific. They are also turned off by the evolution vs. creation debate.

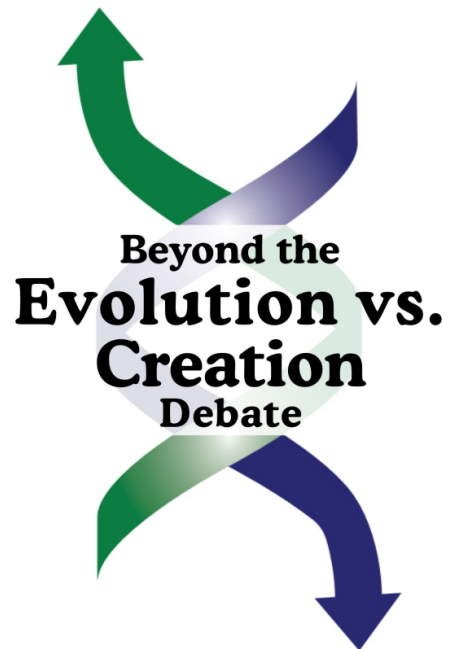
In a book written for high school students, theologian and scientist Denis O. Lamoureux offers various ways to develop a positive and productive relationship between Christian faith and modern science. He also shares his story of losing his faith as a young person, and later returning to the Lord. His approach to origins is ideal for developing critical thinking skills and for honoring Jesus' command (Matt. 22:37):

"Love the Lord your God with all your mind"



available on
amazon

For High School Students



Denis O. Lamoureux
Professor of Science & Religion