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CLIMATE CHANGE: A RURAL AMERICAN THEOLOGICAL PERSPECTIVE

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Abstract

As climates continue to change, the various changes propose questions about whether or not humans can do much to affect those changes, and what pathways we should adopt. However, those questions in turn reveal the deeper question of what the purpose of creation truly is: merely a disposable tool to help us get to heaven, or does it have value in its own right as a resource to be transformed by human skill as part their call to use their talents to exercise dominion? From such answers both a balanced approach to climate care and a spirituality can emerge – which resonates beautifully with Marian devotions.

Keywords: Climate; Climate Change; Marian Devotion; Purpose of Creation

Introduction

It is often proclaimed that the only constant in life is change – and climate certainly exemplifies this. At least in central North America we have the expression: “If you don’t like the weather, wait a few minutes; it will change.” But not only has climate change happened

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on a micro level daily or from year to year, on a macro level we have written historical data of a mini-ice age in the late Middle Ages¹ that contributed to the abandoning of the Norse colony in Greenland, and earth-core samples and archeological evidence of larger ice ages corresponding to paleolithic times – and before.²

Human Limits

Because the climate is intensely associated with the atmosphere (whose temperature gradient changes more radically during yearly cycles the further one moves from the equator and from any large ocean), much of climate concern looks at changes in that atmosphere.³ Volcanoes continue to erupt, sometimes with little to no warning as happened just recently, changing the landscape (or seascape) and emitting vast amounts of materials into the atmosphere.⁴ One in May 2010 emitted so much ash and tiny sand particles that it disrupted air travel between North America and Europe for several days because the sand particles in the air turned to glass in jet engines and rather quickly destroyed those engines.⁵ Though volcanoes are necessary for the earth's center to relieve pressure lest the planet blow up, the damage done by such eruptions both to localities like Pompey from Vesuvius, to Indonesia from Krakatoa and to the entire Minoan civilization by Thera (now called Santorini) have been catastrophic. Indeed, the vast amount of ash and dust and chemical fumes like sulfur that were emitted into the atmosphere by Thera's volcanic eruption exceeded all other air pollutants by significant orders of magnitude.⁶ A common comparison of the powerful effect of such volcanic eruptions is that one even minor eruption approximates a whole year's contribution to the atmosphere from all other sources,

¹ Science News, see <https://www.scuebcdauky.com/releases/2011/06/110620095238.htm>

²C.R. Fielding, T.D. Frank, J.L. Isbell, ed., *Resolving the Late Paleozoic Ice Age in Time and Space*, 275–290.

³One can also examine deforestation or swamp drainage, though those also are often discussed in terms of how they affect the atmosphere.

⁴Early 2021 Eyjafjallajökull erupted in Iceland, and Mt. Etna in Sicily is erupting at the time of this writing. See: Barbie Latza Nadeau, 26 FEB 2021, *The Daily Beast*, Europe's Most Active Volcano is Putting on a Show (msn.com)

⁵See <https://www.bgs.ac.uk/geology-projects/volcanoes> (This is why propeller engines can fly through a "light" sandstorm but jet aircraft cannot.)

⁶See "Minoan Civilization" in *Encyclopedia Britannica*, 10 Sept 2009 revision by Maren Goldberg and Gloria Lotha. The latest contention is that the eruption destroyed a major central port, tsunami waves over 50 feet high wiped out the fleet and the entire north Northern side of Crete, years of atmospheric contamination caused crop failure and famine, and all this caused a lack of confidence in the survivors – making them vulnerable to the Greek invaders.

including human and animal sources.⁷ Sadly, because volcanoes are not something that humans have learned how to tame or control, there is little any of us can do about them other than assist victims and pray for mercy.

Human Actions

However, our inability to control the damage done by volcanic eruptions does not mean that humans cannot affect the climate around them. Wars are tragic reminders of how much damage humans can do—from ancient annihilations that included tossing stones into otherwise fertile fields or sowing salt onto the destroyed enemy city, to the fire-bombing and atomic weapons of World War II. Even secondary actions from wars can be devastating. In rural mid-America during World War I, for example, individual greed—fueled by allied money for grain—propelled so many prairie farmers to ignore U.S. Agriculture Department warnings against plowing up the turf above the aquifer in the western grasslands that the dust bowl ensued.⁸ As a result, much of the good topsoil turned to dust and blew away. But that dust so clouded the air and crippled the crops of those very farmers—as well as all those nearby who did not destroy their portion of the aquifer—that subsequent crops were ruined and many sharecroppers lost the land they were hoping to purchase from the money their greed pursued. Almost a century later, huge tracts of land in the central United States are still trying to recover from that human-induced climate catastrophe, even though the atmosphere has long since healed.

Pope Francis in *Laudato Si* has lamented the deliberate destruction of beautiful coral reefs (often by poachers) simply for profit, as well as a number of other wasteful practices, including those radically changing the Amazon rain forest not for development but for corporate greed.⁹ It is easy for thoughtful examiners to agree with pope Francis that the willful destruction of irreplaceable natural items is a violation of who we are as a responsible people: hoping to pass on the wonders of this earth to future generations. Yet the

⁷The second largest source of smoke and ash appear to be the fires caused by lightning striking forests in inaccessible parts of Canada, the United States and Siberia each summer. See <http://climateatlas.ca/forest-fires-and-climate-change> for info about Canada, which parallels what happens in Alaska and Siberia.

⁸Robert A. McLeman, Juliette Dupre, Lea Berrang Ford, James Ford, Konrad Gajewski; Gregory Marchildon. “What we Learned from the Dust Bowl: Lessons in Science, Policy, and Adaptation,” *Population and Environment* 35, 4 (June 2014) 417–440.

⁹Encyclical Letter *Laudato Si* (May 24, 2015), no. 95, AAS 107 (2015), 885.

specifics of every individual action are sometimes harder to evaluate. Does one person's cutting down a tree in his yard, which removes the shade it provided to a neighbor, constitute such a violation? What about the removal of 100 trees along a boulevard to expand the road and facilitate traffic—to reduce the air pollution from vehicles waiting in traffic jams? [Does the air-filtering of the trees or the removal of the traffic congestion benefit the local air quality more?] What about a farmer who builds a small dam on a stream on his property so he can raise ducks? How is that different from one nation upriver from another [as Sudan is upriver from Egypt] which builds a similar dam so that its fields may receive irrigation—but reduces the fresh water in the Nile delta, which affects both crop production, potential saline back-up into the edges of that delta, and also reduces the amount of fresh water available to the city of Cairo? Indeed, world leaders continue to struggle with adjudicating such balances of (long-standing usage) rights against the legitimate needs of expanding populations.

To be fair, humans do have the right to exist and to live in safe areas and to explore the beautiful areas of the world, and not all human actions are detrimental to the environment. One need only examine swamp drainage, from ancient times to today. Examples include the site of the city of Toledo, Ohio, Boston's back bay area, and the whole series of Dutch polder land reclamations. One can also examine desert reclamation in Israel and Abu Dubai and other Persian Gulf states. Parallel to this is terrace farming on mountain slopes, from China and other parts of Asia to Latin America. If one also looks at canal construction, from the impressive Corinth canal in Greece and the Kiel canal connecting the North and Baltic seas years ago, to the Suez and Panama canals which connect oceans, it is clear that they improve water transport tremendously. Though these canals have almost no effect on ocean currents or marine life, they do affect the atmosphere—but in a beneficial way. Fewer miles traveled means less combustion of fuel and less effect on the atmosphere—but also significantly less risk to life and cargo of those vessels which would have had to transit the Antarctic Ocean around the southern tips of South America and Africa. Natural canals (straits) have existed long before canals, so it is reasonable to assume that God gave humans the example of how to make these wonders of engineering.

In light of such a balanced perspective [that humans can do environmental damage with atmospheric implications, but can also create great benefits parallel to what God has designed already in creation], and realizing humbly that all our efforts are of limited

effect compared to natural events like volcanic eruptions or inaccessible forest fires, what should a responsible theological approach to ongoing climate change look like? Pope Francis offers us some very good insights; and verifiable climate data gives the evidence to test any proposed recommendations.

Parameters

Restrictions to Human Greed: Just as we need police forces to stop evil actions in society, so there are some exploitive practices that the world organizations have prohibited – and need to hold perpetrators accountable to reduce the temptation in others to try to get away with similar exploitation. Beyond just evil individuals, considerable environmental interaction occurs with “corporations” which are legally created persons, and as such do not have consciences. So just as has been reported about Artificial Intelligence,¹⁰ these entities need humans working along with and truly controlling them to provide moral/ethical guidance. As Pope Francis mentions in *Laudato Si*, and repeats that concern even more globally in *Fratelli Tutti*¹¹ that the temptation to exploit requires not only external guarding but internal, spiritual diligence to prevent the destruction of our common home.

Even greater concerns involve living entities, such as huge ancient trees or endangered species, such as the poaching of rhino horns for the supposed medicinal benefits, leaving the animal dead or horribly wounded. Though various species have come and gone over the millennia that earth has existed, some species put on the endangered lists have actually been brought back to stronger populations through human nurturing. Sadly, because the wild environment has a balance of natural enemies, attempts to repopulate unique species have been a struggle and the introduction of some species to solve certain problems have changed a local balance in unintended ways.

Less catastrophic yet still problematic are methods of “harvesting” local resources, be they mineral or plant or animal, that are needlessly destructive: farming methods that allow horrible erosion when it could be prevented, mining that leaves the resulting area devastated rather than reusable, overgrazing a delicate pasture, or even destroying a city park for a new road or shopping centre. Though there are needs for transportation and for road and rail systems that enable families to live

¹⁰This Journal, entire focus of the September 2020 issue.

¹¹Francis, Encyclical Letter *Fratelli Tutti* (October 3, 2020) no. 103 “Liberty becomes nothing more than a condition for living as we will, completely free to choose to whom or what we will belong, or simply to possess or exploit.”

and thrive, during my own lifetime I have anguished over helplessly watching the millions of acres of fertile farmland near mid-western cities converted into housing sub-divisions simply because it was “convenient” to do so. However, there has also been concerted human opposition to such corporate greed for more than two centuries [The mad hatter in Alice in Wonderland from Mercury poisoning] and such destructive greed has even been lamented not only in folk songs but in classical compositions.¹²

Laudatory Alternatives

Humans are also the agent of very positive change. We can turn a jungle into a garden, bring water a distance, even over or through a mountain chain to irrigate an entire valley, and harvest whole hill-sides of various crops, from annual row crops like corn and soybeans to trees for paper that are harvested around the world every 10 to 25 years – and continue to do so without destroying the land.¹³ Moreover, we have found ways of producing food very efficiently, still on family farms that renew the same soil every year through crop rotation, cover crops, and determining the specific needs of each area of soil to renew the chemicals in it properly.¹⁴ There are also Farm CO-OP programs that allow groups of farmers to share the cost of very expensive equipment and share its use. Humans have built cities that provide energy and water to huge numbers of people much better than we did a few centuries ago – and deal with the waste products in ways that do not destroy the environment or the atmosphere. Moreover, the access to medical care, efficiently produced clothing, and other benefits like music that comes through the air to everyone’s phone are wonders that humans have developed without necessarily changing the climate or affecting the environment.

¹²“Big Yellow Taxi” folk song by Joni Mitchell, 1969, available on the album “Ladies of the Canyon” with the insightful chorus line: “Don’t it always seem to go, that you don’t know what you’ve got till it’s gone... they paved Paradise to put up a parking lot” or the classical tune “Farewell to Stromness” by Peter Maxwell Davies, 1980, BBC

¹³ See video from South Africa at https://www.bing.com/videos/search?q=harvesting+trees+for+paper&docid=__608036510124174364&mid=7EB713E2A1F6BB1C93AC7EB713E2A1F6BB1C93AC&view=detail&FORM=VIRE

¹⁴Rather than simply applying blanket amounts of fertilizer onto large fields, where much of it could wash off into watersheds and increase pollution, conscientious farmers have used the GPS on their phones to take various soil samples, analyzed their pH and other chemical needs, plotted those on a terrain graph, and then been able to administer just the right amount of soil chemicals in just the right places. This saved both chemical costs and the environment – and produced spectacular crops. [Personal communication from farmers in Casey, Co. KY, USA, July 2008].

Moreover, as we are reminded both in secular ways and even more so in sacred ways,¹⁵ humans do not simply survive, they are communal creatures that thrive on gatherings that are supported by culture and religion. Though there is some indication that animals have some kind of spirit because they do indeed respond to various kinds of stimuli like music, as well as to human interaction, it is even more abundantly clear that humans have that capacity to be uplifted—be filled with wonder. This can happen both individually (admiring a beautiful landscape or sunset) or collectively (sports enthusiasm, praying together, rock concert exuberance, etc.). Therefore, simply nourishing humans with necessities for existence needs to be augmented with access to those items that enhance that sense of wonder—both to make life worth living and to have one's spirit drawn beyond oneself. Hence, care for creation does not mean simply safeguarding monumentally wondrous locations (like the Swiss Alps or the geysers of Yellowstone or Niagara Falls), but constructing ways for humans to be able to access those locations without destroying other critical spots in the process. If constructed carefully, the effect on the environment is so small as to be insignificant.

In a parallel way, mining for resources, such as copper and zinc which enabled civilizations to move from the Neolithic to the Bronze Age, to iron and craft materials like silver and gold, to the piece of marble used to sculpt the Pietà, needs to continue so that the resources needed to “renew the face of the earth” are available. Yet, the search for and removal of such resources also needs to leave the landscape and atmosphere no worse (or at least minimally worse) in the process. Even though extraction of minerals is not a “renewable” process, is it not legitimate to suggest that God put those materials there not simply to remain hidden but to be used by the talents of humans to make the world significantly better? Has civilization not also used fossil fuels in wonderful ways, even though these are also non-renewable? Where would our world be without plastics, made from petroleum, which make possible construction methods of everything from clothing to computer and cell phone cases and light-weight airplane interiors?

Intermediate or “Grey” Areas: Though few may question the good use of plastics (including recycling them), the debate about combustion of such fossil fuels, coal in particular, has indeed raised questions about the atmosphere. Pure natural gas and petroleum products produce only water and carbon dioxide. Though there are some who claim that these two molecules are dangerous greenhouse

¹⁵“Man does not live on bread alone...” Mt 4:4 quoting Dt 8:3.

gases, despite many other leading scientists who dispute those observations because the data presented is highly questionable;¹⁶ every scientist admits that both water and carbon dioxide are absolutely essential for the growth of green plants.¹⁷ The real debate is about the amount of exhaust from industrial machines (autos, manufacturing, generators that use coal to make electricity, etc.) in concentrated places like large urban centres with restricted wind flow.¹⁸ The planting of Russian olive trees surrounding lanes on interstate highways is one of the creative methods of absorbing excess fossil fuel combustion products—and they look pretty.

A parallel story of how mandatory “scrubbers” on exhaust smokestacks in steel mills not only recovered some of the cost of those scrubbers by harvesting the sulfuric acid generated, but reduced the SO₂ in the atmosphere which had been causing the acid rain which was destroying forests downwind of the mills.¹⁹ Sadly, it took legal action and a federal court decision to overcome human greed from the corporations owning the mills to develop and install those scrubbers. These and other stories demonstrate that human activity can inadvertently concentrate pollutants in the atmosphere; but these limited examples also reveal that engineering ingenuity can discover ways of compensating for those added pollutants.

Principles for Human Actions

Between the boundaries described above—do minimal harm as we survive as humans and enhance what we can with creative ingenuity—the way that humans have acted throughout the Christian centuries has been guided by principles of “natural law” founded in sacred scripture. More recently, appeals to everyday data as “common sense” are often requested by younger generations. The two principles set forth below come from an appeal to both sources.

¹⁶American Chemical Society, Spring National meeting, 1994, found the data so faulty because they used H₂O data in the calculations of CO₂ wrongly, and it was caught by the audience in a general uproar. Hal Turner radio show, 19 July 2022, cites a National Aeronautical and Space Agency report from 1958 showing that a tilt that occurred then in the earth’s solar orbit described by the Milankovitch Climate Theory accounts for a significant portion of any climate change.

¹⁷For a description of photosynthesis and respiration, part of every basic biology text book, see the brief Smithsonian description at <https://ssec.si.edu/stemvisions-blog/what-photosynthesis>

¹⁸Wind flow is often overlooked in such calculations. I lived as a child near Chicago, IL, which has as many autos as London or Los Angeles, but Chicago never had “smog” problems because it is known as the “Windy City” which dissipate any industrial and automobile fumes into the surrounding farmlands that appreciated the carbon dioxide.

¹⁹See the history of EPA standards and enforcement at <https://www.epa.gov/acidrain/what-acid-rain>

1. Creation is Good If one simply looks around, the sense of “awe” overwhelms us. Mountains, valleys, hills, lakes and oceans speak to us of grandeur and wonder. We are more than just part of a food chain where the strongest survive—for a while. We are more than simply a cog in the wheel of time or part of the circle of life, for we can recognize beauty, kindness, and truth—and the wonders of creation call to us to long for something more. Though storms and earthquakes occur, though animals attack each other and us, the goodness of creation jumps out at even the most cynical of theoretical scientists or accountants. Yet the fact that humans, unique among creatures, can notice and appreciate this sets us apart to appreciate that goodness.

This is corroborated by sacred scripture, beginning with Gen 1:25, where God calls all things good right before he creates humans (with special responsibilities) in Gen 1:26 ff. This sentiment is repeated throughout the Hebrew and Greek scriptures, particularly in the wisdom literature: Psalms, Proverbs, Wisdom, Sirach and Song of Songs. It is clearly the duty of humans who live in and make good use of creation to find its creator and thank him for all these gifts.

2. Humans have Dominion, not Domination Empirically evident is the fact that humans can appreciate and create useful crafts (make pottery, cook with a fire, weave clothing, cultivate crops and domesticate animals to pull a wagon they invented, etc.), can trade goods and appreciate different skills (archer, blacksmith, herbalist, etc.), and can do all this with flavour and style. Though animals can sing to each other and do mating dances, humans can create instruments—and music as complex as symphonies to play on them. Humans add art to their crafts, living in homes (with tableware, clothing, etc.) that are not only functional but beautiful. In short, humans are clearly more than simply a part of the food chain, shackled to a dog-eat-dog existence without meaning or hope beyond the next “thrill.” Humans can actually plan ways to enhance creation (drain a swamp, build a wind or water mill, etc.) and cooperate together to carry out those plans. Humans don’t just dominate other parts of creation and force our will on it, we cooperate with creation to irrigate deserts, drain swamps and construct canals, etc. We continually can and do make creation better by exercising dominion to keep a garden from returning to the jungle it was before human care guided it.

This is confirmed in sacred scripture, beginning in Gen 1:26 where the creation of humans is “beyond” that of the rest of the material universe and is described in a unique way. In the psalms (Ps 8:4-9)

man is set “above” creation and even in the story of the fall of man, the ground is cursed because of human sin (Gen 3:17b). Moreover, in the New Testament, although there certainly is emphasis on the New Heavens and New Earth to come from the hand of God (Rev 21:1), the flavour permeating the Christian scriptures is that creation is good enough to be appreciated (cf. Acts 9:15 & 1Tim 4:4-5, etc.). Clearly, the parable of the talents (Mt 25:15-28) and the call to be of service (Mt 20:25) are not simply calling each of us to use the skills God gives us, but also the material resources which those talents can transform, much as St Joseph (and likely our Lord Himself) laboured over pieces of wood in the carpenter shop in Nazareth. Indeed, the sacred scriptures seem to exude a sense of sanctifying the whole world by human actions, in cooperation with God’s grace, transforming material creation into fit objects to be offered one day before the throne of God.

Application of these Principles to “Climate Change”

Limited and Relative Value because humans have limited abilities (can’t stop volcanoes or even hold back the tide) within the responsibility for dominion (helping creation reach its full potential, like a piece of marble becoming a statue, or using crop rotation to help a field remain fertile and productive, etc.), and even though all of creation has value as coming from the hand of God, some choices need to be made to preserve those things of greater or greatest value. Humans, made in the image and likeness of God, are of greatest value; but that does not mean that everything else is “disposable” to one’s whim. Nor does this mean that all humans, though of equal intrinsic value, are equally valuable to society. In the present pandemic, for example, special precautions are taken and vaccines given first to those who are helping cure others. Moreover, both battlefield triage and multiple trauma case crises in hospital emergency rooms operate on the desire to save as many injured as possible who have the most potential. Hence, those who are likely to die no matter what help is given them as well as those who are only minimally injured have their treatment deferred until those who are critically injured (but likely to survive if treated) and those seriously injured (with a parallel chance for recovery) are operated on first. This is common and standard medical procedure when dealing with complex needs and limited resources.²⁰

²⁰See any standard hospital protocol or battlefield medicine manual. However, this does not mean that those who are “expectant” to die are killed with a *coupe de gras* as was standard after battles before the founding of the International Red Cross.

Applying this principle to creation, throughout the centuries it was common for the “bread-winner” of the family to get the food he or she needed so that he or she could provide food for others. Elderly and children got less, and in times of famine the weakest often died despite the best efforts of the strongest. This is consistent with the jungle food chain, where mother animals will care for their young, but will chase them away once they can survive on their own. Yet, unlike that dog-eat-dog, survival of the fittest, food chain, humans can and will often sacrifice for others; they will conserve and ration food and other supplies to triage to help the most survive, and will seek creative ways to find other resources (such as the development of synthetic rubber when access to natural rubber trees was cut off or insufficient). That is an exercise of dominion, rather than a grasping, selfish domination of resources.

Atmospheric Care Because the atmosphere affects the entire planet earth, care for that atmosphere is critical. Through the centuries (indeed millennia) of climate changes, the expanding and contracting ozone layer has reduced the penetration of ultraviolet light from the sun. Some UV light is needed (along with the other frequencies of natural light) along with water and CO₂ for photosynthesis, or life would not even begin to live on this or any planet. Though plants absolutely require CO₂ and water, as well as some other trace minerals in their soil, to grow well, animals require oxygen—which is actually produced by the plants. Because of the rotation of the earth and the warmth of the sun, there are wind currents that help that atmosphere [80% nitrogen, 20% oxygen and less than 1% Argon, helium, CO₂ and a few other rare gasses] continually move and circulate, maintaining that living balance. There is little that humans can do to affect that global balance in the atmosphere.

However, on a micro-level, such as a city within a natural bowl like a crater or harbour area flanked by mountains, human factories and vehicles can cause an imbalance by reducing the amount of oxygen or adding to the total of various extraneous gases. These other gases, though still less than 2%, make themselves obnoxious the way a pig farm shares its odours with areas nearby downwind. Ingenuity can improve this situation by reducing the producers of those gases (move the manufacturing out of the harbour to the other side of the mountains, etc.) or reduce the number and emission of the vehicles (with scrubbers on the factory or car exhaust). Public transportation and creating wind tunnels through a portion of those surrounding mountains is an option—as is abandoning that city site and moving to a place with less constrained wind flow. Asking other areas,

hundreds or thousands of miles away to reduce their consumption of oxygen or production of vital CO₂ is not the answer to that congested area's pollution because of the dispersive effect of the winds in the earth's atmosphere between those two locations. Electric vehicles, electric mass transportation, bicycle paths and constructing open or "green spaces" can help give that localized wounded atmosphere a chance to recover. For decades, recently nuclear energy has provided considerable power where needed at reasonable cost (and a smaller geographic footprint than wind farms or solar farms) and continues to be advocated by climate experts.²¹ Concentrating on "local solutions to local problems" is indeed the most effective way to respect and protect the environment and the atmosphere.

"Mother" earth respected as belonging to Mother Mary Combining two strands of the Franciscan tradition, the special reverence given by the works of Bl. John Duns Scotus who clarified the Immaculate Conception doctrine and the recent works in theological-ecological interface,²² it is possible to sublimate ancient reverence for the earth as sustainer of life, receiver of the sunlight and rain from heaven as a prototype of Mary of Nazareth—who received the light of lights and was filled to overflowing with grace. Though Jesus, our Lord and Saviour, is the one mediator and is uniquely God and human, still very special reverence for Mary His mother (almost as one would respect the mother of one of our friends)²³ can help us develop the proper theological respect for the earth which pope Francis reminds us is "our common home." Respect precludes exploitation and does all it can to enhance—as should be our approach to any climate change. Finally, thinking respectfully of this planet earth as the "home" of Mary, the revered mother of Jesus who has made us His friends, can help us grow spiritually as well as professionally in that respect for "Mary's house" as we continue to develop our talents—using her resources to honour her Son, and laying our accomplishments one day before His Father's throne.

²¹Michael Shellenberger, *Apocalypse Never: Why Environmental Alarmism Hurts us all*, Harper, June 2020, ISBN 9780063001701; and Gregory Wrightstone, *Inconvenient Facts: The Science that Al Gore doesn't Want you to Know*, Silver Crown Pub, Oct 2017, ISBN 9781545614105.

²²Daniel P. Horan, "Haecceitas, Theological Aesthetics, and the Kinship of Creation: John Duns Scotus as a Resource for Environmental Ethics," *Heythrop Journal* LIX, (2018) 1060-1076.

²³"I no longer call you servants, but friends..." (Jn 15:15-16).