

# Proposing an Examen for Living the Ecology of Daily Life and Building a Culture of Care

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## Introduction

“There is a nobility in the duty to care for creation through little daily actions...”<sup>1</sup>

Waste, pollution, water issues, climate change, loss of biodiversity—can one person really make a difference in the face of such daunting global challenges? Many believe that developing effective solutions to such major environmental issues is primarily the task of corporations and governments and that individual actions have negligible impact.<sup>2</sup> However, Pope Francis takes a more comprehensive approach in his encyclical *Laudato Si’*. From the perspective of “integral ecology,” centered on connectivity, the Pope addresses both the macro and the micro dimensions of creation care, acknowledging the economic, political, and social aspects of environmental stewardship while also underscoring the dignity of each person and the importance of small daily acts of caring. These small daily acts are a relatively unexplored aspect of integral ecology called in the encyclical “the ecology of daily life.”<sup>3</sup>

More work is needed to elucidate what the ecology of daily life means in practice and how it relates to the unique vocation of humans to care for creation. Specifically, what does the Pope intend by “the ecology of daily life”? Since a primary goal of the encyclical is to help humanity learn how to care for our common home, there is a need to explicate the links between the ecology of daily life and caring for creation. How can living the ecology of daily life help build a

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<sup>1</sup>Pope Francis, *Laudato Si’: On Care for our Common Home* (Vatican City, VA: Libreria Editrice Vaticana, 24 April 2015), #211, accessed 11 November 2017, [http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si.html](http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html).

<sup>2</sup>See, for example, Worldwatch Institute, “Can We Change the World Just by Changing our Own Actions?” (15 October 2013), accessed 24 May 2018; <http://www.worldwatch.org/system/files/AlterNet-SOW13-AL-102013.pdf>; United Nations Department of Economic and Social Affairs, E/2013/50/Rev. 1 ST/ESA/344 “World Economic and Social Survey 2013: Sustainable Development Challenges,” accessed 24 May 2018, <https://sustainabledevelopment.un.org/content/documents/2843WESS2013.pdf>.

<sup>3</sup>Francis, *Laudato Si’*, #3. The Ecology of Daily Life is the subject of section 3 in Chapter 4 of *Laudato Si’*.

culture of care?<sup>4</sup> This article explores these questions with an eye toward practical applications of the Pope's words in our daily lives, in order that the encyclical have a living impact on who we are as human persons and how we exercise our human responsibility to care for creation.

The article begins with a review of how Catholic social teaching has addressed the question of ecology, with particular focus on Papal writings over the past fifty years. Since the pontificate of Pope Paul VI, each Pope has built on his predecessor's words, fashioning a foundation for Pope Francis' signature concept of integral ecology, the centerpiece of *Laudato Si'*. The article then discusses integral ecology as presented in the encyclical, along with its relationship to the notion of care and attentiveness. Next, it moves to that particular aspect of integral ecology called the ecology of daily life. How is the ecology of daily life defined in the encyclical? What are some obstacles to living it? Based upon the principles articulated in the encyclical, the article proposes an examen for assessing progress in living the ecology of daily life. An examen is a daily prayerful reflection on one's responses to the events of the day for the purpose of spiritual discernment. The proposed examen is applied to two case studies in order to discern a fruitful practice of the ecology of daily life. The case studies represent environmental situations that, while affected by larger scale industrial/commercial processes, are primarily driven by micro-scale decision-making and small daily actions of individuals and local communities. The first case study focuses on endocrine disrupting chemicals as an example of a polluted ecology of daily life, and the second highlights a zero waste initiative as an exemplar of an integral ecology of daily life. Finally, the article concludes with comments on lessons learned from the exercise of applying an examen to the ecology of daily life in two concrete situations. This approach helps discern how to build a culture of care based upon the principles of the ecology of daily life as they are presented in *Laudato Si'*.

## **Ecology in Catholic Social Teaching**

Ecology is the study of the relationships of organisms to one another and to their physical environment. Etymologically, the term "ecology" comes from *oikos*, the Greek word for house. As such, ecology is the study of the household of nature or, in more theological terms, of the common home humans share with the rest of creation. The German biologist Ernst Haeckel coined the term in 1866 and George Perkins Marsh wrote what some identify as the first ecological treatise entitled *Man and Nature* in 1864.<sup>5</sup> However, ecology did not emerge as a

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<sup>4</sup>The subtitle of the encyclical is "On Care for our Common Home." The significance of the use of the word "care" in the subtitle is an important point that is commented upon later.

<sup>5</sup>George Perkins Marsh, *Man and Nature: Or Physical Geography as Modified by Human Action* (New York: Charles Scriener, 1864).

distinct academic discipline until the twentieth century.<sup>6</sup> In 1953, Eugene Odum published the first ecology textbook,<sup>7</sup> and it was another decade before ecology became a prominent field of study, in response to the rise of public environmental concerns in the 1960s.<sup>8</sup>

In the decades since, the Catholic popes have increasingly engaged with ecological issues.<sup>9</sup> The first Pope to refer directly to ecological concerns in his writings was Pope Paul VI. Writing on “Catholic Ecologies and *Laudato Si’*,” Christina Peppard records that Paul VI was the first pope to address the United Nations about environmental issues.<sup>10</sup> In 1970, he addressed the Food and Agriculture Organization (FAO) of the United Nations, expressing his concerns over a “veritable ecological catastrophe” and the widespread pollution of air and water that threatened to destroy “the fruit of millions of years of human and natural selection.”<sup>11</sup> The Pope warned that, while over the millennia human beings have learned how to “dominate and subdue” nature, the time has come to confront the reality of pollution: “The hour has now come for man [*sic*] to dominate his domination.”<sup>12</sup> Continuing this theme, in 1971, Paul VI pointed out in his apostolic letter *Octogesima Adveniens*, written on the eightieth anniversary of Pope Leo XIII’s social encyclical *Rerum Novarum*, that “by an ill-considered exploitation of nature, man [*sic*] risks destroying it and becoming in his turn the victim of this degradation.”<sup>13</sup>

As ecological issues became more pressing in secular cultures, the papal office took greater notice, as evidenced by the fact that in 1979, not long after he became Pope, John Paul II

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<sup>6</sup>Environment and Ecology Staff, “History of Ecology,” *Environment and Ecology* (2018), accessed 11 May 2018, [http://environment-ecology.com/history-of-ecology/132-history-of-ecology.html#cite\\_note-0](http://environment-ecology.com/history-of-ecology/132-history-of-ecology.html#cite_note-0); Robert P. McIntosh, *The Background of Ecology. Concept and Theory* (New York: Cambridge University Press, 1986), 1.

<sup>7</sup>Eugene P. Odum, *Fundamentals of Ecology* (Philadelphia: W.B. Saunders Company, 1953).

<sup>8</sup>See for example, Peter Dykstra, “History of Environmental Movement Full of Twists, Turns” (CNN: 15 December 2008), accessed 24 May 2018, <http://www.cnn.com/2008/TECH/science/12/10/history.environmental.movement/index.html>.

<sup>9</sup>See for example, Celia Deane-Drummond, “*Laudato Si’* and the Natural Sciences: An Assessment of Possibilities and Limits,” *Theological Studies* 77, no. 2 (June 2016): 393-394; Christina Peppard, “Hydrology, Theology, and *Laudato Si’*,” *Theological Studies* 77, no. 2 (June 2016): 417-419; Maura A. Ryan, “A New Shade of Green? Nature, Freedom, and Sexual Difference in *Caritas in Veritate*,” *Theological Studies* 71, no. 2 (May 2010): 335-337.

<sup>10</sup>Peppard, 417.

<sup>11</sup>Pope Paul VI, *Visit of Pope Paul VI to the FAO on the 25<sup>th</sup> Anniversary of its Institution* (Vatican City, VA: Libreria Editrice Vaticana, 16 November 1970), #3, accessed 2 December 2017, [https://w2.vatican.va/content/paul-vi/en/speeches/1970/documents/hf\\_p-vi\\_spe\\_19701116\\_xxv-istituzione-fao.html](https://w2.vatican.va/content/paul-vi/en/speeches/1970/documents/hf_p-vi_spe_19701116_xxv-istituzione-fao.html).

<sup>12</sup>*Ibid.*, #4.

<sup>13</sup>Pope Paul VI, *Octogesima Adveniens* (Vatican City, VA: Libreria Editrice Vaticana, 14 May 1971), #21, accessed 2 December 2017, [http://w2.vatican.va/content/paul-vi/en/apost\\_letters/documents/hf\\_p-vi\\_apl\\_19710514\\_octogesima-adveniens.html](http://w2.vatican.va/content/paul-vi/en/apost_letters/documents/hf_p-vi_apl_19710514_octogesima-adveniens.html).

named St. Francis of Assisi the patron saint of ecology. In his 1987 social encyclical, *Sollicitudo Rei Socialis*, he wrote that the dominion granted by God in the book of Genesis to humans is not absolute; it should not be taken as a license to “use and misuse, or to dispose of things as one pleases.”<sup>14</sup> In 1990, beginning a tradition in his pontificate and that of his successor, Benedict XVI, John Paul II focused his World Day of Peace Message on the ecological crisis. Arguing that “the ecological crisis is a moral issue,” Pope John Paul II lamented “the lack of respect for life evident in many of the patterns of environmental pollution, and that “when man [*sic*] turns his back on the Creator's plan, he provokes a disorder which has inevitable repercussions on the rest of the created order.”<sup>15</sup>

An important contribution of John Paul II was his introduction into Catholic teaching of the term “human ecology,” which first appeared in his encyclical *Centesimus Annus* in 1991.<sup>16</sup> In expressing concern for the “irrational destruction of the natural environment,” he also decried the serious destruction of the human environment in contemporary culture and argued that we need to “safeguard the moral conditions for an authentic ‘human ecology.’”<sup>17</sup> Vincent Miller suggests that John Paul II’s approach to human ecology was grounded in his vision of human solidarity and interdependence and that Pope Francis extends John Paul II’s vision of interdependence to human interdependence with the rest of creation.<sup>18</sup>

Pope Benedict XVI, who has been called the “Green Pope,”<sup>19</sup> significantly developed and extended the themes of his predecessors, adding his own distinctive stamp. For example, in his World Day of Peace Message for 2007, he emphasized that in order to achieve peace, humanity

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<sup>14</sup>Pope John Paul II, *Sollicitudo Rei Socialis* (Vatican City, VA: Libreria Editrice Vaticana, 30 December 1987), #34, accessed 3 December 2017, [http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf\\_jp-ii\\_enc\\_30121987\\_sollicitudo-rei-socialis.html](http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_30121987_sollicitudo-rei-socialis.html).

<sup>15</sup>Pope John Paul II, “Message for the Celebration of the World Day of Peace” (1 January 1990), #5, accessed 19 February 2019, [http://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf\\_jp-ii\\_mes\\_19891208\\_xxiii-world-day-for-peace.html](http://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf_jp-ii_mes_19891208_xxiii-world-day-for-peace.html).

<sup>16</sup>Pope John Paul II, *Centesimus Annus* (Vatican City, VA: Libreria Editrice Vaticana, 1 May 1991), #38-39, accessed 2 December 2017, [http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf\\_jp-ii\\_enc\\_01051991\\_centesimus-annus.html](http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_01051991_centesimus-annus.html).

<sup>17</sup>*Ibid.*, #38.

<sup>18</sup>Vincent Miller, “Integral Ecology: Francis’ Spiritual and Moral Vision of Interconnectedness,” *The Theological and Ecological Vision of Laudato Si’: Everything Is Connected*, ed. Vincent Miller (New York, Bloomsbury T&T Clark, 2017), 19.

<sup>19</sup>Nick Squires, “Benedict XVI—the ‘Green’ Pope,” *The Telegraph*, 21 June 2011, accessed 24 May 2018, <https://www.telegraph.co.uk/news/worldnews/the-pope/8589031/Benedict-XVI-The-green-Pope.html>. See also Woodeen Koenig-Bricker, *Ten Commandments for the Environment: Pope Benedict XVI Speaks Out for Creation and Justice* (Notre Dame: IN.: Ave Maria, 2009), 8, as quoted in Maura Ryan, “A New Shade of Green?,” 335.

must respect the “ecology of peace.”<sup>20</sup> By this, he meant the links between natural and human ecology. For him the “book of nature” is one: it contains a grammar within it that teaches us to respect both human and natural ecology.<sup>21</sup> Maura Ryan, writing on ecological themes in Pope Benedict’s first social encyclical *Caritas in veritate*, comments on the unique contribution of Benedict XVI in connecting physical and human ecology and extending the moral sphere of these interconnections to many social issues.<sup>22</sup> At the end of the 2007 World Day of Peace Message, Benedict XVI encouraged every believer to contribute to advancing true integral humanism by working to rebuild connections between natural and human ecology.<sup>23</sup>

### **Pope Francis and Integral Ecology in *Laudato Si’***

The marriage of human and natural ecology is a distinctive theme in Benedict’s environmental teachings, one which Pope Francis carried forward and further developed in *Laudato Si’* through his notion of integral ecology. Numerous commentators have noted the interconnectedness of Pope Francis’ environmental teachings in *Laudato Si’* with that of his predecessors, as well as with the ecologically-minded Ecumenical Patriarch Bartholomew.<sup>24</sup> The interconnectedness is especially traceable to the themes of natural and human ecology in Popes John Paul II and Benedict XVI, as well as to the emphasis on ecological sin and reconciliation in the Christian Orthodox understanding of ecology. In relation to this latter theme, Christiana Peppard quotes the “Common Declaration on Environmental Ethics” signed by Pope John II and Ecumenical Patriarch Bartholomew in 2002: “What is required is an act of repentance on our part and a renewed attempt to view ourselves, one another, and the world around us within the perspective of the divine design for creation.”<sup>25</sup> Then she states, “It is worth noting that notions of ecological sin and broader theological alignments with Orthodox

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<sup>20</sup> Pope Benedict XVI, *Message of his Holiness Pope Benedict XVI for the Celebration of the World Day of Peace, January 1, 2007* (Vatican City, VA: Libreria Editrice Vaticana, 8 December 2006), #8, accessed 2 December 2017, [http://w2.vatican.va/content/benedict-xvi/en/messages/peace/documents/hf\\_ben-xvi\\_mes\\_20061208\\_xl-world-day-peace.html](http://w2.vatican.va/content/benedict-xvi/en/messages/peace/documents/hf_ben-xvi_mes_20061208_xl-world-day-peace.html).

<sup>21</sup> Pope Benedict XVI, *Caritas in Veritate* (Vatican City, VA: Libreria Editrice Vaticana, 29 June 2009), #51, accessed 4 December 2017, [http://w2.vatican.va/content/benedict-xvi/en/encyclicals/documents/hf\\_ben-xvi\\_enc\\_20090629\\_caritas-in-veritate.html](http://w2.vatican.va/content/benedict-xvi/en/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate.html).

<sup>22</sup> Maura Ryan, “A New Shade of Green?,” 336.

<sup>23</sup> Pope Benedict XVI, *World Day of Peace 2007*, #17.

<sup>24</sup> See, Celia Deane-Drummond, “*Laudato Si’* and the Natural Sciences”; Christina Peppard, “Hydrology, Theology, and *Laudato Si’*”; Maura A. Ryan, “A New Shade of Green?” and *The Theological and Ecological Vision of Laudato Si’*, ed. Vincent Miller.

<sup>25</sup> Peppard, 418.

Christian understandings of ecology are abundantly evident in *Laudato Si'*.<sup>26</sup> The importance of the notion of ecological sin and reconciliation to an understanding of integral ecology should not be underestimated and will be further developed in this article.

Integral ecology is the theme of chapter four of *Laudato Si'*. The chapter divides integral ecology into the following categories: natural ecology, human ecology, cultural ecology, the ecology of daily life, the protection of the common good, intra- and inter-generational solidarity, and the preferential option for the poor.<sup>27</sup> Throughout the encyclical, Pope Francis makes an urgent appeal for an approach to environmental concerns grounded in this comprehensive vision.<sup>28</sup>

Francis' articulation of integral ecology rests on the conviction that "human life is grounded in three fundamental and closely intertwined relationships: with God, with our neighbor, and with the earth itself."<sup>29</sup> In this broader conception of reality, which traces its roots to the Genesis creation accounts, the created world counts as one of our three prime relationships; God, neighbor, and the earth comprise our fundamental natural-spiritual ecosystem. Pope Francis' emphasis on this tripartite relationship could be considered a theological development in continuity with traditional catechetical teachings but also extending them in a significant way. Such a development has profound implications, in that the Pope explicitly views the rupture of any of these three vital relationships as sin.<sup>30</sup> In practical terms, this means that an examination of conscience should include prayerful reflection on our thoughts, words, and deeds, to identify sins against not only God or our neighbor, but also against the created world.

Like Benedict XVI and John Paul II before him, Pope Francis identifies St. Francis of Assisi as a patron saint who shows us how to heal the ruptures in those three fundamental relationships.<sup>31</sup> For Pope Francis, St. Francis is the example par excellence of integral ecology and of the kind of deep personal conversion required in order to practice integral ecology in an

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<sup>26</sup>Ibid., 418.

<sup>27</sup>Cf. chapter four of *Laudato Si'*, which focuses on integral ecology.

<sup>28</sup>Francis, *Laudato Si'*, #141.

<sup>29</sup>Ibid., #66.

<sup>30</sup>Ibid, #66: "The creation accounts in the book of Genesis contain, in their own symbolic and narrative language, profound teachings about human existence and its historical reality. They suggest that human life is grounded in three fundamental and closely intertwined relationships: with God, with our neighbor, and with the earth itself. According to the Bible, these three vital relationships have been broken, both outwardly and within us. This rupture is sin."

<sup>31</sup>Ibid, #66: "It is significant that the harmony which Saint Francis of Assisi experienced with all creatures was seen as a healing of that rupture. Saint Bonaventure held that, through universal reconciliation with every creature, Saint Francis in some way returned to the state of original innocence."

effective way.<sup>32</sup> Writes Pope Francis:

In calling to mind the figure of St. Francis of Assisi, we come to realize that a healthy relationship with creation is one dimension of overall personal conversion, which entails the recognition of our errors, sins, faults, and failures, and leads to heartfelt repentance and desire to change.<sup>33</sup>

St. Francis' ability to care for the vulnerable, the poor, and the outcast, as well as to respond to the cry of nature itself, flowed out of the wellspring of his deep interior conversion. Spiritual writers point out that Francis' embrace of the leper was the door to his spiritual journey and the foundation of his ability to commune with creation. Through his practices of repentance and contemplation, he was able to see the created world with new eyes. For him, the created world was a window to the Creator. The beauty of creatures spoke to him of the goodness of their Creator and prompted him to care for creatures with a sense of fraternity that inspired him to call them brother and sister. As Pope Francis writes: "His response to the world around him was so much more than intellectual appreciation or economic calculus, for to him each and every creature was a sister united to him by bonds of affection."<sup>34</sup>

That sense of affection, connectedness, and relationship exemplified by St. Francis of Assisi is essential to understanding Pope Francis' approach to integral ecology. In this, we see the relationship between integral ecology and care come to light in the encyclical. In Pope Francis' words,

If we approach nature and the environment without this openness to awe and wonder, if we no longer speak the language of fraternity and beauty in our relationship with the world, our attitude will be that of masters, consumers, ruthless exploiters, unable to set limits on their immediate needs. By contrast, if we feel intimately united with all that exists, then sobriety and care will well up spontaneously.<sup>35</sup>

## **Integral Ecology and Care**

The notion of care, like integral ecology, is central to *Laudato Si'*. It is significant that the word "stewardship" appears only twice in the encyclical, while "care" is used forty three times,

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<sup>32</sup>Ibid., #10.

<sup>33</sup>Ibid., #218.

<sup>34</sup>Ibid., #11.

<sup>35</sup>Ibid., #11.

beginning with the subtitle, “On Care for our Common Home.” According to Cardinal Turkson, who was heavily involved in the preparation of *Laudato Si’*, the use of the word “care” by the Pope was purposeful. Care goes beyond stewardship, says Cardinal Turkson:

Whereas talk of “stewardship” implies a relationship based on duty, the notion of “care” taps into something deeper: When one cares for something it is something one does with passion and love.<sup>36</sup>

And further:

Good stewards take responsibility and fulfill their obligation to manage and to render an account. But one can be a good steward without feeling connected. If one cares, however, one is connected. To care is to allow oneself to be affected by another, so much so that one’s path and priorities change.<sup>37</sup>

In placing the emphasis on care rather than stewardship, Pope Francis joins a growing body of literature that is critical of stewardship-based eco-theologies.<sup>38</sup> Some authors argue that the model of stewardship is too “managerial” and “androcentric.”<sup>39</sup> Others suggest that stewardship implies a subject-object rather than a subject-subject mindset.<sup>40</sup> At the heart of the wide range of critiques is the concern that the model of stewardship, as varied as it is, places emphasis on use of resources, rather than on relationship. For example, Himes and Himes write, “The theme of companionship, the relationship which exists not only between human persons but between humans and nonhumans, has been largely submerged in the

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<sup>36</sup>Quoted in Henry Longbottom SJ, “Duty Free? Virtue Ethics in *Laudato Si’*,” *Thinking Faith* (10 August, 2015), accessed 1 June 2018, [http://www.thinkingfaith.org/articles/duty-free-virtue-ethics-laudato-si%E2%80%9999\\_](http://www.thinkingfaith.org/articles/duty-free-virtue-ethics-laudato-si%E2%80%9999_)

<sup>37</sup>Cardinal Peter Turkson, “Moral Challenges to Business and Society,” paper presented at The Future of the Corporation: From Best in the World to Best for the World, 507 January 2016, Pontificium Consilium de Iustitia et Pace, <http://www.iustitiaetpax.va/content/dam/giustiziaepace/presidenteinterventi/2016/2016.01.06TurksonIAM%26ESEChile.pdf>.

<sup>38</sup>This literature is found in many different circles, including Protestant, feminist, and Catholic theology and philosophy. See, for example, Ernst Conradie, “Stewards or Sojourners in the Household of God?,” *Scripture* 73 (2000): 153-174; Sally McFague, *Super, Natural Christians: How We Should Love Nature* (Minneapolis: Fortress Press, 1997); Norman Wirzba, *The Paradise of God* (Oxford: Oxford University Press, 2003); Clare Palmer, “Stewardship: A Case Study in Environmental Ethics,” in *The Earth Beneath: A Critical Guide to Green Theology*, eds. Ian Ball, Margaret Goodall, Clare Palmer, and John Reader (London, SPCK, 1992), 67-87; Michael J. Himes and Kenneth R. Himes, *Orders of Friars Minor*, “The Sacrament of Creation: Toward and Environmental Theology,” *Commonweal* 117 (1990): 42-49.

<sup>39</sup>Conradie, 158.

<sup>40</sup>Sally McFague, 36-38; and Himes and Himes, 45. Himes and Himes refer to Martin Buber’s rubric of “I-Thou” and contrast it with the contrasting rubric of “I-It,” which they argue is more characteristic of the attitude of stewardship.



stewardship theme.”<sup>41</sup> This literature suggests that there is a need for a love-based environmental ethic that goes beyond stewardship.

In response to this need, the ethics of care literature that emerged from feminist ethics in the 1980s could play an important role.<sup>42</sup> One particularly relevant theme is that of attentiveness,<sup>43</sup> especially as articulated by Simone Weil.<sup>44</sup> Attention comes from the Latin *attendere*, which has the connotation of both waiting and holding.<sup>45</sup> To attend to someone requires waiting and taking the time to pay attention to their needs in order to be able to respond in a meaningful way. For example, the attending physician must listen to the patient and be attentive to symptoms while also knowing well the duties of proper medical care.<sup>46</sup>

Simone Weil emphasized the importance of attentiveness in education, contemplation, prayer, and the practice of compassion.<sup>47</sup> For her, attention is a kind of emptying, accompanied by waiting in a receptive stance for the truth of the thing, person, or philosophical/moral problem

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<sup>41</sup>Himes and Himes, 45. Similarly, Clare Palmer states, “This perception of stewardship portrays God as a rich man who has handed his riches over to humanity to use to greatest advantage. Thus humanity is a kind of investor—intended to use the resources to the master’s and its own best advantage, to make them grow.... The primary emphasis is on the steward and the use of the resources, rather than on the relationship between the master and the steward” (73).

<sup>42</sup>See, for example, Carol Gilligan, *In a Different Voice: Psychological Theory and Women’s Development* (Boston: Harvard University Press, 1982); Nel Noddings, *Caring: A Feminine Approach to Ethics and Moral Education* (Berkeley: University of California Press, 1989).

<sup>43</sup>Cf. Joan Tonto, “An Ethic of Care,” in *Feminist Theory: a Philosophical Anthology*, eds. Ann E. Cudd and Robin O. Andreasen (Malden, MA: Blackwell Publishing, 2005), 251-263. Tonto identifies attentiveness as the first of four ethical elements of care.

<sup>44</sup>Cf. Simone Weil, “Reflections on the Right Use of School Studies with a View to the Love of God,” *Waiting on God*, trans. Emma Crauford (New York: G.P. Putnam’s Sons, 1951), 105-115; “Attention and Will,” *Gravity and Grace* (New York: G.P. Putnam’s Sons, 1952); *First and Last Notebooks* (London: Oxford University Press, 1970); *Simone Weil Reader*, ed. George A. Panichas (New York: David McKay, 1977); Ann Pirruccello, “Interpreting Simone Weil: Presence and Absence in Attention,” *Philosophy East and West* 45, no. 1 (1995), 61-72.

<sup>45</sup>Selma Sevenhuijsen, “Care and Attention,” paper presented at A Meaningful Life in a Just Society: Investigating Wellbeing and Democratic Caring, 30-31 January 2014, Utrecht, Universiteit voor Humanistiek, <http://selmasevenhuijsen.nl/wp-content/uploads/2015/12/Active-attention.pdf>.

<sup>46</sup>Warren T. Reich, “History of the Notion of Care,” in *Encyclopedia of Bioethics* (New York: Simon & Schuster Macmillan, 1995), 319-331.

<sup>47</sup>Cf. Simone Weil, “Reflections”; “Attention and Will,” *First and Last Notebooks*; *Simone Weil Reader*; *Lectures on Philosophy* (Cambridge: University Press, 1978); Kazuaki Yoda, “Simone Weil on Attention and Education: Can Love Be Taught?” (Columbia University Academic Commons, 2014), accessed 18 April 2018, <https://academiccommons.columbia.edu/catalog/ac:176152>; Stuart Jessen, “Simone Weil: Suffering, Attention and Compassionate Thought,” *Studies in Christian Ethics* 27, no. 2 (April 2014); Rik Van Nieuwenhove, “Contemplation, Attention, and the Distinctive Nature of Catholic Education,” *Journal of Catholic Higher Education* 35, no. 2 (2016), 193-209.

to emerge.<sup>48</sup> This is an important posture for study as well as prayer.<sup>49</sup> She also maintained that attention is essential to the practice of compassion. Those who are in need of care need true attentiveness and caregivers must excel in practicing that kind of attentiveness.<sup>50</sup>

The kind of attentiveness that Simone Weil proposed is required if humanity is to understand the natural world more fully and to learn better how to attend to its needs. In *Laudato Si'*, Pope Francis refers to the need for “serene attentiveness” in how we approach persons and the created world.<sup>51</sup> Attaining this “attitude of the heart” helps us to “overcome that unhealthy anxiety which makes us superficial, aggressive and compulsive consumers” and enables us to change attitudes and behaviors so as to become more caring persons.<sup>52</sup> Through this, we can grow in our capacity to be attentive to the beauty—and the groaning—of the created world and be moved to action on its behalf.

Others have written about the need for attentiveness in ecological conversion. For example, Neil Ormerod and Cristina Vanin write:

Ecological conversion ... involves ongoing attentiveness to what we habitually disregard and what we are likely to pay attention to. Our alienation from the natural world is so extensive that we are not even aware that we are alienated.... Contemporary nature writers are helpful guides for teaching us how to reconnect with the natural world, how to develop our capacity for intimate communion and relationship. A consistent theme in their writing is the need for human beings to develop the capacity to pay attention.<sup>53</sup>

Attentiveness is essential to building a culture of care, one in which natural and human ecology are respected and integral ecology is advanced. In speaking about care, Pope Francis anchors himself in Jesus’ prime teaching on love as charity or *caritas*.<sup>54</sup> Care involves Christian love for

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<sup>48</sup>Simone Weil, “Reflections,” 108. She writes, “Attention consists of suspending our thought, leaving it detached, empty and ready to be penetrated by the object.... Above all our thought should be empty, waiting, not seeking anything, but ready to receive in its naked truth the object which is to penetrate it.”

<sup>49</sup>Ibid., 105. In her words, “The development of the faculty of attention forms the real object and almost the sole interest of studies,” and “the quality of attention counts for much in the quality of the prayer.”

<sup>50</sup>Ibid., 115. Persons who are suffering, she writes, “have no need for anything in world but people capable of giving them their attention. The capacity to give one’s attention to a sufferer is a very rare and difficult thing; . . . it is a miracle.”

<sup>51</sup>Francis, *Laudato Si'*, #226.

<sup>52</sup>Ibid., #226.

<sup>53</sup>Neil Ormerod and Cristina Vanin, “Ecological Conversion: What Does it Mean?” *Theological Studies* 77, no. 2 (2016): 328-352.

<sup>54</sup>Chloe Angyal and Ryan Grim, “What Pope Francis Means When He Talks about the Ethics of Care,” *Huffington*

creation, the poor, the disabled, and the vulnerable. With its emphasis on the notion of care, *Laudato Si'* advocates an integral ecology that goes beyond duty and obligation and moves toward the preeminence of relationality and love. One could say that integral ecology is in its essence about building a culture of care: care for God, care for each other, and care for our common home. The goal is to bring about a true “ecological conversion,” the fruits of which are deep-rooted changes in attitudes and lifestyles that promote the mutual flourishing of natural and human ecology.

Developing this kind of attentiveness requires paying “care-ful” attention to the details in each moment of daily life. This points to the significance of the relatively unexplored aspect of integral ecology called “the ecology of daily life,” which is the focus of the following section.

### **The Ecology of Daily Life in *Laudato Si'***<sup>55</sup>

The ecology of daily life is, first, as highlighted in chapter four of the encyclical, that aspect of integral ecology governing “the interrelationship between living space and human behavior.”<sup>56</sup> It encompasses “the setting in which people live their lives” and the ways they express their identities in their homes, workplaces, and neighborhoods.<sup>57</sup> A healthy ecology of daily life promotes designs which “increase our sense of belonging, of rootedness, of ‘feeling at home’” and which “combine to form a whole which is perceived by its inhabitants as a coherent and meaningful framework for their lives.”<sup>58</sup> It emphasizes the priority of spaces that connect, relate, and favor the recognition of others and which provide a setting for building community. A healthy ecology of daily life should promote interconnections in both natural ecosystems and human communities.

Second, the ecology of daily life does not only govern external realities, it also embraces internal ones. It involves the habits and interior motivations that govern daily actions according to the moral laws “inscribed in our nature.”<sup>59</sup> Principally, this implicates our bodies, which are in direct relationship with the environment and with other living beings.<sup>60</sup> Our bodies are God’s

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*Post* (2015), accessed 25 May 2018, [https://www.huffingtonpost.com/entry/pope-francis-ethics-of-care\\_us\\_56086189e4b0768126fdf774](https://www.huffingtonpost.com/entry/pope-francis-ethics-of-care_us_56086189e4b0768126fdf774).

<sup>55</sup>Ibid., #137-162.

<sup>56</sup>Ibid., #147, 149.

<sup>57</sup>Ibid., #147, 150.

<sup>58</sup>Ibid., #150-154,

<sup>59</sup>Ibid., #155.

<sup>60</sup>Ibid., #155.

gift, and the Pope indicates that how we accept and treat our bodies reflects something of how we accept and treat the created world as gift. He observes that “thinking we enjoy absolute power over our own bodies turns, often subtly, into thinking that we enjoy absolute power over creation.”<sup>61</sup> An ecology of daily life embraces a consistent life ethic, one that recognizes the intrinsic dignity of things, “independent of their usefulness,” from a Brazilian rainforest to a poor person, to a human embryo, to a person with disabilities.<sup>62</sup>

Third, integral to the practice of daily ecology are small acts of caring which flow from interior convictions and concern. Just as “Jesus worked with his hands, in daily contact with the matter created by God, to which he gave form by his craftsmanship,” so there is “a nobility in the duty to care for creation through little daily actions.”<sup>63</sup> The Pope invites persons to practice daily ecology in companionship with St. Therese of Lisieux, according to her “little way of love.”<sup>64</sup> What is needed, emphasizes the Pope, are “simple daily gestures which break with the logic of violence, exploitation and selfishness.”<sup>65</sup>

In summary, the ecology of daily life as defined in the encyclical includes three primary aspects: (1) The physical spaces that form the “setting in which people live their lives.”<sup>66</sup> (2) The bodies of human persons, as they are “in a direct relationship with the environment and with other living beings” and are subject to “moral laws inscribed in our nature.”<sup>67</sup> (3) Simple daily gestures and actions of care.<sup>68</sup>

### **Obstacles to Living a Healthy Ecology of Daily Life**

There is a need for attentiveness and reconciliation in these three areas of relationship— in our physical spaces, our bodies, and our simple daily actions—in order to live the ecology of daily life well and build a culture of care. However, militating against this are certain obstacles identified by Pope Francis throughout the encyclical. They include:

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<sup>61</sup>Ibid., #155.

<sup>62</sup>Ibid., #117, 140.

<sup>63</sup>Ibid., #211.

<sup>64</sup>Ibid., #230.

<sup>65</sup>Ibid., #230.

<sup>66</sup>Ibid., #147-155

<sup>67</sup>Ibid., #155

<sup>68</sup>Ibid., #98,211, 230.

- Environmental pollution, which is a part of almost everyone’s experience today, and which compromises the integrity of our physical spaces and surroundings.<sup>69</sup>
- The throwaway culture, which affects the excluded just as it reduces things to rubbish.<sup>70</sup>
- A “self-centered culture of instant gratification” underlying the throwaway culture, accompanied by a logic of selfishness and even violence and exploitation “which sees everything as irrelevant unless it serves one’s immediate needs.”<sup>71</sup>
- A “relativistic logic” that commodifies nature and human beings, as Pope Francis laments: “In the absence of objective truths or sound principles other than the satisfaction of our own desires and immediate needs, what limits can be placed on human trafficking, organized crime, the drug trade, commerce in blood diamonds and the fur of endangered species? Is it not the same relativistic logic which justifies buying the organs of the poor for resale or use in experimentation, or eliminating children because they are not what their parents wanted?”<sup>72</sup>
- The “sin of indifference” resulting from excessive consumerism and utilitarianism, whereby the cosmos is viewed as a “‘mere ‘space’ into which objects can be thrown with complete indifference.”<sup>73</sup> This compromises the intrinsic dignity of all created beings.

It is as if the broad range of external forms of pollution with which the earth is currently afflicted are mirroring a deeply afflicted interior landscape. As Benedict XVI said in his inaugural homily in 2008, “The external deserts in the world are growing, because the internal deserts are so vast.”<sup>74</sup> Ecological imbalances are occurring because humans are interiorly off-balance. Earth

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<sup>69</sup>Ibid., #20-31.

<sup>70</sup>Ibid., #16, 22, 43.

<sup>71</sup>Ibid., #162, 122.

<sup>72</sup>Ibid., #123.

<sup>73</sup>Ibid., #115.

<sup>74</sup>Pope Benedict XVI, *Mass, Imposition of the Pallium, and Conferral of the Fishermen’s Ring for the Beginning of the Petrine Ministry of the Bishop of Rome* (Vatican City, VA: Libreria Editrice Vaticana, 24 April 2005), accessed 18 December 2017, [https://w2.vatican.va/content/benedict-xvi/en/homilies/2005/documents/hf\\_ben-xvi\\_hom\\_20050424\\_inizio-pontificato.html](https://w2.vatican.va/content/benedict-xvi/en/homilies/2005/documents/hf_ben-xvi_hom_20050424_inizio-pontificato.html).

and its communities are experiencing pollution and disease because humans are “dis-eased” or “ill at ease” with one another and with the world around them.

For ecological conversion to occur, it is necessary to be attentive to the consequences of daily attitudes and behaviors that cause imbalances or “dis-ease.” These disordered patterns of life require reconciliation and repentance in order to heal the broken relationships resulting from them. One spiritual practice that could be helpful in doing this is that of the examen. This article now proposes a specific examen to assess the integrity of one’s ecology of daily life in light of the three principles of daily ecology elucidated from *Laudato Si’*.

### **Ecology of Daily Life and a Culture of Care: Examen**

The daily *examen* is a Christian technique of prayerful reflection on the events of the day in order to evaluate one’s conduct and become more aware of God’s presence in daily life.<sup>75</sup> The term “examen” comes from the Latin *exigere*, meaning “to weigh accurately.”<sup>76</sup> The daily examen is a process of “weighing” the day’s events to ascertain how one’s attitudes and behaviors “measure up” to certain moral principles; it is an aid in reconciling ruptured relationships, living each day well, and recognizing God’s blessings in the daily events of life.

The following examen centers on the three aspects of the ecology of daily life previously identified: our physical spaces, our bodies, and our daily actions. The examen assists in discerning one’s errors and faults in relation to those three areas and identifying those aspects of daily ecology in need of reconciliation. It could be one means of putting *Laudato Si’* into practice in a concrete way.

1. **Our physical spaces:** What do our physical spaces look like? Are they polluted? Marred by waste? Do they promote, or break, interconnections? Do they increase our sense of belonging and bring about an experience of community?
2. **Our bodies:** Do our daily practices and behaviors put our bodies in a healthy, or a diseased, relationship with the environment and with other living

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<sup>75</sup>“The Daily Examen,” *Ignatian Spirituality.com: A Service of Loyola Press*, accessed 1 February 2018, <https://www.ignatianspirituality.com/ignatian-prayer/the-examen>.

<sup>76</sup>“Examen,” *Online Etymology Dictionary*, accessed 1 February 2018, <https://www.etymonline.com/word/examine>.

beings? Do we care well for our bodies and for the bodies of other living beings?

3. **Our daily actions:** Do our daily acts flow from an interior landscape of attentiveness, love, and caring? Or from a throwaway mentality, selfish or violent attitudes, excessive consumption, or indifference? Are our daily acts a form of “craftsmanship” that builds a culture of care?

This examen will now be applied to two case studies that represent two contrasting ways of living the ecology of daily life. The first is framed as an example of a polluted ecology of daily life and the second as an example of a restored ecology of daily life, with levels of care fluctuating accordingly.

## Two Case Studies: The Ecology of Daily Life in Practice

### *Endocrine Disrupting Chemicals (EDCs): A Polluted Ecology of Daily Life*

Endocrine disrupting chemicals, or EDCs, are any non-natural chemical or mixture of chemicals that interferes with any aspect of hormone action by mimicking, blocking, or otherwise affecting hormone activity.<sup>77</sup> Much scientific research has been undertaken to investigate the ecological effects of these compounds. Over recent decades, EDCs have risen to be one of the most concerning environmental issues in contemporary Western culture, for a number of reasons.<sup>78</sup> Because they are a heterogeneous group of chemicals found in commonly used chemicals and foods, exposures can occur ubiquitously through air, water, and soil.<sup>79</sup> In fact, concentrations of these chemicals are found across the globe in many different regions and ecosystems, even those long distances away from contaminant sources.<sup>80</sup> Furthermore, EDCs

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<sup>77</sup>Evanthia Diamanti-Kandarakis, Jean-Pierre Bourguignon, Linda C. Giudice, Russ Hauser, Gail .S Prins, Ana M. Soto, R. Thomas Zoeller, and Andrea C. Gore, “Endocrine Disrupting Chemicals: An Endocrine Society Scientific Statement,” *Endocrine Reviews* 30, no. 4 (2009): 293-342.

<sup>78</sup>*Ibid.*, 294-296.

<sup>79</sup>A.C. Gore, V.A. Chappell, S.E. Fenton, J.A. Flaws, A. Nadal, G.S. Prins, J. Toppari, and R.T. Zoeller, “EDC-2: The Endocrine Society’s Second Scientific Statement on Endocrine-Disrupting Chemicals,” *Endocrine Reviews* 36, no. 6 (2015): 1-150.

<sup>80</sup>Many sources have documented the long-range transport of EDCs, but see, for example, for a good review of the literature: A.C. Gore, Chappell, et.al; Theo Colborn, Frederick S. vom Saal, and Ana M. Soto, “Developmental Effects of Endocrine-Disrupting Chemicals in Wildlife and Humans,” *Environmental Health Perspectives* 101, no. 5 (1993): 378-384; United States Environmental Protection Agency (EPA), “Endocrine Disruption,” accessed September 14, 2017, <https://www.epa.gov/endocrine-disruption>; Collaborative on Health and the Environment (CHE), “Endocrine Disrupting Chemicals,” accessed November 1, 2017, <https://www.healthandenvironment.org/>

bioaccumulate up the food chain and alter the actual developmental pathways of affected organisms.<sup>81</sup> They have wide-ranging health impacts involving the reproductive, hormonal, immune, and nervous systems, and even transgenerational effects, across all species including humans.<sup>82</sup>

In 2003 and 2004, when researchers from University of Colorado initiated a study of native fish in Boulder Creek near the Boulder, Colorado domestic wastewater treatment plant, they might have been expecting to find evidence of pollution, but not the kind of “dis-ease” upon which they stumbled. As they sampled upstream and downstream of the wastewater treatment plant, researchers were alarmed to discover that the fish, called white suckers, were changing sex upon exposure to the domestic wastewater effluent.<sup>83</sup> Upstream there was approximately an even percentage of male and female white suckers, but at the downstream sampling site, the frequency of males (17-21%) was half that of the upstream site (36-46%). Not only that, but at the downstream location, 18-22% of the fish were intersex, containing both ovaries and testes. It seemed the wastewater was having a feminizing effect on the fish. In addition, the downstream males had lower sperm counts and the downstream females and intersex fish had smaller-than-average ovaries. What was the cause of this?

According to chemical analyses, the wastewater treatment plant effluent contained a complex mixture of hormonally-active chemicals (EDCs), including in this case 17 beta-estradiol, 17 alpha-ethynylestradiol, bisphenol A, and alkylphenols.<sup>84</sup> These estrogenic chemicals can affect fish even at extremely low concentrations, as low as 1 part per trillion. This is the equivalent of a pinch of salt in an Olympic pool.<sup>85</sup> The results indicated that the effects occurred rapidly: the

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environmental-health/environmental-risks/chemical-environment-overview/edcs; National Institute of Environmental Health Sciences (NIEHS), “Endocrine Disruptors,” accessed October 16, 2017, <https://www.niehs.nih.gov/health/topics/agents/endocrine/index.cfm>; Bjørn Monroe Jenssen, “Endocrine-Disrupting Chemicals and Climate Change: A Worst-Case Combination for Arctic Marine Mammals and Seabirds?” *Environmental Health Perspectives* (2006): 76-80, published online 2005 Oct 21. doi: 10.1289/ehp.8057, accessed 17 October 2018, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1874189/>.

<sup>81</sup>T. Colborn, F.S.V. Saal, A.M. Soto, et.al. “Developmental effects of endocrine-disrupting chemicals in wildlife and humans,” *Environmental Health Perspectives* 101 (1993):378–379.

<sup>82</sup>Ibid., 378,381; Francis Xin, Martha Susiarjo, and Marisa S. Bartolomei, “Multigenerational and transgenerational effects of endocrine disrupting chemicals: a role for altered epigenetic regulation?” *Seminars in Cell and Developmental Biology* 43 (2015): 66-75, published online 2015 May 28. doi: 10.1016/j.semcdb.2015.05.008, accessed 16 October 2017, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4662893>.

<sup>83</sup>Alan M. Vajda, Larry B. Barber, James L. Gray, Elena M. Lopez, John D. Woodling, and David O. Norris, “Reproductive Disruption in Fish Downstream from an Estrogenic Wastewater Effluent,” *Environmental Science and Technology* 42, no. 9 (2008): 3407-3414.

<sup>84</sup>Ibid.

<sup>85</sup>“Fish Sex Change Investigated,” *Colorado Daily* (2006), accessed 1 February 2018,



males were feminized in as little as fourteen days after exposure to the wastewater.<sup>86</sup> Dr. John Woodling, one of the biologists working on this study, expressed how troubled he was at the findings: “It’s one thing to kill a river. It’s another thing to kill nature. If you’re messing with the hormonal balance in your aquatic community, you’re going deep down. You’re twiddling with how life proceeds.”<sup>87</sup>

Over the past forty years, similar phenomena have been observed widely, with developmental and reproductive anomalies documented across all taxonomic classes, from invertebrates, fish, amphibians, reptiles, and birds to mammals.<sup>88</sup> Many research studies have attributed these anomalies to endocrine disrupting chemicals, and their stories are weaving together one of the most disturbing chapters in Earth’s environmental history.

EDCs were synthesized during and after World War II to support the fast-growing post-war industrial economy. They are found in everyday products such as pharmaceuticals, plastic bottles, metal food cans, detergents, food additives and packaging, toys, cosmetics, perfumes, flame retardants, and pesticides. The chemicals detected in the Boulder Creek wastewater included 17alpha-ethynylestradiol, a synthetic estrogen used in birth control pills and hormone replacement therapy; bisphenol A, a plastic derivative in food and beverage packaging; and alkylphenols, a component of detergents and fragrances. Since EDCs mimic or block the action of hormones in the body, a wide range of health effects have been associated with them, including disrupted sexual development, decreased fertility, cancer, birth defects, impaired immune response, and neurological and behavioral changes.

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[http://www.coloradodaily.com/CI\\_13070083](http://www.coloradodaily.com/CI_13070083).

<sup>86</sup>Alan M. Vajda, Larry B. Barber, James L. Gray, Elena M. Lopez, Ashley M. Bolden, Heiko L. Schoenfuss, and David O. Norris, “Demasculinization of Male Fish by Wastewater Treatment Plant Effluent,” *Aquatic Toxicology* 103 (2011): 213-221.

<sup>87</sup>Theo Stein and Miles Moffeit, “Mutant Fish Prompt Concern. Study Focuses on Sewage Plants,” *Denver Post* (2004), accessed 1 February 2018, <https://sites.lafayette.edu/kneya/edc-multidisciplinary-project/denver-post-article>.

<sup>88</sup>See, for example, Åke Bergman, Jerrold J. Heindel, Susan Jobling, Karen A. Kidd and R. Thomas Zoeller, eds., *State of the Science of Endocrine-Disrupting Chemicals—2012, “Summary for Decision-Makers”* (United Nations Environment Program and the World Health Organization, 2013), 1- 38; Andrea C. Gore, David Crews, Loretta L. Doan, Michele La Merrill, Heather Patisaul, and Ami Zota, “Introduction to Endocrine Disrupting Chemicals (EDCs),” *The Endocrine Society* (2014): 1-38; Theo Colborn, Frederick S. vom Saal, and Ana M. Soto, “Developmental Effects of Endocrine-Disrupting Chemicals in Wildlife and Humans,” *Environmental Health Perspectives* 101, no. 5 (1993): 378-384; United States Environmental Protection Agency (EPA), “Endocrine Disruption,” accessed September 14, 2017, <https://www.epa.gov/endocrine-disruption>; Collaborative on Health and the Environment (CHE), “Endocrine Disrupting Chemicals,” accessed November 1, 2017, <https://www.healthandenvironment.org/environmental-health/environmental-risks/chemical-environment-overview/edcs>; National Institute of Environmental Health Sciences (NIEHS), “Endocrine Disruptors,” accessed October 16, 2017, <https://www.niehs.nih.gov/health/topics/agents/endocrine/index.cfm>.

Humans are not exempt. One of the higher profile human stories revolves around sperm counts in men. For the past several decades, sperm count declines have been reported in the scientific literature,<sup>89</sup> and in 2017 the peer-reviewed scientific journal *Human Reproduction Update* published a comprehensive synthesis of the studies to date.<sup>90</sup> The authors screened 7500 studies and conducted a meta-regression analysis of 185 studies conducted around the world from 1973-2011. They reported that during this period there was a statistically significant decline in both sperm concentration and total sperm counts. Most alarming was a 50-60% decline among men from North America, Europe, Australia and New Zealand. In other words, sperm counts in men from these industrialized societies have halved in the past forty years. Furthermore, the rate of decline among Western men is not showing any signs of slowing down, as shown by the steep slopes of the curves in Figure 1. The same trend does not seem to be occurring in men from more undeveloped parts of the world such as Africa, Asia, or South America.

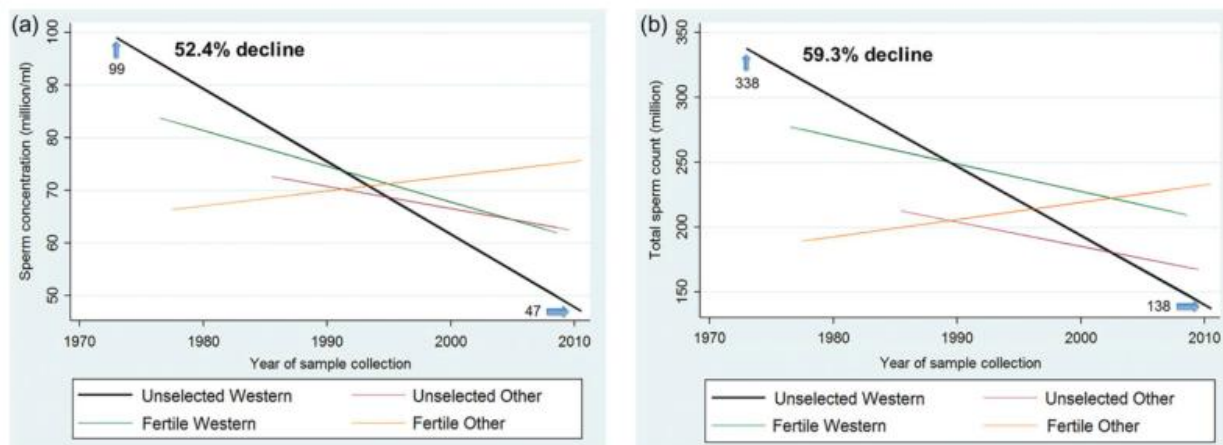


Figure 1. Declines in sperm concentration (left) and total sperm count (right), as reported in the 2017 *Human Reproduction Update* article.<sup>91</sup>

<sup>89</sup>See, for example, S.H. Swan, E.P. Elkin, L. Fenster, “The Question of Declining Sperm Density Revisited: an Analysis of 101 Studies Published 1934–1996,” *Environmental Health Perspectives* 108 (2000): 961–966; C. Huang et al., “Decline in Semen Quality Among 30,636 Young Chinese Men from 2001 to 2015,” *Fertility and Sterility* 107 (2016): 83–88; J. Le Moal, et al., “Semen Quality Trends in French Regions are Consistent with a Global Change in Environmental Exposure,” *Reproduction* 147 (2014): 567–574; J. Mendiola, et al., “Sperm Counts May Have Declined in Young University Students in Southern Spain,” *Andrology* 1 (2013): 408–413; N. Jørgensen et al., “Human Semen Quality in the New Millennium: A Prospective Cross-sectional Population-based Study of 4867 Men,” *BMJ Open* 2 (2012):1-13; N. Jørgensen et al., “Recent Adverse Trends in Semen Quality and Testis Cancer Incidence Among Finnish Men,” *International Journal of Andrology* 34 (2011): 37–48.

<sup>90</sup>Hagai Levine, Niels Jorgensen, Anderson Martin-Andrade, Jaime Mendiola, Dan Weksler-Derri, Irina Mindlis, Rachel Pinotti, and Shanna H. Swan, “Temporal Trends in Sperm Count: A Systematic Review and Meta-Regression Analysis,” *Human Reproduction Update* 23, no. 6 (2017): 646-659.

<sup>91</sup>Ibid., 651. Reprinted with permission.

The article does not diagnose the causes of this worrisome decline, but the authors mention factors such as prenatal endocrine disruption from chemical exposure, postnatal pesticide/chemical exposure, lifestyle behaviors, maternal smoking, and obesity. Many other researchers in past studies have identified exposure to different types of endocrine disrupting chemicals as the cause of a wide range of male reproductive abnormalities, including declining sperm counts.<sup>92</sup> Even more alarming is that the negative effects of male exposure to estrogenic compounds can be transmitted to subsequent unexposed generations.<sup>93</sup>

How is it that these chemicals have produced such far-reaching and even transgenerational effects? Direct ingestion through food, dust, water, and air is one exposure pathway.<sup>94</sup> EDCs can also be transferred from mother to child across the placenta or through breast milk. The most dominant pathway, however, is ecosystem cycling through food webs.<sup>95</sup> Because EDCs do not biodegrade readily, they persist in the environment, and we now know that contaminants released into the air, water, and soil tend to bioaccumulate as organisms at different levels in the food chain ingest them.<sup>96</sup>

Consider one of the more extensively studied EDCs, the synthetic estrogenic compound 17 $\alpha$ -ethynylestradiol (EE2), which has affected a wide range of species at all levels of ecosystems.<sup>97</sup> How did it get into their bodies? EE2 is used as a hormone treatment for animals and humans and as a human birth control agent. When EE2 is administered to an animal or human, any excess not utilized by the body is excreted. In the case of livestock, the excess EE2 excreted in the manure can wash into nearby streams or lakes, to be ingested by organisms in the aquatic

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<sup>92</sup>See, for example, RM Sharpe, NE Skakkebaek, "Are Oestrogens Involved in Falling Sperm Counts and Disorders of the Male Reproductive Tract?" *Lancet* 341 (1993): 1392–1396; RM Sharpe, "The 'Oestrogen Hypothesis'—Where Do We Stand Now?" *International Journal of Andrology* 26 (2003): 2–15; J. Knez, "Endocrine-Disrupting Chemicals and Male Reproductive Health," *Reproductive BioMedicine Online* 26 (2013): 440–448; J. Del-Mazo, MA Briño-Enríquez, J. García-López, LA López-Fernández, and M. De-Felici, "Endocrine Disruptors, Gene Deregulation and Male Germ Cell Tumors," *International Journal of Developmental Biology* 57 (2013): 225–239.

<sup>93</sup>Tegan S. Horan, Alyssa Marre, Terry Hassold, Crystal Lawson, and Patricia A. Hunt, "Germline and Reproductive Tract Effects Intensify in Male Mice with Successive Generations of Estrogenic Exposure," *PLOS Genetics* 13, no.7 (2017): 1-23.

<sup>94</sup>S. Jobling, K.A. Kidd and R.T. Zoeller, eds., *State of the Science of Endocrine-Disrupting Chemicals—2012*, "Summary for Decision-Makers"; A.C. Gore, D. Crews, et.al., "Introduction to Endocrine Disrupting Chemicals (EDCs)."

<sup>95</sup>Ibid., and Colburn, et.al, "Developmental Effects of Endocrine-Disrupting Chemicals in Wildlife and Humans."

<sup>96</sup>Ibid.

<sup>97</sup>Ahmad Zaharin Aris, Aida Soraya Shamsuddin, and Sarva Mangala Praveena, "Occurrence of 17 $\alpha$ -ethynylestradiol (EE2) in the Environment and Effect on Exposed Biota: A Review," *Environment International* 69 (2014):104-119.

food chain. Contaminants like EE2 move through the food web through ingestion by primary, then secondary consumers, and finally tertiary consumers at the top of the food chain where humans interact. As the EE2 moves through the food chain, it accumulates in organisms at each level, causing unintended health effects along the way.<sup>98</sup>

Humans taking EE2 as a pharmaceutical excrete the excess in domestic sewage, which travels from their homes in the sewer pipes to the wastewater treatment plant. Because EE2 does not easily biodegrade and most wastewater treatment plants are not equipped to treat for such compounds, the EE2 is released to local streams in the wastewater effluent.<sup>99</sup> There, fish exposed to the effluent experience its estrogenic effect, as was observed by the researchers at Boulder Creek.<sup>100</sup> Many other studies have observed similar effects. Toxicity has been observed at extremely low concentrations, and because EDCs are hormonally active, organisms are particularly susceptible at sensitive points in their development pathways, such as *in utero*.<sup>101</sup>

As a result, we now know that in the industrialized West we are exposed to an array of endocrine disrupting chemicals on a daily basis. Concentrations of these chemicals are present in the bodies of humans and wildlife and are causing various kinds of diseases as a result. In some cases, the offspring of humans and animals are inheriting this unfortunate legacy.

### **Applying the Examen to the Case of EDCs**

One can understand why John Woodling of the University of Colorado at Boulder expressed such deep concern about this kind of pollution, because on a widespread scale we are interfering with how life develops and even understands itself. The sobering story of EDCs is one that should cause us to reflect on where we have gone astray in living the ecology of daily life and how we can reconcile our behaviors and attitudes toward a more integral ecology. Applying the examen proposed here can be a means for working toward this reconciliation. Specifically, the examen can illumine the impacts of our daily ecology by helping us to be more aware of the effects of these chemicals on our physical spaces and our bodies and to reflect on the interior attitudes underlying our behaviors.

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<sup>98</sup>M. Adeel, X. Song, Y. Wang, D. Francis, and Y. Yang, "Environmental Impact of Estrogens on Human, Animal, and Plant Life," *Environment International* 99 (Feb. 2017): 107-119, published online at <https://doi.org/10.1016/j.envint.2016.12.010>, accessed 17 October 2018, available at <https://www.sciencedirect.com/science/article/pii/S0160412016304494>.

<sup>99</sup>Ibid.

<sup>100</sup>A.M. Vajda, et.al.

<sup>101</sup>M. Adeel, X. Song, et.al., T. Colburn, et.al; A.C. Gore, et.al.

1. **Our physical spaces:** What do our physical spaces look like? Are they polluted? Marred by waste? Do they promote, or break, interconnections? Do they increase our sense of belonging and bring about an experience of community?

In this case, the beautiful and complex interconnectedness of nature has been perverted as natural cycles circulate the pollutants introduced into them by wastes from human activities and economies. Natural cycles should function to promote the evolution of diversity and ecological health. However, in this case, the careless, inattentive use of EDCs has in effect “short-circuited” natural cycling processes, such that the bodies of all levels of life, including humans, are now impacted. EDCs have caused a subtle yet devastating kind of pollution that now demands serious attention. Have we allowed ourselves to forget that “everything is interconnected,” that we are part of nature, and that “nature cannot be regarded as something separate from ourselves or as a mere setting in which we live”?<sup>102</sup>

2. **Our bodies:** Do our daily practices and behaviors put our bodies in a healthy, or a diseased, relationship with the environment and with other living beings? Do we care well for our bodies and for the bodies of other living beings?

Because we have not taken responsibility for the wastes produced by industrialized society, we are succumbing to diseases associated with exposure to them; we have become victims of the consumeristic, throwaway culture we ourselves have created. We are not taking good care of our own bodies by using EDC-containing products, nor are we caring well for the health of other living creatures. The fact that such unintended hormonal disruptions have serious and life-altering consequences, as this case study demonstrates, should encourage us to examine our daily practices and uses of such chemicals so as to reduce our use of them wherever possible.

3. **Our daily actions:** Do our daily acts flow from an interior landscape of attentiveness, love, and caring? Or from a throwaway mentality, selfish or

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<sup>102</sup>Francis, *Laudato Si'*, #138-139.

violent attitudes, excessive consumption, or indifference? Are our daily acts a form of “craftsmanship” that builds a culture of care?

This case study points out the significance of the daily decisions we make to use certain products, whether pharmaceuticals, plastics, pesticides, or other EDC-containing items. Many persons use these products regularly in their daily lives. Should we consciously move away from using them, or are we indifferent to the effects of our choices? Are we addicted to consumption such that we do not even entertain changing our daily behaviors and choosing to use more natural products that are less harmful to the environment? Are we willing to care enough for ourselves and for creation to change our behaviors—for example, to try methods of natural birth regulation that do not release EDCs into the environment, to move away from the use of EDC-releasing plastics, to reduce our use of EDC-releasing synthetic cosmetics, to eat homegrown or fresh food rather than foods packaged in EDC-containing plastics, etc.?

The examen demonstrates how lack of care in living the ecology of daily life can have serious consequences for humans and for the rest of the created world. How can this lack of care be replaced with an authentic culture of care as called for by *Laudato Si'*?<sup>103</sup> An ecological conversion is needed. In any conversion process, the first step is a turning away—in this case, turning away from daily habits and practices that harm or pollute natural cycles. The second step is a turning toward—turning toward a new good. The second case study explores one practice of daily ecology that moves away from the throwaway mentality and toward a culture of care.

### **Toward a Restored Ecology of Daily Life: Zero Waste**

The current home institution of the author, Aquinas College, is a small Catholic liberal arts college in Grand Rapids, Michigan with a full-time undergraduate enrollment of approximately 1700 students. Located on the east side of Grand Rapids in a predominantly forested area, the beautiful 107-acre campus has been an inspiration for environmental initiatives since it moved to this location in 1945. With the encouragement of local donors, the college has championed a longstanding commitment to sustainability.<sup>104</sup>

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<sup>103</sup>Of course, creating such a culture of care through daily practices does not preclude the need for larger governmental and corporate initiatives in relation to environmental issues, including EDCs. This is absolutely necessary, but it is beyond the scope of this article, the focus of which is to emphasize the importance of individual conversion and change of lifestyles.

<sup>104</sup>Aquinas College, *Our Mission and Vision*, accessed 19 February 2019, <https://www.aquinas.edu/discover-aq/>

One flagship sustainability project of the college is its Zero Waste Initiative.<sup>105</sup> Zero waste refers to a waste diversion rate of greater than 90%, meaning that less than 10% of the solid waste generated by an institution is sent to a landfill.<sup>106</sup> In 2010, the college, through its Center for Sustainability, set a zero-waste goal as part of their action plan for the American College and University Presidents' Climate Commitment. The target date to reach zero waste was 2014. While this goal has not been reached to date, diversion rates have increased significantly from about 45% in 2011, when they were first reported, to about 69% for the 2017-2018 academic year. This means that close to 70% of the waste generated by the college is diverted from the landfill.

Campus-wide diversion rates for the 2017-2018 academic year are shown in the following table.

Landfilled/Incinerated	Lbs	Tons
Total Campus Trash	57.57	28.8
Total Special Waste	3.56	1.8
<b>Total</b>	<b>61.13</b>	<b>30.6</b>

Diverted	Lbs	Tons
Total Campus Compost	56.36	28.2
Total Campus Recycling	51.28	25.6
Total Campus Special Collections	30.21	15.1
<b>Total</b>	<b>137.85</b>	<b>68.9</b>
<b>Diversion Rate: 69%</b>		

Table 1. Diversion and Landfill Rates for AY2017-2018

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our-mission-vision.

<sup>105</sup>"Zero Waste Initiative," *Aquinas College*, accessed October 10 2017, <https://www.aquinas.edu/discover-aq/sustainability-initiative/zero-waste-initiative>.

<sup>106</sup>"Standards and Policies," *Zero Waste International Alliance (ZWIA)*, accessed January 2, 2018, <http://zwia.org/standards>.

This diversion rate was achieved through a combination of single stream recycling, composting, and special collections. Single stream recycling allows paper, cardboard, plastic, glass, tin, and aluminum to be disposed of in the same bin. These bins are blue. Green bins are for compostable materials. Aquinas has a partnership with a Michigan-based company called Spurt Industries, an industrial composting company that creates topsoil and mulch from the compost. Paper towels are also collected for composting from bathrooms and selected laboratories. Even items like used tissues, gum, and Q-tips can be composted. Special collections are available for non-traditional materials like e-waste, ink cartridges, Goodwill donations, and Terracycle items such as snack bags and candy wrappers. The only commonly used items that must be disposed of in the trash are Ziploc bags, unmarked clear plastic bags, and styrofoam.

Every building on campus contains multiple stations with bins for recycling, composting, special collections, and landfill trash at each station. Individual offices have small trashcans as well as bins for single stream recycling. Some offices also have individual ceramic compost crocks. Essentially, the only waste from individual offices that cannot be recycled or composted is sandwich bags. Campus Dining composts all pre and post-consumer food matter along with recycling paper, cardboard, plastic, glass, aluminum, and used fryer oil.

The college also made the decision to modify certain purchasing policies in order to support the initiative and reduce landfill waste. Catering now uses real plates, cups, and silverware for many campus events and meals. In situations where ceramic dishware is not practical, compostable hot and cold drink cups, plates, and PLA flatware are utilized.

Waste is weighed each week and data collected to compile diversion rates semester by semester. Diversion rates are calculated for each building on campus and averaged to determine the campus-wide diversion rate. Generally, student dormitories have lower diversion rates than the academic buildings. In response to this, more intensive educational initiatives are being developed to improve the diversion rates in the student common areas and living spaces.

The Zero Waste Initiative is promoted in many ways on campus. Zero waste policies and practices are an integral part of student orientation each semester. Training is provided for resident assistants and sustainability interns so they can teach their peers about the daily practices of recycling on campus. Zero Waste Gurus are designated point persons for zero waste in different buildings or areas of campus. Each year student, faculty, and staff Zero Waste Gurus compete in the Great Guru Garbage Games, a friendly competition to determine which building is the Zero Waste Champion. Campus offices desiring to demonstrate their commitment to the Zero Waste Initiative may sign a Zero Waste Office Pledge. Throughout the year, there are numerous zero waste events and competitions to engage students, faculty, and staff in the initiative.



## Applying the Examen to the Zero Waste Case

The Zero Waste Initiative can be framed as a living lab for engaging the Aquinas College campus community in sustainability through concrete daily practices. In the spirit of *Laudato Si'*, the initiative can be viewed as a training ground in the ecology of daily life. Applying the examen can help show the links between this practice of daily ecology and building a culture of care on campus.

1. **Our physical spaces:** What do our physical spaces look like? Are they polluted? Marred by waste? Do they promote, or break, interconnections? Do they increase our sense of belonging and bring about an experience of community?

The Zero Waste Initiative is reducing the amount of waste produced on campus. Zero waste stations are prominently featured in every building and are a public demonstration of the campus' dedication to reducing waste. Industrial composting helps to reestablish cycling of nutrients, rather than the dead-ended processes which produce landfill trash. The initiative is a source of unity for the college and regularly brings together faculty, staff, and students who are dedicated to extreme waste reduction. In this way it is helping to build a sustainability culture and community on the campus. Through targeted events and competitions, new employees and students are educated regularly about the importance of the initiative and the details of how to carry it out effectively. The commitment to Zero Waste has brought together many different people across campus in a community initiative that is forming a collective attitude of responsibility across campus in relation to waste.

2. **Our bodies:** Do our daily practices and behaviors put our bodies in a healthy, or a diseased, relationship with the environment and with other living beings? Do we care well for our bodies and for the bodies of other living beings?

Since Zero Waste encourages healthy cycling of materials, it reduces the amount of landfilled waste and is better for the environment. It teaches those on campus how to be attentive to the waste they generate and to be "care-ful" with how much and what they consume. It also has the additional benefit of teaching persons to reverence natural cycles, in nature as well as in their own bodies.

3. **Our daily actions:** Do our daily acts flow from an interior landscape of attentiveness, love, and caring? Or from a throwaway mentality, selfish or violent attitudes, excessive consumption, or indifference? Are our daily acts a form of “craftsmanship” that builds a culture of care?

By being faithful to small acts of recycling and composting each day, the students, faculty, and staff of the college are practicing small acts of caring out of concern for the environment and for the common good. Zero Waste is one way to educate young people about the throwaway culture and the problems associated with it. Rather than carelessly throwing away paper, food, or other materials in the trashcan, where they “dead-end” on their way to the landfill, students may choose to act intentionally in a manner that contravenes the “use and throw away logic” Francis laments in *Laudato Si’*. Education in ecological responsibility, says the Pope, calls for

ways of acting which directly and significantly affect the world around us, such as avoiding the use of plastic and paper, reducing water consumption, separating refuse, cooking only what can reasonably be consumed, showing care for other living beings, using public transport or car-pooling, planting trees, turning off unnecessary lights, or any number of other practices.<sup>107</sup>

These are all examples of practices of daily ecology. By participating in the Zero Waste Initiative, students are being educated into ecological citizenship; they are living in a thoughtful way and taking responsibility for supporting an alternative to the “use and throw away” model, one that promotes a more circular economy. In this model, which is more harmonious with the natural functioning of ecosystems, materials are not just “reduced to rubbish” in a dead-ended process. Instead, they become a resource for another cycle in which they are recycled, composted, or reused.

Since the ecology of daily life influences both external practices and internal attitudes, the daily “care-ful” practice of zero waste can help reform those “care-less” attitudes of utilitarianism and indifference that have arisen in our consumeristic culture. Indeed, as Pope Francis says so well, “Reusing something instead of immediately discarding it, when done for the right reasons, can be an act of love which expresses our own dignity.”<sup>108</sup> Daily acts of love are the foundation for building a culture of care. The hope is that persons will grow in their capacity to care for all

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<sup>107</sup>Francis, *Laudato Si’*, #211.

<sup>108</sup>*Ibid.*, #211.

life, human and non-human, by increasing their ability to care through small daily practices of love.<sup>109</sup>

### **Conclusion: Lessons Learned**

How can living a healthy ecology of daily life help build a culture of care as called for in *Laudato Si'*? Environmental stewardship, which is based in a sense of obligation or duty, might, for example, call for new laws or governmental programs to protect the environment. As good as these actions are, they are not sufficient to solve environmental problems. While Pope Francis' vision includes stewardship, it also embraces a deeper interior dimension of relationship by emphasizing the practice of care. Care involves affection and attentiveness and flows out of a sense of fraternity with God, with others, and with the created world. A culture of care proceeds from an interior disposition of love and genuine concern.

Integral ecology, the centerpiece of the encyclical, is about building a culture of care, encompassing care for God, care for others, and care for all creation. In order to achieve this, Pope Francis, like his namesake St. Francis of Assisi, reminds us that reconciliation is necessary to heal rifts in these fundamental relationships. This article explored one aspect of integral ecology, the ecology of daily life, as a tool in this reconciliation process. It proposed a daily examen in relation to three key categories of daily ecology identified in the encyclical: our physical spaces, our bodies, and our daily actions. The ecology of daily life starts with attentiveness to our daily behaviors and attitudes, especially in these three areas, and teaches us that the little things matter: they are at the heart of building a culture of care. A daily ecology of care should cultivate interior dispositions oriented toward the good of others and of the world around us.

It is through the interior growth in attentiveness, in this case engendered by practicing a daily examen in conjunction with exterior practices of daily ecology such as zero waste, that society can counter the throwaway culture and begin to build a culture of care. For, as the Popes teach, interior lack of care shows itself in external lack of care, of which environmental deterioration is just one manifestation. In light of the examen proposed in this article, the case of Endocrine Disrupting Chemicals is a disturbing example of this. The lack of care manifests itself in not only

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<sup>109</sup>In *Laudato Si'*, Pope Francis places great value on the need to recognize the interconnections between all levels of life, both human and non-human, and to protect vulnerable life across that spectrum as part of building a culture of care. One implication of this is that "an ecological approach always becomes a social approach" (#49). This means that a consistent pro-life ethic is also part of an ecological ethic. In #117, the Pope writes, "When we fail to acknowledge as part of reality the worth of a poor person, a human embryo, a person with disabilities—to offer just a few examples—it becomes difficult to hear the cry of nature itself; everything is connected."

pollution and disease at all levels of life, but also in a consumeristic, throwaway mentality that tends to discard people as readily as it does physical wastes. Simple practices of daily ecology like the examen and Zero Waste can help break this cycle by transforming persons so they possess the interior dispositions needed to counter the throwaway culture and gradually reverse its effects. Such practices of reconciliation and recycling have the potential to bring persons back into communion with cycles of nature in which there is no waste and each creature has its unique place. The hope is that practicing the ecology of daily life in this way will cultivate a culture of care in which the intrinsic dignity of life in all its forms is protected and the interconnections between natural and human ecology are nourished.