



# Time to expand a paradigm: Healthcare sustainability and eco-ethical assessment

Luca Valera<sup>1,2</sup>

<sup>1</sup>Department of Philosophy, Universidad de Valladolid, Valladolid, Spain

<sup>2</sup>Bioethics Centre, Pontificia Universidad Católica de Chile, Santiago de Chile, Chile

## Correspondence

Luca Valera ([luca.valera@uva.es](mailto:luca.valera@uva.es))

## ABSTRACT

This paper aims to rethink healthcare sustainability from an eco-ethical approach, mainly referring to van Rensselaer Potter's global bioethics and Arne Naess's ecosophy. In this sense, it seeks to address the ethical problem of allocating resources from a non-individualist and essentially bio-medical perspective, which interprets health (or disease) as a mere feature of the individual. On the contrary, starting from a planetary health approach (Potter) and an "ecosophical" view of human beings (Næss), individual health gains meaning in a broader context. At the ethical level, this implies: 1. a focus on the patient's wellbeing, more than his/her diagnosis and cure; 2. a conception of shared responsibility and agency of all stakeholders; 3. the pursuit of ecologically sound decisions that go beyond the individual; 4. promoting environmental stewardship, which may overcome the dichotomy between anthropocentrism and biocentrism; and 5. pursuing epistemic humility. All these pragmatic considerations may inspire the construction of environmentally sustainable health systems. In this regard, the paradigm proposed in this paper is principally directed to healthcare organizations, and not to the particular doctor-patient relationship, where the classical principles of bio-medical ethics might still be appropriate. This non-exclusionary approach allows the integration of the two facets of bioethics: Georgetown bio-medical ethics (Kennedy Institute) and Wisconsin global bioethics (Potter).

## KEYWORDS

ecological determinants of health, global bioethics, Næss, One Health, Potter

## 1 | HEALTHCARE SUSTAINABILITY: A PRESSING CONCERN

The relationship between health and pollution is quite curious. On the one hand, as is widely known, pollution can be the cause of many diseases.<sup>1</sup> According to a recent WHO estimation, annual deaths caused by environmental and household air pollution are about seven million.<sup>2</sup> On the other, maintaining good human health can be the reason for more pollution. Indeed, healthcare itself is a significant source of environmental contaminants that negatively impact human wellbeing.<sup>3</sup> As can be easily inferred, this may even have a consequence, in the long-term, of an increase in disease and human unwellness. Indeed, it is safe to argue that “modern healthcare itself is a major emitter of environmental pollutants that adversely affect human health.”<sup>4</sup> Some authors, for example, expanding the concept of Social Determinants of Health,<sup>5</sup> have talked of “Ecological” Determinants of Health, precisely to emphasize the impact the environment has on human health condition.<sup>6</sup>

The circularity between environmental pollution and healthcare definitely points out, from a theoretical point of view, the problematic two-way relationship between nature and humans (or, more specifically, human health) and calls for new paradigms to rethink it.<sup>7</sup> Indeed, the relationship between human and environmental health is

questioned by several critical emerging factors, such as the number of deaths attributed to environmental factors, the unsustainability of healthcare systems, the scarceness of resources, and so forth.<sup>8</sup> The present paper mainly focuses on the second aspect of the human/nature relationship, that is to say, the impact of human healthcare on environmental dynamics. Indeed, if the topic of the harmful effects of an unhealthy environment on human health has been widely investigated in recent years, the awareness of the impact of healthcare on environmental pollution “and the duty to address it are only beginning to gain recognition in the clinical community.”<sup>9</sup> To face these concerns, the concept of “Healthcare Sustainability” (HS) has recently emerged<sup>10</sup> to support a system that seems to be at the point of collapse, with obvious negative consequences even for human health itself.<sup>11</sup>

The aim of this paper is to offer a theoretical background for the concept of HS, in light of a precise bioethical tradition, too frequently forgotten by the mainstream paradigms of bioethics. For this purpose, it points out some emerging environmental factors challenging our concepts of health and healthcare (Section 2) and offers philosophical and bioethical points of view—recalling Næss's ecosophy and Potter's global bioethics—to interpret them (Sections 3 and 4). Finally, it offers some ethical pragmatic considerations that may promote environmentally sustainable healthcare systems from the abovementioned perspective (Section 5). In this regard, this paper aims to offer a broader theoretical standpoint to face the problem of the actual unsustainability of healthcare systems and eco-ethical assessment. Its aim is not to address specific cases in light of the paradigm introduced; it only tries to offer a new hermeneutic paradigm to reframe the current problems emerging in the intersection between human health and the environment.

## 2 | MORE-THAN-HUMAN HEALTH: SOME CHALLENGES FOR MODERN MEDICINE

The crisis in the relationship between human and environmental health forces us to rethink concepts, as every crisis does. This crisis—from the Greek word *κρίσις*, that is, “point at which change must come, for better or worse”—may be identified as a turning point both in medicine and environmental science, calling for new paradigms to change the problematic state of things. In the following, I will show some of the main challenges that are currently emerging at the crossroads between human and environmental health. These challenges directly and indirectly affect medical practice, considering this last concept as more than the mere doctor-patient relationship.

<sup>1</sup>Cf. Shaffer, R. M., Sellers, S. P., Baker, M. G., Kalman, R. d. B., Frostad, J., Suter, M. K., Anenberg, S. C., Balbus, J., Basu, N., Bellinger, D. C., Brinbaum, L., Brauer, M., Cohen, A., Ebi, K. L., Fuller, R., Grandjean, P., Hess, J., Kogevinas, M., Kumar, P., ... Hu, H. (2019). Improving and expanding estimates of the global burden of disease due to environmental health risk factors. *Environmental Health Perspectives*, 127(10), 105001; Fuller, R., Landrigan, P. J., Balakrishnan, K., Bathian, G., Bose-O'Reilly, S., Brauer, M., Caravanas, J., Chiles, T., Cohen, A., Corra, L., Cropper, M., Ferraro, G., Hanna, J., Hanrahan, D., Hu, H., Hunter, D., Janata, G., Kupka, R., Lanphear, B., ... Yan, C. (2022). Pollution and health: A progress update. *Lancet Planet Health*, 6, e535–e547.

<sup>2</sup>World Health Organization (WHO) (2018). *Burden of Disease from Ambient Air Pollution for 2016, Version 2*. [https://cdn.who.int/media/docs/default-source/air-pollution-documents/air-quality-and-health/aap\\_bod\\_results\\_may2018\\_final.pdf?sfvrsn=2fd055a2\\_3](https://cdn.who.int/media/docs/default-source/air-pollution-documents/air-quality-and-health/aap_bod_results_may2018_final.pdf?sfvrsn=2fd055a2_3).

<sup>3</sup>Cf. Eckelman, M. J., & Sherman, J. D. (2016). Environmental impacts of the US Health Care System and effects on public health. *PLoS One*, 11(6), e0157014; Eckelman, M. J., & Sherman, J. D. (2018). Estimated global disease burden from US Health Care sector greenhouse gas emissions. *American Journal of Public Health*, 108(S2), S120–S122; Eckelman, M. J., Sherman, J. D., & MacNeill, A. J. (2018). Life cycle environmental emissions and health damages from the Canadian healthcare system: An economic-environmental epidemiological analysis. *PLoS Medicine*, 15(7), e1002623; Sherman, J. D., Thiel, C., MacNeill, A., Eckelman, M. J., Dubrow, R., Hopf, H., Lagasse, R., Bialowitz, J., Costello, A., Forbes, M., Standcliffe, R., Anastas, P., Anderko, L., Baratz, M., Barna, S., Bhatnagar, U., Burnham, J., Cai, Y., Cassels-Brown, A., ... Bilec, M. M. (2020). The green print: Advancement of environmental sustainability in healthcare. *Resources, Conservation and Recycling*, 161, 104882. <https://doi.org/10.1016/j.resconrec.2020.104882>.

<sup>4</sup>Sherman, J. D., et al., op. cit. note 3. It is worth noticing that “globally, the healthcare sector causes 4.4% of greenhouse gas emissions”—Pratt, B. (2023). Expanding health justice to consider the environment: How can bioethics avoid reinforcing epistemic injustice? *Journal of Medical Ethics*, 49, 642–648. <https://doi.org/10.1136/jme-2022-108458>.

<sup>5</sup>WHO (2012). *Addressing the social determinants of health: The urban dimension and the role of local government*. WHO-Regional Office for Europe. [https://www.euro.who.int/\\_data/assets/pdf\\_file/0005/166136/UrbanDimensions.pdf](https://www.euro.who.int/_data/assets/pdf_file/0005/166136/UrbanDimensions.pdf). On the ethics of the Social Determinants of Health, cf. Prah Ruger, J. (2004). Ethics of the social determinants of health. *Lancet*, 364, 1092–1097; Valera, L., & López Barreda, R. (2022). Bioethics and COVID-19: Considering the social determinants of health. *Frontiers in Medicine*, 9, 824791. <https://doi.org/10.3389/fmed.2022.824791>.

<sup>6</sup>Cf. Friis, R. H. (2012). *Essentials of environmental health* (2nd ed.). Jones & Bartlett Learning; Li, A. M. L. (2017). Ecological determinants of health: Food and environment on human health. *Environmental Science and Pollution Research*, 24, 9002–9015.

<sup>7</sup>In this sense, Ehrlich points out that currently “bioethics does not provide much of an ethical base for considering human–nature relationships”—Ehrlich, P. R. (2009). *Ecoethics: Now central to all ethics*. *Journal of Bioethical Inquiry*, 6, 417.

<sup>8</sup>Lenzen, M., Malik, A., Li, M., Fry, J., Weisz, H., Pichler, P. P., Chaves, L. S. M., Capon, A., & Pencheon, D. (2020). The environmental footprint of health care: A global assessment. *Lancet Planet Health*, 4(7), e277.

<sup>9</sup>Sherman, J. D., et al., op. cit. note 3.

<sup>10</sup>Cf. MacNeill, A. J., McGain, F., & Sherman, J. D. (2021). Planetary health care: A framework for sustainable health systems. *Lancet Planet Health*, 5(2), E66–E68.

<sup>11</sup>Ibid.

Among the most relevant challenges that may *directly* affect medical practice (understood as something more than the mere doctor-patient relationship), the following should be mentioned:

## 2.1 | A broader concept of health<sup>12</sup>

Health should no longer be understood as “the absence of disease or infirmity” and not only interpreted as “a state of complete physical, mental and social well-being”:<sup>13</sup> Our health is closely linked to and interdependent with the health of domestic and wild animals, plants, and the wider environment (including ecosystems).<sup>14</sup> In this regard, both the reductionistic, mechanical, and individualistic biomedical model of health (and disease) and the biopsychosocial one<sup>15</sup> should leave room for the “One Health” model, which “considers inextricable linkages between ecosystems, society and health of animals and humans.”<sup>16</sup> This emerging idea of health and disease as something that goes beyond the individual is not something new: “In Hippocrates’ work *Air, Waters and Places*, health is defined on the basis of an equilibrium achieved between environmental forces on the one hand [...] and individual habits on the other.”<sup>17</sup>

## 2.2 | A proper and extended consideration of health determinants

If health is something that goes beyond the individual, we must look for the determinants of health beyond the same individual, interpreting the human being as the center of many significant relationships. These relationships may cause significant changes in human health.<sup>18</sup> Indeed, we should consider “the interactions between psychosocial factors, biophysical environment and behaviors and life habits of each individual as health determinants.”<sup>19</sup> For this reason, both the concepts of Social Determinants of Health (SDH) and Ecological Determinants of Health (EDH) have been developed to include these socio-ecological interactions with other humans and living

beings.<sup>20</sup> Different research demonstrates that, on the one hand, “social inequalities are the underlying cause of disparities in health outcomes”<sup>21</sup> and, on the other, “global environmental hazards are [...] the major ecological determinants with consequential effects on our human health.”<sup>22</sup>

## 2.3 | A call for “expanding conceptions of health justice to consider the environment.”<sup>23</sup>

As mentioned above, the two-way relationship between our health and the environment implies a mutual influence between them. In this regard, “it is time to modify our perception of what health is, in order to have a more global perspective while addressing as many influencing factors as possible, if we want to maintain the health and wellbeing for all during their life-course or, in other words, fostering Sustainable Health (SH).”<sup>24</sup> The concept of SH emerges, thus, as a synthesis of sustainable lives, healthy ecosystems, and a balance between needs and resources in healthcare.

This last point moves us to focus on the challenges that may *indirectly* affect the way the doctor-patient relationship is conceived, namely:

- a. *The emerging knowledge about the factors that contribute to the successful execution of environmental sustainability in healthcare services.*<sup>25</sup>

In this regard, ethical and ecological considerations in healthcare have “traditionally focused on medical structures and equipment that contribute to carbon emissions,” but recently other “less visible” aspects (e.g., the “hospital care and physician/clinical services,” the “emissions of pharmaceuticals”) have been ethically considered.<sup>26</sup> For this reason, healthcare organizations “have started introducing environmental management into their strategic objectives.”<sup>27</sup>

- b. *The need to include a new set of values in healthcare ethics, like environmental sustainability and the Sustainable Development Goals.*

To develop ecologically sound decisions, “including environmental considerations in health system decision-making”<sup>28</sup> is

<sup>12</sup>Laprise, C. (2023). It's time to take a sustainable approach to health care in the face of the challenges of the 21<sup>st</sup> century. *One Health*, 16, 00510. <https://doi.org/10.1016/j.onehl.2023.100510>

<sup>13</sup>WHO. (1948). *Constitution of the World Health Organization*. <https://www.who.int/about/governance/constitution>.

<sup>14</sup>WHO. (2025). *One health*. [https://www.who.int/health-topics/one-health#tab=tab\\_1](https://www.who.int/health-topics/one-health#tab=tab_1).

<sup>15</sup>Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129–136.

<sup>16</sup>Zinsstag, J., Schelling, E., Waltner-Toews, D., & Tanner, M. (2011). From ‘One Medicine’ to ‘One Health’ and systemic approaches to health and well-being. *Preventive Veterinary Medicine*, 101(3–4), 148–156. One of the aims of this paradigm is the control of zoonoses, diseases shared between animals and humans.

<sup>17</sup>Tountas, Y. (2009). The historical origins of the basic concepts of health promotion and education: The role of ancient Greek philosophy and medicine. *Health Promotion International*, 24(2), 186.

<sup>18</sup>The difference between causation and correlation when defining the relationship between health and SDHs is obviously relevant. For reason of space, I cannot discuss this topic here—cf. Preda, A., & Voigt, K. (2015). The social determinants of health: Why should we care? *AJOB*, 15(3), 25–36.

<sup>19</sup>Laprise, op. cit. note 12.

<sup>20</sup>Cf. Parkes, M. W., Poland, B., Allison, S., Cole, D. C., Culbert, I., Gislason, M. K., Hancock, T., Howard, C., Papadopoulos, A., & Waheed, F. (2020). Preparing for the future of public health: Ecological determinants of health and the call for an eco-social approach to public health education. *Canadian Journal of Public Health*, 111, 60–64.

<sup>21</sup>Valera & López Barreda, op. cit. note 5.

<sup>22</sup>Li, op. cit. note 6, p. 9005. The same author lists, among the EDH: “climate change, stratospheric ozone depletion, loss of biodiversity, changes in hydrological systems and the supplies of freshwater, land degradation and stresses on food-producing systems, [...] health threats from the human-animal-ecosystems interface (HAEI) and zoonotic diseases.”

<sup>23</sup>Pratt, op. cit. note 4.

<sup>24</sup>Laprise, op. cit. note 12.

<sup>25</sup>Vaishnavi, V., & Suresh, M. (2023). Modelling the factors in implementation of environmental sustainability in healthcare organisations. *Management of Environmental Quality*, 34(1), 139–142.

<sup>26</sup>Richie, C. (2022). Environmental sustainability and the carbon emissions of pharmaceuticals. *Journal of Medical Ethics*, 48, 334.

<sup>27</sup>Vaishnavi & Suresh, op. cit. note 25.

<sup>28</sup>WHO. (2016). *Towards environmentally sustainable health systems in Europe. A review of the evidence*. WHO Regional Office for Europe, p. 28.

needed: "Doctors and other health sector leaders have a practical and ethical responsibility to measure, monitor, and address the environmental footprint of health care."<sup>29</sup> In this sense, the ethical assessment of healthcare management should also<sup>30</sup> consider the impact of health systems on the environment (e.g., the volume of waste produced, the amount of natural resources consumed, the misdistribution of medical resources and the carbon emissions, etc.<sup>31</sup>).

### c. *New time and space frames.*

The emerging point of view beyond the patient implies an extended conception of time, capable of prudently considering future possible scenarios. In this regard, it is worth wondering "how far into the future should we look when determining whether a resource allocation decision would be (sufficiently) sustainable."<sup>32</sup> To this new conception of time, we should also add a renewed notion of space, which is equally relevant. Indeed, we would consider the ecological consequences of our actions on other ecosystems (e.g., if the production of a drug implies polluting and affecting the health of people in another country, it would be morally relevant). At the ethical level, therefore, we should simultaneously consider intergenerational and intragenerational solidarity due to the emerging knowledge ecology is currently providing us.

All these challenges call for possible answers and solutions. To this aim, consistent philosophical paradigms capable of systematically recovering these social, environmental, and medical changes are needed. In the following section, I will briefly introduce these paradigms.

## 3 | TWO FORGOTTEN AND UP-TO-DATE PARADIGMS: POTTER'S BIOETHICS AND NÆSS'S ECOSOPHY

The issue at stake here is pushing us toward a broader view of medicine, the relationship between human beings and the environment, and bioethics as well. In this regard, rather than practical solutions, what is lacking is a paradigm that can interpret these three issues more broadly, highlighting the mutual connections among them. At a later stage, this general vision can be delineated into specific recommendations or principles that will illuminate practice: for now, it is sufficient to elucidate the general bioethical and philosophical bases of HS. Indeed, an interpretation of individual health

as separate from environmental health will mostly lead to ineffective or partial solutions. The history of bioethics has often been marked by this juxtaposition, precluding the integration of the two paradigms.

In Potter's original intentions, bioethics was precisely meant to overcome this "short-term"<sup>33</sup> individualistic view of human health and wellbeing by linking the survival of the human species with that of the ecosystem, and vice versa: "We need to preserve the good earth and forge the requirements for global survival, health care, and earth care."<sup>34</sup> The issue at stake in Potterian bioethics, indeed, is not human health *per se*, but the "interdependent vitality of all natural and anthropogenic ecosystems."<sup>35</sup>

Traditionally, bioethics has mostly been interpreted as clinical or biomedical ethics, and its area of analysis has been the doctor-patient relationship.<sup>36</sup> In this sense, Potter's original idea of bioethics has been relegated to a philosophical paradigm inapplicable to concrete medical problems, or, at best, to one among many proposals for environmental ethics.<sup>37</sup> From this perspective, Potter's bioethics might ultimately have been useful for interpreting some current issues in "environmental bioethics"<sup>38</sup> but not for solving concrete clinical problems. For these latter, there were either the Kennedy Institute or the Hastings Center's biomedical ethics. In Potter's words: "This matter of the day to day problems arising in the course of dealing with individual patients has in fact been defined by the Center at Georgetown University as the area that concerns bioethics."<sup>39</sup>

Bioethics interpreted as the mere doctor-patient relationship ethics could perhaps be adequate to the ancient idea of health as the mere absence of disease,<sup>40</sup> but not to the current conception of health as a complex relationship between different living beings—that is, "One Health."<sup>41</sup> In this regard, climate change –or pollution– is a bioethics problem,<sup>42</sup> since "Health Care and Earth Care"<sup>43</sup> go hand in hand. Thus, recalling the aforementioned reflections on the current

<sup>29</sup>Lenzen, M., et al., op. cit. note 8, p. e271.

<sup>30</sup>The adverb *also* is particularly relevant here, as it indicates that it is one of many factors to be addressed when making clinical or pharmacological decisions. Thus, for example, when starting the approval process for new drugs and devices (e.g., at the FDA), the environmental impact assessment will be a *necessary* part of this process. Practically, this means that, *ceteris paribus*, the most successful drug or device is the one with the lowest environmental impact. The same is valid for clinical cases. Something similar has been proposed by Sherman, J. D., et al., op. cit. note 3.

<sup>31</sup>Richie, C. (2022). Environmentally sustainable development and use of artificial intelligence in health care. *Bioethics*, 36, 547–555.

<sup>32</sup>Munthe, C., Fumagalli, D., & Malmqvist, E. (2021). Sustainability principle for the ethics of healthcare resource allocation. *Journal of Medical Ethics*, 47, 95.

<sup>33</sup>Potter, V. R. (1988). *Global bioethics. Building on the Leopold legacy* (p. 1). Michigan State University Press.

<sup>34</sup>Potter, V. R., & Potter, L. (2001). Global bioethics: Converting sustainable development to global survival. *Global Bioethics*, 14(4), 15.

<sup>35</sup>Prescott, S. L., Logan, A. C., Bristow, J., Rozzi, R., Moodie, R., Redvers, N., Haatela, T., Warber, S., Poland, B., Hancock, T., & Berman, B. (2022). Exiting the Anthropocene: Achieving personal and planetary health in the 21st century. *Allergy*, 77, 3498–3512.

<sup>36</sup>Lee, L. M. (2017). A bridge back to the future: Public health ethics, bioethics, environmental ethics. *AJOB*, 17, 5–12. Retaking the reflections on the Tuskegee experiment, Lee argues: "Modern biomedical ethics was born. And its emphasis echoed Hellegers's vision for a focus on dilemmas in clinical care and research ethics. Potter's broad vision for a bridge between science and the humanities—one that included all living things—went unfunded and remained largely unknown"—Ibid: 7.

<sup>37</sup>Cf. ten Have, H. A. M. J., & Gordjin, B. (2014). Global bioethics. In H. ten Have, & B. Gordjin, *Global bioethics* (pp. 3–18). Springer; Valera, L. (2021). Cincuenta años de la "ciencia de la supervivencia": ¿Un puente de vuelta al futuro? In M. A. Carrasco, L. Valera, *50 años de Bioética* (pp. 156–168). Tirant lo Blanch.

<sup>38</sup>Potter, V. R. (1975). Humility with responsibility—A bioethic for oncologists: Presidential address. *Cancer Research*, 35, 2297–2306.

<sup>39</sup>Potter, V. R. (1993). Bridging the gap between medical ethics and environmental ethics. *Global Bioethics*, 6(3), 161.

<sup>40</sup>Boorse, C. (1977). Health as a theoretical concept. *Philosophy of Science*, 44, 542.

<sup>41</sup>Cf. Lerner, H., & Berg, C. (2015). The concept of health in One Health and some practical implications for research and education: What is One Health? *Infection Ecology & Epidemiology*, 5(1), <https://doi.org/10.3402/iee.v5.25300>; Laprise, op. cit. note 12.

<sup>42</sup>MacPherson, C. C. (2013). Climate change is a bioethics problem. *Bioethics*, 27(6), 305–308.

<sup>43</sup>Potter, op. cit. note 38, p. 162.

concept of health—which is determined by biological, social, and ecological factors—a broader idea of bioethics is emerging: to improve human health, we need to consider both the social and ecological determinants of health, that is to say, we should expand “the boundary in the concepts of health.”<sup>44</sup> Furthermore, the idea of bioethics supported by Potter mainly relied on promoting health rather than treating illnesses.<sup>45</sup> “Potter’s reaction was based on his fear that the Georgetown approach to bioethics would simply reaffirm the medical profession’s inclination to think more in terms of issues of therapy to the neglect of prevention. Because his field was carcinogenesis, he was aware of the strong link between medical problems and carcinogens in the environment. Thus, his holistic way of perceiving health led him to the view that even the clinical therapist ‘should be thinking about the need for environmental ethics.’”<sup>46</sup> Indeed, Potter’s intention was not to eliminate the Georgetown perspective—just as “One Health” does not eliminate the conception of disease or health in the biological sense<sup>47</sup>—but to complement, enrich, and expand it beyond the mere individual (or patient).<sup>48</sup> He argues: “To resolve the dichotomy between medical bioethics and environmental bioethics I coined the phrase Global Bioethics in 1988.”<sup>49</sup> The global feature of Potter’s bioethics was exactly meant to embrace “the pertinence and importance of including environmental concerns in bioethics,”<sup>50</sup> broadening the scope of bioethics in the long term and trying to think beyond the individual (i.e., “preserving the ecosystem in a form that is compatible with the continued existence of the human species”<sup>51</sup>). This is precisely what Potter calls “to move from medical ethics to medical bioethics.”<sup>52</sup> This bioethical project is exceptionally up-to-date and potentially fitting to face the healthcare unsustainability described above.

Nevertheless, in the last phase of his academic life, Potter turned toward an even more radical theoretical path, that is, “Deep Bioethics,”<sup>53</sup> “modeled after Arne Næss’ concept of deep

ecology.”<sup>54</sup> The link between the two frameworks—Potter’s bioethics and Næss’ ecosophy—is relevant<sup>55</sup> for both human and environmental health. In the following, I will briefly try to show how Potter’s ethical standpoint is—and should be—based on Næss’ ontological assumptions. The last phase<sup>56</sup> in Potter’s life, though, is characterized by the adjectives “deep” and “global”:<sup>57</sup> he intended to bring his discipline closer to the systems of thought of both Aldo Leopold (*Land Ethics*) and Arne Næss (*Deep Ecology*). While the term “global” refers to the broad scope (or range) of the discipline, “deep” mainly indicates the paradigm shift needed to face the current environmental and social challenges.

In this regard, Potter’s “depth” is closer to Næss’s, as it describes the logical aspect of the human understanding of nature, it is a “depth of perspective.”<sup>58</sup> In Næss, this epistemological quality is strictly connected to three main ontological points: 1. Nature in itself (*in se*) is deeper than the “objective” scientific image/description of nature; 2. Our selves are deeper than our narrow ego; 3. Our relationships with other forms of life are deeper than what we expect.<sup>59</sup> These three sentences may be summed up as follows: we are “knots in the biospherical net”<sup>60</sup> (i.e., we are deeply connected to other forms of life), and our self-realization depends on the realization of the other forms of life.<sup>61</sup> In this sense, due to this original interconnectedness, the main principle regarding our relationship to nature should be cooperation (“You and I,” not “Either you or me”): hence, “Live and let live” is a more powerful ecological principle than ‘Either you or me’.<sup>62</sup> If we add to this previous point the Næssian principle for which every form of life tends to its self-realization (recalling Spinoza’s *Ethics*, both concerning *conatus* and the principle “*perseverare in suo esse*”<sup>63</sup>), we understand why the realization of the other being should not be an obstacle to me, but a stimulus, in principle.<sup>64</sup> Every form of life should simultaneously tend to cooperate and flourish, in principle. Even though we do not assume the optimistic worldview expressed by

<sup>44</sup>Li, op. cit. note 6, pp. 9002–9003.

<sup>45</sup>In this regard, Potter struggled against “Necrophilic bioethics”—Brescia, T. (2015). The rediscovery of Potterian bioethics. *Global Bioethics*, 26(3–4), 194.

<sup>46</sup>Reich, W. T. (1995). The word “bioethics”: The struggle over its earliest meanings. *Kennedy Institute of Ethics Journal*, 5(1), 20–21.

<sup>47</sup>Potter’s idea of health is broader than the one used in the 1970s and is closer to the current conception of human/ecosystem health balance. He argues: “Without a reference to the global picture of the ecological sciences, a just analysis of medical problems is not even possible”—Potter, V. R., & Russo, G. (1995). La prima idea di bioetica. In G. Russo (Ed.), *Storia della bioetica* (pp. 5–18). Armando, p. 11.

<sup>48</sup>The same effort may be found in Clements, C. D. (1985). “Therefore choose life”: Reconciling medical and environmental bioethics. *Perspectives in Biology and Medicine*, 28(3), 407–425.

<sup>49</sup>Potter, op. cit. note 38, p. 162. Potter’s global perspective considers the “globe” (the biosphere) as the object of moral consideration. Thus, “bioethics should adopt a global, not merely an international, perspective” (Jennings, B. (2016). Putting the bios back into bioethics: Prospects for health and climate justice. In C. C. Macpherson (Ed.), *Bioethical insights into values and policy. Climate change and health* (pp. 11–37). Springer, p. 12): it is not a matter of political changes but of theoretical ones.

<sup>50</sup>Dupras, C., Ravitsky, V., & Williams-Jones, B. (2014). Epigenetics and the Environment in Bioethics. *Bioethics*, 28(7), 327. For this reason, for Potter, human health and environmental health always go hand in hand—Potter, op. cit. note 33, p. 74.

<sup>51</sup>Potter, V. R. (1987). Aldo Leopold’s land ethic revisited: Two kinds of bioethics. *Perspectives in Biology and Medicine*, 30(2), 159.

<sup>52</sup>Potter, V. R. (1985). A response to Clements environmental bioethics: A call for controlled human fertility in a healthy ecosystem. *Perspectives in Biology and Medicine*, 28(3), 429.

<sup>53</sup>Potter, V. R., & Whitehouse, P. J. (1998). Deep and global bioethics for a livable third millennium. *The Scientist*, 12(1), 9.

<sup>54</sup>Beever, J., & Whitehouse, P. J. (2017). The ecosystem of bioethics: Building bridges to public health. *JAHR*, 8(2–16), 233.

<sup>55</sup>That same link is also evident in the introduction to the book *Global Bioethics*, where Potter directly recalls his intellectual debt to Næss. On the other hand, they both share the intellectual mentorship of Aldo Leopold, the father of *Land Ethics*—Potter, op. cit. note 33.

<sup>56</sup>We may point out three stages in Potter’s bioethical thought: “Bridge Bioethics,” “Global Bioethics,” and “Deep Bioethics”—see Zanella, D., Sganzerla, A., & Pessini, L. (2019). V. R. Potter’s global bioethics. *Ambiente & Sociedade*, 22, e02081.

<sup>57</sup>Potter, V. R. (1999). Fragmented ethics and “bridge bioethics.” *Hastings Center Report*, 29(1), 39.

<sup>58</sup>See Valera, L. (2019). Depth, ecology, and the deep ecology movement: Arne Næss’s proposal for the future. *Environmental Ethics*, 41, 293–303.

<sup>59</sup>Cf. Næss, A. (2005). Self-realization: An ecological approach to being in the world. In H. Glasser, & A. Drengson (Eds.), *The selected works of Arne Næss* (Vol. X, pp. 515–530). Springer.

<sup>60</sup>Næss, A. (1973). The shallow and the deep, long-range ecology movement. A summary. *Inquiry*, 16, 95.

<sup>61</sup>Cf. Valera, L. (2018). Home, ecological self and self-realization: Understanding asymmetrical relationships through Arne Næss’s ecosophy. *Journal of Agricultural and Environmental Ethics*, 31, 661–675. Regarding the mutual dependence of the living beings, the paper mentioned here argues that Næss’s consideration of nature is oversimplified and optimistic.

<sup>62</sup>Næss, op. cit. note 60, p. 96.

<sup>63</sup>Valera, L., & Vidal, G. (2022). Pantheism, panentheism, and ecosophy: Getting back to Spinoza? *Zygon*, 57(3), 545–563.

<sup>64</sup>Næssian realism implies that all these postulates should be considered *in principle* (i.e., not in an absolute manner): “The ‘in principle’ clause is inserted because any realistic praxis necessitates some killing, exploitation, and suppression.”—Næss, op. cit. note 60.



Næss, a point should be clear: the original interconnectedness of every living being makes almost impossible a purely individualistic bioethical standpoint or assessment.

#### 4 | SOME BIOETHICAL CONSEQUENCES OF THESE PARADIGMS

Even though Næss and Potter's standpoints seem to be more theoretical than applied paradigms,<sup>65</sup> they have some relevant bioethical consequences. In the following, I will show them, highlighting the differences with the Georgetown paradigm and the possible benefits of these positions.

First, a new consideration of the self, and thus, of human freedom, is needed. Indeed, "deep" ontological changes to the traditional view of the self can have many meaningful applications to the ways we understand, interact with, and care for persons.<sup>66</sup> Following Næss, our self cannot be identified with our narrow ego, but must be extended beyond our limits, both socially and ecologically. This implies that "morality begins with transcending the narrow ego. It does not end there."<sup>67</sup> In this sense, the ontological and cosmological standpoint for which we are a part of the natural world –we are continuously constituted by these natural relationships– entails some ethical consequences: our relationships are not like "mutual thefts"<sup>68</sup> but collaborative ones. Indeed, "as living creatures, we exist not only as discrete individuals but also, and simultaneously, as nodes in ecological as well as social networks. If to be genuinely free is to be free to be oneself, then this must include the freedom to participate fully in those networks of which one is a part, be they social or ecological."<sup>69</sup> This extended conception of the self pushes us to think beyond the mere individualistic point of view and to consider the concrete human being (e.g., the patient) as a part (a knot) of an extended ecological and social network,<sup>70</sup> without losing his/her individuality.<sup>71</sup> The patient is at the center of many significant social and environmental relationships: a bioethical perspective on his/her situation must adequately consider this point, taking into account that his/her autonomy is always situated and relational. Furthermore, health should be interpreted as one of several dimensions in human life: self-realization implies considering health among many different relevant vital factors. Nevertheless, the previous considerations do not imply that the relationship between the individual and the whole (e.g., the ecosystem or the social system) is peaceful or immediately positive: they only push us to consider the whole as a constitutive

part of the individual. There obviously are some essential tensions between the individual and the collectives they are part of, and this is particularly relevant for the issue of health, as Lee points out: "Community health is essential for individual health and [...] individual health affects the health of the community, locally and globally."<sup>72</sup>

Second—as a consequence of the first point—our health is relational, too. Not only should we consider health as a part of our lives, but we also must understand it as something shared with other living beings. This point implies embracing a new concept of health, considered as the result of the interactions between different organisms and environments, as mentioned above.<sup>73</sup> This is a relevant point for bioethics insofar as it forces us to move outside the patient's bedside (or the hospital), to interpret his/her health: "The concerns of bioethics have been almost exclusively human-centered, in sharp contrast to many works on environmental ethics. This abstraction of human interests and activity from broader ecological systems has ironically limited even the capacity of bioethics to understand human health and other problems in human terms. This is a serious distortion because so much of human health and wellbeing comes precisely from the relationality with natural ecosystems."<sup>74</sup> If we want to understand both our health and diseases, we must expand our point of view beyond our bodies or immediate relationships, also looking at the health of our ecosystems and other species related to us.<sup>75</sup> Indeed, "one major bioethics challenge is to integrate health, human activity, and biodiversity."<sup>76</sup> This would allow us to offer a more complex and integrated view of human health, towards a "planetary health ethics or ecologized bioethics."<sup>77</sup>

Third, we have an ethical duty to act according to the considerations highlighted in the previous two points. Our care (or stewardship<sup>78</sup>) should be directed toward both human beings and nature: if our health is intertwined with the ecosystem health, we must take care of the ecosystem for the sake of our wellbeing.<sup>79</sup> In this regard, "health care systems should focus not just on policies for the organization's internal workings but also on the broad impact of hospitals and other organizations on health. Many hospital health systems have

<sup>72</sup>Lee, op. cit. note 36, p. 9.

<sup>73</sup>Lee argues: "The belief that all natural things are connected gave rise to concerns about the health of ecological systems, rather than specific problems related to particular plants, animals, or other resources"—ibid., p. 6.

<sup>74</sup>Jennings, op. cit. note 49, p. 23.

<sup>75</sup>It is worth noting that "understanding health at the intersections of individual and community requires an ecosystemic perspective where health care is seen in the context of social care and other economic and ecological priorities. Other life forms besides humans are part of this public health picture"—Beever & Whitehouse, op. cit. note 54, p. 236.

<sup>76</sup>Boudreau LeBlanc, A., & Williams-Jones, B. (2023). Applying the ecosystem approach to global bioethics: Building on the Leopold legacy. *Global Bioethics*, 34(1). <https://doi.org/10.1080/11287462.2023.2280289>.

<sup>77</sup>Anderson, W. (2023). Toward planetary health ethics? Refiguring bios in bioethics. *Journal of Bioethical Inquiry*, 20, 695–702. <https://doi.org/10.1007/s11673-023-10285-0>. Li points out: "The promotion of ecological health literacy is utmost important for embracing the morality as an integral part of our inherent human nature for the realization of ethical value in the environmental ethics"—Li, op. cit. note 6, p. 9010.

<sup>78</sup>Cf. Welchman, J. (2012). A defence of environmental stewardship. *Environmental Values*, 21(3), 297–316.

<sup>79</sup>I am expressing this concept from a Potterian point of view, which seems to be rather anthropocentric (the main aim of his bioethics is human survival). Næss would disagree with this formulation, even though he argues: "Remember that human beings are unfortunately dependent upon the health of the ecosystems. Therefore respect nature or you invite disaster!"—Næss, A. (2005). The deep ecology "Eight Points" revisited. In H. Glasser & A. Drengson, *The selected works of Arne Næss* (Vol. X, pp. 57–66). Springer, p. 59.

<sup>65</sup>On the contrary, principlism is an applied ethics paradigm, with clear practical implications. In this regard, the Georgetown paradigm seems to be more effective than the Wisconsin one—this is one of the main criticisms of Potter's paradigm.

<sup>66</sup>Beever, J., & Morar, N. (2016). Bioethics and the challenge of the ecological individual. *Environmental Philosophy*, 13(2), 233.

<sup>67</sup>Reitan, E. H. (1996). Deep ecology and the irrelevance of morality. *Environmental Ethics*, 18, 422.

<sup>68</sup>Valera, op. cit. note 61, p. 669.

<sup>69</sup>Hannis, M. (2015). The virtues of acknowledged ecological dependence: Sustainability, autonomy and human flourishing. *Environmental Values*, 24(2), 152.

<sup>70</sup>Cf. Beever & Morar, op. cit. note 66, pp. 215–238.

<sup>71</sup>Cf. Valera, op. cit. note 61.

a negative ecological impact on their environment by virtue of their enormous size as they create parking lots and discharge highly toxic waste into our watersheds. It is time that bioethicists stand up and ask our health care systems 'Are you doing enough for the health of the environment and their communities?'<sup>80</sup> On the contrary, a mere individualistic patient-centered care would risk harming the same patient, as it would be only a short-term, defensive, and reactive strategy, considering the socio-ecological environment as something inessential to his/her wellbeing.

#### 4.1 | Eco-ethical assessment and SH: Five pragmatic considerations<sup>81</sup>

Recalling the previous points, in light of Næss and Potter's approaches, some pragmatic considerations for the eco-ethical<sup>82</sup> assessment of healthcare systems are pointed out in this last section. These pragmatic considerations recall the need for both public health ethics<sup>83</sup> and global and deep bioethics in dialogue with environmental ethics, capable of considering human health "beyond the hospital" or the healthcare system. The pragmatic considerations are:

1. A focus on the patient's wellbeing and care, more than his/her diagnosis and cure,<sup>84</sup> is needed. This follows from the idea of health as a complex interaction between humans and the environment, as well as the different ideas on health mentioned in Section 2. The focus on good lifestyle habits and balanced behavior may help diminish the healthcare burden on environmental sustainability. This pragmatic consideration implies at least two consequences: i. Prevention should be considered as the best option and the most effective solution, both for the patient's wellbeing and HS.<sup>85</sup> In this regard, "caring should take priority over curing,"<sup>86</sup> driving medicine to be more preventive rather than regenerative, and to focus more on wellbeing rather than on therapies.<sup>87</sup> This consideration may help save on unnecessary

therapies in view of HS; ii. Due to the previous point, medicine is also concerned with healthy individuals (and their environments), not only with the sick ones. This will help continuously maintain the wellbeing of individuals and their environments, rather than reacting to tragic or catastrophic events: the present pragmatic consideration goes in the line of "sustaining" rather than continually trying to reestablish a physical state.

2. A conception of shared responsibility and agency of all co-inhabitants and stakeholders is necessary. Recalling the "social connection model" proposed by Young,<sup>88</sup> the idea of "shared agency" elaborated by Bratman,<sup>89</sup> and the concept of "co-inhabitation interrelationships" by Rozzi,<sup>90</sup> we want to stress here the idea of common and shared responsibility of the different actors in promoting human health.
3. The pursuit of ecologically sound decisions must go beyond the individual. This point allows us to rethink the relation of parts to the whole (i.e., mereology): if the individual is part of a socio-ecological system, we should simultaneously take care of both since the health and wellbeing of the former depend on the health and wellbeing of the latter, and vice versa.<sup>91</sup> This "virtuous circularity" is at the basis of HS.
4. Environmental stewardship must be promoted. The concept of "One Health" precisely pushes us to leave the dichotomy between anthropocentrism and biocentrism, pointing at a common purpose (Planetary Health) that can also have positive consequences for particular interests (i.e., individual health). This approach aims to make conscious choices to reduce our impact on the planet, move towards SH, and enhance our wellbeing. This form of stewardship would "promote ecological harmony and preserve the eco-environments for the co-existence of healthy ecosystems, healthy animals and healthy humans."<sup>92</sup>
5. The complexity of the current ecological dynamics invites us to epistemic humility and prudent (or cautious) approaches to events with uncertain consequences.<sup>93</sup> This approach would lead to a technological conservatism rather than the all-out current technocracy, techno-optimism, or techno-fix approaches.<sup>94</sup>

The considerations presented here are intended to help create a bridge (as Potter calls it) between clinical ethics and environmental ethics. Between these two poles, the conflict of values seems to be evident, and this is why one perspective (or approach) has always excluded the other. On this topic, Resnik points out: "Promoting

<sup>80</sup>Whitehouse, P. J. (2001). The rebirth of bioethics: A tribute to Van Rensselaer Potter. *Global Bioethics*, 14(4), 42–43.

<sup>81</sup>I use here the concept of "pragmatic considerations" instead of "principles" since the word principle mainly refers to a part of a normative theory that justifies or defends moral rules and/or judgments. This paper doesn't aim to offer a complex normative theory, but only to set general directions in order to achieve HS. I acknowledge Angus Dawson for pushing me clarifying this point.

<sup>82</sup>I use the word eco-ethical to stress the "more-than-individualistic" approach.

<sup>83</sup>Lee, op. cit. note 36.

<sup>84</sup>MacNeill, A. J., et al., op. cit. note 10, p. E67.

<sup>85</sup>Sherman, J. D., et al., op. cit. note 3. The authors argue: "Prevention is widely recognized to be the most effective means of ensuring healthcare sustainability from environmental, social, and economic standpoints, but requires a paradigm shift away from a system focused on the treatment of illness to one dedicated to promoting health"—ibid. Cf. Prescott, S. L., Logan, A. C., & Katz, D. L. (2019). Preventive medicine for person, place, and planet: revisiting the concept of high-level wellness in the planetary health paradigm. *International Journal of Environmental Research and Public Health*, 16(2), 238.

<sup>86</sup>Sánchez Díaz, I., López Barreda, R., & Valera, L. (2020). COVID-19 and ethics: A Latin American perspective. *Asia Pacific Journal of Public Health*, 32(8), 506.

<sup>87</sup>I am formulating, here, general standpoints about medicine in our era. In this sense, these pragmatic considerations may simultaneously be useful for international and non-governmental organizations and healthcare providers since they offer basic guidelines that may indirectly affect the individual doctor-patient relationship.

<sup>88</sup>Young, I. M. (2006). Responsibility and global justice: a social connection model. *Soc Philosophy and Policy*, 23, 102–130.

<sup>89</sup>Bratman, M. (2014). *Shared agency: A planning theory of acting together*. Oxford University Press.

<sup>90</sup>Rozzi, R. (2019). Taxonomic chauvinism, no more! Antidotes from Hume, Darwin, and biocultural ethics. *Environmental Ethics*, 41, 275.

<sup>91</sup>Concerning the possible applications of this point—that is, both the aim and the subject of these pragmatic considerations—see note 86.

<sup>92</sup>Li, op. cit. note 6, p. 9005.

<sup>93</sup>Jonas, H. (1984). *The imperative of responsibility. In search of an ethics for the technological age* (p. 8ff). The University of Chicago Press.

<sup>94</sup>See Huesemann, M., & Huesemann, J. (2011). *Techno-fix: Why technology won't save us or the environment*. New Society Publishers.

human health and protecting the environment are important ethical values that often harmonize but sometimes do not. [...] Some of the influential theories of ethical decision-making from the disciplines of health care ethics and environmental ethics lack the conceptual tools to resolve these conflicts. Theories of health care ethics tend to be human-centered and do not take the environment into account, whereas theories of environmental ethics have little to say about human health. What is needed is an approach to ethics and public policy that takes human health and the environment into account.<sup>95</sup> The pragmatic considerations presented above aim to transcend the extreme individualism of "classical" medical ethics and the generalist holism of environmental ethics. Clearly, even before offering a well-defined set of values applicable to different problems in this context, it is necessary to change the paradigm and offer an organic vision, capable of addressing dilemmas and value problems from a broad perspective.

## 5 | CONCLUDING REMARKS

The emerging ecological and healthcare problems highlighted above call for new paradigms and models. We urgently need to expand the leading individualistic, mechanistic, and atomistic standpoint in bioethics toward a more relational point of view, capable of considering our health as a part of a broader socio-ecological system. This "'relational turn' in bioethics"<sup>96</sup> can be based on Næss's ecosophy and Potter's bioethics, as I tried to argue in this paper. These paradigms offer a proper understanding of several challenges arising from modern medicine, namely: a broader concept of health and disease, an extended knowledge of determinants of health, and the need to balance sustainable lives with the scarcity of resources. Here, the concept of HS emerges. These paradigms, furthermore, allow us to enunciate some pragmatic considerations that may orient healthcare practices with a broader perspective, linking bioethics, medical ethics, public health ethics, and environmental ethics.

A final consideration should be added: the aim of this paper is not to provide useful guidance for real-world cases where patient well-being may conflict with the environment. On the contrary, it aims to integrate, from the development of a new paradigm, the ecological lens into the health assessment. As stated earlier, this does not mean that we should give a value priority to the environment over the human individual. On the contrary, it wants to add, in the context of clinical or pharmacological ethical assessment, the consideration of some environmental indicators, so that, *ceteris paribus*, measures with low environmental impact should be prioritized.

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## AUTHOR BIOGRAPHY

**Luca Valera** studied philosophy (BA and MA) at the Università Cattolica del Sacro Cuore di Milano (Italy). He holds a PhD in bioethics and philosophy from the Università Campus Bio-Medico di Roma (Italy). His thesis was on the topic of human ecology, in the field of environmental ethics. He has been a Professor at the Pontificia Universidad Católica de Chile since 2015, and he was the Director of the Bioethics Centre from 2018 to 2021. He is now an Associate Professor at the Universidad de Valladolid (Spain), Department of Philosophy and an Associate Researcher at the Cape Horn International Center (CHIC, Chile).

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<sup>95</sup>Resnik, D. B. (2009). Human health and the environment: in harmony or in conflict? *Health Care Analysis*, 17, 275.

<sup>96</sup>Jennings, op. cit., note 30, p. 24.