Body and Biosphere: Tracing Aldo Leopold's Transformation and its Modern-Day Significance

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Defense Date: November 1, 2023

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Acknowledgements

In the spirit of extending my gratitude, I would like to take this moment to appreciate those who have been instrumental in my academic journey.

Dr. Garrett Bredeson: Your mentorship has been invaluable. Your willingness to guide me and your encouragement to explore unfamiliar intellectual territories have immeasurably enriched this process.

Dr. Brian Talbot: Time is a precious commodity. I want to extend my heartfelt thanks for your willingness to invest your time in my project. Your role on my committee is genuinely appreciated.

Dr. Rolf Norgaard: Our conversations have been truly engaging, each adding a layer of knowledge and self-understanding integral to my development. My gratitude goes beyond mere words; I feel a profound sense of indebtedness that is difficult to encapsulate.

Dr. Iskra Fileva: Thank you for your consistent support, even during your sabbatical.

Note to the reader:

The preface aims to provide additional context for the forthcoming exploration of Aldo Leopold's philosophy, particularly his ethics concerning environmental stewardship. The cornerstone of this deeper contextualization is a personal one: both Leopold and I received diagnoses of end-stage kidney disease in our late twenties. This health crisis serves as more than just autobiographical detail; it functions as a background against which the core arguments I'm making here in this thesis can be more clearly understood. In my experience, the diagnosis of kidney disease thrusts one into an immediate confrontation with the limitations inherent in biological systems, an experience that naturally complements and enriches the inquiry into Leopold's thoughts on ecological limitations and responsibilities.

The narrative of health challenges not only informs my research but also intensifies the philosophical issues under examination, emphasizing the importance of addressing environmental ethics and conservation holistically to ensure the integrity of the biotic community, which were significant themes in Leopold's life and work. When faced with a diagnosis that highlights the limited and delicate nature of life, whether it's personal or ecological, one's perspectives inevitably change, leading to a reevaluation of values and ethical considerations.

As you progress through the thesis, consider how this personal health context serves not only as an autobiographical footnote but as a layer that deepens the exploration of Leopold's environmental philosophy. This correlation invites us to perceive ethical and philosophical inquiries not as detached academic exercises but as urgent deliberations with significant consequences for human health and the well-being of our planet.

Living with compromised organ functions is a tangible analog to Leopold's concerns about compromised land health. This experience enriches the academic arguments by introducing a level of immediacy. As this thesis briefly critiques popular solutions to environmental crises, specifically “green growth” strategies hinged on “green capitalism,” I invite you to reflect on the limitations of similar fixes in healthcare, understanding that temporary solutions do not address underlying systemic issues.

Abstract

This research aims to investigate the evolving ethical thought of environmentalist Aldo Leopold, with a special emphasis on how his personal health crisis—namely, kidney failure—played a pivotal role in shaping his well-known "land ethic" as well as his philosophy on "land health." Initially, the paper will draw from Leopold's biographical details and his documented experiences to establish a correlation between his deteriorating health and his developing ideas about ethical responsibilities toward nature. Through a textual analysis and close reading that incorporates select quotes, I will argue that Leopold's ethics were indeed influenced by his personal health challenges. The concept of health is applied as a heuristic lens to better understand how Leopold's ethics prescribe a symbiotic relationship between human well-being and ecological conservation. Transitioning to contemporary relevance, I will also critique *post facto* interventions that primarily rely on technological solutions arguing that they fall short of achieving true health. Specifically, green growth strategies are inadequate in addressing climate issues as they neither fulfill the criteria for land health nor establish the conditions requisite for health, as defined by Leopold.

Introduction

This thesis argues that Aldo Leopold's health difficulties significantly informed his seminal ideas on 'land ethic' and 'land health.' Rather than situating Leopold's philosophy merely as an element within broader environmental ethics, the paper posits that his lived experience of illness serves as a lens through which he conceives of land health. Specifically, Leopold's notion of land health transcends a utilitarian approach to environmental care; it instead posits a moral imperative to sustain the 'health' of the land as an end in itself, much like the ethical considerations we accord to human health. Leopold's conceptualization of 'the land' adopts a holistic approach, drawing parallels to the intricate relationship between the human mind and body. In Leopold's philosophical framework, humans are inseparable from the land, much like the mind and body are interconnected.

Background

Aldo Leopold (1887–1948), the father of wildlife ecology, was a renowned scientist, scholar, educator, philosopher, and wordsmith. His posthumously published book, A Sand County Almanac, is considered a seminal work in conservation literature, combining his observations and descriptions of the natural world with his eloquent prose. Leopold's philosophy has influenced many individuals seeking to understand the importance of coexisting with the natural world and fellow humans. While he is rarely mentioned in footnotes or citations within distinctly philosophical literature, it is generally acknowledged that he was the greatest thinker about wildlife, land, and conservation in the 20th century (Meine, 1988). Furthermore, Leopold both formed and embodied a pragmatic in the vernacular sense, ethical approach which, despite its modern relevance, is curiously absent from the conventional philosophical canon.

To understand Leopold’s philosophical impact, it’s important to understand the state of ecology before him, which was arguably entrenched in anthropocentric accounts of nature (Meine, 1988). Gifford Pinchot, the Founder of Leopold's alma mater, Yale School of Forestry, was a major impact in this field. Pinchot's philosophy, which emphasized both the human right to nature’s resources and the responsibility to use them judiciously, is encapsulated by the dictum he was famous for, “for the greatest good for the greatest number over the long run” (Meine, 1988, p. 76). This viewpoint wasn’t only a personal one on behalf of Pinchot, it was part of the Progressive Era's zeitgeist, which was defined by a belief in the application of science to natural resource management and economic efficiency in the service of human progress (Meine, 1988). During that period, the emphasis on forestry was not on preserving pristine woodlands. Instead, the prevailing belief was that with informed management, forests could continually yield timber without lasting detriment (Meine, 1988).

Although anthropocentrism acknowledges the inherent connection between people and their natural surroundings, it does so in a restricted and limited way. Humans take precedence over land health in this framework, and nature may be subjugated if necessary or desirable to further human welfare. This worldview finds its roots in history, notably in religious doctrines that have bestowed upon humanity a dominion over the land. Throughout the course of history, this anthropocentric perspective has profoundly influenced human interactions with the natural world.

Gifford Pinchot's conservationism had an impact on Leopold in the early stages of his career (Meine, 1988). At first, Leopold's outlook on conservation and land management mirrored many of Pinchot's principles, as they both advocated for the use of natural resources for human

benefit, emphasizing efficiency and utility as central tenets of their conservation philosophies. He also espoused anthropocentric values early in his career; campaigning from a place of economic privilege and youthful arrogance. Nevertheless, his growth from these mistakes has contributed to the development of an integrated approach, which is precisely what renders his land ethic a favored environmental ethos among conservationists and ecologists (Callicott, 2013).

However, as Leopold's career progressed and he explored the intricacies of the natural world, his perspective started to expand beyond Pinchot's anthropocentrism and utilitarian approach. The turning point came as he confronted the relationships between society, economics, and the environment. Leopold's increasing awareness of these complexities led him to realize that the utilitarian “yardsticks” advocated by Pinchot were inadequate to address the broader ethical and ecological dimensions of land management (Leopold, 2013 p. 325). Leopold's philosophy grew to include a holistic and ecocentric perspective.

Illness History

In 1913, at the young age of 26, Leopold was dying of acute kidney failure—a condition known for its irreversible nature. The symptoms of kidney disease are typically not evident until the disease reaches critical mass. Indeed, the initial signs of his condition manifested as extensive swelling throughout his body, prompting him to seek medical attention. Unfortunately, the doctor misdiagnosed Leopold's ailment, attributing it to rheumatism. This unintentional error nearly proved fatal, leading Leopold to endure a protracted convalescence (Meine, 1988).

Leopold spent over a year predominantly confined to his sickbed, and there was considerable uncertainty regarding his survival (Meine, 1988). During his lifetime, kidney

disease was a rather misunderstood condition, leaving patients in a precarious state of not knowing whether the disease would ultimately prove fatal (Bynum,2014). Treatments that are commonplace now, such as dialysis and kidney transplants, were not even in the conceptual stages then. Dialysis was approximately three decades away, and kidney transplants would not be developed for another decade beyond that (Bynum, 2014). As such, Leopold found himself grappling with the effects of organ failure and clinging to hope for eventual improvement despite any effective treatments being available.

As his renal function declined, it is reasonable to assume that his relationship with his own health became strained. This physiological crisis forced him to shift his attention inward, compelling him to reckon with the upheaval taking place within his own bodily systems. It is my view that this experience had a transformative impact on his conceptualization of health.

Previously, his good health served as an unacknowledged but integral partner, collaboratively enabling his intellectual and outdoor pursuits unencumbered by physical limitations. In good health, he had enjoyed the unacknowledged yet invaluable partnership of a body that facilitated all aspects of his life, whether professional or personal. During the experience of chronic sickness, Leopold came to see health not merely as a static condition but rather as an ongoing negotiation between interdependent bodily systems. Later he came to define health as "a capacity for internal self-renewal" (Leopold 2013, p. 168). Whereas sickness can only be meaningfully understood in relation to known states of health. Bodily systems of health dovetail with Leopold's view that the health of a landscape becomes clear only when contrasted with a "wild area" (Leopold, 2013, p. 167).

Health

What emerges from Leopold's physical ordeal is an illustration of the systemic interconnectedness of health. This extends to the mutually dependent nature of the land, reinforcing the notion that land is by definition a dynamic organism, ever-changing and evolving, much like the human body. In Leopold's perspective, the land isn't a static entity but rather one that undergoes processes of growth, decay, and natural succession (p.431). In a similar vein, human health isn't a fixed state but a dynamic condition affected by myriad factors, from the biological to environmental. Just as a disturbance in one organ system can have cascading effects on the rest of the body, an intervention or imbalance in one part of the land can reverberate throughout the entire ecological community. Therefore, attending to the health of the land—understood as a dynamic organism—is intrinsically tied to human well-being, both physical and psychological (Leopold, 2013).

This conceptual similarity accentuates the need for a holistic approach to health and ecology, challenging isolated or compartmentalized ways of addressing environmental and medical issues. The insight here carries ethical weight. If we acknowledge the land as a dynamic organism, as Leopold did, the imperative shifts from mere sustainable utility to a form of ecological stewardship that is attuned to the complexities and constant changes in natural systems. By seeing land and health in this intertwined, systemic fashion, it becomes clear that a narrow, anthropocentric focus is not just intellectually limiting but ethically problematic.

As his kidneys struggled to maintain this capacity, he came to understand that health was not merely the absence of illness but a delicate equilibrium within the internal ecosystem of the body. It was a state of interdependence and balance, mirroring the ecological principles he had

explored in his work. This invites us to consider that a normative state, be it health or a pristine landscape, serves as a crucial point of reference for evaluating other states. The subjective ideal of health and the objective reality coexist, each informing the other, in a dynamic relationship.

> The conservation of recreational resources here advocated has its historic counterpart in the conservation of timber resources lately become a national issue and expressed in the forestry program. Timber conservation began fifteen years ago with the same vague premonitions of impending shortage now discernible in the recreational press. Timber conservation encountered the same general rebuttal of "inexhaustible supplies" which recreational conservation will shortly encounter. After a period of milling and mulling, timber conservation established the principle that timber supplies are capable of qualitative as well as quantitative exhaustion, and that the existence of "inexhaustible" areas of trees did not necessarily insure the supply of bridge timber, naval stores, or pulp. (Leopold, 2013, p.215)

The Land Ethic

In mainstream thought, the concept of 'land' primarily encompasses idyllic meadows, expansive natural spaces, the enigmatic depths of forests, the grandeur of mountain ranges, and those remote territories where human habitation is sparse. This term is seldom linked to the treacherous oceans, winding rivers, hidden mineral treasures nestled in rock, a stormy gale, or even the carefully tended front lawns and gardens resembling postage stamps on neighborhood blocks. In this narrative, even our domestic companions, like our loyal canines and helpful mousers, are not usually seen as integral parts of the land. This typical viewpoint on land

delineates a narrower perspective, one that excludes things that are possessed, domesticated, and ugly.

Conversely, to Leopold, "land" is all of those things, but it also transcends those things to encompass even the ugly, unsightly, and unappreciated features and people of nature. It extends to the intangible yet invaluable resources like the air we breathe, a vital component of the intricate web of life. It includes the decomposing remnants of life, underscoring the cyclical nature of the land and the role of death in nourishing new life. Even microscopic bacteria, which play an essential role in nutrient cycling and ecosystem functioning, find their place within Leopold's expansive definition of land.

Agriculture, too, is embraced by this broader perspective of land. Leopold recognizes that the cultivation of land is not merely a human endeavor but an integral part of the land community. In his view, the land accommodates the rhythm of woodpeckers hammering on tree trunks, the delicate beauty of wildflowers gracing the landscape, and even the resilience of tenacious weeds that thrive in adverse conditions. Each of these elements, no matter how inconspicuous or mundane, contributes to the rich and interconnected community. Furthermore, Leopold (2013), elaborates:

> All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for). The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land (p. 172).

The land ethic speaks to broader philosophical themes around relationality, suggesting that entities—whether they be human bodies or ecological systems—derive part of their significance or meaning from their relationships to other entities.

Leopold did not set forth to establish rigid moral codes that dictate right from wrong but, rather, a set of values that evolved throughout his life experiences. The realization of the complexities of human's relationship with the land was profoundly shaped by the challenges Leopold faced during his battle with kidney failure. Leopold's land ethic accentuates and challenges the contrast between human's proclaimed love of the land and the contradictions that exist in our actions. Therefore, "In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it . It implies respect for his fellow-members, and also respect for the community as such" (Leopold, 2013 p. 172).

Leopold introduces the idea of the "biotic pyramid" as a metaphor that captures this ecological relationship more than the mechanistic models of his time. He says, "mechanism. A truer image is the one used in ecology: the biotic pyramid. I will sketch the pyramid as a symbol of land and explore its implications in terms of land-use" (Leopold, 2013, p. 179).
Moreover, Leopold goes beyond an understanding to posit a dimension to the land, which he refers to as "land health." This construct advocates for the preservation of the ecological integrity of each part of the system. This suggests that soil, water, plants, and animals are not only resources to be exploited but entities deserving ethical consideration. Leopold's perspective on the land introduces an obligation towards holistic well-being.

Land Health

Leopold's articulation of land health, typically framed within the larger environmental ethics discourse, has a conceptual underpinning rooted in his own embodied experience of irreversible illness. This uncertainty, characterized by irreversibility and the fragility of life, parallels Leopold's own ideas on land health. *Land health,* for Leopold, is an ethical imperative connected to principles of conservation and goes beyond mere sustainability. This principle does not merely prescribe taking care of the environment but invokes a moral obligation to maintain the 'health' of the land for its own sake, akin to human health (Leopold, 2013).

In "A Sand County Almanac," metaphors and analogies are important in articulating the link between land health and human health. Leopold frequently uses medical terms when talking about the land, using words like "ailments," "diagnosis," and "treatment" to describe environmental conditions. In one of his analogies, he likens the land to a living organism, complete with its own physiology and metabolism (Leopold, 12013). This rhetorical strategy brings the abstract concept of an ecosystem into the tangible realm of his individual experience of the integral relationship of biological systems, thereby facilitating a deeper understanding of the intimate relationship between land health and human health.

Moreover, if we recognize the land as an interdependent system that we have the privilege and duty to support in its capacity for self-renewal and balance, realizing that our own health is reliant on the health of the land (Leopold, 2013). Land-health isn't merely an ancillary concern; it's central to the well-being of every living thing that inhabits the land.

In light of this and informed by Leopold's own experiences, the contrast of what he calls "land-doctoring" and the "science of land health" becomes particularly pertinent (Leopold, 2013, p 166). The practice of land doctoring, similar to Leopold's encounter with medical misdiagnosis, often ignores root causes and may delay necessary interventions and eschewing notions of treatment until obvious crises arise, as it did with his kidney disease. Land-doctoring serves as an initial and intuitive approach to addressing environmental degradation but lacks a systemic understanding of mechanisms of disease. On the other hand, what Leopold calls for in terms of a 'science of land health' resembles a scientific approach seeking to understand the root causes through rigorous methods. This approach would involve techniques from biology, ecology, and environmental science to understand patterns, make forecasts, and consider variables like climate, soil quality, and biodiversity (Leopold, 2013).

In doing so, we recognize that land is not just an asset for economic gain but a complex community. Consequently, our obligations to this community should extend beyond mere exploitation; we are called to uphold responsibilities like conservation. According to Leopold, conservation signifies a necessary harmonious relationship between humans and land. In essence, Leopold portrays the land as an interconnected system that we are obliged to support in its capacity for self-renewal and balance, understanding that its health is mutually dependent on our own. In this context of human-to-land interaction, a noticeable disconnect arises: Our actions, although seen as progress, also come at an ecological cost to the land.

Conservation

In his early career, Leopold endorsed the hunting of wolves under the assumption that reducing their numbers would yield a greater abundance of game animals. Driven by a philosophy that prioritized human benefit, he influenced policies leading to the eradication of wolves. However, Leopold later underwent a significant philosophical transition. He shifted from promoting top-down approaches that subjugated nature for human utility to advocating for the intrinsic value of natural diversity. Leopold came to understand that the well-being of each component within an ecosystem contributes to the system's overall health (Meine, 1988). In one particularly striking passage, Leopold (2013) describes the aftermath of wolf eradication:

> Since then I have lived to see state after state extirpate its wolves. I have watched the face of many a newly wolfless [*sic*] mountain, and seen the south-facing slopes wrinkle with a maze of new deer trails. I have seen every edible bush and seedling browsed, first to anaemic [*sic*] desuetude, and then to death. I have seen every edible tree defoliated to the height of a saddlehorn. Such a mountain looks as if someone had given God a new pruning shears, and forbidden Him all other exercise. In the end the starved bones of the hoped for deer herd, dead of its own too-much, bleach with the bones of the dead sage, or molder under the high-lined junipers. (116)

The term "anaemic" is poignant in this context, as it is typically used in medical contexts to describe a lack of vitality. In the same way that removing wolves disrupted the balance of the ecosystem, leading it to an "anaemic" state, so too can the failure of one organ, like the kidneys, destabilize the entire human body. By applying this term to the natural landscape, Leopold

emphasizes the dire outcomes when individual elements—such as wolves—are removed from an ecosystem.

From this perspective, Leopold's personal health journey likely sensitized him to the nuances of ecological balance, thereby informing his later advocacy for a more respectful and symbiotic relationship between humans and nature. Leopold's insights into human physiology may have paralleled and deepened his recognition of similar dynamics within the land.

Green Growth

The term "green growth" is often lauded for its promise of reconciling economic development with environmental sustainability. However, Leopold would likely take issue with the assumptions that underpin the green growth paradigm. For Leopold, health is not just an individualistic pursuit but is biophysically determined by the wellbeing of the land as a whole system (Leopold, 2013). In contrast, green growth often operates under the assumption that we can achieve the advantages of economic expansion without bearing the environmental costs (Erickson, 2022, p. 152). Leopold's skepticism about the concept of infinite growth on a planet with finite resources seems fundamentally at odds with the green growth strategies that are often advocated today. Green growth tends to hinge on John Erickson (2022) has termed "Manna From Heaven intervention policies"(p.35). These strategies prioritize technological solutions and government-funded innovations to address environmental issues (Daly, 2014). The expectation is that advances in areas such as electric vehicles (EVs) and renewable energy will pave the way for both economic development and environmental sustainability (Hickel, 2019).

This techno-optimism inherent in green growth strategies could be likened to banking on future medical technologies like dialysis and organ transplantation to treat end-stage renal failure. The analogy is particularly poignant given Leopold's own experiences with kidney disease at a time when treatments like dialysis and transplantation were not yet conceivable. For Leopold, relying on yet-to-be-invented technological solutions would likely be seen as an abdication of immediate moral and ecological responsibilities. His own lived experience with untreatable kidney disease might have informed his perception that waiting for technological "silver bullets" is a risky strategy when it comes to dealing with the limits imposed by nature.

Critics might argue that Aldo Leopold's critique of green growth on the basis of land health may be interpreted as Malthusian in its underlying premises. The Malthusian perspective, originating from the works of Thomas Robert Malthus, posits that the human population tends to increase more rapidly than its means of subsistence, eventually leading to societal collapse unless checked by factors like famine, disease, or other calamities (Malthus, 1798/1986). Leopold's emphasis on the land's "carrying capacity" and the need for ethical engagement based on current ecosystem limitations might be seen as echoing Malthusian concerns about overpopulation and resource depletion.

These critics might contend that a Malthusian interpretation of Leopold's work could inadvertently support policies or attitudes that are socially regressive or harmful (Powell, 2014). For instance, it could be leveraged to justify restricting resources to certain populations, promoting anti-immigration policies, or limiting social welfare programs, all in the name of conservation or promoting health. Furthermore, it can be critiqued for its potential to divert

attention away from systemic issues such as unequal resource distribution, thereby reinforcing existing inequalities.

Moreover, critics might assert that Leopold's focus on immediate systemic limitations does not leave much room for human ingenuity and adaptability, which have historically expanded what might be considered 'carrying capacity' through technological and social innovations. Such a focus might be critiqued for being unduly pessimistic or limiting in its view of human potential and adaptability, aligning it with Malthusian fatalism (see also Ehrlich, Population Bomb,1968).

To address these critiques, it's important to clarify the nuances of Aldo Leopold's ecological philosophy, particularly in relation to the charge of Malthusianism. Leopold's views, contrary to Malthusian predictions of inevitable ecological disaster due to population growth, focus on the moral and ethical relationship that humans have with the land. It's not a mere call to limit growth or human activity, but an urging for a qualitative transformation in how we engage with the environment (Leopold, 2013).

Let's revisit the analogy of treating end-stage renal failure with dialysis and organ transplantation. While it's tempting to place faith in technological solutions, Leopold would argue that this defers ethical responsibility. For him, relying on unproven technologies as a panacea for ecological issues would be akin to neglecting the immediate moral obligations we have towards the Earth. His firsthand experience with kidney disease might underscore his aversion to speculative, future-oriented solutions.

It's essential to note that Leopold did not reject the use of technology or human ingenuity in addressing ecological challenges; rather, he questioned the wisdom of strategies that fail to contribute to the self-renewal and health of the land. Leopold posited that land health was inextricably tied to the well-being of individual organisms, including humans. Hence, technologies that exploit the land without replenishing it or maintaining its health do not align with Leopold's ecological ethos.

Green growth strategies often tout market mechanisms as the path to ecological sustainability, but Leopold offers a counterpoint. He contends that such technologies are useful only as long as the land remains healthy. The health of the land, in Leopold's view, depends on its community of flora and fauna, a notion that challenges the species-centered myopia that often drives economic decisions. To label or remove certain species as 'bad' based on short-term benefits or drawbacks epitomizes anthropocentric arrogance.

It's therefore a misreading to suggest that Leopold's critique aligns with Malthusianism. His vision is not of limitation but of ethical coexistence and sustainability, guided by a respect for the self-renewal capacities of land. Green growth, when it prioritizes market demands over land health, deviates from this vision. So, rather than retreating into a Malthusian doomsday narrative, the key takeaway from Leopold is the need for a more ethically informed interaction with the natural world, one that respects the land as a community to which we belong, rather than a resource to be endlessly exploited.

The notion of green growth as a solution to environmental degradation can be seen as a form of ecological myopia. In a way, it parallels the idea of choosing dialysis over more direct,

albeit challenging, medical interventions to address kidney failure. Just as dialysis can be a life-saving but ultimately stopgap measure that doesn't address the root causes of kidney disease, so too does green growth serve as a temporary palliative that avoids confronting the more systemic issues at play in environmental decline.

This reluctance to adopt more transformative approaches can be analogized to a patient who, when warned by their physician of impending kidney failure due to lifestyle choices, opts for the 'convenience' of dialysis over making difficult but necessary changes. Such a mindset is at odds with Aldo Leopold's Land Ethic, which posits that true ecological integrity involves a holistic view of land as a community to which we belong, rather than as a commodity to exploit (Leopold, 2013).

The land ethic urges us to expand our ethical considerations to include soil, water, plants, and animals, or what Leopold termed "the land." It's an ethos that necessitates fundamental shifts in behavior, rather than the mere technological fixes often heralded by the proponents of green growth.

Leopold's ethical orientation underscores the limitations of solutions like green growth in achieving genuine "land health," a term he used to describe the capability of the soil to renew itself, support life, and integrate all the ecological functions into a resilient system. Therefore, green growth, by focusing mainly on human ingenuity and technological innovation, disregards the interconnectedness of natural systems and the inherent value of land health, ultimately sidestepping the radical reorientation of values and behaviors needed for sustainable coexistence.

The relationship Leopold saw between human wellness and nature conservation extends beyond theory to become an embodied reality, particularly when framed by his personal health challenges. His remarks on self-renewal deepen our understanding of this mind-body parallel. By drawing a correlation between the limited capacity for renewal in kidneys and the degradation of land, we gain further insight into the foundations of his ethical thought. This perspective underscores the interconnectedness of human well-being and ecological balance. Both require targeted actions for recovery, challenging prevailing ethical perspectives that separate bodily health from land health. Leopold's ethical vision prompts us to question and reassess the division of these areas in current ethical thinking (Leopold, 2013).

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