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# STEPS TOWARDS ECOLOGICAL MEDICINE: BATESONIAN INSPIRATIONS FOR REFLECTING ON THE CONNECTION BETWEEN PLANETARY HEALTH AND ENVIRONMENTAL EDUCATION

## INTRODUCTION

There was once a Garden. It contained many hundreds of species—probably in the subtropics—living in great fertility and balance, with plenty of humus, and so on. In that garden, there were two anthropoids who were more intelligent than the other animals.

On one of the trees there was a fruit, very high up, which the two apes were unable to reach. So they began to *think*. That was the mistake. They began to think purposively.

By and by, the he ape, whose name was Adam, went and got an empty box and put it under the tree and stepped on it, but he found he still couldn't reach the fruit. So he got another box and put it on top of the first. Then he climbed up on the two boxes and finally he got that apple.

Adam and Eve then became almost drunk with excitement. This was the way to do things. Make a plan, ABC and you get D.

They then began to specialize in doing things the planned way. In effect, they cast out from the Garden the concept of their own total systemic nature and of its total systemic nature.

After they had cast God out of the Garden, they really went to work on this purposive business, and pretty soon the topsoil disappeared. After that, several species of plants became 'weeds' and some of the animals became 'pests'; and Adam found that gardening was much harder work. He had to get his bread by the sweat of his brow and he said, 'It's a vengeful God. I should never have eaten that apple.' [...]

Be that as it may. Adam went on pursuing his purposes and finally invented the free-enterprise system. Eve was not, for a long time, allowed to participate in this because she was a woman. But she joined a bridge club and there found an outlet for her hate.

In the next generation, they again had trouble with love. Cain, the inventor and innovator, was told by God that 'His [Abel's] desire shall be unto thee and thou shalt rule over him.' So he killed Abel (Bateson, 1972: 434-436).

In early 2022, an important scientific investigation involving researchers from different regions of the globe received great attention in the international media. The study evaluated the biochemical contamination level in 258 rivers located in 104 countries and found that more than a quarter of the samples analyzed presented "active pharmaceutical ingredients" potentially capable of putting the health of ecosystems and humans at risk (Wilkinson et al., 2022). It draws attention to the fact that the most contaminated sites are located in Sub-Saharan Africa, South Asia, and South America, in areas with precarious infrastructure for waste management, water treatment and manufacturing of pharmaceutical products. Chemical substances such as paracetamol, nicotine, caffeine, medications for epilepsy, diabetes, and depression were found in the analyzed samples, revealing that a portion of these and other substances excreted by humans end up being drained into rivers without undergoing due treatment. The increased presence of antibiotics found in rivers could result in the development of bacteria more resistant to these components, even representing "a global threat to environmental and human health" (Wilkinson et al., 2022: 1). This is because, when they leave the human body and come into direct contact with the environment, such substances can have their chemical structures modified, generating even greater impacts on the ecosystem and human beings. Added to this is the effect of so-called trophic magnification, that is, the phenomenon in which toxic substances accumulate throughout the food chain, resulting in extreme damage to the living beings involved, including humans. This increasing degree of environmental toxicity can cause cancer, anemia, infertility, weakening of the immune system, neurological and endocrine diseases, genetic abnormalities, among others (Botsaris, 2010).

Such events point to the precariousness of water treatment systems in peripheral countries, revealing that global economic inequality evidently affects the health care of those populations under greater social vulnerability. But the research also revealed that even the most modern and efficient treatment plants, located in the most economically developed countries, were unable to completely degrade these substances, due to their significant quantity, before they reached rivers (Wilkinson et al., 2022). Notably, linked to the enormous socioeconomic inequality that crosses the globe is an increasingly accentuated medicalization or, more precisely, pharmacologization of

everyday life as a result of a reductionist, mechanistic, and fragmented view of human beings and the environment.

Gregory Bateson, a British anthropologist and biologist based in the United States at the outbreak of the Second World War, was already aware of this reductionist view, constitutive of Western hegemonic thought, at least since the 1950s. Against this fragmentary and potentially destructive logic, he proposed in his studies and publications (Bateson, 1972, 1979, 1991) a new way of thinking, an epistemology attentive to the system as a whole, to its relations and transformations, and which was capable of recognizing the systemic (or ecological) dimension of organisms, life, and the world.

Drawing inspiration from and establishing a creative dialogue with this Batesonian perspective on reality, this essay presents the main characteristics and propositions of the so-called ‘ecological medicine’ to understand how its ideas can tension or problematize this structuring worldview of the biomedical paradigm that directly impacts contemporary medical practice and the medicalization of life. Approaching the idea of planetary health, ecological medicine invites us to another way of perceiving health and, mainly, the relations we establish with the environment. In this sense, it prompts us to consider medical knowledge and practice as a pedagogical process capable of (re)educating our perception of the body, mind and environment, emphasizing precisely the deep existing connection between these dimensions. With this objective in mind, three topics will be developed throughout this essay: (1) introducing ecological medicine; (2) Gregory Bateson’s ecological epistemology; (3) connecting planetary health and environmental education.

### **INTRODUCING ECOLOGICAL MEDICINE**

“Ecological medicine” was the term chosen by the American archaeologist, lawyer, and environmental activist Carolyn Raffensperger (2005) to refer to a new field of research and action interested in (re)reconciling the care and health of ecosystems, populations, communities, and individuals. In 1994, aiming to disseminate her ideas and practical propositions, Raffensperger, with the help of colleagues linked to the environmental cause, founded the *Science & Environmental Health Network* (SEHN), a network of activists and researchers located in different locations in North America, whose fundamental objective is to provide scientific and legal support to organizations (governmental and non-governmental) that wish to implement social policies committed to the environment and to the health and well-being of all living beings, whether human or non-human.

Carolyn Raffensperger reported on different occasions (Olson, 2007)—while working as an archaeologist, studying the artifacts and material remains left by the Anasazi indigenous people in the southwestern desert of the USA—how she was simultaneously enchanted by the beauty of that lands-

cape and horrified by the environmental threats posed by dams, mining, and the inadequate disposal of toxic waste. Due to this scenario and her desire to protect the rivers, prairies, and desert of that region, she abandoned Archeology and decided to pursue a Bachelor's degree in Law at Wheaton College, Illinois, later specializing in Environmental Law.

Another prominent figure in the field of ecological medicine is the American physician, researcher, and activist Ted Schettler, also one of the founders of SEHN, where he currently serves as scientific director. Author of several books and articles addressing the relationship between the environment and health (Schettler, 2002; 2013; Schettler et al., 1999), Schettler works as a consultant for two international organizations (*Collaborative for Health and Environment* and *Health Care Without Harm*) responsible for helping health institutions worldwide to reduce their 'environmental footprints,' especially by developing more sustainable practical actions from a socio-environmental point of view.

In Brazil, the main promoter of this field of activity is Alex Botsaris, a physician from Rio de Janeiro and author of the book *Medicina Ecológica* [Ecological Medicine] (Botsaris, 2010) and other works focused especially on Traditional Chinese Medicine and the clinical use of certain medicinal plants. Interestingly, on Brazilian soil, ecological medicine seems to have established a closer relationship with so-called alternative, traditional, or complementary medicines which, especially due to their minimal impact on the environment and 'holistic vision' regarding health, come to be understood as the "gateway" to the treatment of illnesses (Botsaris, 2010: 158-160). With their emphasis on promoting health and preventing illness, to the detriment of a hegemonic medical practice focused exclusively on diagnosing and curing diseases, these 'traditional medicines' were institutionalized in Brazil after the issuance, in 2006, of the National Policy on Integrative and Complementary Practices, which contributed to disseminating and politically legitimizing a series of therapeutic practices, many of them derived from ancient knowledge and traditions, especially in Primary Health Care, the main gateway to the Brazilian Public Health System.

Before presenting in more detail the ideas and assumptions that conform ecological medicine, we must highlight some of the main constitutive characteristics of a medical practice model and a certain understanding of health and disease (and, consequently, of person and environment) that have become hegemonic in the West and against which it is opposed. Western hegemonic medicine or, more precisely, contemporary biomedical rationality (Camargo Jr., 2005), presents a fragmented view of the human being segmented into several parts or 'systems' with specific functions (muscular, endocrine, nervous, digestive, respiratory, etc.) and dissociated from the environment. It is a disease-centered medical practice, understood as an "object with a concrete, fixed and immutable existence," and not on the individual as a whole. In fact,

“the very definition of health is now assumed to be the absence of disease” (Camargo Jr., 2005: 181, free translation). Producing discourses with alleged universal validity, the biomedical model proposes to create ‘general laws’ capable of explaining the ‘mechanisms’ of body functioning or ‘human machine’ based on the isolated analysis of each of its material components. In this sense, the human body is understood as a generic entity where any individual singularity will be discarded in favor of this search for a universal explanation and a linear causality for each disease.

If the view that biomedical rationality has regarding human beings is fragmented, their knowledge will also be produced in a fragmented manner or divided into a series of disciplines or medical specialties. “Thus, the respiratory system is the territory of pulmonologists; the gastrointestinal, of gastroenterologists, and the central nervous system, depending on the angle you take, is of neurologists or psychiatrists” (Camargo Jr., 2005: 183, free translation). Due to this fragmentation of beings and knowledge into relatively autonomous disciplines in theoretical-conceptual terms, these medical specialties often become competitors in explaining a given disease, losing sight of understanding the sick person as a whole.

Regarding forms of therapeutic intervention, although several techniques can be used, in practice only medications and surgeries are considered ‘real therapy.’ As Camargo Jr. (2005) recalls, many medical schools lack a specific discipline on therapeutic interventions, opening space not only for the action of pharmaceutical industry propagandists, but also for excessive medicalization. This absence reflects the low importance given to therapy in medical education, a fact that points to another characteristic aspect of biomedical rationality: “the mismatch between the scientific project of studying diseases and the ethical project of therapy, which are not always reconcilable” (Camargo Jr., 2005: 194, free translation).

Another very defining element of the contemporary biomedical paradigm concerns the centrality that the hospital—“temple of medical knowledge” (Bonet, 2004: 11)—plays both in the scope of medical education and in professional practice. It is a controlled, highly technological environment that isolates and separates the person from their socio-environmental context, reducing them to their illness or disease. This hospital-centric and segregating vision that characterizes Western hegemonic medicine will be highly criticized not only by ecological medicine proponents, but also by Gregory Bateson himself who, in the last days of his life, was already quite weakened by a serious illness but, suspicious of the technological apparatus of medicine, decided to leave the hospital where he had been admitted and transfer to a Zen Buddhist Center in San Francisco, where he died a while later (Steil & Chiesa, 2023: 52). Carolyn Raffensperger, in turn, questions the fact that the therapeutic forms used by physicians in the hospital hardly ask us about the people we live with, our neighbors or our community. “We think

we're separate from the environment. This is laughable. With ecological medicine, the medical community now has an invitation and a charge to look at the whole system, the person within the context of her or his environment" (Raffensperger *apud* Olson, 2007).

Criticism of the reductionist and fragmented perspective that characterizes biomedical rationality is, evidently, not something new or exclusively presented by ecological medicine and its proponents. At least since the 1970s, especially after the Alma-Ata International Conference organized by the World Health Organization in 1978, one notices a questioning of the dominant paradigm in Western medicine by the defense of a medical practice aimed mainly at prevention and health promotion, focusing its approach no longer on curing a disease but on comprehensive care for the sick person in their uniqueness. The biopsychosocial model, proposed as a counterpoint to the biomedical model, and the interest in the totality of conditions that permeate and determine health problems become fundamental elements for constructing another form of medical practice that finds its main representative focus in Family and Community Medicine (Bonet, 2014). It is, similarly to ecological medicine, a *person- and relationships-centered medicine* that, however, can have their therapeutic perspective expanded to also include non-humans in its understanding of health, thus dissolving the border that separates human and more-than-human, self and other, person and world, being and environment.

In an interview with Carolyn Raffensperger, the American writer and historian Karen Olson comments that the activist would be someone capable of perceiving the interconnection of things. "We are the land, the water, the grizzly bear, the soil microbes. This is not a New Age statement. It is a medical statement. We forget that we are porous, not only through our mouths and noses, but also through our skin," says Raffensperger. For Olson (2007), the proponent of ecological medicine would be "the kind of pragmatic, interdisciplinary thinker we need if we really want to reimagine a culture as highly specialized and short-thinking as modern science is".

The article *Ecological Medicine* illustrates well the systemic approach or attention to the "interconnection of things" that characterizes Raffensperger's (2005) thinking. She begins the essay by commenting that, in the same week that her husband returned home after undergoing surgery for prostate cancer metastasis, the United States Department of Agriculture (USDA) had authorized the use of a pesticide (in reality, an "avicide") to exterminate a certain bird species that was devouring large quantities of sunflowers, an important commodity produced in the state of North Dakota. Such a bird, therefore, hindered the economic interests of farmers in that region and the specific purpose of the USDA was precisely to protect these interests.

Before adopting organic production on his farm, Fred, Carolyn's husband, worked for 20 years spraying crops without using any adequate protection and often without taking a shower right after work, as the place still

lacked running water. Raffensperger then hypothesizes that the pesticides used in North Dakota could somehow be related to her husband's cancer. A few months after the surgical procedure, Fred and Carolyn visited an oncologist who had conducted a clinical trial for this specific type of cancer using thalidomide, a medication that, in the 1950s, was indicated for treating nausea during pregnancy. However, the use of this medicine by pregnant women caused a series of terrible birth defects in their infants, "flippers instead of limbs and deformities of the genitals and digestive tract, among other things" (Raffensperger, 2005: 59). She then asks the oncologist, "a well-trained physician," what her husband would metabolize and excrete after using thalidomide, and what the fate and effect of that medication would be in the environment. Completely surprised by the question, the experienced oncologist says he never thought about the consequences of thalidomide excretion, or its derivatives, on the environment. Raffensperger reminds us that thalidomide has been used to treat tuberculosis, HIV infection, and several types of cancer. She then asks us whether, due to the intensive use of this medication, we would not be running the risk of finding possible thalidomide residues in the water or even in an animal contaminated by this chemical substance. Finally, the author concludes her argument:

Because of our experience with Fred's cancer and the lessons learned on our organic farm, I coined the term *ecological medicine* to begin describing the truths that health is derived from the natural world and that healing is an ecological process. Healthy people cannot exist in a damaged and broken world, in a world of polluted water, smoggy air, and depleted soils, nor can people be healed in medical settings that, in turn, poison the environment through incinerating plastic waste, using massive quantities of disposables, and discharging toxic pharmaceuticals and other chemicals. It is like purifying a drop of water and sending it back into the polluted river (Raffensperger, 2005: 59).

Five general principles characterize the proposal of ecological medicine: (1) prevent first, cure second; (2) think locally; (3) do no harm; (4) create conditions for health; (5) heal the whole. These principles are interconnected and constitute the ethical basis of ecological medicine. The first ('prevent first, cure second') consists of reviving the famous precautionary principle, one of the ethical foundations of Hippocratic medicine, for which prevention, more than the cure itself, should be the first and main objective of medical practice. At the historic *Wingspread Conference on the Precautionary Principle*, promoted by the Johnson Foundation in 1998 and attended by scientists, environmentalists, politicians, and lawyers from different parts of the world, this principle was officially defined as follows:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent

of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action (Science & Environmental Health Network, 2018: np).

Such an argument, evidently, is a direct attack on the hegemonic biomedical paradigm which tends to neglect prevention, either because of the difficulty in obtaining financial gains from the adoption of preventive measures, or the difficulty in understanding the cause of most diseases (especially the so-called 'chronic diseases') emerging in the 21st century.

The second principle ('think locally') posits that each location has a certain environmental characteristic that is directly associated with the health of its inhabitants. "We are creatures of place," says Raffensperger. To illustrate the argument, the author points out "that children conceived in rural Minnesota in the spring are more likely to suffer birth defects than children born in urban areas. These defects seem to be associated with the spring application of pesticides" (Raffensperger, 2005: 60). Ecological medicine is, therefore, a medicine of place, an idea that can also be found in some of the texts attributed to Hippocrates, the "father of Western medicine," especially in the treatise entitled *Airs, waters, and places* (Cairus, 2005).

Its third principle ('do no harm') also revisits the Hippocratic principle of precaution aiming to expand its scope to the non-human or more-than-human world. In other words, more than simply not generating any type of harm to the patient under medical care, harm to the planet as a whole must be avoided. "Much of Western medicine has been oblivious to its environmental footprint—from the amount of waste generated to the toxic pharmaceuticals used in its practices" (Raffensperger, 2005: 60). We stop causing harm (or, at least, reduce its amount) when we begin to educate our attention to notice the ecological consequences of each action we take. With this in mind, Raffensperger (2005) suggests we ask ourselves three questions to ensure that our actions are effectively guided by the precautionary principle: (1) Can this damage be avoided? (2) Are there alternatives to this potentially harmful activity? (3) Do we know enough to act?

The fourth principle ('create conditions for health') underlying the ethics of ecological medicine postulates that more than simply stopping causing harm, we must also carry out actions capable of producing conditions favorable to health. It is, in short, about doing to other living beings what we would like them to do to us, stimulating a genuine feeling of respect for all forms of life. As Raffensperger (2005: 60) puts it, "restoration of the earth, cleaning up the air and water, are providing an anchor for health. If it is good for the birds and the fish, it is almost certainly good for the humans. What we have forgotten is that what seems to be good for the humans but is bad for the birds and fish is probably also bad for the humans."



Finally, its fifth principle ('heal the whole') can be understood as a synthesis of the systemic vision that characterizes ecological medicine. More than treating symptoms, ecological medicine is interested in the 'basic causes,' seeking to act at the root of the problem. After all, "giving a child an inhaler but not replacing the diesel buses is the equivalent of pissing in the wind" (Raffensperger, 2005: 60), that is, a useless effort. In focusing its attention on the whole, ecological medicine dissolves the boundaries between medical, social, and environmental sciences by emphasizing the deep connection between people and the world, being and environment, human and non-human. "The world is so terribly degraded: the oceans are dying, the glaciers are melting, the birds cannot reproduce, age-adjusted cancers are increasing. Healing the world is no longer optional; it is triage; it is emergency room medicine" (Raffensperger, 2005: 60).

Within the ecological approach that guides this counter-hegemonic look at medicine, the idea of balance plays a fundamental role. In fact, according to Alex Botsaris (2010: 160, free translation) "the concept of balance is the most important criterion for ecological medicine." Balance here refers both to the search for an intrinsic harmony in the organism—something that conventional science calls homeostasis—and to the way we relate to or 'adapt' to the environment. In this regard, for ecological medicine, every illness will be understood as an ecological imbalance or, more precisely, an "inadequate adaptation of the person to the environment in which they live, either because the environment is very adverse, or because genetics and other individual and specific characteristics of patients negatively influence their adaptive capacity" (Botsaris, 2010: 159, free translation). The focus of medicine then becomes helping the individual to reestablish balance with themselves and the environment, reversing inadequate adaptive reactions and encouraging a return to a state of health, so that "individual and environment continue [or return] to live together in a harmonious and constructive way" (Botsaris, 2010: 160). This objective, however, can only be achieved if this focus falls upon the entirety of the person-environment relationship and not just on an isolated part of this process. One must maintain a systemic view regarding health, the environment and life itself. As Botsaris (2010: 124, free translation) explains:

It is possible to exemplify this by evaluating the case of insomnia, a disease whose incidence has been progressively increasing in recent years due to environmental changes. Many physicians limit themselves to prescribing medication with a hypnotic effect—which induces sleep—as the only treatment strategy. But if we look at this fact from the perspective of ecological medicine, we will deduce that current cases of insomnia have a lot to do with electric light and continued stress. Without adopting measures that act on these factors, the strategy of using only medication will certainly be doomed to failure. After some time, the patient must develop tolerance to the medications, which no longer have a satisfactory effect.

### **GREGORY BATESON'S ECOLOGICAL EPISTEMOLOGY**

The parable narrated by Gregory Bateson (1972) and transcribed at the beginning of this essay illustrates well the type of feeling and criticism that the promoters of ecological medicine present against conventional medicine. In his understanding, what the hegemonic biomedical model lacks is the wisdom to address and relate to the sick person as a whole, perceiving their totality and their environment, and not the specificities of their illnesses. In short, it would lack of a systemic perspective that, when acting with caution, would actually be attentive and concerned about life. Wisdom, totality, environment, system, precaution, life—these can be considered some of the keywords contained both in the proposal of ecological medicine and in Gregory Bateson's ecological epistemology.

Following in the footsteps of cybernetic thinking and systems theory, Bateson (1972) suggests that the lack of a systemic perspective on the world caused, for example, by the separation between mind and matter, reason and emotion, or between being and environment, results in a perception dominated or guided by the idea of a 'conscious purpose' or a 'common sense' responsible for focusing on parts and creating shortcuts to get where they want through the most linear path possible, disregarding thinking of the system as a whole. In the Batesonian version of the myth of Adam and Eve, it is the idea of doing ABC to obtain D without considering the consequences of this action (which, in the parable, resulted in God's expulsion from paradise). The problem with actions guided by a conscious purpose is taking the part for the whole, thinking that what is seen by consciousness characterizes the mind as a whole. Precisely because it is guided by a specific purpose, consciousness is, in Bateson's view, a smaller and limited portion of a larger mind; it is a screen that captures only a part of the whole. By disregarding the functioning of an organism (or an ecosystem) in its entirety, this reductionist perception tends therefore to compromise the system's total balance, resulting in often irreversible transformations. According to Austrian physicist Fritjof Capra, thought guided by a conscious purpose

[...] has led us to treat the natural environment—the web of life—as if it consisted of separate parts, to be exploited by different interest groups. Moreover, we have extended this fragmented view to our human society, dividing it into different nations, races, religious and political groups. The belief that all these fragments—in ourselves, in our environment, and in our society—are really separate has alienated us from nature and from our fellow human beings and thus has diminished us (Capra, 1996: 296).

Bateson brings as an example of this reductionist and fragmented view the efforts made by conventional medicine in its research on medications focused on specific purposes. When doctors decide that it would be good to get rid of, for example, polio, they devote enormous financial resources and

research time to focusing on these problems or purposes. At a certain point, a solution (in this case, a vaccine) will be presented and the problem will be solved. At that moment, the focus becomes finding a solution to a new problem, and so on. Medicine thus becomes a science responsible for inventing a series of solutions to countless problems. In Bateson's (1972) terms, it becomes a "bag of tricks," some of which are undoubtedly extremely valuable. "It is an extraordinary achievement that these tricks have been discovered; all that I don't argue. But still we do not know two-penn'orth, really, about the total network system" (Bateson, 1972: 433). By operating through 'shortcuts' aimed at achieving a specific objective in the quickest way possible, mainstream medical science—arrogant and blinded by the very 'tricks' it invented to control the environment—tends to lose sight of understanding the organism's totality, even failing to perceive its 'self-corrective' capabilities. This lack of a systemic view of the organism can put its own balance (or homeostasis) at risk. Thus, an action that initially purported to promote health or restore balance may end up generating new illnesses, triggering a new imbalance in that same organism.

Plenty of examples of this limited vision presented by contemporary biomedical rationality exists and some have already been mentioned previously. From the well-known 'adverse effects' described in leaflets of the most varied medicines synthesized by the pharmaceutical industry, to the not yet well-known effects caused by these same medicines on rivers, oceans and other non-human beings that inhabit the world, the lack of a systemic perception tends to become even more dangerous and powerful with the advent of new technological instruments capable of affecting the balance (and, therefore, the health) not only of an organism, but of an entire ecosystem or even the entire planet. This was Bateson's (1972: 434) greatest concern since the addition of modern technology to a way of thinking guided by conscious purpose, "now empowered to upset the balances of the body, of society, and of the biological world around us." Thus, adds the author, "the lack of systemic wisdom is always punished."

In the systemic paradigm—which, depending on the author, can also be called ecological (Bateson, 1972), holistic (Capra, 1996), or complex (Morin, 2015)—living organisms are understood as integrated totalities inserted in a process, a continuous flow of development, evolution and self-realization. This argument contradicts and problematizes the mechanistic, reductionist or atomistic explanation that seeks to emphasize the parts over the whole, conceiving the world, beings and things as finished blocks, a collection of objects or fundamental entities isolated from the environment. From a biomedical perspective, it means looking at the cellular injury and not at the sick person as a whole. Conversely, systems thinking observes and emphasizes the connections between things and not the objects themselves, as it conceives reality as a network of relationships, a dynamic web of interrelated

events. In this regard, it refers to procedural, relational, contextual, environmental thinking since perceiving things in a systemic manner means placing them within a context, an environment, emphasizing their relations. Among systemic thinkers, the idea of a network or web becomes one of the main metaphors for explaining living and open systems in all their different levels of complexity (i.e., network of cells, system of organs, individual organisms, ecosystems, etc.). The web of life, argues Capra (1996), consists of networks within networks, living systems interacting with other systems or networks.

In the shift from mechanistic thinking to systems thinking, the relationship between the parts and the whole has been reversed. Cartesian science believed that in any complex system the behavior of the whole could be analyzed in terms of the properties of its parts. Systems science shows that living systems cannot be understood by analysis. The properties of the parts are not intrinsic properties but can be understood only within the context of the larger whole (Capra, 1996: 37).

Analyzing implies dissecting, fragmenting, decomposing the whole into countless isolated parts, destroying its systemic properties. For Bateson, neglecting to look at the whole is, without a doubt, something incredibly harmful as it can lead the system to collapse, the organism to extinction. Transforming the living world into a collection of isolated and finished objects, besides being extremely arbitrary, means interrupting the processes, flows, movements and relationships that give life to this world, ultimately killing this world. Such a systemic perspective on the world and life seems therefore to align perfectly with the perception that ecological medicine develops regarding the relationship that humans establish with the environment.

It is a perspective capable of perceiving the unity of things, the person in their entirety, the being in their environment. Bateson (1991) suggests that, generally speaking, we can find this unified and non-dualistic view of the world in artistic and religious expressions. For him, aesthetic and sacred experiences promote greater attention to the whole than to the parts, emphasizing the relations between things rather than the things themselves or their attributes. Bateson understands sacred perception as a 'bridge' or a synthesis capable of connecting all beings and things thereby producing a way of giving meaning to life. But this dimension has been, in the author's view, increasingly poorly treated by Western society which has used this bridge for an exclusively marketing or utilitarian purpose, thus losing the sense of the aesthetic and sacred unity of the world. This "epistemological mistake" can, however, still be corrected, as "there is at least an impulse still in the human breast to unify and thereby sanctify the total natural world, of which we are" (Bateson, 1979: 18).

Bateson believes that an epistemology that attributes a sacred character to the lifeworld may be more accurate and appropriate for decision-making

than a way of thinking based exclusively on conscious purposes. Despite relating it to the brain's hemisphere linked to poetry, dreams, and emotions, Bateson suggests that the sacred is, in reality, the union and not the separation of two dimensions or two ways of knowing—one related to analytical rationality, and another to creative sensitivity. The sacred is, therefore, the integrating dimension of human experience. It is a way of being/knowing that establishes relationships and not barriers, sensitive to the “pattern that connects” and the “beauty of unity” (Bateson, 1979; 1991).

Corresponding to this “human impulse” to “unite and sanctify” that Bateson (1979) describes, ecological medicine—resuming, perhaps, the primordial sacred character of medical activity (Chiesa, 2022)—seeks to think and understand human beings, their life and health differently. Unlike conventional medicine anchored in biomedical rationality which, concerned with solving problems, combating symptoms and diagnosing a disease, fragments the human body with a conscious purpose in mind, ecological medicine treats the sick person (and not the disease) as a single totality integrated into the environment (nature, the cosmos, the universe) and affected by countless forces and dimensions that surround it. In this regard, it is a medicine of relationships and not of entities and particularities. Evidently, such a monistic, relational, and integral perception of the human being is nothing new and in one way or another has always been present in Western medicine imaginary. The search for a “lost totality,” producing feelings of harmony, unity, affinity, and integration with the cosmos is something that certainly brings ecological medicine closer not only to Hippocratic medical thought, but also to German romantic medicine and the vitalist paradigm of the 18th and 19th centuries. It is, moreover, something that brings ecological medicine closer to certain aesthetic and sacred experiences insofar as they all, as Bateson (1991) suggests, awaken a sense of unity or totality of human life.

As the French philosopher Georges Gusdorf (1984) argued, the idea of “the totality of the organism” is fundamental in the German romantic medicine of the 18th and 19th centuries. The notion of totality, when reflecting the total dimension of lived experience, destabilizes any supposed separation between bodily phenomena, psychic realities, and environmental contexts, presenting itself as a coherent and integrated whole to the universe. The notion of organism, in turn, also implies thinking and treating the sick person as a whole and not as an aggregate of parts or ‘pieces’ (of a ‘machine’) treated in isolation by different therapeutic modalities or specialties. In Gusdorf’s terms (1984: 258, free translation), “the human being, body and thought, makes up a unitary domain which cannot be approached as an aggregate of parts exclusive to each other, treated in the case of diseases by different therapies. It is not an organ that suffers; it is the individual as a whole.” Even in the case of a specific injury, the organism will present a global reaction, involving the entire being. Thus, “romantic medicine is a medicine of the

person” (Gusdorf, 1984: 260, free translation); a person who is not limited by his skin, as he establishes a deep communication with the environment. Hence, there is no separation between the microcosm and the macrocosm, as one is affected by the other and the two must remain in perfect harmony. This argument certainly comes close to an ecological explanation of the origin of diseases and, therefore, moves away from purely mechanistic interpretations of life, health, and disease.

Contrary to the excessive compartmentalization of medical disciplines, romantic thinkers argue that for a full understanding of life it makes no sense to separate, for example, anatomy from physiology. Pathological study must be concerned with the entire organism and the therapy, rather than aiming to find the right medicine for each symptom, must interpret these symptoms as signs of a global (or holistic) organic imbalance that requires treatment. According to Gusdorf (1984: 270), this is a phenomenological approach to illness that emphasizes the total experience of human pain and opposes the dominant mechanistic tendencies. Medicine is more than a set of techniques; it is “a medicine in the first person, and not an impersonal medicine, in the third person, which aims to treat symptoms, pathological entities and not human suffering” (Gusdorf, 1984: 277, free translation). A medicine that does not limit its analysis and diagnosis to the simple obedience of mechanical, physical, or mathematical laws which are certainly important, but do not define medical practice. The strong appreciation of intuition as a diagnostic resource affords physicians a role similar to that of an artist, poet, and diviner, who perceive the true value and spiritual meaning of life in its entirety. Connected to these immaterial dimensions, the treatment of illness must be at the same time a ‘cure of the soul,’ since it is the entire human being who is sick, and not just his physical body.

Both in the romantic conception of medical practice and in Bateson’s ecological thought, the soul, spirit or mind must be understood as integrated with the immanence of the body, matter, the world, thus configuring a single totality or a “necessary unity” (Bateson, 1979). This ‘ecological mind,’ porous and immanent to the environment, also allows us to establish a very evident connection with ecological medicine itself and its fundamental proposal that taking care of oneself necessarily implies taking care of the planet (and vice versa), given the impossibility to disconnect such dimensions. By expanding the concept of mind towards the environment, Bateson invites us to realize that we belong to a greater whole and thus depend on the existence of this whole to survive. After all, without a planet there is no human being. This seemingly obvious idea demands a true work of “ecological literacy” (Capra et al., 2005) or “education of attention” (Ingold, 2001) responsible for leading us to different ways—more systemic, ecological or sacred—of acting and relate to the environment and all its inhabitants.

### **CONNECTING PLANETARY HEALTH AND ENVIRONMENTAL EDUCATION**

The need to develop a way of being, knowing and inhabiting the world that can reestablish the connection between the “three great divisions” (Scharmer, 2016)—that is, between the self and nature (ecological division), the self and the other (social division), and the self and the self (spiritual division)—makes the task of ecological medicine assume, besides the traditional therapeutic character, an evident pedagogical or educational character. As emphasized by physician and environmental educator Maria Luiza Branco, the formulators of this proposed action understand “that health promoting doctors must resume their original and fundamental role of being an educator! Doctor, a word that means both educator and the one who acts as the ‘mediator’ between nature and being in disharmony” (Branco, 2015: np, free translation).

Developing this understanding about the connection between human health and planetary health or the complete interdependence relation between all living beings ends up transforming our understanding of the very concept of health and its connection with the environment. If the concepts of ‘environmental health’ and ‘global health,’ associated with the fields of environmental toxicology, epidemiology and public health, were initially central to promoting the reflection on the ways in which socio-environmental determinants—for example, housing conditions, management of natural resources, exposure to environmental risks, access to health services or even, on a global scale, the spread of diseases caused by environmental factors and population displacements—affect human health, today the idea of “planetary health” is gaining prominence (Whitmee et al., 2015). This proposal argues that the aspects listed above, despite being fundamental, are still strongly anchored in an anthropocentric worldview. Hence, by incorporating the health of the entire planetary system and including the ecosystems that support the various forms of life (and not just human life), the notion of planetary health would contribute to constructing another perspective, certainly more ‘eco-centric,’ about the idea of health.

Based on the proposal for planetary health, ecological medicine takes on the pedagogical task of helping to change how we perceive and relate to the environment to bring medical practice closer to or even transform it into a true work of environmental education. However, this work is not limited to assisting in the publicization of educational campaigns aimed, for example, at raising awareness about the effects of toxins or chemical residues accumulated in human beings and dumped in nature or at promoting conscious consumption habits and environmentally sustainable behaviors. More than simply transmitting information about how air, water, and soil pollution, climate change, biodiversity loss, deforestation and other environmental problems affect human health, the primary pedagogical task of ecological medicine consists in making individuals capable of perceiving the sense of unity with the environment and of interdependence between all beings. In short,

its work is to enable us “to regain our experience of connectedness with the entire web of life. This reconnecting, *religio* in Latin, is the very essence of the spiritual grounding of deep ecology” (Capra, 1996: 296).

Elaborated by the Norwegian philosopher Arne Naess (1989), the notion of ‘deep ecology’ concerns the need to transform our perception of the environment by creating a ‘new ontology’ that conceives humanity as inseparable from nature. This change in perception recognizes the intrinsic value of nature or life itself, understood here more broadly, that is, including “things [that] biologists may classify as non-living: rivers (watersheds), landscapes, cultures, ecosystems, ‘the living earth’” (Naess, 1989: 29). Naess creates the notion of deep ecology to differentiate itself from conventional (or ‘superficial’) definitions of ecology which, to him, would be more concerned with elaborating palliative measures aimed mainly at conserving natural resources and promoting the so-called “sustainable development” than in contributing profoundly to transforming how we perceive and relate to the environment.

Similarly to the deep ecology elaborated by Naess or the ecological epistemology developed by Bateson, the environmental (or planetary) pedagogy practiced by the proponents of ecological medicine should provide a certain set of techniques, strategies and experiences that enable us to develop a ‘planetary intelligence,’ that is, an ability that allows us to think in planetary terms whilst making us more “biosensitive” (Boyden, 2016), focusing on the connection between all forms of life. Such strategies range from encouraging practices and experiences closer to natural environments—such as ‘forest bathing’—to reviving the values and worldviews of original peoples regarding nature or, more precisely, the indivisibility between being and environment.

Approaching other ways of relating to and perceiving nature also involves searching for alternative understandings of health, closer to the idea of balance or harmony between all the dimensions that cross and constitute living beings. It is in this sense that a vast range of knowledge contained in so-called integrative and complementary medicines or practices will be welcomed and valued by ecological medicine. These therapeutic knowledge and medicinal traditions make use of a series of techniques and procedures that are much less invasive and aggressive to humans and the environment than those commonly employed by conventional medicine and which contribute to establishing another type of understanding about the connection between body, mind and the environment. Techniques aimed at knowledge and care of the self (Foucault, 2006)—as is the case, for example, of deep meditation practiced in different philosophical traditions around the world—can result in the complete transformation of how we perceive the environment and ourselves. To the extent that being and environment—person and world—become one, the meditative experience enables the construction of a new look within oneself that moves towards unity with the whole and the consequent dissolution of the borders separating me and the other (Chiesa et al., 2021).



A similar understanding can be found in the Quechua notion of *Sumak Kawsai*, commonly translated (or simplified) as ‘good living.’ Expression of a way of being in the world, this concept coming from the worldview of the ancestral people who inhabited the Andes Mountains refers, in the words of Ailton Krenak (2020: 8, free translation), to the “difficult experience of maintaining a balance between what we can get from life, from nature, and what we can give back.” We note, once again, that the idea of balance plays a key role in how we perceive and relate to “all the other beings that share the air with us, that drink water with us and that tread this earth together with us” (Krenak, 2020: 6, free translation).

As beings that inhabit the living organism called “Gaia” (Lovelock, 2000), we are part of and actively participate in the composition and maintenance of this living world. Educating our attention so that we are able to perceive this complex interdependence network between all the beings that make up this interconnected world is the primary task of environmental education, in connection with the notions of planetary health and deep ecology, from the perspective presented by medicine ecological. As such,

[...] we need to learn to learn in another way, without focusing our attention on the transmission and acquisition of certain fragmented and disciplinary knowledge, but rather looking wisely at everything that surrounds us, trying to understand the relationship between all the things that make up the living world that we inhabit. It is a movement of openness to life that implies a different way of engaging and learning with the environment (and with others), which is structured in a type of learning that occurs fundamentally through experience or, more precisely, in experience (*learning by doing* by educational philosopher John Dewey). A learning that takes place with things and not about things (Chiesa et al., 2021: 12, free translation).

The moment we can learn to learn in another way, perceiving, caring for and connecting with the world (and its inhabitants) without compartmentalizing it into isolated disciplines, we will build a form of learning (and caring) in the environment that values attention to the whole rather than the intention (or conscious purpose) that emphasizes the parts. We will be developing “an education for simplicity, for mindfulness, for slowing down that promotes openness to experience in a substantive way” (Carvalho & Muhle, 2016: 40, free translation).

## **FINAL CONSIDERATIONS**

“What is it about our way of perceiving that makes us not see the delicate interdependencies in an ecological system that give it its integrity?” asks Gregory Bateson in one of the snippets from the film *An ecology of mind*, dedicated to presenting his main ideas and directed by his daughter, the filmmaker, educator and environmental activist Nora Bateson. In that same

passage, Bateson concludes that “we do not see them [these interdependencies], and for that reason we break them.” As we have discussed, this disconnected and fragmented perception of the environment would be, in Bateson’s view, an epistemological mistake, but which could still be corrected if we were capable of learning to see, feel and think in an ecological, systemic or sacred manner. Overcoming this mistake and reestablishing the connection between being and environment is the challenge that ecological medicine has set out to face. To do this, it abandons old conceptions about health, illness, and the human being itself, approaching the notions of planetary health and deep ecology. In this movement, the idea of balance becomes the core guide for understanding the quality of the relations we establish with the environment, with other beings and with our own bodies and minds. Health, in this ecological conception, refers not only to the ability that an organism has to reestablish its internal balance (or its homeostasis), but also to the way it perceives and relates to everything that surrounds it. Ultimately, the very internal/external dichotomy ceases to make sense as the individual and the world are perceived as composing a single and inseparable totality.

By understanding the pedagogical meaning that structures medical activity, ecological medicine would be responsible for executing the following tasks: dissolve the barriers created by a hegemonic way of doing science (and medicine) structured in specialties that fragment life and segment reality in disconnected parts of a totality; develop an education that encourages other forms of attention to the environment; re-perceive this interdependence network that exists between every inhabitant of the planet, but which for some “purpose” was forgotten or no longer seen; and finally, recover our experience of connection with the entire web of life.

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## **STEPS TOWARDS ECOLOGICAL MEDICINE: BATESONIAN INSPIRATIONS FOR REFLECTING ON THE CONNECTION BETWEEN PLANETARY HEALTH AND ENVIRONMENTAL EDUCATION**

### **Keywords**

Ecological Medicine;  
Gregory Bateson;  
Planetary Health;  
Environmental Education;  
Deep Ecology.

### **Abstract**

Drawing inspiration from some of Gregory Bateson's main concepts and questions, this essay presents the characteristics and propositions of so-called 'ecological medicine' to understand how his ideas problematize contemporary biomedical rationality and its repercussions on everyday life and the environment. By approaching the notion of planetary health, ecological medicine invites us to another way of thinking about health and the relations we establish with the environment. It prompts us to consider medical knowledge and practice as a process that both therapeutic and fundamentally pedagogical, responsible for educating our perception of the body, mind, and environment, highlighting the existing deep connection between such dimensions.

## **PASSOS PARA UMA MEDICINA ECOLÓGICA: INSPIRAÇÕES BATESONIANAS PARA PENSAR A CONEXÃO ENTRE SAÚDE PLANETÁRIA E EDUCAÇÃO AMBIENTAL**

### **Palavras-Chave**

Medicina Ecológica;  
Gregory Bateson;  
Saúde Planetária;  
Educação Ambiental;  
Ecologia Profunda.

### **Resumo**

Inspirando-se em alguns dos principais conceitos e questionamentos elaborados por Gregory Bateson, este ensaio pretende apresentar as características e proposições da assim chamada "medicina ecológica", procurando compreender de que maneira suas ideias tensionam a racionalidade biomédica contemporânea e suas repercussões sobre a vida cotidiana e o meio ambiente. Ao aproximar-se da noção de saúde planetária, a medicina ecológica nos convida a uma outra maneira de pensar a saúde e a relação que estabelecemos com o ambiente. Trata-se de considerar o saber e a prática médica como um processo não apenas terapêutico, mas também fundamentalmente pedagógico, responsável por educar nossa percepção sobre o corpo, a mente e o ambiente, ressaltando a profunda conexão existente entre tais dimensões.