



## Epistemic Root of Ecological Crisis: Towards an Ecological Epistemology

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### **Abstract**

There has been a surge in global concerns for the ecosystem. The depth of environmental problems and their perilous consequences on the ecosystem today explains concerns. In many environmentalists' literature, it is common to blame the roots of the crisis on such factors as indiscriminate application of advances in science and technology, and the defective pattern of economic world order. Taking a departure from such commonly identified factors, this paper interrogates the root of problem from an epistemological perspective. This is due to the need to tackle it from the root. It argues that since our conception of reality determines the way we relate with the world, our ecological crisis is basically rooted in the wrong human conception of the world of nature as a ready tool for man's use and exploitation. Such conception as sponsored by the dualistic epistemic framework in traditional epistemology, focuses on pure mental cognition of the epistemic subject in knowledge production, while undermining the crucial agency of the environment in shaping mental activities. This creates an impression of man's masterly power over the world on nature. The consequence of such polarizing and exclusivist epistemic orientation is man's unrestrained domination and ill-exploitation of the environment today, resulting in the ecological crisis. As a way out, the paper proposes an ecological epistemology as a philosophical tool for rethinking the epistemic interconnectedness between man and the environment. It concludes that such ecologically-oriented epistemology offers a reconceptualization of humanity that has the potential to conserve the environment.

**Keywords:** *Ecosystem; Epistemology; Ecological Crisis; Climate Change; Environmentalism; Affordances*

### **Introduction**

Concerns for the environmental issues has taken the center stage in public discourse in recent times. This is hardly fortuitous, given the frightening dimension of the ecological crisis our world is facing today, which "has assumed such proportions as to be the responsibility of everyone" (John Paul II, 1989, no.15). Faced with the widespread experiences of environmental degradation, climate change,

global warming, to the depletion of natural resources, and biodiversity loss today, the auguries are clear enough that we are in a serious battle for the future of the entire earth's planet, and that unless humans change their environmental course, the end of the earth planet and its component structures that depend on it may soon be near. As the United Nations' recent warning on the global ecological crisis, cited in David Attenborough warns, "nature is in freefall, with biodiversity declining faster than at any other point in human history. As a result, we are now facing what scientists are referring to as the world's sixth mass die-off, with a million species facing extinction across the globe, many within decades" (2020: 1).

Associated with this global concern for the earth today, is the painful realization that the unrestraint human activities that ill-exploit and degrade the environment and nature is the leading cause of the present global environmental and ecological crisis (Etuk and Anweting, 2021: 216). In his Encyclical Letter, *Laudato Si*, Pope Francis confirms that "the exploitation of the planet has already exceeded its acceptable limits" (2015: 27), and that man's culpability for the problem is clearly manifested in the atmospheric pollution leading to climate change (2015: 20-26), the exhaustion and contamination of water (27-30) and the extinction of biodiversity (32-42), which have paved the way for the decline of the quality of life and the breakdown of the society today (43-47). On this, Raymon Dasmann writes pithily: "the human race is like an ape with a hand grenade. Nobody can say when he will pull the pin of grenade and the whole world will be destroyed" (1976: 24).

Based on this sad situation, a new ecological awareness has emerged across the globe. The public in general – environmentalists and experts from a wide range of disciplines, environmentalist groups and movements, political leaders and international community – are engaging the problem – studying its causes and solutions. However, despite the avalanche of efforts deployed and solutions proffered to address the problem, the crisis remains unresolved with increasingly lethal dimensions by the day. Arpana Das notes that "environmental degradation has reached its peak and obviously, there is a need for a philosophy of life based on a symbiosis i.e. cordiality between man and nature, instead of the Darwinian survival of the fittest" (2003: 587). In the face of this seeming dilemma and inspired by the relevance epistemic of Das' comment on the need for a relevant eco-philosophy, this paper takes a different approach in seeking solution to the problem. It interrogates the root of the problem from the epistemological perspective based on the fact that the nature of our relationship with the world is determined by our mindset or consciousness. It situates the root of the problem with the dualistic epistemic orientation in traditional western epistemology, which typically favours an abstracted concept of the mind in knowledge production, while undermining the role of the physical environment in shape our mental activities. This epistemic orientation which translates into human's mastery of the environment, impels from man an attitude of unrestrained domination and exploitation of the environment. To reverse the situation and encourage a more cordial man-environment relationship, the paper argues for an ecological epistemology, which demonstrates the basic epistemic connection between man and the environment.

### **The Ecosystem and Global Ecological Crisis**

The Ecosystem (or ecological system), consists of all the earth's organisms and the physical environment with which they interact (Chapin, 2011, p. III). This includes and the biotic (living things) and the abiotic (non-living things) components that function together as a unit, and are linked together through nutrient cycles and energy flows (Odum, 1971, p.56). The processes in the ecosystem are driven by the various species either in the terrestrial or aquatic environments; and net outcome of the actions of individual organisms as they interact with their environment in the ecosystem is the balance this ensures in the ecosystem. Based on this, biodiversity (the biological variety and variability of life on earth) plays an important role in the proper functioning of the ecosystem (Schulze, et al., 2005: 449). This dynamics of interdependence of living systems in the ecosystem is the preoccupation of ecological studies.

The concept of ecosystem embraces the environment, which is “a system of physical and biotic elements with a dynamic interaction between them” (Owosho, 2016: 250). The environment consists both organisms and their physical surroundings (Park, 1980: 28). That is, all the physical and biological elements which are constantly and systematically interacting with each other. The physical elements in the environment include space, land, waterbodies, climate, soil, minerals rock, etc., while the biological elements are composed of plants, animals, micro-organisms and man (Das, 2003: 587). The environment provides resources which supports life on earth and which also help in the growth of an interchanging relationship between living organisms and their habitat. These interactions between individuals, between populations, and between organisms and their environment form ecological systems, or ecosystems.

Ecological crisis is a term that is used to describe the sum of the environmental problems that we face today and their consequences on the ecosystem. It occurs when changes to the environment of a species or population destabilizes its continued survival. Das defines it as “the lowering of environmental quality on local, regional and global scale by both natural processes and the activities of the species particularly man, occupying the habitat” (Das, 2003: 588). It can occur “due to the destabilization of the ecosystem brought about by the natural hazards like earth quakes, volcanic eruption, faulting, cyclonic storms, landslides, avalanches etc., and harmful anthropogenic (man-oriented) activities” (Das, 2003: 588). It is clear from this understanding that ecological crisis can result from some natural causes or human activities. The major concern of this paper is with the human causes as shall be examined later.

For the terrestrial ecosystems, the ecological crisis today includes such problems as environmental pollution, climate change, global warming, stratospheric ozone depletion, vast quantities of toxic waste, biodiversity loss, air pollution, water pollution, habitat fragmentation, soil degradation, and deforestation. For the aquatic ecosystems, it includes undue exploitation of marine resources (for example overfishing), marine pollution, microplastics pollution, and the effects of climate change on oceans (e.g. warming and acidification) (Alexander, 1999: 14). What appears to generate greater global concern today is the issue of climate change, which consists the alteration in the atmospheric composition of the earth, caused by greenhouse gases emissions – the rapid increase in carbon dioxide and methane levels in the earth’s atmosphere that is causing severe climate events around the world. The intense and rapid increase in the level of these two greenhouse gases in the atmosphere, has resulted today in the rapid warming of our atmosphere and earth’s surface, known as global warming, which is the ongoing increase in global average temperature – and its effects on earth’s climate system. This creates an imbalance in our ecosystems which are unable to cope with the rate and speed of the change (Lovelady and Shivant, 2019: 1).

The consequence of this is the present catastrophic global environmental crisis such as severe storms, floods, hurricanes, melting of ice sheets in the North and South poles, air and water pollution, water scarcity, food insecurity, deforestation, rising sea levels, loss of species and habitat biodiversity, and also the start of the sixth mass extinction of all the species of our planet – including humans. John Coates summarizes the problem this way: “The environmental crisis is the modern canary in the mineshaft of modern society... plants and animals are being extinct in in unprecedented manner, the oceans’ fisheries are in decline, water is increasingly polluted, and even the air we breathe – so called ‘fresh air’ – is frequently smog (contaminated by industrial and agricultural pollutants)... industrial processes have released toxins on earth which have altered the environment so severely the reproductive capacities of animals are affected...” (2002: 1).

### **Commonly Identified Human Factors**

Many scientists, environmentalists, theologians and others, who have ecological concern, have theorised about the different anthropogenic factors responsible for today’s ecological crisis. Among some commonly identified factors include inappropriate use of developments in technology, which have given people a greater ability to use the environment and its natural resources for their own ends (particularly

since the Industrial Revolution); “industrialization, urbanization, growing population, overconsumption, economic growth...” (Dempsey and Butkus, 1999: 29). Leonardo Boff writes that despite its benefits, technology has turned out to be highly destructive and all the more ecologically destabilizing, as it has become the source of the man’s exploitation of natural resources, soil poisoning, destruction of the forests, atmospheric pollution, chemicals in food and so on (1997: 64). Thompson Copperfield adds that with the progress in industrialization, urban centres increased inordinately due to lack of vision for the need of planning, and by this way creating social disorder and disorder of the natural environment” (2004: 292).

Other thinkers analyse the factors from other different angles as political, social, economic, cultural, spiritual and historical perspectives (Devadoss, 2016: 31). For instance, in his “The Historical Roots of our Ecological Crisis”, Lynn White, advanced many points to show that the Christian view that nature is given to man to subdue, dominate and exploit has helped to sponsor human environmental degradation with the concomitant deadly effects on the environment. According to him, “Christianity...not only established a dualism of man and nature but also insists that it is God’s will that man exploits nature... Christianity bears a huge burden of guilt and we are likely to encounter a worsening ecological crisis until we are in a position to discover a new religion or rethink our old one” (White, 1967: 1203). From the historical perspective too, Dumanoski argues that “the environmental crisis can be regarded as a crisis for humanity and modern civilization as the bedrock assumptions of our civilization are increasingly at odds with world we now inhabit” (2001: 1).

Yet, some others blame it on the materialist and consumerist culture of man today, the defective pattern of growth in world’s capitalist economy and the emergence of free market economies (Sayre, 2010: 48). Devadoss (2016: 31) attributes the causes to “the hallucination of progress or growth, consumerist and throw-away culture, excessive anthropocentric approach to nature”. According to Das, “the global environmental crisis confronted today is partly rooted in rapid population growth in the south and in the consumerist culture in the north” (2003: 590). It is for this reason that Pope John Paul writes that “the present global ecological crisis is essentially a moral problem” (1989: 6), and Pope Francis sees it as “a spiritual problem requiring from man a moral and spiritual response” (2015: 9).

### **Environmentalists’ Solutions and their Challenges**

A range of solutions to the problem have been proposed by several individuals and groups engaged in environmental issues under the general term of environmentalism to create. Most of these solutions and proposals are, understandably, based on such aforementioned commonly identified factor. Presently, the United Nations Environmental Programme (UNEP) is a leading the global authority on the environment issues seeking a variety of solutions to challenge. Within the scope of these solutions are such technology-related ones as: investment in cost-effective and sustainable energy technologies, elimination of distorting subsidies favouring fossil fuels at the expense of renewable alternatives, the development of climate-friendly markets (e.g., carbon trading), targets for concentrations of greenhouse gases, and rationalized consumption and production patterns (Melnick et al., 2005, p.28).

Unfortunately, such technology-related solutions have not been very successful in addressing the problem. Instead, technology has remained highly ecologically destabilizing through its involvements in rapid industrialization, environmental degradation and atmospheric pollution. Every year, representatives of governments meet, especially at the UN forum, to decide how to cut down carbon emissions to mitigate climate change, yet, nothing much seems to come out of such meetings. Yet, political obstacles, forms of exaggerated nationalism and economic interests often show up as a barrier to any such international cooperation. Whereas the global northern countries insist that developing southern countries should clean up their industrial activities and cut down on production to contain carbon emissions, the global southern countries, on the other hand, call the high build-up of carbon in the atmosphere a direct consequence of reckless industrialisation and wealth creation by the north over the past century and

demand to fund the cost (Leo, 2016: 10). Additionally, southern countries, claimed the right to continue to develop their industrial and infrastructural base to help their peoples to achieve a reasonably good standard of living. As a result, not much action is undertaken to slow down the atmospheric pollution with carbon emissions, and other greenhouse gases.

Variety of solutions proposed based on other human factors as aforementioned – historical factor, the consumerist culture, the defective concept of growth and world economic order, the anthropocentric view of nature, etc., have also not yielded much desired results due to ideological disagreements, amongst others. For instance, J. Davis, considers White’s accusation of Christianity for sponsoring the anthropocentric view of nature through history as a limited understanding of the Christian anthropology (2004: 270). For modernist thinkers after the mind of Nietzsche, “as far as our modern society is concerned, the will to power-domination is that, which characterizes human beings” (Boff 1997: 69). This implies that everything in the universe exists exclusively for man’s domination and exploitation. Besides, despite such exhortations for all humans and countries seeking development to extend active solidarity to one another and have consideration for the universal common good (Pope John XXIII 963: 76-80), the U.N. World Commission on Environment and Development (1987) that harps on the need for sustainable development for nations as well as the necessity of our responsibility in developmental activities, and the U.N. 2030 Agenda for Sustainable Development (2015), which highlights the connections between the environmental, social and economic aspects of sustainable development, not much can be said about the commitments of humans and nations to such ideals and demands towards environmental protection and conservation.

Instead, the world continues to groan under the heavy burden of ecological crisis as not many nations appear ready to embrace the connection between sustainable development and intergenerational solidarity or to support their sustainable developmental programs especially through the reduction of their energy consumption and economic activities (Francis, 2015: 52, 159, 193). Most people and countries continue to “make consumption a way of life, to convert the buying and use of goods into rituals, and to seek satisfaction in consumption: to have things consumed, burned up, worn out, replaced, and discarded at an ever-increasing rate” (Wielenga, 146-147).

Moreover, many countries, especially developed ones have continued to equate power with economic growth that aims at utmost profit, without any concern about the various ways and means through which harm is done to the environment such as land degradation, soil erosion, atmospheric pollution, water contamination, extinction of species, depletion of natural resources and the like. Leonardo Boff sums this up thus: “no matter which terms we would like to employ in order to refer to such development, whether self-sustaining or self-generating, it never gets disassociated from its economic origins, namely, rising productivity, accumulation, and technological innovation” (1997: 65). Given the apparent disappointing outcomes of these regular solutions to the ecological crisis, which signifies the merely symptomatic nature of the aforementioned commonly identified factors (upon which they are based), there is the need to go to the bottom of the matter in order to find lasting solution to the problem. At this point, it becomes important to examine the epistemic root of the problem.

### **The Epistemic root of Ecological Crisis**

The mind is the seat of human consciousness. Its mode of operation has practical implications on the quality of human interpersonal relationships and man’s relationship with the world: “The behaviour of observers depends on their perception of the environment” (Gibson, 1979: 127). In other words, the way we relate with the world and people around us depends on the way we conceptualize reality (Chaffee, 2009: 437). Hence “all knowledge is orientation” (Honenberger, 2023, 39), and “if your mental map of the world is reasonably accurate, then it will provide reliable guidance in helping you figure out things and make intelligible decisions. On the other hand, if your mental map is not accurate, then the results are likely to be unfortunate and even disastrous” (Chaffee, 2009: 437). It is evident from this fact that the root



cause of our ecological crisis is in the nature of our mental conception of the world of nature, which is based on our dominant epistemic orientation through history – especially from the framework of western epistemology, which deals with human knowledge.

Western epistemology is an aspect of western philosophy. Also called the theory of knowledge”, epistemology “studies the nature, sources and validity of knowledge” (Blocker and William, 85). Typically, the traditional epistemology focuses on the pure cognition of the individual epistemic agent who has unlimited mental/logical ability to abstract, synthesize and organize the data or features of objects of sense experience into recognizable categories, in order to give phenomenal meaning to things in knowledge production. In other words, the standard epistemic orientation as given in traditional western epistemological frameworks takes knowledge as “a mental construct, regardless of its material base” (Carvalho, 2016: 1)., whereby, knowledge becomes a representation of reality which is processed through mental abstraction and logical operation detached from its empirical base. Such epistemic orientation polarizes the knowing process by separating the knowing subject from the object of knowledge, confers epistemic primacy of the subject while undermining the role of the objects. This has had strong negative impact on the way man perceives himself and his relationship with the world of nature. A brief look at the views of some notable philosophers in western epistemology history will justify this claim.

The earliest classical formulation of epistemic dualism and polarizing approach to knowledge can be traced to Plato’s theory of knowledge. Plato assumes that knowledge is a *factive* mental state, which consists in the mind’s grasping of the Forms of things (Republic 476e–480a). The Forms, according to him are “the changeless, eternal and nonmaterial essences or patterns of things of which the actual visible objects we see in our physical environments are only poor copies” (Stumpf, 1989: 72). With his four segments of the Divided Line (Republic 509d– 511e), Plato illustrates the ascent of the mind from imagining, belief, thinking to knowledge – from the objects in the physical world to the Forms (which are the real objects of knowledge) in the world of Forms. Knowledge, therefore, represents the mind as completely released from sensible or visible objects in the environment, and dealing directly with their Forms or Ideas in the world of Forms. Evidently, Plato’s theory of knowledge presents an epistemic dualism, which clearly disregards and devalues the materiality or physical integrity of the visible objects of knowledge in the environment (which he regards as mere shadows or mere copies of the real Forms), in favour of mental abstraction of their ideas and full apprehension of their Forms in the supra-sensible world. Ana Smokrović says that “Through centuries, the center of epistemology occupied an isolated and rational subject who was not placed in real-life situations in the analysis” (2002: 11).

Aristotle in his epistemology, unlike Plato, gestures towards the earth by indicating the importance of acquiring knowledge of the real world of nature as we observe it. However, in his distinction between the accidental qualities of objects and their essential qualities or substances (essences of things), he shows his agreement with Plato’s theory of knowledge by attributing to the mind role of abstracting and retaining such essential qualities or substances of things in knowledge production (Book B, 5). Thus, despite his disagreement with the Platonic transcendent Forms, Aristotle agrees with Plato’s basic epistemological doctrines. For Aristotle, as cited in Joseph Omeregbe, our knowledge begins with ideas acquired through sense experience, though the senses are not adequately structured as to penetrate the hidden essences or substances of things. The mind “receives and transforms itself into them, thereby turning them into concepts otherwise known as universal ideas or abstract ideas (1998: 66). Aristotle’s epistemology has sustained the matter and form, substance (essence) and accident, subject and object dualism in representational thinking in western epistemology.

This sort of anthropocentric thinking and epistemic dualism was strengthened in the sixteenth century by Rene Descartes, “the father of modern philosophy” (Stumpf, 1989: 254). As a rationalist, Descartes, underscores the ultimate role of the mind in the process of acquiring knowledge of reality. In his *Meditations on First Philosophy*, believes that only the mind, armed with the faculties of intuition and

deduction, can guarantee us true and certain knowledge of reality. For him, man's rational orderly intellect is superior to the irrational disorderly nature; and, nature is best known by breaking it into parts, reasoning from the small to the large or from the particular to the general, from universal doubt to ideas that are indubitably 'clear and distinct' to the mind (1931: 144). This is the epistemic foundation of his *methodic doubt* and its conclusion of the *cogito ergo sum* (I think therefore I am), which provides the epistemological foundation for the knowledge of other realities (Skirry, 2005: 3). By implication, the physical world as perceptible through the sense is not what leads to knowledge, but the mind.

Thus, Descartes reduces the human person to a thinking-self: "A thing that doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sense perceptions" (*Second Meditation*, II, 19), distinct from the physical body, which affirms his own existence through the act of his thinking before all else. Such a priori certainty of the thinking-self, is not only prior to but also enjoys epistemic primacy above every other reality deductively re-established on the basis of its epistemic certainty and foundation, which includes God, the physical body, and a world of bodies external to the mind. In other words, for Descartes, consciousness is the first given in experience before the external world, whose existence depends on the mind or the thinking self!

Although the empiricist, John Locke, affirms the senses rather than the mind as the source and foundation of all our knowledge, as indicated in his *Essay Concerning Human Understanding* (2, 1, 2), yet, while classifying our ideas into simple ideas (the raw materials out of which knowledge is made, received passively by the mind through the senses) and complex ideas (put together by the mind as a compound of simple ideas) (Stumpf, 1989: 250), Locke re-introduces the epistemic primacy the human mind over its objects of experience in the environment. He emphasizes the active role the mind plays in receiving and retaining simple ideas and making complex ones out of them in understanding the world. Thus, the Lockean epistemology reflects on a representational view of perception and an information-processing practice, where knowledge is a "mental construct"; for, the mind is actually the active agent in the process of knowledge production. By implication, our actions towards the external world are determined by the mind's faculty of cognition and volition.

The German modern philosopher, Immanuel Kant introduces a transcendental idealistic dimension to this framework of epistemic dualism in western epistemology. In his *Critique of Pure Reason*, Kant presents knowledge no longer as a reflection of what has been given from the outside, but as "a personal construction in which the individual imposes meaning by relating bits of knowledge to some (mental) organizing schemata" (Resnick, 1985: 130). In what is sometimes termed a "Copernican revolution," Kant argues that objects conform to our ways of knowing; that our mind, infused a priori with certain natural structure or mechanisms with which it constructs knowledge out of sense experience, is actively involved in creatively synthesizing and categorizing knowledge, and is not merely a passive recipient of experience (A92/B125). Kant, thus, considers the acquisition of knowledge as an active mental process, in which the mind actively restructures the data it receives from experience, making them to conform with own a priori contents or structure, namely: Forms of intuition – space and time, and Categories of thought. Hence, the structure of the human mind has a profound influence on our knowledge because whatever is known based on these structures. This means that we cannot know what the things are in themselves, except as they are restructured or pre-determined by our mind. By implication, reality is unknowable as what we call reality is a reconstructed version of it by the power of the human mind.

With his epistemology, Kant promotes an epistemic constructivism according to which all "knowledge is a compilation of human-made constructions" (Raskin, 2002: 4), and not "the neutral discovery of an objective truth" (Castelló, and Botella, 2006, 263). He, thereby, not only demonstrates the transcending epistemic power of the human mind to reconstruct reality in line with its internal structures, but also that the world of nature depends solely for its meaning and value attribute to it the human mind. This has created an impression about man of an absolute exclusivist subsisting subject different from and

superior to the environment whose meaning and significance is a product of his mental representation and interpretation. Such epistemic ambivalence/dualism has had negative consequences in man's relationship with the environment or world of nature. This has encouraged the tendency in man to understand and relate with the world in a disjointed, polarizing and exclusivist way, negating the mutual complementary interrelatedness between man and the world of nature (Asouzu, 2011:16).

### Implications for Environmental Crisis

Fidelity to such epistemic dualistic conceptual scheme from the traditional western epistemology, has led to the wrong understanding of the relationship between man and the rest of the world, leading to the human abuse and misuse of the natural world. The dangerous conceptual polarization of realities emerging from this epistemic dualism has given birth to the superiority-inferiority syndrome between man and the environment, where man occupies the superior place and the environment is reduced to an inferior status. It creates a consciousness of humans are the ones who give meaning and value to the world of nature, which has no intrinsic value. With this come the feeling that humans are to dominate and control environment – a ready tool to be used and exploited for the satisfaction of man's needs and interests. Lorraine Code observes that it is this imaginary of mastery that pervades our language of human development: we conquer nature; we conceive cognitive development in terms of 'mastering' knowledge and information, of 'mastery over' one's physical social-natural surroundings, over one's emotions, over one's body (2006: 134).

The consequence of this is man's unrestrained domination and ill-exploitation of the environment. Jungan Moltmann helps us understand better the implication of this masterly power of humanity over the world of nature rooted in the dualistic and polarizing epistemic orientation from western epistemology: "within the circle of science and epistemology, there exists some kind of *divide et impera* (divide and rule) logic that is 'the world of nature is to be broken down into component parts and mastered for human use' (Petty, 1996: 4). Code says that this language of man's superiority and mastery over nature, "permeates naming, normalizing and naturalizing our experiences of the world and the Other" (2006: 134). On this, Pope Francis says, "Often what was handed on was a Promethean vision of mastery over the world, which gave the impression that the protection of nature was something that only the faint-hearted cared about" (2015: 116). Thus, the mindless exploitation of the earth's resources and degradation of the environment in diverse ways by man today (as aforementioned), leading to the present ecological crisis, stem fundamentally from the polarizing and exclusivist mindset of humans as oriented by the dualistic epistemic framework in western epistemology.

### Towards an Ecological Epistemology

Having established the epistemic root of our ecological problem, it is only proper to argue for an ecological epistemology as an alternative dynamic framework of complementarity in epistemology that can reset the mindset or consciousness of humans towards a relationship of mutual dependence and interdependence in complementarity with the natural world. Such epistemic framework will highlight the existential structure as "Being-in-the world" and "Being-with-others" (Heidegger 27, 160), which connotes not just a spatial relation of 'being-in' another, but also an existential category of 'living-in' an environment (Okeregebe, 2016: 43). Such a dynamic relationship of interconnectedness between man and the world in epistemic matters is what ecological epistemology represents, which I here propose as a solution to our ecological crisis.

Thus, ecological epistemology "encompasses the knowledge emerging from the assumption of symmetry between things and thought, human and nonhuman beings, and historical and natural processes" (Isabel, 2016: 1). It seeks to overcome the philosophical constructivism of the traditional epistemology's dualistic orientation that takes knowledge as a mental construct, regardless of its material base. On the other hand, ecological epistemology shows knowledge as a practical action that requires for



its successful outcome the weaving together of the humans and the environment with the full respect of their integrity as “coresidents, and ‘co-citizens’ of the same world” (Isabel, 2016: 1). Within this epistemic framework, it is not necessary to posit the logical and epistemic primacy of either the epistemic agent (man) or the environment; for, both are equal “partners” in the practice of knowledge, so that eventually, knowledge is no longer “about”, but knowledge “with” the environment (Isabel, 2016: 1).

For this reason, unlike the representational idea of knowledge in the standard framework in traditional epistemology, ecological epistemology involves a perceptual theory in which the knowledge we have concerning the environment is much more direct. Not direct in the sense that perceptual knowledge somehow avoids going through different brain filters, but rather, in the sense that there is no representational mediation between the environment and our perception of it. Thus, perception in the ecological epistemology perspective is much more pragmatic in that our perception is tied up with human behaviour and opportunities the environment offers man for such behaviours. Evidently, our environments, afford all animals (including man) a lot opportunities for behaviours. Such opportunities are what James Gibson calls “affordances”: “The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill” (Gibson, 1979: 127). (1979: 127). These include terrain, shelters, water, fire, objects, tools, other animals, and human displays, etc. (Gibson, 1979: 127).

Hence, “to perceive the surfaces(environment) is to perceive what they afford” (Gibson, 1979: 127). In other words, in perception actions are directly conveyed to us by the environment, and not only that the ‘values’ and ‘meanings’ of things in the environment can be directly perceived, they are also “external to the perceiver” (Gibson, 1979: 127). The perceiving of these affordances is based on the pickup of the information in touch, sound, odour, taste, and ambient light. It is just as much based on stimulus information as is the simpler perception of the support that is offered by the ground under one’s feet. By way of illustrating the affordance relationship of support that exists between man and a ground Gibson says:

If a terrestrial surface is nearly horizontal (instead of slanted), nearly flat (instead of convex or concave), and sufficiently extended (relative to the size of the animal) and if its substance is rigid (relative to the weight of the animal), then the surface affords support. It is a surface of support, and we call it a substratum, ground, or floor. It is stand-on-able, permitting an upright posture for quadrupeds and bipeds. It is therefore walk-on-able and run-over-able. It is not sink-into-able like a surface of water or a swamp, that is, not for heavy terrestrial animals. Support for water bugs is different (Gibson, 1979: 127).

This means that the ground in the environment, naturally affords man such opportunities for action as standing, walking and running, etc. Hence, when we perceive the ground in the environment, we do not have a sensation input and then infer that the ground is for standing, walking and running, etc., but rather, we directly see that the ground as available for such actions based on the pickup of the information in touch, sound, odour, taste, and ambient light. In other words, the affordances are relationships that exist naturally and do not require preexisting knowledge or inferences from analysis and logical deductions as is the case with representational knowledge.

Ecological epistemology engages this idea of directly perceived affordances, which clearly does away with the necessity of mental representations of objects in traditional western epistemology, which creates a dualism between man and the environment, grant epistemic primacy to man (the epistemic subject), while denigrating the environmental (the epistemic object) components in the process. From this ecological theory of perception, it is clear that we are not estranged from the environment epistemically, but rather, intimately entangled with it due to our pragmatic orientation with our ecological niches. We are, so to speak, epistemically at home with our environment through the natural relationship based on

the affordances it offers to all animals. Ecological epistemology, thus, challenges the traditional epistemology's autonomous exclusivist and self-actualizing subject.

This epistemic framework underscores not only the direct experience and epistemic relationship between man and the environment, but also the fact of the materiality and objectivity of the environment around us; for the affordances of the environment are in a sense objective, real, and physical, unlike values and meanings in the traditional epistemology, which are often supposed to be subjective, phenomenal, and mental. Against the imprisonment of knowledge within the human mind in traditional epistemology, where knowledge is knowledge "about", in ecological epistemology, knowledge becomes knowledge "with" the environment, because, "[A]n affordance points both ways, to the environment and to the observer" (Gibson, 1979: 129). We know what the ground in our environment affords and this knowledge guides our behavior so that we may cope with the environment sufficiently. Instructively, the affordance is not bestowed upon an object by a need of an observer and his act of perceiving it. An affordance of something does not change as the need of the observer changes. The observer may or may not perceive or attend to the affordance, according to his needs, but the affordance, being invariant, is always there to be perceived. The object offers what it does because it is what it is. In addition, the affordances would continue to exist in the absence of the perceiver. As long as the animal exists, the natural world will continue to afford certain actions.

Based on this idea of affordances, environmental degradation resulting in today's ecological crisis happens because man has selfishly altered the shapes and substances of the natural environment and by doing, changed what it naturally affords animals, including himself. That is, the affordances nature grants to animals are getting lost through environmental degradation through the mindless alterations of the environment by man, which results in ecological crisis:

The layout of surfaces has been changed, by cutting, clearing, levelling, paving, and building. Natural deserts and mountains, swamps and rivers, forests and plains still exist, but they are being encroached upon and reshaped by man-made layouts. Moreover, the substances of the environment have been partly converted from the natural materials of the earth into various kinds of artificial materials such as bronze iron concrete and bread. Even the medium of the environment—the air for us and the water for fish—is becoming slowly altered despite the restorative cycles that yielded a steady state for millions of years prior to man (Gibson, 1979: 129).

Man alters the environment in these injurious ways because "he wants to make more available what benefits him and less pressing what injures him" (Gibson, 1979: 129). However, in making life easier for himself, he has eventually made life harder not only for most of the other animals in the ecosystem, but also to himself, because the benefits of the affordances of nature are disappearing from being opportunities for all animals.

### **Implications for Environmental Protection and Conservation**

The ecological epistemology framework has enormous implications for environmental preservation and conservation. can be extended from philosophy of mind to philosophy of the environment. While this new epistemological framework provides a clear motivation for abandoning traditional dualisms between mind and world, subject and object, it also provides a philosophical basis for rethinking of the status of the physical environment as well as relationship between man and the natural world. By taking our minds out from the abstracted space of Reason, ecological theory puts humanity right back into a relationship of mutual reciprocity with nature; and when we appreciate our epistemic embeddedness within an environment, as ecological epistemology demonstrates through the concept affordance relationship, we arrive at a position readily adaptable for environmental protection and conservation.

With the epistemic ideals of ecological epistemology, we get rid of the traditional epistemic bias against seeing ourselves as superior to the physical world that is just there for our unreserved exploitation and all manners of manipulations for the fulfilment of our human never-ending human desires. It enables a conception of humanity that is intimately connected with the surrounding environment epistemically, being aware of the “epistemic dignity” or and physical integrity of the environment, which are necessary conditions for an authentic relationship of complementarity between man and the environment. This provides the epistemic framework and motivation for environmental preservation and protection, with the awareness that since we are intimately related with the environment through the affordances, our acts of environmental degradation ultimate harms our survival and that of other others in the ecosystem. This is because by degrading and mindlessly altering the natural environment, we erode the natural affordance they convey to animals. This way, the abiotic component of the ecosystem would no longer be there to support its biotic components. With this conceptual scheme, we can appreciate and keep ever alive a sense of "fraternity" with the earth and see that it becomes for us, “our common home” and “not just a resource to be exploited but, a sister with whom we share our life and a beautiful mother who opens her arms to embrace us” (Francis, 2015: 1). For this reason, the commitment of ecological epistemology to reach out and protect the environment becomes another way of reaching out to protect ourselves and the entire earth planet.

### ***Conclusion***

In solidarity with the global search for theoretical options that can lay to rest the challenge of ecological crisis, this paper investigates into the root cause of the problem, which it identifies with the epistemic dualism of traditional western epistemology. This conception of epistemology tends to encourage and attitude of hostility from man against the environment by detaching the epistemic agent (man) from the epistemic object – the environment which focuses on the pure cognition of the epistemic agent, while ignoring the crucial agency of the environment in shaping mental activities. Such dualistic epistemic orientation confers epistemic primacy on man and occasions the wrong understanding of man/environment relationship. The effect of this is the current serial environmental degradation by man, leading to the present ecological crisis.

To resolve this problem, the paper argues for ecological epistemology, which reestablishes man in an intimate relationship of epistemic connectedness with the environment though the natural opportunities (affordances) the environment offers man to support his humanity. By divorcing itself from this traditional theory of epistemic detachment of man from the environment and representational concept of knowledge, ecological epistemology, thus, offers a reconceptualization of humanity that has the potential to change the way we perceive ourselves as related to the environment, allowing for a newfound enthusiasm concerning environmental protection and conservation.

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