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## **Aristotle's Notion of Friendship in Focus and the Role of Technology in Climate Sustainability**

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### **Abstract**

The issues caused by climate change can be categorized as air, land, and water pollution, all of which threaten man's survival. This study aimed to challenge the kind of relationship which humans have with the environment at present, and to encourage humans to view and treat the environment as a friend. It explored how humans can adopt Aristotle's notion of friendship and deploy technology (artificial intelligence) for environmental sustainability. It argued that the type of relationship and interaction that exists between humans and the environment needs to be redefined. Aristotle's notion of friendship is rooted in beneficence and goodness, provoking mercy, kindness, generosity, and charity. Climate change, which is attributive to human activities, has led to many prevailing environmental issues like the extinction of species, environmental degradation, carbon emissions, drought, health risks and poverty. The study evaluated how man could adopt AI to guarantee the survival and sustainability of the environment which happens to be a reliable and dependent friend of man. The paper adopted the method of critical analysis to challenge the status quo of indiscriminate carbon emission by arguing that the current level of carbon emission is not sustainable as it is posing great threat to the environment. But with the adoption of AI technology, human's carbon footprint will reduce drastically, and climate sustainability can be achieved. In this way, humans will treat the environment as a friend. It emphasized that AI technology; using unmanned and rechargeable vehicles that can provide ecofriendly alternatives can reduce carbon emissions and guarantee environmental safety. This will cement a friendly relationship between human beings and the planet. In view of this, the study argued that Aristotle's notion of friendship can be a template for a better relationship between humans and the environment.

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**Keywords:** Friendship, Goodness, Beneficence, Environment, Climate Change, Interaction.

## Introduction

It cannot easily be thought that there are human beings who do not have friends. Even brute throughout history were thought of having friends who served as close confidants. This implies that it may not be possible for any human to thrive on the social scene without having friends. Friendship is a way of maintaining beneficial relationships within every society, so, in society, one cannot make friends with just everybody. One makes friends with individuals who one feels align with one's personality, purpose and goals in life. Aristotle's idea of friendship is predicated on the notion that friendship is a virtue or implies virtue and is besides most necessary with a view to living a worthy life (Aristotle, 2009). Friendship is not just a virtue for Aristotle; it is held in high regard. This is justified in the saying that "when men are friends, they have no need of justice, while when they are just, they need friendship as well, and the truest form of justice is thought to be a friendly quality" (Aristotle, 2009, Bk viii, Chpt. 1, 1155a27). This is because, when men are friends, they need not be unjust to themselves, they must be on equal footing and care for each other even in the most perilous times, because friends are expected to be both sympathetic and empathetic towards one another (Hossain, 2023). The relationship between man and the environment can easily be described as that of friends who need to take care of each other, and see to each other's needs, and not be unjust to each other. This work uses Aristotle's notion of friendship to draw attention to the question of climate change.

Climate change threatens human health and survival as well as that of the environment in which humans inhabit. It is mostly recognized as a global shift in weather and temperature which is mostly caused by human activities. The idea that climate change is caused vastly by human activity is noted by Fuinhas, *et al.* (2021); that climate change is caused by extensive use of fossil fuels which causes problems in land use and production, and interferes in the carbon cycle, which in turn affects the availability of essential resources such as drinking water. Pollution produced mainly by carbon dioxide increases the acidity of the oceans and compromises the marine food chain. In addition, there is also the dumping of waste in rivers, and the use of toxic chemicals for fishing, and deforestation, which are all because of industrialization and the need for humans to make the planet fit into our concept of comfort and convenience (Sheng, *et al.*, 2021). All these human activities are born out of the kind of interaction that occurs between humans and the environment which have paved the way for global challenges such as extinction of species, health risks, environmental degradation, drought, and poverty. Thus, in the pursuit of growth and comfort, human beings have left the planet behind.

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Unmanned (including autonomous and driverless ones like Tesla) vehicles and drones are important for the reduction of carbon footprints and could also enhance scientific research into the impacts of human activities on the environment (Vishaw, *et al.*, 2019). Mwaura (2024, p. 69) argues that the use of drones and autonomous machinery in human activities such as transportation, agriculture and manufacturing would go a long way in guaranteeing climate safety and security across the globe. Similarly, Robinson, *et al.* (2022) also mentions that the use of these AI technologies can enhance the accuracy of decision-making and information gathering that could lead to more climate-friendly policies in various sectors. Humans can better leverage on these technologies to improve climate safety and restore balance in the interaction between man and the environment. This is the friendship based on virtue which is aimed at a mutually beneficial friendship between human beings and the environment. Therefore, AI holds enormous promises for the normalization of relationships and improving the nature of interaction between humans and the planet, to achieve environmental safety.

This study argues that the sort of interaction that exists between humans and the environment needs to be redefined to reflect mutuality. Humans should now view the environment as a friend. This is one true way through which we can save humanity from the troubling issues of climate change. Friends are not expected to hurt each other, they are expected to love, care, and preserve each other for their own benefit. Since it is unthinkable that humans can survive without the environment or nature, it is important that humans prevent the slow destruction of the environment at all costs. Aristotle offers three kinds of friendship: friendship based on utility, friendship based on pleasure, friendship based on virtue, and avers that the first two are easily dissolved (Aristotle, 2009, p. 1156b). When it comes to the issue of climate change, friendship based on virtue is the most appropriate since it focuses on humans and nature as being good towards each other, which is, loving and benefiting from each other. This study employs the methods of critical analysis and criticism; it critiques the current interaction that exists between man and nature and explores possible grounds on which such interaction can be improved upon and redefined for the benefit of humanity.

### **Aristotle and the Notion Friendship**

Friendship is thought widely to be characterised by mutual affection and trust, where parties involved selflessly act for the benefit of one another. Aristotle divides friendship into three types (pleasure, utility, and virtuous), it is however important to focus on the third kind of friendship, which Aristotle also calls friendship of the good. Here, Aristotle points out that “perfect friendship is the friendship of men who are good, and alike in virtue; for these wish well alike to each other qua good, and they are good in themselves” (2009, 1156b) Thus, when either good men become

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friends or when friends wish good, selflessly, to one another, it cannot be thought that they can do harm to one another. The point is that the first two kinds of friendship are limited to what the parties can offer in terms of pleasure or usefulness, as such, once one party falls short of either pleasure or usefulness, the friendship is dissolved (Baltzly and Eliopoulos, 2014). This implies that in perfect friendship, which is the friendship of good or virtuous men, parties wish good to one another whether they fall short of pleasure or utility. This kind of friendship can be long-lasting and permanent. In that regard, avers that “those who wish well to their friends for their sake are most truly friends; for they do this by reason of their own nature and not incidentally; therefore, their friendship lasts as long as they are good — and goodness is an enduring thing” (Aristotle 2009, 1156b).

True friendship requires no law, and no coercion. This is since parties involved strive naturally to do good for themselves and need not be taught or coerced to act towards goodwill. Aristotle affirms by noting that “when men are friends, they have no need of justice, while when they are just, they need friendship as well, and the truest form of justice is thought to be a friendly quality” (2009, p. 1155a). The point implied here is that between good friends, Justice is natural and mutual. In such friendship, there would be no exploitation by any of the parties involved since all parties involved would view it as a natural duty to do good to one another. Writing about Aristotle’s notion of friendship, Katz (2023) avers that the first lesson that comes from Aristotle’s definition of friendship is reciprocal, recognized goodwill. In contrast to parenthood or siblinghood, friendship exists only if it is acknowledged by both parties. It is not enough to wish someone well; they must wish you well in return, and you must both recognize this mutual goodwill. This implies that true friendship should not be one sided and both parties are expected to reciprocate goodwill in equal degrees. This notion should exemplify the interaction between humans and the planet.

Relating Aristotle’s notion of friendship to the issue of climate change, it is important to take cognizance of the mutual reciprocity of goodwill and the inherent justice that characterises good friendship. In the relationship between man and the environment, it is undeniable that man benefits from the environment just as the environment should benefit from man. What is being pursued in this study is that the relationship ought to take a new platform based on Aristotle’s notion of friendship, with reference to virtuous friendship. In this sense, man ought to view nature as a friend, whom he cannot do without and who cannot do without her. This approach will be a step further in the quest to address the issue of climate change because, man will act in ways that will not harm the environment but will preserve the environment by investing in the environment, the same measure which he takes from it. This will also redefine how man ought to act towards nature especially regarding energy and waste management.

### **Climate Change and Human-Environment Interactionism**

Irrespective of the idea that nature plays a role in climate change, it should however be noted that earth's climate has worsened over the years due to the kind of lopsided interaction that exists between humans and the environment (Bonneuil, 2015). This interaction is described as lopsided because it tends to cater for man's immediate economic and social needs, without giving much consideration to environmental safety. This can first be known through a critical study of greenhouse gases and how they have increased through human activities. Carbon dioxide (CO<sub>2</sub>) for example is naturally a part of the earth's carbon cycle, it has been observed that "carbon dioxide is also a waste product that results from the burning of fossil fuels (coal, oil, and natural gas) and the manufacturing of cement, steel, iron, and plastic" (Garcia, 2022, p.32) and many more. This connotes that industries or factories built for human ends have increased the presence of carbon dioxide (CO<sub>2</sub>) in the atmosphere over the years. More so, this has contaminated the atmosphere and resulting in soot in many cities around the world, which is harmful to human health. Humans have not only contributed to the appreciation of carbon dioxide (CO<sub>2</sub>) through the building of industries alone or the burning of coal, oil, and natural gas; they have also contributed through deforestation, that is, the cutting of trees for firewood or for building industries, and roads of which Garcia (2022, p. 32) notes that "carbon dioxide is removed from the atmosphere when it is absorbed by plants through photosynthesis", in this case, when humans cut trees for any reason, we intrude in the natural process that helps to curb earth's over-infiltration of carbon dioxide.

Another greenhouse gas that should be brought into cognizance is methane (CH<sub>4</sub>). Van Amstel (2012. p. 5) defines methane as "an odourless gas with a concentration in the troposphere", and "the third most important greenhouse gas after water vapour and carbon dioxide." In respect to greenhouse effects, Garcia (2022, pp. 32-33) notes that "methane is 25 times more powerful than carbon dioxide, but it only stays in the atmosphere for about a decade; carbon dioxide typically stays for at least 100 years... about 60 percent of global methane emissions are the result of human activities." This can cause respiratory diseases, vision issues, heart rate balance problems, and numbness and so on. Perhaps, human have caused a soar in global methane (CH<sub>4</sub>) through the dumping of wastes in landfills, the raising of livestock as well as the usage of fossil fuels.

Nitrous oxide (N<sub>2</sub>O) is largely generated from agriculture, industry, and transportation. The greenhouse gas is generated when farmers apply synthetic fertilizers to their crops to boost their harvest (Garcia, 2022). Nitrous oxide (N<sub>2</sub>O) is a

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very dangerous chemical compound which is very harmful to human health and plants likewise. According to Garcia (2022, p. 33), “when it comes to retaining heat, nitrous oxide molecules are 300 times more powerful than carbon dioxide.” Hence, it can be more disastrous than carbon dioxide (CO<sub>2</sub>) even though it may be lesser in quantity. Fluorinated gases are another set of greenhouse gases that contribute much to the issue of climate change and which are largely generated through human activities. Fluorinated gases include hydro fluorocarbons, per fluorocarbons, sulphur hexafluoride, and nitrogen trifluoride. These are used in making toothpastes, cars, refrigerators and air conditioners which are largely for human comfort and utilization. The fact that fluorinated gases sometimes stay in the atmosphere for thousands of years according to Markham, *et al.* (2021), makes them worse than many other greenhouse gases even though they may be emitted in small quantities. One would wonder what kind of planet we would have in future with all these dangerous and life-threatening gases occupying our atmosphere. This is the reason we call for a mutually benefiting relationship between human beings and the planet, which would be modelled in line with Aristotle’s notion of friendship. This proposed interaction will be all about “live and let live.” Whereas it is imperative that human beings exist on the earth, do exploits and create enabling environment for economics and manufacturing, it is also essential that the climate, the best friend man has, be protected and kept safe, to avoid mutually assured destruction.

Another way in which human interactions with the environment provoke climate change possibilities is through solid wastes. Most of these wastes are hazardous such as non-biodegradable wastes and in fact municipal wastes. Akpan and Olukanni (2020) avers that wastes generated by industries include: plastics, pesticides, medicine, paint, petroleum, metals, leather and categorizes wastes into cyanide waste, metal finishing wastes, asbestos, Waste containing mercury, thallium, arsenic and cadmium, Solvents and non-halogenated hydrocarbons, halogenated hydrocarbons, wastes of dye and its intermediate, and Glue, painting, and varnish pigments wastes. These wastes, directly and indirectly contribute to the issue of climate change which steadily threatens the existence of earth and its inhabitant life. The use of automated sorting process through AI-driven systems can help to quickly distinguish between recyclable, non-recyclable, organic wastes and contaminants (Xu, *et al.*, 2021). In this way, waste management will be more efficient, and the purity of recycled materials will be guaranteed.

Humans, one way or the other, benefit from nature and in the process, harm nature or the environment with the effects lasting, not just years but decades and hundreds of years. This is due to the kind of relationship humans have made with nature, a relationship based on human utility and pleasure, which exist only for human gains (Ahmed, *et al.*, 2022). We see the environment as an object and not a friend that should be protected. However, it is impossible for humans to survive

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without the environment as we are in fact, part of the environment. Aristotle's virtuous friendship is the only true nature of friendship that can be deployed to rectify the issue of climate change. If humans view the environment as a friend (based on virtue), they will not relate with the environment in a way that will destroy it but through affection and love; giving back to the environment in equal measure what they get from it and avoiding any act that can endanger the environment.

### **Aristotle's Friendship, AI Technology and Climate Sustainability**

The present condition of the earth tells a lot about the kind of relationship man has with his environment. Xu, *et al.* (2021) notes that the emission of carbon dioxide (Co<sub>2</sub>) continues to accelerate globally as trillions of toxic chemicals are being released into the atmosphere through mining, mineral processing, farming, construction, and energy production, while these toxic chemicals have synthesised between 140, 000 to 350, 000 chemicals which previously did not exist. In addition to that, Daniel Hoornweg and Perinaz (2012, p. Vii) hold that "currently, world cities generate about 1.3 billion tonnes of solid waste per year. Waste generation rates will more than double over the next twenty years in lower income countries". Globally, solid waste management costs will increase from annual \$205.4 billion in 2012 to about \$375.5 billion before the end of 2025 (Koengkan and Fuinhas, 2021).

The current relationship between man and his environment can be likened to either friendship of utility or pleasure since man only takes from the environment for his pleasure and utility, and during that, harms the environment. It is a one-sided and exploitative relationship that leads to the destruction of human lives and the earth at large. However, to do justice to the issue of climate change is to redefine the kind of relationship man has with his environment. This implies that human beings will adopt AI technology; especially mechanisms such as unmanned vehicles and drones, to interact with the environment and make human activities more environmentally sustainable. Though these unmanned drones and vehicles can emit radiation, a study by Kubacki, *et al.*, (2025) reveals that such radiation is low-level and insufficient to increase carbon footprint and alter the climate. Quamar, *et al.* (2023) observes that this will help to guarantee the availability of reliable data for climate protection, as well as the reduction of carbon emission into the atmosphere. In other words, man's relationship with his environment ought to imitate Aristotle's description of a perfect friendship of the good where parties involved (man, environment) will have mutual and reciprocated goodwill, which will be characterised by inherent justice. Because the destruction of the environment is largely due to man's activity, humans owe much responsibility to keeping the environment clean and green, even without needing laws to enforce it (Corcoran, *et al.*, 2021). However, in developing good friendly relations with the environment, government and individuals have roles to play through laws and regulations.

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Climate change is a global threat, and it is up to governments to come together to make the current man-environment relationship a past. Government legal and regulatory frameworks could be directed towards the development of AI technology such as drones and unmanned vehicles, to promote climate responsibility by reducing global carbon emission. For instance, Corcoran, *et al.* (2021) stresses that the use of drones as delivery method helps to reduce greenhouse emission by 84% compared to the diesel trucks. As an AI mechanism, drones have been identified as being able to help industries minimize energy waste by providing precise and real-time operations monitoring. Their ability to access hard-to-reach areas allows more accurate data collection; identifying inefficiencies that might otherwise go unnoticed (Corcoran, *et al.*, 2021). For example, drones can detect leaks in equipment or highlight areas of overconsumption. Replacing the need for trucks or other vehicles to conduct inspections or transport supplies over short distances can reduce CO<sub>2</sub> emissions. Though it is unlikely to completely replace human efforts, it is nevertheless increasingly becoming handy, especially in high-risk tasks (Berkowitz, 2014). This precise monitoring and optimized resource use can contribute to a greener and more sustainable industrial landscape (Shirokov and Lepekhn, 2021). These features enable decision-makers to take immediate action to reduce waste and emissions, thereby fostering an enduring friendship with the environment.

Additionally, as game-changer in renewable energy projects, drones can also reduce emissions linked to traditional electricity production. They improve efficiency by monitoring large solar and wind farms, detecting issues early, and ensuring everything operates at peak performance. This reduces the need for fuel-based inspection methods and helps lower overall emissions. In addition, users can utilize drones to work autonomously, capturing video footage, inspecting equipment, and ensuring safety without human interference (Shirokov and Lepkhn, 2021). This streamlines operations and supports the broader goal of reducing the power sector's carbon footprint. Governments could also change the status quo by utilizing the media in promoting more information about the dangers of climate change and how individuals and corporate bodies can utilize drones and unmanned vehicle mechanism provided by AI technology to preserve and safeguard the environment. The media can also eradicate and refuse to report contents that make conspiracy theories out of the issue of climate change. In addition, AI technology can be deployed towards the careful processing of animal and human feces to replace dangerous fertilizers, and stricter mechanisms to enforce the philosophy of 'reduce, recycle, and reuse', to create a more useful route to mitigating climate change and preserving the environment as a good friend.

Another way individuals can mitigate climate change would be to restructure our habit and method of waste management. This would mean reducing our individual wastes by learning to repair and reuse items or to use items for other

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purposes rather than disposing. Fuchi, *et al.* (2022) avows that the traditional methods of managing garbage are labour-intensive, inefficient, and comparatively more expensive compared to drone technology. UAVs can also be employed to monitor and inspect locations for any illegal dumping on industrial wastes by factories. This benefit of monitoring and data collection makes drone technology the future of waste management and a reliable tool in forging a more sustainable interaction between humans and the environment (Fuchi, *et al.*, 2022). Therefore, the use of autonomous vehicles can help to accelerate a good, virtuous and mutual beneficial interaction between humans and the planet. As Aristotle envisioned friendship based on virtue and mutual empathy, this work's thesis is that the use of AI technology through drones, autonomous and unmanned vehicles, can reduce human carbon footprint and help foster this mutuality of friendship. This will signal a bold step towards achieving the net-zero target, creating mutual trust and respect between human beings and the environment just as Aristotle envisioned friendship.

Restructuring one's attitude or relationship with the environment to fit with a preservation and protection may be cumbersome, but achievable through discipline. We ought to see the environment as a friend, and if we love our friends genuinely, we will do everything possible not to harm them in anyway, we will rather strive to defend and protect them from any external harm. It is a different matter entirely when we get to know that such a friend is one which we cannot do without, and on whom we depend on for almost if not for everything, including our survival. Protecting, safeguarding, and preserving our friend (the environment), is a major task that must be achieved, and AI technology is a veritable means of achieving this in the modern world. Humans ought to reciprocate the goodwill offered to us selflessly by the environment by ensuring as this work proposes that the environment be taken care of as dependable ally, with technology such as drones, rechargeable and unmanned vehicles, to help detect and reduce carbon emission which threatens sustainability. In this way, we will realise a cleaner, greener, and safer earth, and increase the possibilities of our survival as humans.

## **Conclusion**

Climate change is now undeniable, and its effects outlive our present generation. Most of the gases that are emitted today will take hundreds of years and possibly thousands of years to leave our atmosphere. By then, we may be having increases in synthesised gases. As such, it is a duty and a responsibility for humans to tackle the issue of climate change by redefining the kind of relationship that we share with the environment, with AI mechanisms. This study finds such a relationship embedded in Aristotle's idea of virtuous friendship as opposed to friendship of utility and that of pleasure which defines the kind of relationship humans have with the environment at present. Aristotle's notion of virtuous

friendship is characterised by mutual and reciprocated goodwill, done selflessly and without qualification. If humans establish same friendly relations with the environment, it will lead to government and individual redefinition of attitude towards how we act, what we use, and how we use and reuse. This could come at a great cost, but nothing is costlier than human life, which is threatened by climate change, and that of the environment, our permanent and good friend whom we cannot do without and whom we depend on for everything.

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