

Article

Pathway to Sustainability through Pragmatic Wisdom

Wai Kian Tan 

Institute of Liberal Arts and Sciences, Toyohashi University of Technology, Toyohashi, Aichi 441-8580, Japan; tan@las.tut.ac.jp

Abstract: In this era of rapid modernization, technology has changed people’s everyday lives globally but at a heavy price, as evidenced, for example, by the earth’s deteriorating environments. Environmental contamination has induced the adverse impacts of climate change, manifested as natural disasters. According to scientific predictions, if climate change continues at the current rate, irreversible damage to the planet’s ability to sustain life could occur by 2100. This disturbing scenario has prompted a wake-up call for promoting sustainability and initiatives, such as the Sustainable Development Goals formulated by the United Nations, which are aimed at influencing and penetrating every aspect of life. This article discusses the importance of pragmatic wisdom for our earth’s restoration through the achievement of sustainability, which requires a revolution in education. A new educational model, particular within higher education, which extends beyond most of the current educational models for acquiring knowledge, is required to promote pragmatic wisdom. Apart from the acquisition of scientific knowledge, philosophical thinking and critical thinking skills are essential for promoting pragmatic wisdom. In this context, an education that couples liberal arts with natural sciences could be one of the solutions for facilitating the transformation of knowledge into pragmatic wisdom, which can potentially foster sustainability.

Keywords: sustainability; education; liberal arts; natural science; humanities; universities; sustainable development



Citation: Tan, W.K. Pathway to Sustainability through Pragmatic Wisdom. *Philosophies* **2022**, *7*, 131. <https://doi.org/10.3390/philosophies7060131>

Received: 7 October 2022

Accepted: 14 November 2022

Published: 19 November 2022

Publisher’s Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The term “sustainability” is widely used within global society and diverse organizations as part of coordinated efforts toward achieving the Sustainable Development Goals (SDGs) [1]. However, despite efforts to integrate all aspects of higher education policies and activities, such as the educational mission, curricula, research, and implementation, the acquisition of knowledge continues to be centralized, and sustainability-oriented movements remain top-down [2,3]. While restoring the balance with nature through sustainability is essential, science and technology are viewed as the main solution to climate change, even though human beings with their advanced technologies have propelled this crisis.

An awareness of the role of current education systems and of the thinking patterns that they create is needed for their reorientation and reconstruction to deal with the climate change crisis through the development of a new philosophical approach. A positivist fallacy, which has been shown to be inconsistent within the social science literature [4], continues to dominate most educational and behavioral projects. Education plays a vital role in promoting the desired awareness by engaging not only students but also the community in grasping the knowledge that is delivered and in generating wisdom. The incorporation of philosophical thinking into education to create awareness in everyday life can help to foster wisdom derived from the instilled knowledge.

The manner in which science and technology are imparted requires a thorough re-evaluation, with an emphasis on the development of personal and social aptitudes (as components of wisdom) as opposed to the mere acquisition of knowledge [5]. Furthermore, “sustainability” is widely assumed to be a far-fetched goal, with “a sustainable orientation” or “sustainable development” considered to be the means for achieving this goal.

Notwithstanding these views, systematic planning is imperative for achieving the desired “sustainability” goals, but the formulation of an ideology and conceptual tools requires careful thought. This is because misconceptions about the goals being unrealistic, as described above, could complicate the process of transformation toward achieving the desired outcomes [6]. There is also the issue of altruism versus egoism, which hinders collective efforts toward achieving sustainability. Individuals’ egoism could create a tendency toward negative behavior rather than altruism, which is required to promote sustainability.

The philosophical thought system within science, and its aims, should be thoroughly grasped to enable efforts to be directed toward sustainability [7]. Through philosophical thinking, profound intent and motivation could be found, enabling strategic movements and actions in pressing sustainable-related management matters. By in-depth inquiry, a clearer understanding of the consequences of certain action or inaction toward the environment, biodiversity imbalance, climate change, etc., would lead to the creation of positive actions contributing to sustainability. Furthermore, the solutions to achieve sustainability cover a broad perspective and require collaborative effort from all, such as scientists, economists, policy makers, etc. From understanding the effort spent in philosophical thinking that led to the modern science that we have nowadays, this creates appreciation and could induce motivation, and spur new ideas and methodologies that could bring the needed transformation in sustainable management. On the other hand, by ignoring philosophical thinking, we are shutting ourselves out and limiting our conceivable options to achieve sustainability.

The question of choice consciousness or the deep implications of individual actions, behaviors, values, and norms is perhaps better understood through engagement with liberal arts’ education. Introduction to philosophical thinking via a liberal arts education could help create pragmatic wisdom using acquired knowledge, enabling us to see beyond the current limitations and focus on the possibilities and ways to foster a sustainable future. Parker [8] has described how philosophical approaches can facilitate the formation of a global society that could contribute to the achievement of sustainability. According to Meppem [9], an agenda that focuses more on learning processes than on the mere projection of outcomes could liberate the process of thinking and analysis, providing an expanded space for wisdom to grow. The key lies in in-depth reflection on current issues, considering the need to adjust existing philosophical thinking to enable the development of novel and profound philosophical approaches that can serve as a tool for meaningful development.

Einstein made the following observation: “*Physics is a conceptual attempt to grasp reality as it is thought independently of its being observed*” [10]. Adopting a different perspective, the philosopher, Karl Popper, labeled Einstein as a falsificationist [11]. Although empiricism and knowledge acquisition are widely acknowledged to be at the core of academic pursuits, the question raised is whether a radical paradigm shift within academia from knowledge-based inquiry to wisdom-based inquiry is possible to provide a solution for attaining sustainability. If this shift is indeed possible, can it be accomplished quickly enough to save us from the looming disaster caused by climate change? Recent developments in education evidence a move in this direction, with the realization of the importance of a liberal arts education providing a more critical and constructive thought process for achieving radical changes for improving the future, irrespective of altruism or egoism.

The question of whether science can proceed without metaphysical presuppositions on nature has been a subject of debate. Maxwell stated that a new academic inquiry constitutes one way of strengthening the rationale to overcome the present issues and conflicts and to progress toward a better world for all [12–14]. Therefore, consolidation of science and technological knowledge with education (wisdom promotion) and philosophical thinking, should be pursued and developed, as this is our only way out of the crises that we have placed ourselves in. However, knowledge on its own will not be transformed into wisdom if educational institutions prioritize only the pursuit of knowledge as the primary motivation within their visions and missions [15,16]. The acquisition of knowledge only makes people

aware of the consequences of ignorance (an absence of wisdom) and egoism, and of the aftermath, for example, of climate issues that would sweep us off the earth's surface [17,18].

It is also striking that individuals' inner lives, despite their importance, are neglected, even by scholars. By contrast, spiritual leaders, such as Pope Francis and the Dalai Lama, have spoken of and shed light on the inner lives of individuals. Both of these leaders have suggested that efforts to protect the world should focus on the inner world, which also provides a platform that could foster a more ethical and sustainable community [19]. The preoccupation of modern society with external social phenomena has led to the neglect of their inner world, namely beliefs, identities, and thoughts, which ultimately affect their actions that hold the capacity to create a much-needed transformation toward sustainability. Pope Francis suggested that one could relate to an inner communication within oneself, and he expressed his interest in how an inner spirituality could promote compassion toward earth conservation [19]. With such compassion, values shift from being a growth-centered society to a human and environmental well-being-centered mindset, further promoting sustainability via astute ethical actions. Ives et al. [19] stated that "*The condition of people's inner worlds ought to also be considered a dimension of sustainability itself.*" A strong inner world built on the foundation of compassion, kindness, and empathy would likely emanate toward a more profound response toward sustainability.

Maxwell [14] argued that enlightenment through scientific learning to advance society and create a better world requires three essential prerequisites. First, appropriate scientific methods for achieving progress should be correctly identified. Second, these methods need to be generalizable to enable their successful application to any worthwhile and challenging human endeavor, irrespective of its aims, and not just to one endeavor for acquiring knowledge. Third, these generalized methods for achieving progress need to be applied appropriately in the great human endeavor aimed at achieving social progress and the creation of an enlightened and civilized world.

Unless these prerequisites are met, the generalization of the methods would not bring about the desired progress, which could lead to a failed civilization; a prospect that is now facing us [20]. We are paying the price now for past ignorance and are facing climate change and natural disasters because our predecessors believed that individual action would have little effect on a global scale. Reducing consumption will be unpopular and politically challenging, resulting in continuing denial and inaction. The difficulty is compounded by the imparting to society of conflicting information as a result of divergent interests or different knowledge [21,22], whether deliberately or not. This is especially apparent in the case of climate change. Thus, while carbon neutrality and a prospective ban on the use of combustion engines are being promoted globally, the rich and famous are spending extravagantly on space tourism for their leisure, generating tons of carbon dioxide emissions and moving the world ever farther from the goal of sustainability.

The rapid advance of technology has evidently made life more comfortable for us, but at what cost if we cannot sustain and preserve the earth? Recent crises relating to pollution, war, global warming, and the COVID-19 pandemic are unprecedented and should serve as a timely wake-up call to make radical changes to the way we think and educate the next generation, hopefully in time to avoid an apocalypse.

In a transformative process toward genuine global sustainability, reforms in our way of thinking and our education pedagogies are vital. Lehtonen [21] argued that educational practices need to be redesigned in alignment with learning goals. In a quest to promote wisdom for achieving sustainability, Maxwell, who draws on Karl Popper's philosophy of science, advocates a new form of educational empiricism [23,24]. New paradigms are required, such as sustainability science, which seek to integrate knowledge by bridging science, politics, and implementation, thus accounting for diverse factors, notably time, balance, interests, and systemic issues [25,26]. It is also important to define terms used across diverse transdisciplinary platforms, as sustainability requires interconnected practices [27]. Paradigm shifts are always challenging to accomplish; all the more so given the emphasis

on transdisciplinary, aim-oriented concepts to achieve sustainability. Consequently, the generation of wisdom is needed even more.

Knowledge on its own, without wisdom, is insufficient. The integration of knowledge from different fields, combined with analysis, can help us better understand the unsustainability of our current systems. However, this exercise is insufficient to make the connection between humans and the environment, which is required to bring about a proper solution [28]. Acceptance of responsibility is needed, coupled with knowledge, to foster much-needed wisdom. Without this coupling, egoism will trump altruism, rendering futile the collective effort toward achieving sustainability. According to this model of social evolution, which draws on human and animal data on altruism and relative evolution, *"Selfishness beats altruism within groups. Altruistic groups beat selfish groups"* p. 345 [29].

Even though established and organized tertiary education systems are now prevalent, it is debatable whether sufficient efforts are underway to help humanity to come to grips with the pressing global issues confronting us, namely the climate crisis and degradation of the natural world [30]. There is an urgent need for an academic revolution (from knowledge to wisdom), initiated by Maxwell [31,32]. However, more participation and compassionate reflection within the societal and governance domains are required to create an education that seeks to foster wisdom; one that can create ripple effects for achieving a sustainable impacts and long-needed changes that should have occurred decades ago.

2. Knowledge and Wisdom

More emphasis should be given to natural science education, which should be reoriented to promote awareness and concern for nature and the environment, leading to the creation of essential values, such as honesty, humility, and responsibility, which support progress toward achieving the desired outcomes [33]. As debates and arguments on sustainable development from various perspectives (philosophy, science, policy, etc.) are in a state of stagnation, the only recourse lies in transdisciplinary involvement for promoting understanding to stimulate dynamic change and action rather than simply predicting future outcomes on the basis of specific analyses of the economy or environmental conditions at a particular timeline [9].

For the sake of clarity, it is important to formulate clear definitions of knowledge and wisdom to develop a process of learning or action. Within the university system, there is an emphasis on problem solving, with a focus on benefiting society, conceived as a unit [34]. However, the question is whether its relevance and societal needs are being considered from the perspective of wisdom? When things start to fall apart, for example, during the COVID-19 pandemic and natural disasters (flash floods, landslides, and wild forest fires), which are a consequence of our own actions and uncontrolled environmental pollution, society scrambles to find solutions.

In the absence of wisdom, the mere pursuit of knowledge would not be effective in salvaging what remains of this world. According to Stenberg [35], wisdom can be defined as the ability to find a common good, to balance interests as well as intellectual and emotional responses, and to recognize our intellectual and other limitations.

Some scholars e.g., [34] have argued that problem solving using a scientific approach for acquiring knowledge, which is pursued in universities, could impede efforts to foster wisdom. Therefore, realization and awareness of the need to transform education is important for the development of a new form of education, which also integrate the liberal arts and sciences. Liberal arts can provide us with the tools to explore and realize the power of indigenous learning in promoting sustainable development. With transformation of learned knowledge to wisdom, a carefully thought-through action would reverberate through positive interlinking effects. In other words, promoting altruism, which is crucial toward sustainability achievement through the adoption of liberal arts' education. It could promote the generation of wisdom through acquired knowledge and horizon-broadening skills, such as philosophical thinking, critical judgment skills, smart interpretation, and

other soft skills. This educational approach could serve as a foundation for the cultivation of pragmatic wisdom.

Pragmatic wisdom entails a new way of thinking in which knowledge acquired through scientific as well as scholastic endeavors is critically assessed. It is only through this process that intelligence can be harnessed to achieve materialistic as well as environmental sustainability. A common belief about wisdom is that it requires a focus not only on individual contributions but also on those of society and communities [34]. However, the methods used to achieve the targeted goals need to be adjusted in a timely manner according to circumstances and situations (scientific and social), even while using a wisdom-based approach.

According to Maxwell [36], aim-oriented empiricism illuminates a problematic metaphysical assumption that is inherent to science's objectives. The assumptions and claims of a study are based on results obtained using designated methods, and do not apply to just one small part of the wider canvas of targeted goals [37]. This aim-oriented empiricism is derived from Karl Popper's philosophy of science [38] and has been further refined. In his call for a revolution in the philosophy of science, Popper [39–41] challenged standard empiricism or the old paradigm, refuting conjecture by opposing induction involving many observations [11,42–44]. Inductions from numerous observations result in the permanent acceptance of the component of scientific knowledge without considering empiricism, which, in contrast to accepted theories, is sidelined.

With the advancement of the philosophy of science, and especially of the metaphysics of science, most scholars now recognize and emphasize the importance of imaginative and critical thinking for the transformation of metaphysics. However, they stop short of emphasizing the integral nature of science itself. Maxwell [45] further stated that it is possible that the incorporation of aim-oriented empiricism could make a major contribution in advancing not only science but also education, prompting the creation of new pathways of thinking for achieving sustainability, possibly through global altruistic wisdom. Whereas science is widely assumed to be about the observation of nature, Midgley [46] argues that it begins with intervention, with observation constituting a sub-domain within intervention. At times, change is induced during interventions, and the observed results are not true phenomena. Therefore, it is necessary to reconsider and adopt a new philosophy of science for fostering intellectuality within a new science that can serve humanity better than the current one [47].

Objectivity has been at the center of many philosophical debates and remains at the core of the philosophy of science [48]. Durant's adage that "*every science begins as philosophy and ends as art*" [49] resonates powerfully. It is undeniable that many excellent scientific discoveries began as philosophical problems that were solved successfully, but the recognition of the role played by philosophy is sometimes underrated or even ignored. This is when empiricism transitioned from being a philosophical issue into a scientific discipline [50].

With modern technological advances, even machines have been credited with objectivity in the learning process (machine learning). In the process of teaching machines how to learn, deduce, infer, and perform certain tasks via computer algorithms and by analyzing data samples, objectivity is still required to solve or answer a particular set of questions [51]. Even as machine learning is applied in analyses of conversational systems, its philosophical integration, for example, in the area of objectivity is also being explored. Although existing conversational systems may not yet function fully as envisaged, they are thought to be able to describe objectivity within a social process geared toward understanding and trusting science [52].

3. Instigation of Pragmatic Wisdom

In this modern age, humanity is facing more challenges than ever, such as climate change, pollution, the spread of pandemic diseases, animal extinction, terrorism, social issues, and the threat of nuclear weapons [17,18]. Within classical philosophy, Aristotle's

concept of phronesis (or ‘practical wisdom’) marked the inception of practical wisdom [19]. Harding [53] described practical wisdom as an inner source that enables the acquisition of intuitive knowledge and as experience that enables the performance of actions in uncertain or unprecedented situations. By adapting this philosophy to current needs and goals, wise, pragmatic, and potentially altruistic approaches can be adopted for achieving sustainability.

Pragmatic wisdom is deemed an important approach for fostering environmental balance and sustainability. This view highlights the importance of applying the altruistic wisdom gained to integrate the acquired knowledge as thoughts and actions geared toward collective sustainability-oriented initiatives. The need for a coherent philosophy of science to promote sustainability and provide an organizing framework that takes values and social choices into account has previously been proposed [54]. This philosophy should consider competing values, problem recognition, the reconciliation of competing social claims, and achieving a balance with nature. The development of an altruistic movement requires a libertarian approach in which “freedom” to think and act takes precedence over paternalism. In the absence of wisdom, sustainable solutions cannot be achieved solely on the basis of acquired knowledge. Therefore, a new philosophy that emphasizes pragmatic wisdom is necessary.

Before embarking on a conceptual inquiry, it is first necessary to understand the distinction between “knowledge-inquiry” and “wisdom-inquiry.” This has been explained by Maxwell [15] p. 3, as follows:

“Wisdom-inquiry is what emerges when knowledge-inquiry is modified just sufficiently to cure it of its gross irrationality. According to wisdom-inquiry, the basic aim of inquiry is wisdom, construed to be the capacity, the active endeavor, and possibly the desire, to realize what is of value in life, for oneself and others. Realize, here, means both apprehend or experience, and create or make real; both aspects of inquiry are included, inquiry pursued for its own sake, and inquiry pursued for the sake of other ends. Wisdom includes knowledge, understanding and technological know-how, but much else besides, such as the capacity to discover what is of value, and the capacity to solve those problems that need to be solved if what is of value is to be realized.”

Through wisdom-inquiry, self- or assisted awareness of the true value in life can be achieved [15]. Although conceptual precision benefits empirical knowledge, conceptual vagueness can also help to create a more comprehensive pragmatic and problem-solving ideology [55]. The pros and cons relating to the role of the philosophy of science in the development of science have been widely debated, and incorporation of an aim-oriented wisdom, and of both contrasting contexts, should be given equal consideration before reaching a pragmatic solution that is aim-oriented altruistically.

4. The Pathway from Knowledge to Wisdom Relating to Sustainability

Sustainability covers a wide domain, spanning resources, emissions, human power, environments, ecologies, and economics. A comprehensive overall outlook, which covers all dimensions, including resource extraction, the selection of raw materials, the industrial design, and engineering, incorporating emissions’ reduction and waste management within a “design for the environment” concept can play pivotal roles in the drive to achieve sustainability [56]. However, when the quantities of waste and emissions outweigh conserved resources, this situation is deemed unsustainable. Not only are technological approaches and methods for reducing, reusing, and recycling the generated waste or emissions required, but a philosophical approach entailing awareness and thinking is also critical.

The modern world is habituated to the production of “fast fix” or “disposable” items made of synthetic materials, leading to the production of millions of tons of garbage, which will last for many years [57]. Thus, responsible consumer behavior and the consciousness of each user is essential. What is important is not the redesign of the physical products themselves but rather the redesign of the societal mindset through the promotion of a pragmatic and sustainable philosophy and awareness.

Through the right philosophical approach, the promotion and adoption of sustainable behavior become possible, marking the first step toward sustainable wisdom via manufacturers and end users. Philosophical reflection on thoughts and behavior as well as inter- and transdisciplinary science and technologies can significantly benefit the evolving sustainability movement. From the perspective of ecological economics, Baumgartner et al. [58] developed a methodology for integrating philosophical considerations into a conceptual foundation to inform efforts to attain sustainability. Contrasting visions of philosophers and scientists and their expected outcomes pose another stumbling block, impeding the achievement of sustainability. Detailed scrutiny of the practices of scientists and practitioners of sustainability by scholars of the philosophy of science often lead to a perception among scientists that they are being harshly treated by philosophers through their relentless inquiry. However, this inquiry plays a critical role in fostering a motive-focused inquiry among the scientists themselves [43]. Therefore, the following question arises. Can the philosophical incorporation of wisdom advance sustainability science?

As society turns increasingly to science for solutions to our problems, a few questions arise as to whether a philosophical approach could help, and most importantly, provide enduring and effective outcomes. Interestingly, Aristotle's approach of combining logic with observations to make causal claims retains its relevance even now, indicating the extensive need for a philosophy of science. González-Márquez and Toledo even demonstrated the applicability of Aristotle's argument for sustainability science [59]. Using Thomas Kuhn's conceptual framework of scientific paradigms in their study, they determined the current stage of progress in sustainability science. They noted: "*A paradigm is a whole way of producing science, which is common to the practitioners of a particular field of research based on a shared package of fundamental claims about the world*" p. 2 [59]. "Normal science" entails research aimed at extending and refining a particular paradigm. Drawing on Kuhn's framework, González-Márquez and Toledo reviewed various criteria required to evaluate progress in the field of sustainability science and identified the ability to solve problems as the main criterion. Considering this ability, they searched for elements that could help in the evaluation of the paradigm, concluding that a perception of general insufficiency exists. A normal scientist does not question those fundamental claims. Nevertheless, the continuous attention to detail that characterizes normal science inevitably leads to the discovery of anomalies. Anomalies are problems that resist solutions within the framework of a particular paradigm. At some point, anomalies may become so important that they lead to a state of crisis, forcing the community to bring some foundations back into the discussion. If a new paradigm with increased problem-solving capacity is created, then the community will adopt it, thereby initiating a new period of "normal science" [59]. Although Kuhn's work has been criticized for alleged misinterpretation, it has been reiterated that although he shattered traditional empiricist ideas about science, this does not mean that he believed science to be a completely irrational process [60].

In an effort to advance sustainability science, Nagatsu et al. proposed a critical engagement between philosophers of science and scientists, which would thread its way into a complex domain that requires extensive coverage of fundamental issues, such as moral, ethical, and interdisciplinary transitions [61]. Sustainability science requires descriptive knowledge and a normative approach [50], with ethics providing the connecting bridge between philosophy and policy [62]. In my view, this brings us back to Maxwell's philosophy in which he repeatedly calls for a revolution within the education system. Revolutionary education implies that institutions could play more active roles in promoting wisdom seeking within science and technology education [63].

In the current situation, many educators emphasize problem-based education, with a focus on finding solutions to particular issues that are being faced. This approach confines our thinking to dialogical exchanges that occur within a specific frame [64,65]. A more complete approach would entail stimulating individuals to think within totally new circumstances or surroundings, which would help to foster pragmatic sustainability and wisdom. In recent educational developments, the importance of a liberal arts education

has been foregrounded in efforts to promote a new way of thinking, inducing a different pathway to intelligence creation. This development encourages a perception of a new form of education in which the liberal arts are integrated with the natural sciences.

Some philosophers consider scientific education and philosophical thinking to be different paths with different ideologies. Their combination can be advantageous, marking a step forward toward meeting the urgent need for pragmatic wisdom required to create a sustainable future. Therefore, it is important for contemporary educationists to contemplate how the liberal arts can be effectively integrated with the sciences. It is acknowledged that it is difficult to impart pragmatic wisdom through textbook-based education. A combination of knowledge and experiential learning through real-life awareness is crucial for initiating the actualization of wisdom. Immersion in new, stimulating surroundings with an unfamiliar culture, language, and norms could stimulate out-of-the-box thinking. The inter-relation of action and consequences to sustainability requires an academic inquiry into various humanities and sciences, propagated by a liberal arts' curriculum. For example, the constant inquiry of the balance between production, consumption, and conservation would promote thoughts and actions that lead to a pragmatic solution for sustainable development goals. It is conceivable that this educational approach along with the incorporation of aim-oriented empiricism and a slight adjustment made to the sustainability-oriented concept, could stimulate the development of pragmatic wisdom, which is beneficial for advancing the sustainable goals [66].

In relation to the SDGs movement, the goal in education (SDG 4) aims to ensure exclusive and equitable quality education and promote lifelong learning opportunities for all. Nevertheless, the effort and targets for achievement of this goal are significant toward sustainability from a local to global scale, through promotion of the importance of education for sustainable development, global understanding, peace, human rights, and gender equality toward a sustainable development for global citizenship. In addition to promoting accessible education, universal literacy, numeracy, and pursuit of knowledge, perhaps with an additional touch of pragmatic wisdom instillation through a more widespread incorporation of liberal arts education, this could forge more effective efforts and outcomes in addressing sustainability issues.

The integration of aim-oriented empiricism into scientific studies and practices could lead to the advancement of science and wisdom, which would result in further progress toward achieving sustainability. This approach could be viewed as a contemporary version of natural philosophy [67], which stems from Maxwell's philosophical approach in parallel with Popper's philosophy, which calls for a scientific method rooted in a new rationality that has been described as an aim-oriented rationality [36,68]. Both philosophers point to a continual need to readjust the focus toward a certain goal or problem prior to embarking on the next action of providing a solution. The underlying reasoning is that the pursuit of a misinterpreted goal would prompt action that leads to further straying from the original intended goal, thereby compounding the problem. Thus, a new call has emerged for action-oriented, knowledge-seeking research institutions to adopt a new paradigm for achieving sustainability by focusing on the creation and promotion of sustainability-oriented wisdom. This philosophical approach is very similar to aim-oriented empiricism [69], which Maxwell has relentlessly advocated for in the pursuit of wisdom-inquiry in our education systems.

This integration of philosophy and science is crucial. Philosophy can generate induction, leading to the formulation of solutions to problems. Subsequently, science can consolidate the metaphysical assumptions and procedures toward forging sound knowledge [36], which leads to effective solutions for all concerned. It is imperative that an improved scientific rationality is incorporated with wisdom into modern science education [15]. This move will not only benefit science, but, with proper and conscious practice, it could also enhance life at the individual and collective levels. Through this philosophical approach of aim-oriented empiricism, "intentional design", in which wisdom is potentially embedded in all aspects of life, could prompt attitudes and actions that could shape an overall societal mindset [56]. Reitan p. 78 [70] made the following observation:

“Understanding earth systems and applying the best possible technologies, based on local and global policies attuned to geo-ecological limitations, will require unprecedented success in educating students at all levels, continuous effective communication with [the] public aided by informed media, and uncommon wisdom among policymakers.”

This statement implies that, despite all of the available knowledge and education, in the absence of wisdom, we could find ourselves on a disastrous path of destruction without even knowing this.

5. Converge or Diverge at the Crossroad of Sustainability

The simple fact is that philosophies oriented toward sustainability through the cultivation of wisdom are within everyone’s reach. Without doubt, almost everyone is aware of the climate crisis that we are facing and of what could happen if this situation continues to be ignored. Banning the use of combustion engines, increasing research projects to promote carbon neutrality and putting more emphasis on carbon reduction projects as well as the radical movement initiated by the adolescent, Greta Thunberg, have served to create momentum within the sustainability movement. Thunberg’s provocative statements, such as *“How are you? You have stolen my dreams and my childhood with your empty words”* have elicited praise as well as criticism. Her courage and expression of a sense of urgency have been appreciated by many activists; however, the emotional backlash and constant rejection of any efforts made so far have led others to the perception that such reactions are unfair and that the objectivity of the movement has been lost. Even at this critical stage, when we are witnessing natural disasters at levels of severity not seen before, such as the flooding of one-third of Pakistan, diverging views are still apparent. Although Pakistan has generated less than 1% of the total global warming, this country is facing the dire consequences of the world’s negligence.

Unity is another factor that is required to ensure that we all move in the right direction toward sustainability. We are now at a point where a vital decision has to be made: the choice is either to converge toward or diverge from philosophies that foster pragmatic wisdom in an attempt to create future sustainability. Maxwell [71] has actively promoted wisdom-inquiry and a revolutionary approach to philosophy for mitigating the climate crisis and social issues. However, for decades, continuing to the present, resistance remains deep-rooted and enduring [72]. As with any philosophical approaches, his ideology has been subject to criticism. Maxwell defended the necessity of this ideology for sparking a revolution within academic inquiry, aimed at cultivating pragmatic wisdom that could help to solve our current problems relating to unsustainable activities, climate-related disasters, wars and conflicts [40,73]. The world is in crisis, and if the global community realizes this sooner rather than later and embraces wisdom-inquiry as a pivotal process, we still have a chance of achieving sustainability and salvaging whatever is left before this window of opportunity finally closes. The other option is to diverge from this philosophy and accept the potential consequences that would come with this decision. Actions taken by academic institutions toward transforming knowledge-inquiry into wisdom-inquiry could prompt a backlash from various quarters [15], but, given the prevailing stagnancy, with crisis upon crisis unfolding before us, perhaps it is time to take the road less traveled, embrace wisdom-inquiry, and see where it takes us.

One important question arises: could society realize the critical importance of wisdom for achieving a sustainable world? Could this be the elixir to save us all before it is too late?

The thoughts and philosophies that we need are out there, but are educators or educational institutions ready to step up and take the bull by the horns, leading the process of transformation? Without the active participation of academicians and educational institutions, engaging the public will remain a monumental task, and, therefore, the energy and effort required for its accomplishment would be better spent focusing on the real issue at hand, namely creating a sustainable future through wisdom.

In this conundrum, as long as sustainability science is primarily problem-driven and outcome-oriented, the incorporation of philosophy will not happen. This important lacuna

should not, however, prevent us from continuing to practice normal science. Boda [26] affirmed that, although it is vital to recognize the role of science normativity, it is not only the integrity of conduct of science that is important but also the inclusion of epistemological/philosophical ideology. Epistemological issues relating to inter/transdisciplinary methodologies also need to be re-evaluated [61]. Even with the ever-increasing engagement of scientists, practitioners, and members of the public with sustainability issues, differences in opinions and perceptions derived from the acquired knowledge impede efforts to solve the core issues and challenges, prompting the need for a relational approach for fostering a more productive inquiry and interventions [74]. On a positive note, more recognition of the importance of philosophy and its incorporation into a transdisciplinary methodology within the sustainability movement is evident. However, scientists and practitioners are still reluctant to be drawn into philosophical debates in crisis situations [75]. However, philosophically oriented scholars are also aware that over-engagement within their interventions in the field of sustainability science, for example, in the area of ethical ambiguities, can prevent a quick response, potentially leading to negative consequences if certain issues are not dealt with on a timely basis.

Without a doubt, humankind has benefited tremendously from all of the knowledge that has been gathered, leading to the development of advanced science and technology that have been applied across diverse sectors, for example, modernizing agriculture, the energy sector, medicine, and the Internet of Things, all of which have improved our lifestyles. However, if we reach a point when more damage than good is apparent in relation to sustainability, our approaches will need to be seriously rethought and reevaluated. As Maxwell observed, “*Science without civilization, without wisdom, is a menace*” p. 9 [15].

6. Conclusions

The proactive adaptation of knowledge through wisdom is essential on the path to achieving pragmatic sustainability. Climate change, wars and conflicts, and the COVID-19 pandemic have induced a heightened sense of urgency for the need to regain a foothold so that we can apply pragmatic wisdom to develop a collective solution for all of these disasters. Knowledge on its own is insufficient unless it is acted on, and wisdom and actions should follow before it is too late. These responsibilities, entailed in the cultivation of pragmatic wisdom, which can propel us toward a sustainable future, also fall on the shoulders of educators. The integration of philosophy and aim-oriented empiricism/rationality can help to promote wisdom, and the conscious application of science and technology within interdisciplinary endeavors provide us with a pathway toward sustainability.

Funding: This research was funded by Toyohashi University of Technology research fund.

Data Availability Statement: Not applicable.

Acknowledgments: The author would like to thank the members of the Institute of Liberal Arts and Sciences in Toyohashi University of Technology for the exposure and opportunity to engage in activities toward sustainable development goals from various perspectives.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Droz, L. Redefining Sustainability: From Self-Determination to Environmental Autonomy. *Philosophies* **2019**, *4*, 42. [[CrossRef](#)]
2. Rowe, D. Education for a Sustainable Future. *Science* **2007**, *317*, 323–324. [[CrossRef](#)] [[PubMed](#)]
3. Bonnett, M. Environmental Education and Beyond. *J. Philos. Educ.* **1997**, *31*, 249–266. [[CrossRef](#)]
4. Brenner, J. The Philosophy of Ecology and Sustainability: New Logical and Informational Dimensions. *Philosophies* **2018**, *3*, 16. [[CrossRef](#)]
5. Clochard, M.C.; Melilli, G.; Rizza, G.; Madon, B.; Alves, M.; Wegrowe, J.E.; Toimil-Molares, M.E.; Christian, M.; Ortolani, L.; Rizzoli, R.; et al. Large area fabrication of self-standing nanoporous graphene-on-PMMA substrate. *Mater. Lett.* **2016**, *184*, 47–51. [[CrossRef](#)]
6. Hector, D.C.; Christensen, C.B.; Petrie, J. Sustainability and Sustainable Development: Philosophical Distinctions and Practical Implications. *Environ. Values* **2014**, *23*, 7–28. [[CrossRef](#)]

7. Baker, A.M. A Precautionary Tale: Towards a Sustainable Philosophy of Science. *J. Philos. Sci. Law* **2007**, *7*, 1–10. [CrossRef]
8. Parker, J. *Critiquing Sustainability, Changing Philosophy*; Routledge: London, UK, 2014.
9. Meppem, T.; Gill, R. Planning for sustainability as a learning concept. *Ecol. Econ.* **1998**, *26*, 121–137. [CrossRef]
10. Kosso, P. Appearance and Reality: An Introduction to the Philosophy of Physics. *Am. J. Phys.* **1998**, *66*, 838–839. [CrossRef]
11. Maxwell, N. Induction and scientific realism: Einstein versus Van Fraassen part three: Einstein, aim-oriented empiricism and the discovery of special and general relativity. *Br. J. Philos. Sci.* **1993**, *44*, 275–305. [CrossRef]
12. Maxwell, N. From Knowledge-Inquiry to Wisdom-Inquiry. *Paradig. Explor.* **2019**, *129*, 3–7.
13. Maxwell, N. Wisdom-inquiry. *Philos. Mag.* **2010**, *22*, 84–85. [CrossRef]
14. Maxwell, N. Arguing for wisdom in the university: An intellectual autobiography. *Philosophia* **2012**, *40*, 663–704. [CrossRef]
15. Maxwell, N. How Universities Have Betrayed Reason and Humanity—And What’s to Be Done About It. *Front. Sustain.* **2021**, *2*, 18. [CrossRef]
16. Maxwell, N. Creating a Better World: Towards the University of Wisdom. In *The Future University: Ideas and Possibilities*; Barnett, R., Ed.; Routledge: New York, NY, USA, 2011.
17. Wilson, P.J. Climate Change Inaction and Optimism. *Philosophies* **2021**, *6*, 61. [CrossRef]
18. Maxwell, N. Are Philosophers Responsible for Global Warming? *Philos. Now* **2008**, *65*, 12–13.
19. Ives, C.D.; Freeth, R.; Fischer, J. Inside-out sustainability: The neglect of inner worlds. *Ambio* **2020**, *49*, 208–217. [CrossRef]
20. Maxwell, N. The key to the solution of the world crisis we face. *Hum. Aff.* **2021**, *31*, 21–39. [CrossRef]
21. Lehtonen, A.; Salonen, A.; Cantell, H.; Riuttanen, L. A pedagogy of interconnectedness for encountering climate change as a wicked sustainability problem. *J. Clean. Prod.* **2018**, *199*, 860–867. [CrossRef]
22. Maxwell, N. The Crisis of Our Times and What to Do about It. In *HPS and ST Note*; Matthews, M.R., Ed.; 2017; pp. 5–8. Available online: http://www.idtc-ihps.com/uploads/6/2/9/3/62931075/hps_st_note_2017_april.pdf (accessed on 30 September 2022).
23. Maxwell, N. A Critique of Popper’s Views on Scientific Method. *Philos. Sci.* **1972**, *39*, 131–152. [CrossRef]
24. Maxwell, N. Misconceptions Concerning Wisdom. *J. Mod. Wisdom* **2013**, *2*, 92–97.
25. Martens, P. Sustainability: Science or fiction? *Sustain. Sci. Pract. Policy* **2017**, *2*, 36–41.
26. Boda, C.S. Values, science, and competing paradigms in sustainability research: Furthering the conversation. *Sustain. Sci.* **2021**, *16*, 2157–2161. [CrossRef]
27. Aronson, J. Sustainability science demands that we define our terms across diverse disciplines. *Landsc. Ecol.* **2011**, *26*, 457–460. [CrossRef]
28. Maxwell, N. How Wisdom Can Help Solve Global Problems. In *Applying Wisdom to Contemporary World Problems*; Sternberg, R., Nusbaum, H., Glueck, J., Eds.; Palgrave Macmillan: London, UK, 2019; pp. 337–380.
29. Wilson, D.S.; Wilson, E.O. Rethinking the Theoretical Foundation of Sociobiology. *Q. Rev. Biol.* **2007**, *82*, 327–348. [CrossRef]
30. Maxwell, N. *The World Crisis—And What To Do About It: A Revolution for Thought and Action Preface and Chapter 1*; World Scientific: Singapore, 2021.
31. Maxwell, N. The Urgent Need for an Academic Revolution: From Knowledge to Wisdom. In Proceedings of the Conference at Poznan University of Technology, Poznań, Poland, 20–22 June 2010; pp. 19–30.
32. Maxwell, N. The Urgent Need for Social Wisdom. In *The Cambridge Handbook of Wisdom*; Sternberg, R., Gluck, J., Eds.; Cambridge University Press: Cambridge, UK, 2019; pp. 754–780.
33. Maxwell, N. The New Enlightenment. In *Science and Enlightenment: Two Great Problems of Learning*; Springer International Publishing: Cham, Switzerland, 2019; pp. 21–42.
34. Diamond, Z.M. Old Pedagogies for Wise Education: A Janussian Reflection on Universities. *Philosophies* **2021**, *6*, 64. [CrossRef]
35. Sternberg, R.J. Transformational Creativity: The Link between Creativity, Wisdom, and the Solution of Global Problems. *Philosophies* **2021**, *6*, 75. [CrossRef]
36. Maxwell, N. Aim-Oriented Empiricism and the Metaphysics of Science. *Philosophia* **2019**, *48*, 347–364. [CrossRef]
37. Maxwell, N. Is Science Neurotic? *Philos. Now* **2002**, *51*, 30–33. [CrossRef]
38. Maxwell, N. Improve Popper and Procure a Perfect Simulacrum of Verification Indistinguishable from the Real Thing. *J. Gen. Philos. Sci.* **2021**, *53*, 163–185. [CrossRef]
39. Maxwell, N. The Need for a Revolution in the Philosophy of Science. *J. Gen. Philos. Sci./Z. Für Allg. Wiss.* **2002**, *33*, 381–408. [CrossRef]
40. Maxwell, N. Muller’s Critique of the Argument for Aim-Oriented Empiricism. *J. Gen. Philos. Sci./Z. Für Allg. Wiss.* **2009**, *40*, 103–114. [CrossRef]
41. Maxwell, N. Karl Popper, Science and Enlightenment: An Idea to Help Save the World. *Ethical Rec.* **2018**, *123*, 27–30.
42. Popper, K. *Conjectures and Refutations: The Growth of Scientific Knowledge*; Routledge: Abingdon, UK, 2014.
43. Ziegler, R.; Ott, K. The quality of sustainability science: A philosophical perspective. *Sustain. Sci. Pract. Policy* **2017**, *7*, 31–44.
44. Martin, L. Incorporating values into sustainability decision-making. *J. Clean. Prod.* **2015**, *105*, 146–156.
45. Maxwell, N. Can Humanity Learn to become Civilized? The Crisis of Science without Civilization. *J. Appl. Philos.* **2000**, *17*, 29–44. [CrossRef]
46. Midgley, G. Science as Systemic Intervention: Some Implications of Systems Thinking and Complexity for the Philosophy of Science. *Syst. Pract. Action Res.* **2003**, *16*, 77–97. [CrossRef]

47. Maxwell, N. A New Task for Philosophy of Science. *Metaphilosophy* **2019**, *50*, 316–338. [CrossRef]
48. Thagard, P. Philosophy and Machine Learning. *Can. J. Philos.* **1990**, *20*, 261–276. [CrossRef]
49. Durant, W. *The Story of Philosophy*; Garden City Publishing: New York, NY, USA, 1926.
50. Wang, L.-S. Causal efficacy and the normative notion of sustainability science. *Sustain. Sci. Pract. Policy* **2017**, *7*, 30–40. [CrossRef]
51. Javed, S.; Adewumi, T.P.; Liwicki, F.S.; Liwicki, M. Understanding the Role of Objectivity in Machine Learning and Research Evaluation. *Philosophies* **2021**, *6*, 22. [CrossRef]
52. Adewumi, T.P.; Liwicki, F.; Liwicki, M. Conversational Systems in Machine Learning from the Point of View of the Philosophy of Science—Using Alime Chat and Related Studies. *Philosophies* **2019**, *4*, 41. [CrossRef]
53. Harding, S. *Animate earth: Science, intuition, and Gaia*; Chelsea Green Publishing: Hartford, VT, USA, 2006.
54. Anderson, M.W.; Teisl, M.F.; Noblet, C.L. Whose values count: Is a theory of social choice for sustainability science possible? *Sustain. Sci.* **2015**, *11*, 373–383. [CrossRef]
55. Strunz, S. Is conceptual vagueness an asset? Arguments from philosophy of science applied to the concept of resilience. *Ecol. Econ.* **2012**, *76*, 112–118. [CrossRef]
56. Stegall, N. Designing for Sustainability: A Philosophy for Ecologically Intentional Design. *Des. Issues* **2006**, *22*, 56–63. [CrossRef]
57. Mathijssen, D. Composites made from recycled thermoplastics and natural fibers: A new philosophy for the future. *Reinf. Plast.* **2016**, *60*, 142–145. [CrossRef]
58. Baumgärtner, S.; Becker, C.; Frank, K.; Müller, B.; Quaas, M. Relating the philosophy and practice of ecological economics: The role of concepts, models, and case studies in inter- and transdisciplinary sustainability research. *Ecol. Econ.* **2008**, *67*, 384–393. [CrossRef]
59. González-Márquez, I.; Toledo, V.M. Sustainability Science: A Paradigm in Crisis? *Sustainability* **2020**, *12*, 2802. [CrossRef]
60. Godfrey-Smith, P. *Theory and Reality: An Introduction to the Philosophy of Science*; University of Chicago Press: Chicago, IL, USA, 2009.
61. Nagatsu, M.; Davis, T.; DesRoches, C.T.; Koskinen, I.; MacLeod, M.; Stojanovic, M.; Thorén, H. Philosophy of science for sustainability science. *Sustain. Sci.* **2020**, *15*, 1807–1817. [CrossRef]
62. Joaquin, J.J.B.; Biana, H.T. Sustainability science is ethics: Bridging the philosophical gap between science and policy. *Resour. Conserv. Recycl.* **2020**, *160*, 104929. [CrossRef]
63. Maxwell, N. What's Wrong with Science and Technology Studies? What Needs to Be Done to Put It Right? In *A Bridge Between Conceptual Frameworks: Sciences, Society and Technology Studies*; Pisano, R., Capecchi, D., Eds.; Springer: Berlin/Heidelberg, Germany, 2015.
64. Gardner, S.T. Sisyphus and Climate Change: Educating in the Context of Tragedies of the Commons. *Philosophies* **2021**, *6*, 4. [CrossRef]
65. Maxwell, N. Can Universities Save Us from Disaster? *Horiz. Online J.* **2017**, *25*, 115–130. [CrossRef]
66. Tan, W.K.; Umemoto, M. International Industrial Internship: A Case Study from a Japanese Engineering University Perspective. *Educ. Sci.* **2021**, *11*, 156. [CrossRef]
67. Maxwell, N. We Need to Recreate Natural Philosophy. *Philosophies* **2018**, *3*, 28. [CrossRef]
68. Maxwell, N. The Rationality of Scientific Discovery Part II: An Aim Oriented Theory of Scientific Discovery. *Philos. Sci.* **1974**, *41*, 247–295. [CrossRef]
69. Caniglia, G.; Luederitz, C.; von Wirth, T.; Fazey, I.; Martín-López, B.; Hondrila, K.; König, A.; von Wehrden, H.; Schöpke, N.A.; Laubichler, M.D.; et al. A pluralistic and integrated approach to action-oriented knowledge for sustainability. *Nat. Sustain.* **2021**, *4*, 93–100. [CrossRef]
70. Reitan, P.H. Sustainability science—And what's needed beyond science. *Sustain. Sci. Pract. Policy* **2017**, *1*, 77–80. [CrossRef]
71. Maxwell, N. Our Fundamental Problem: A Revolution for Philosophy and the World. *Humanit. Arts Soc. Mag.* **2021**, *3*. Available online: <https://humanitiesartsandsociety.org/magazine/our-fundamental-problem-a-revolution-for-philosophy-and-the-world/> (accessed on 30 September 2022).
72. Maxwell, N. The Scandal of the Irrationality of Academia. *Philos. Theory High. Educ.* **2019**, *1*, 105–128. [CrossRef]
73. Maxwell, N. Reply to comments on science and the pursuit of wisdom. *Philosophia* **2010**, *38*, 667–690. [CrossRef]
74. West, S.; Haider, L.J.; Stålhammar, S.; Woroniecki, S. A relational turn for sustainability science? Relational thinking, leverage points and transformations. *Ecosyst. People* **2020**, *16*, 304–325. [CrossRef]
75. Tallis, H.; Lubchenco, J. Working together: A call for inclusive conservation. *Nature* **2014**, *515*, 27–28. [CrossRef] [PubMed]