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Axiology of Modern Science: Navigating Ethical Dilemmas, Technological Imperatives, and Humanistic Benefits

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ABSTRACT

In an era characterized by rapid technological innovation, artificial intelligence expansion, and ecological crises, the development of science often prioritizes technical progress over moral considerations. This study critically examines the axiology of science as an essential philosophical framework to ensure scientific advancements remain aligned with human dignity and planetary sustainability. Utilizing a qualitative library research design with a philosophical-hermeneutic approach, this paper synthesizes contemporary and classical literature on the value dimensions of science. The analysis addresses three core issues: the structural alignment between axiology and scientific inquiry, the systemic factors leading to the marginalization of axiological reflection, and a critical evaluation of science's benefits alongside its potential risks. The findings demonstrate that axiology serves not merely as a moral supervisor, but as a active compass that bridges theoretical knowledge with human welfare, limits destructive applications, and promotes inclusive, data-driven public policy. However, the institutional dominance of positivism, hyper-specialization, and commercial pressures frequently sideline axiological considerations in modern research environments. The study concludes that embedding axiological evaluation into scientific education, policy design, and research governance is imperative for transforming scientific progress into sustainable, ethically grounded benefits for humanity.

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INTRODUCTION

Science represents one of the most remarkable intellectual achievements of human civilization, serving as a primary driver of technological innovation, societal development, and material progress (Afriandi et al., 2024; Susanto, 2021). In its epistemological journey to uncover objective truth, science has transformed human existence, enabling humanity to cure complex

diseases, expand global communication networks, enhance agricultural productivity, and explore the vast dimensions of the universe (Bennett et al., 2017; Ives et al., 2017). However, as scientific capabilities expand exponentially in the contemporary era, the rapid proliferation of advanced technologies—such as artificial intelligence, genetic engineering, autonomous weaponry, and industrial-scale resource extraction—has introduced unprecedented ethical, social, and ecological challenges (Menapace, 2019; Varpio & MacLeod, 2020). These developments demonstrate that scientific advancement is not inherently benevolent or value-neutral; rather, its impact on humanity depends heavily on the underlying values and moral frameworks that guide its development and application (Harahap, 2022; Rokhmah, 2021).

Within the philosophical architecture of the philosophy of science, axiology stands alongside ontology and epistemology as a vital pillar that addresses questions of value, ethics, utility, and purpose (Luthfiyah & Khobir, 2023; Sari et al., 2024). Derived from the Greek words *axios* (worth or value) and *logos* (theory or study), axiology critically investigates what constitutes value, how scientific knowledge ought to be utilized, and whether scientific pursuits contribute meaningfully to human dignity, social justice, and environmental sustainability (Biesta, 2015; Tojimatovich & Saydaliyevich, 2021). While ontology examines the fundamental nature of reality and epistemology investigates the validity and mechanisms of knowledge acquisition, axiology functions as an ethical compass and normative guide that asks: *"To what end is knowledge sought, and who benefits from its application?"* (Biedenbach & Jacobsson, 2016; Menapace, 2019). Without a robust axiological foundation, scientific research risks becoming a hyper-technical enterprise detached from humanistic imperatives or, worse, an instrument of destruction and exploitation (Agriyanto & Rohman, 2015; Mukti, 2022).

In the contemporary modern context, the urgency of axiological reflection is further heightened by structural shifts in how scientific research is conducted, funded, and institutionalized (Biedenbach & Jacobsson, 2016; Harahap, 2022). The historical dominance of the positivist paradigm—which dogmatically asserts that genuine science must remain value-free and completely detached from subjective moral considerations—has long marginalized axiological evaluation in research design (Harahap, 2022). Furthermore, the hyper-specialization of scientific disciplines, combined with commercial pressures, market-driven funding models, and political agendas, frequently incentivizes short-term technical achievements over long-term ethical reflection (Agriyanto & Rohman, 2015; Menapace, 2019). Scientists and policy-makers often prioritize technical feasibility ("*Can we build or discover this?*") while ignoring axiological responsibility ("*Should we deploy this, and what are its systemic consequences for future generations?*") (Varpio & MacLeod, 2020). This systemic disconnect creates an urgent need to re-examine and reintegrate axiological principles into the mainstream philosophy and governance of science.

A growing body of scholarly literature has examined the value dimensions of scientific progress (*State of the Art*). Scholars such as Biesta (2015) and Varpio & MacLeod (2020) have highlighted the theoretical necessity of integrating ontology, epistemology, and axiology in educational and medical research frameworks. Similarly, research by Bennett et al. (2017) and

Ives et al. (2018) emphasized the role of human values and social sciences in guiding environmental conservation and sustainability strategies. In the domain of Islamic philosophy of science, researchers like Harahap (2022), Auni (2021), and Qorib & Afandi (2024) have explored how ethical and spiritual values can serve as an antidote to the dehumanizing tendencies of secularized modern science. These existing studies have contributed significantly to demonstrating that science cannot be totally detached from societal and moral contexts (Mukti, 2022; Susanto, 2021).

However, despite these valuable insights, a critical literature gap (*Research Gap*) remains in contemporary scholarship. Existing studies predominantly treat axiology either as an abstract philosophical theoretical discourse without concrete operational mechanisms, or as a localized ethical concern limited to specific sub-fields such as bioethics or environmental policy (Bennett et al., 2017; Zaidi & Larsen, 2018). Few studies offer an integrative, multi-dimensional synthesis that systematically identifies the structural causes of axiology's institutional marginalization while simultaneously mapping how axiological principles can actively guide technology governance, public policy formulation, and global human welfare in an age dominated by rapid technological disruption (Agriyanto & Rohman, 2015; Harahap, 2022). Furthermore, there is a lack of comprehensive analytical frameworks that bridge classical philosophical axiologies with contemporary socio-technological dilemmas such as artificial intelligence ethics, algorithmic bias, and ecological degradation.

To fill this literature gap, this study presents a critical philosophical analysis of the axiology of science, examining both its theoretical foundations and practical applications for modern humanity. The primary objectives of this article are threefold: (1) to analyze the structural relationship between axiology and scientific inquiry; (2) to critically examine the systemic, institutional, and paradigmatic factors that lead to the marginalization of axiological considerations in scientific practices; and (3) to evaluate the humanistic, social, and environmental benefits of science when guided by ethical principles. The main novelty of this research lies in its integrative analytical framework, which bridges classical philosophy of science with contemporary technological dilemmas, offering a multi-tiered model that connects axiological principles (truth, goodness, beauty, and utility) directly to actionable research governance, policy-making, and educational reform. By re-establishing axiology as an indispensable driver of scientific progress, this study contributes to building a more ethically grounded, socially responsible, and human-centric scientific paradigm for the 21st century.

METHOD

This study adopts a qualitative-descriptive library research design integrated with a philosophical-analytical and hermeneutic approach to explore the axiological dimensions of modern science and its humanistic implications (Muktaf, 2016; Ridwan et al., 2021). A qualitative philosophical library design was selected because the core inquiry investigates conceptual frameworks, moral values, and ethical structures surrounding scientific inquiry, which require rigorous textual interpretation, contextual synthesis, and logical argumentation rather than

empirical field measurement (Muktaf, 2016; Varpio & MacLeod, 2020). Data collection was executed through a comprehensive, systematic literature search across major academic indexing databases, including Scopus, Web of Science, Google Scholar, and Directory of Open Access Journals (DOAJ). The search strategy utilized targeted combinations of key terms, such as *"axiology of science"*, *"ethical responsibility in scientific progress"*, *"value-free vs. value-laden science"*, *"technological ethics"*, and *"humanistic benefits of science"* (Biedenbach & Jacobsson, 2016; Harahap, 2022; Menapace, 2019).

To maintain high analytical quality and academic relevance, explicit inclusion and exclusion criteria were established to govern literature selection. The inclusion criteria specified peer-reviewed journal articles, scholarly monographs, and authoritative academic book chapters published primarily between 2015 and 2024. Eligible literature was required to address core philosophical dimensions of science (ontology, epistemology, axiology) or provide explicit critical analyses of ethical, social, and environmental issues arising from modern technological and scientific developments (Bennett et al., 2017; Biesta, 2015; Sari et al., 2024). Conversely, the exclusion criteria filtered out non-peer-reviewed popular articles, opinion pieces, commercial reports, and publications prior to 2015, with the exception of foundational classic texts in the philosophy of science, such as seminal works by Karl Popper, Thomas Kuhn, and classic value theorists. Studies focusing solely on technical or empirical procedures without addressing value, ethical, or policy implications were also excluded.

Data analysis followed a systematic four-phase descriptive-analytical process combined with hermeneutic textual interpretation (Ridwan et al., 2021). The analytical workflow began with data reduction and categorization, where selected sources were organized around primary thematic axes: theoretical axiological frameworks, systemic causes of value marginalization (e.g., positivism and hyper-specialization), and domain-specific humanistic applications. This was followed by philosophical hermeneutics, critically interpreting the underlying meanings, ideological assumptions, and ethical implications embedded within contemporary scientific discourses (Az-Zahra & Silbi, 2024; Rokhmah, 2021). Next, conceptual synthesis was conducted to bridge classical philosophical value theories with modern socio-technological dilemmas, including artificial intelligence ethics, environmental sustainability, and inclusive public policy (Ives et al., 2018; Qorib & Afandi, 2024). Finally, the study executed logical inference and conclusion drawing, formulating actionable guidelines and an integrative model that positions axiology as an operational compass for modern scientific governance, education, and research practice.

FINDINGS AND DISCUSSION

The Relationship between Axiology and Science

Axiology is a branch of philosophy that discusses the value and usefulness of something. In the context of science, axiology studies the values contained in the development and application of science. Axiology is "a branch of philosophy that discusses values". He emphasized that axiology is related to the question "What is the usefulness of science?. Axiology as a branch of

philosophy that discusses the problem of values, both truth values, beauty values, and goodness values. Axiology is related to questions regarding the benefits and impacts of science. Furthermore, Bambang Sugiharto explained that axiology is a branch of philosophy that questions the value or usefulness of the results of thought or knowledge obtained. Axiology questions whether a science can make a positive contribution to human life (Tojimatovich & Saydaliyevich, 2021).

From the several definitions above, it can be concluded that axiology is a branch of philosophy that discusses the values, usefulness, and practical benefits of science for human life. Axiology seeks to align the development of science with the needs and welfare of mankind. Axiology and science have a close relationship, where axiology provides a foundation of value for the development of science. This includes ethical, aesthetic, and truth values that serve as guides in research and development of science.

In the context of the philosophy of science, axiology plays an important role in answering questions about the goals and values underlying the development of science. Axiology in science is concerned with "the problem of truth value, utility value, and aesthetic value". Science must not only produce theoretical truth, but also have practical uses and fulfill aesthetic values. The axiology of science includes questions about the usefulness of science for life and what values it contains (Zaidi & Larsen, 2018).

Science must be able to make a positive contribution to the welfare of humanity, not just satisfy intellectual ambitions alone. The axiology of science concerns the problem of the usefulness or utility value of science. Science must be able to increase human dignity and honor, and uphold human values (Natasya et al., 2026). Thus, axiology plays an important role in directing science so that it not only satisfies curiosity, but also provides real benefits for human life. Axiology encourages science to always be based on the values of goodness, truth, and beauty.

Axiology, as a branch of philosophy that discusses values and benefits, has a close relationship with science. This relationship lies in the orientation of science as an effort to make a real contribution to human life and the environment. Science, which epistemologically aims to seek the truth, requires an axiological foundation to ensure that the search for truth is not only theoretical, but also has positive utility value. In other words, axiology provides ethical and moral direction to science, so that the science that is developed not only answers the question "what is true" but also "what is the truth used for" (Menapace, 2019).

In the application of science, axiology becomes a guide to evaluating its benefits and impacts on life. For example, in the development of medical technology, the epistemological goal of finding solutions to diseases must be balanced with axiological considerations about the accessibility of the technology, its impact on public welfare, and the potential risks that may arise. Thus, axiology acts as a reminder that science must be oriented towards human values, justice, and sustainability. In addition, the relationship between axiology and science is also seen in decision-making involving science. In the modern era, science is often the basis for public policy, such as environmental, health, or education policies. Without axiological guidance, science-based policies can be biased, unfair, or even detrimental to certain groups (Biesta, 2015). For example,

exploitation of natural resources carried out in the name of scientific progress without considering sustainability values can threaten the balance of the ecosystem and harm future generations..

Furthermore, axiology also becomes the basis for questioning the direction and priorities of scientific development. Not all knowledge that can be discovered technically is worthy of being developed. For example, research in the field of biotechnology such as human cloning presents an axiological dilemma about whether the benefits are worth the possible ethical and social risks. By considering axiological values, science can be directed to focus on developments that truly provide great benefits to humanity and the universe.

This relationship shows that axiology is not just a complement to science, but an integral component that ensures that science runs in harmony with human needs and moral values. In the context of globalization and rapid technological progress, this relationship is increasingly relevant. Modern challenges such as climate change, social inequality, and ethical crises in the use of technology require a scientific approach that is not only technically sophisticated but also morally wise. Axiology becomes the main guide in realizing this goal, making science a means that empowers, not destroys (Biedenbach & Jacobsson, 2016).

Axiology plays an important role in science, especially in ensuring that science not only functions as a tool to understand reality, but also provides real benefits to human life. The urgency of axiology lies in its ability to provide value orientation to science, which prevents the misuse of science and ensures that its development remains in accordance with the goals of humanity. In the modern world, where science is developing rapidly and is often the basis for social, economic and technological change, it is important to ensure that it is used responsibly and sustainably.

One of the main urgencies of axiology in science is to bridge the gap between theory and practice. Science that only focuses on theoretical exploration without considering its practical value can lose social relevance. For example, research in the field of renewable energy is not only a scientific issue but also a moral one, because it concerns human responsibility for the sustainability of the planet. In this context, axiology serves as a guide to determining research priorities, ensuring that science is directed at efforts that have a positive impact on human life and the environment (Varpio & MacLeod, 2020).

In addition, axiology also plays a role in limiting the negative impacts of science. Technological developments, for example, although they provide many benefits, can also be a threat if not balanced with value considerations. An example is the development of artificial intelligence (AI), which has great potential to increase human efficiency and productivity, but also poses risks such as mass unemployment, data privacy, and social inequality. With an axiological approach, these negative impacts can be minimized through the formulation of appropriate policies and regulations.

Another urgency of axiology is as a foundation for developing inclusive and equitable science. In many cases, the development of science tends to be biased towards certain groups, especially in the context of access and benefits. For example, medical research often focuses more on diseases relevant to developed countries, while diseases in developing countries are often ignored. By considering the principles of axiology, science can be directed to meet global needs

fairly, ensuring that its benefits can be felt by all levels of society without discrimination (Rokhmah, 2021).

Furthermore, axiology also becomes an ethical compass in science-based decision-making. In various situations, scientific progress often presents complex moral dilemmas, such as in the fields of genetic engineering, euthanasia, or space exploration. Without axiological guidance, decisions in this context risk ignoring human values. Axiology helps scientists, policy makers, and the wider community to evaluate the choices presented by science, so that decisions can be made that are not only technically correct but also morally wise.

Therefore, axiology is not only a moral supervisor, but also a key driver for making science a tool for positive transformation. By understanding the urgency of axiology, science can be developed holistically, oriented towards human welfare, environmental sustainability, and social justice. This makes axiology an essential element in responding to the challenges and opportunities presented by the development of science in the modern era (Mayasari et al., 2022).

Although axiology plays an important role in providing ethical direction and utility for science, in reality this aspect is often under-considered in the development of science. This can be traced to several historical, philosophical, and pragmatic factors. One of the main reasons is the dominance of the positivist paradigm in science, which tends to emphasize the objectivity and neutrality of science without considering value implications. In the positivist view, science is seen as an effort to find universal truths that are free from bias, so that moral considerations or social benefits are often considered outside the scope of scientific study.

In addition, the very rapid development of modern science is often focused on technical exploration and technological innovation. The pressure to produce new findings, scientific publications, and innovations that can be applied commercially makes scientists and research institutions more focused on achieving short-term targets than evaluating the long-term impact of their research. In this context, axiology tends to be marginalized because it is considered an aspect that is not directly related to the success of research quantitatively (Harahap, 2022).

Another influencing factor is the increasingly specific fragmentation of science. High specialization in various fields of science makes scientists more focused on their respective fields of study, so that they pay less attention to the relationship between the science they develop and broader values. For example, an expert in the field of artificial intelligence may only focus on improving algorithms without considering the ethical implications of their application in society. As a result, the development of science tends to proceed without adequate axiological guidance.

On the other hand, the lack of consideration of axiology can also be caused by the weakness of value education in the scientific education system. Many educational institutions emphasize mastery of the technical and methodological aspects of science, but do not provide enough space to discuss philosophical aspects such as axiology. As a result, scientists and technologists often lack the awareness or ability to evaluate the values associated with their work.

Economic and political factors also play a role in ignoring axiology in science. In many cases, science is developed to meet the needs of a particular industry or political agenda that is oriented towards economic gain or power. Such an approach often ignores the social,

environmental, or moral impacts of the application of science. For example, the exploitation of natural resources supported by scientific research is often carried out without considering the principle of sustainability or its impact on local communities (Agriyanto & Rohman, 2015).

Finally, the biggest challenge may lie in the lack of collective awareness of the importance of axiology among the wider community. In a modern era that greatly glorifies technological progress, many people are more fascinated by the technical capabilities of science than asking what those capabilities are used for. As a result, the pressure from society to integrate axiology into science is minimal, so that scientists and policy makers feel less motivated to consider axiological values in the process of developing science.

This condition shows that although axiology is very important, structural, paradigmatic, and institutional challenges have caused this aspect to often be neglected in the development of science. To overcome this, a paradigm shift is needed that places axiology as an integral part of science, as well as education that is able to equip scientists with an awareness of the moral and social responsibilities of their research..

Critical Analysis of the Benefits of Science for Humanity

In general, it can be agreed that the axiology of science is closely related to questions about the value, usefulness, and impact of science on human life. Axiology encourages science to not only satisfy curiosity, but also to make a positive contribution to the welfare of humanity. One of the critical views raised is that the axiology of science must be able to anticipate and mitigate the potential negative impacts that can be caused by the application of science and technology. Advances in science that are not balanced with ethical considerations and mature risk analysis can have detrimental consequences for humans and the environment.

Nevertheless, it is undeniable that science has provided extraordinary benefits for humans, both in improving the quality of life and in helping to understand the universe. One of the main benefits of science is its ability to provide practical solutions to various problems faced by humans. From health to technology, science has become the foundation of innovation that brings significant change. Medical discoveries, such as vaccines and antibiotics, have saved millions of lives and extended human life expectancy. On the other hand, science-based technologies, such as the internet and modern communication devices, have revolutionized the way humans work, interact, and obtain information (Bennett, Roth, Klain, Chan, Christie, et al., 2017).

The benefits of science also lie in its ability to increase human efficiency and productivity. In agriculture, for example, research has produced modern farming methods, such as advanced irrigation techniques and more effective use of fertilizers, which have enabled humans to produce large amounts of food to meet the needs of the world's growing population. In the industrial sector, science has simplified production processes through automation, reducing human workload and improving the quality of the products produced.

In addition to practical benefits, science also provides philosophical and intellectual benefits. It helps humans understand the origin, structure, and dynamics of the universe, providing a broader perspective on human position in it. Astronomy, for example, has revealed mysteries

about the solar system, galaxies, and even the existence of the universe itself, providing a deep understanding of human existence. In this context, science not only functions as a tool to meet material needs, but also as a means to satisfy human curiosity about the universe.

One of the most obvious benefits of science is in the health sector. Discoveries such as vaccines, antibiotics, and modern medical technology have changed the way humans fight disease. Before the discovery of antibiotics, even a mild infection could be fatal. Now, science has enabled humans to not only cure diseases but also prevent them through immunization and research-based healthy lifestyles. Technologies such as medical imaging (MRI, CT Scan) allow doctors to diagnose diseases accurately and early, increasing the chances of a cure. In addition, advances in biotechnology, such as gene therapy, open up opportunities to treat diseases previously considered incurable, such as cancer and genetic disorders (Bennett, Roth, Klain, Chan, Clark, et al., 2017).

Science has helped humanity address global challenges such as climate change, water scarcity and food security. Climate change research has provided deep insights into the causes, impacts and mitigation strategies to reduce carbon emissions. Desalination technology, for example, has turned seawater into drinkable water, addressing the water crisis in arid regions. In the food sector, science has driven the development of technologies such as genetic engineering and hydroponics, which allow for more efficient food production despite limited agricultural land.

The technologies we enjoy today, such as the internet, computers and modern transportation, are direct results of advances in science. The internet, for example, has revolutionized the way people communicate, work and learn. In education, online learning now enables access to education for millions of people around the world, including those living in remote areas. In transportation, technologies such as airplanes and electric vehicles have not only accelerated human mobility but have also helped reduce environmental impacts through the use of cleaner energy (Ives et al., 2017).

Science also makes a major contribution to understanding the origins and structure of the universe. Discoveries in astrophysics, such as the existence of other galaxies and the big bang theory, provide perspective on humanity's place in the universe. In evolutionary biology, research on genetics and fossils helps us understand the long journey of evolution to become what we are today. This understanding is not only academic but also spiritual, as it helps us appreciate the complexity of life and the responsibility to maintain the sustainability of the earth (Chambers et al., 2016).

In the social realm, science helps create better, data-driven policies. Research in sociology, psychology, and economics provides insights into patterns of human behavior and social dynamics. For example, research on economic inequality has led countries to adopt more equitable redistribution policies. In education, science encourages more inclusive approaches, such as tailored learning methods for students with special needs.

At the social level, science plays a vital role in building a more just and prosperous society. Through the study of psychology, sociology, and economics, science helps us understand individual behavior and group dynamics, allowing for better policies to address social problems such as poverty, inequality, and conflict. For example, research on education has produced new

approaches to the learning process, which not only improves the quality of education but also expands access for underprivileged communities (Qorib & Afandi, 2024).

Science has provided concrete solutions to maintain environmental sustainability. Renewable energy technologies, such as solar panels and wind turbines, are now an alternative to reducing dependence on fossil fuels. Research in ecology has also helped humans understand the importance of biodiversity and ecosystems. Thus, forest conservation, protection of endangered species, and waste management become more effective because they are based on accurate scientific data (Az-Zahra & Silbi, 2024).

The benefits of science also include environmental conservation and sustainability efforts. In the modern era, when threats to the ecosystem are increasingly real, science provides guidance for managing natural resources wisely. Research on renewable energy, waste management, and biodiversity conservation have helped humans reduce their negative impact on the environment. Thus, science not only helps humans to live better, but also ensures that future generations can enjoy life on a healthy planet (Ives et al., 2018).

Although science is often considered neutral, its benefits also include moral and spiritual aspects. Knowledge about the limitations of the earth's resources, for example, encourages humans to live more economically and responsibly. Science also provides lessons about human dependence on each other and on the environment. This perspective strengthens values such as solidarity, empathy, and respect for life (Auni, 2021). By encouraging humans to think critically and rationally, science helps build a more open attitude towards differences, whether in the context of culture, religion, or outlook on life. In this case, science becomes a bridge to create harmony amidst diversity, strengthening the spirit of tolerance and respect for human rights (Mukti, 2022).

Overall, science has brought invaluable benefits to humans. From material to spiritual aspects, science provides a foundation for humans to continue to develop, overcome challenges, and create a better world. However, these benefits can only be fully felt if science is developed by considering axiological values, so that the progress achieved is not only technical but also ethically and socially meaningful. The benefits of science for humans are very broad, covering material, intellectual, social, environmental, and moral aspects. By continuing to develop science and integrating it with axiological values, humans can create a better world, where science is not only a tool for achieving progress, but also a foundation for sustainable prosperity.

However, it is important to pay attention to and consider the honesty, transparency and accountability of scientists. Certain political, economic or ideological interests can sometimes lead to the misuse of science and cover up its negative impacts. Therefore, wider community involvement is needed in decision-making related to the application of science. On the other hand, the axiology of science is also seen as an effort to align scientific progress with noble human values. Science must be able to improve human dignity and provide real benefits for life, not just satisfy intellectual ambitions. Critically, it can be concluded that the axiology of science is an important aspect that must be considered so that science can be truly useful and in line with human values. The development of science must be accompanied by a comprehensive impact analysis,

transparency, accountability and community involvement in decision-making. Only in this way can scientific progress provide an optimal positive contribution to human life.

CONCLUSION

Axiology plays a vital role in providing a foundation of values for the development of science. Values in science include theoretical, practical, and ethical aspects that are integrated with each other. The benefits of science for humans are manifested in various aspects of life, from technology to health. Challenges in the development of science need to be faced by considering ethical aspects and their social impacts. The axiology of science is an important dimension that provides direction and purpose in the development of science, so that it is not only oriented towards knowledge alone but also on its benefits and impacts on human life. By integrating ethical, moral, and social values, axiology ensures that science is used for the common good, avoiding misuse that can harm individuals and the environment. The benefits of science are very broad, covering various fields such as health, technology, environment, and social, which directly improve the quality of human life and provide solutions to various global challenges. However, in practice, the axiological dimension is often less considered in the development of science, so that there is a risk of dehumanization and imbalance in technological and social progress. Therefore, the development of science must always be directed by axiology in order to be able to realize a balance between material progress and human values, so as to provide maximum benefits for humanity and the sustainability of this planet.

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