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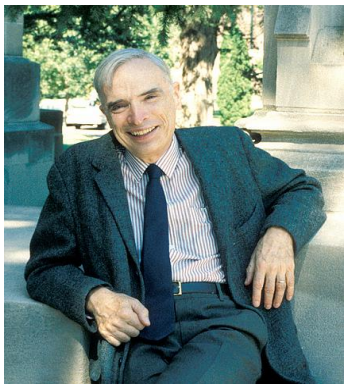

Ian G. Barbour's Thoughts on Science and Religion

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Abstract: *The purpose of this article is to explore Ian G. Barbour's thoughts on the relationship between science and religion from the perspective of the philosophy of science and how relevant they are to the development of contemporary Christian and Islamic thought. The research method is qualitative with biographical, historical, and content analysis approaches. This discussion found that there are four typologies of the relationship between science and religion made by Barbour, namely: (1) Conflict typology, which involves scientific materialism and biblical literalism; (2) Independent typology, separating the two types in two different regions. The two can be distinguished based on the problem studied, the domain to which they are referred, the methods (existentialism and neo-orthodoxy) used and the two different languages and their two functions (the analytic tradition); (3) the Typology of dialogue, which considers presuppositions in scientific endeavours, or explores in parallels the methods between science and religion, (4) Integration, which consists of natural theology, theology of nature, systematic synthesis (science or religion contributes to the development of inclusive metaphysics such as Whitehead's philosophy of processes). A view similar to but not the same as Barbour's was put forward by John F. Haught who divided the approaches to science and religion into conflict, contrast, contact, and confirmation. These four views can be seen as a kind of typology like Barbour's, but Haught also sees them as a kind of journey. However, there are some criticisms from contemporary Christian and Islamic thinkers of Barbour's typology.*

Keywords: *thought, Ian Barbour, dialogue of religion and science, independent, integration.*

INTRODUCTION

Ian G. Barbour, an American physicist and theologian, is known for his monumental contribution to blending the thought of philosophy of science and religion. His thinking embraced the idea that religion and science were not contradictory but should complement each other. In his view, the philosophy of science and religion should not be in conflict but rather can be a source of inspiration and a deeper understanding of the universe and human existence. Barbour stressed the importance of dialogue between these two fields, which he said could yield deeper insights into the nature of the universe and humanity's place in it. Thus, Barbour's contributions in linking religion and science have been the foundation for many modern thinkers seeking to understand the complex relationship between religious belief and scientific knowledge [1]–[3].

The history of the relationship between science and religion in the West underscores that church leaders rejected Galileo's heliocentric theory or Darwin's theory of evolution. Church leaders made statements that were beyond his competence. In the Eastern world, in this case, the Islamic world, the teaching of Islamic religious sciences is normative-textual apart from the development of science and technology, social sciences, economics, law and humanities in general [1]–[3].

In the West, the discourse on the relationship between science and religion in the new millennium was popularized by Barbour. This Christian physicist theologian is considered one of the foundations of the latest discourse on science and religion, both in terms of material and methodology. His influence has now greatly spread thanks to the translation of his books, including in Indonesia. In this paper, Barbour's opinion will be analyzed from other perspectives: "Christian Science" and "Islamic Science" [4]–[6].

Barbour's biography in the context of the relationship between science and religion has been comprehensively described by Russell. Ian G. Barbour is known as one of the initiators of the dialogue between science and religion today. He has dedicated himself and made extensive contributions to this realm [7], [8]. His contribution to the connection between science and religion can be said to be far greater than the contributions of other scholars, even today who are still writing. Since his earliest writings, Barbour has paid serious attention to the proper form of the relationship between science and religion. He therefore constantly discussed this issue. Proof of his seriousness to this issue is Barbour's famous typology, of four categories of ways of linking science and religion: Conflict, Independence, Dialogue, and Integration [9]–[11].

LITERATURE REVIEW

Barbour was born in Beijing in 1923. His mother was a member of the Episcopal church, while his father was a member of the Presbyterian Church, the two met in Edinburgh Scotland and soon afterwards married. Barbour's parents moved to China again to teach at Yenching University; his father was in Geology while his mother was in Religious Education [12]–[14].

In 1940 Barbour entered Swarthmore school, starting as an engineering student but later moving into physics because his theories and experiments piqued Barbour's curiosity. The experience of being a laboratory assistant to the "admiration" of a skilled young physics teacher, further strengthened him to this choice. Among the humanities courses, Barbour studied was the philosophy of religion, a course that he said at the time was somewhat discouraged because it contained only classical arguments of divinity. But one summer while working with the Quakers was an important experience for him, there was an intimate environment, meditation, and discussion or sharing [15]–[17].

At the University of Chicago Barbour became an assistant to Enrico Fermi, where physics had occupied most of his time. The Ford Foundation offered a scholarship to Barbour's department to study for a year, outside of his discipline. In 1951 he took "Theological Studies and Ethics" at Yale Theological School, and he felt very fortunate to be able to study with H.

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Richard Niebuhr, Roland Bainton, and Robert Calhoun, among others. Barbour was very satisfied with their lectures, so he proposed that his return be postponed one year later. Barbour believes that such a choice can reflect a personal intelligence, interest, and in a religious context also a response or call to God and human needs [18], [19]. Barbour enjoyed physics and was familiar with it so he could teach and still spent a lot of time on physics-related activities. Moreover, Barbour understood very well that scientists are respected and valued in academia, and their opinions are highly considered and heard on educational, ethical and religious issues. In addition, Barbour also agreed with the Reformed Church's belief that all useful scholarship could be used to serve God and human needs. But Barbour felt increasingly confident, and interested and felt it was important to spend at least part of his life studying and teaching Religious Studies. He then obtained a bachelor's degree in Theology at Yale, taking advantage of two summer vacations in Union, New York [20]–[22].

Carleton University in Minnesota offered Barbour a job, which was to teach half the time to teach physics and half the time to teach religion at the faculty of Philosophy (there is no faculty of Religion here). In addition to teaching a variety of important courses, mentoring students' religious groups, and continuing cosmic ray experiments. Barbour was very "depressed" during his first five years here and was very disappointed that he did not spend time with his children when they were very young, especially the third and fourth children, David and Heather. Barbour's four children have all continuously enriched his life infinitely [23]–[25].

In 1960, the Faculty of Religion was approved for establishment and Barbour "dropped out" of the Department of Physics to become chair of the department and teach full-time in the new Department of Religion. At the beginning of 1962, he enjoyed being in the association of scientists and theologians with Harold Schilling, William Pollard, Frederick Ferre, Huston Smith, Roger Shinn, and Dan William (the men who introduced Barbour to process theology), the first two being philosophers and the remaining three being theologians. Barbour later edited the association's papers, Earth Might Fair: Reflections on Ethics, Religion and Ecology [26]–[28].

In 1963, Barbour was again awarded a scholarship to conduct research at Harvard. After attending a seminar chaired by Gardon Kaufman he carefully read the theologies of Charles Hartshorne, John Cobb, and David Griffin, whom he had previously doubted. Upon his return to Carlton, Barbour wrote several writings that had previously been experimented with in his lectures which were later revised and became a book entitled: "Issues in Science and Religion (1966)". What Barbour wrote from this work was an early attempt to unite the two sides of his life in science and religion. It became a broader insight even many people turned out to be interested in this work. The book has been widely used as a curriculum text at a time when many other authors have tried to do the same [29]–[31].

A few years later Barbour was awarded scholarships by the Guggenheim and Fulbright to study deepening epistemological issues in Cambridge, England. He and his wife Deane enjoyed living there in the company of their three children, who were enrolled in local schools. Barbour attended several seminars and afterwards wrote Myths, Models and Paradigms (1973) [32]–[34].

Positivist philosophers disputed the objectivity of science and the subjectivity of religion, but new themes in the philosophy of science (such as Mary Hesse in Writing on Models and Thomas Kuhn in Paradigms), and new views of the language of religion in English analytic philosophy, put forward similarities as well as differences. Barbour's critical realism had the support of Arthur Peacocke and John Polkinghorne and has appealed to other philosophers and theologians [35].

Since the nuclear weapons discussions in Chicago took off, Barbour has become more and more concerned with the ethics of applying science. In the early 1970s. Barbour has written on themes of environmental ethics and technology. From these writings, he collected in a book entitled "Technology, Environment and Human Values". The following year Barbour taught

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science, technology and society at Perdue as a visiting professor of science, theology and human values, and enjoyed another year at The National Humanities Center, writing "Energy and American Values" with three other authors [36]–[38].

The invitations in 1989 and 1990 to give lectures in Gifford, Scotland, were a good opportunity for Barbour to try to teach theology and ethics simultaneously. His first book series "Religion in an Age of Science" (1990), has been widely used as a lecture text, while his second series of books "Religion in an Age of Technology" (1993), was used by the public but not as enthusiastically as the first book series. According to Barbour, this fact is probably because this second series of books has indeed been taught by him in lectures at Technical Colleges, Seminars, and Art Schools [39].

Table 1. Literature Review of Ian G. Barbour's Thoughts on the Relationship between Philosophy of Science and Religion

Aspects	Ian G. Barbour's thoughts
Perspective	Ian G. Barbour presents an integrative perspective between science and religion, known as "scientific theology". Given this, he offers an approach that allows dialogue between the two fields.
Compatibility	Barbour views that science and religion do not have to contradict, but rather, they can complement each other. He believed that science provided insight into "how" the universe worked, whereas religion provided questions about the "why" and meaning behind existence.
Conflict	While acknowledging the potential conflict between science and religion, Barbour argues that the conflict can be resolved through dialogue, appreciation, and deep understanding of both fields.
Type Dialog	Barbour proposed four types of dialogue between science and religion: conflict, independent, separate, and integrative. He advocated integrative dialogue as the most productive approach to achieving comprehensive understanding.
Important Contributions	Barbour's work has made an important contribution to promoting a better understanding between science and religion. His approach helps address conflicts that often arise between the two fields, and encourages constructive dialogue.

The table above provides a brief overview of Ian G. Barbour's thoughts on the relationship between science and religion

METHODOLOGY

The research method is qualitative with biographical, historical, and content analysis approaches. It is said to be qualitative because this study emphasizes more on describing the thought of Ian G Barbour. Because the focus is descriptive, this research is also natural and inductive. Qualitative research has five specific characteristics, namely: naturalistic, descriptive, attention to process, inductive, and attention to meaning [40]–[42].

Table 2. Qualitative Research Methods of Ian G. Barbour's Thoughts on the Philosophy of Science and Religion

Qualitative Research Steps	Description
Identify the subject matter	Identify key concepts in Ian G. Barbour's thoughts on
	The relationship between philosophy of science and religion.

	Examples: Involvement of religion in the scientific process, views on truth
Data Source Selection	Religion and Science
	Options may include Barbour's written works, such as books, articles, or
	interview him if possible.
	Also, it may be relevant to take into account interpretation and secondary analysis
Data Collection	Barbour's Work Done by Other Scholars.
	Reading and analysis of Barbour's works to understand
	formulation and context of his thinking.
	Interviews with experts or practitioners who study and understand
Data Analysis	Barbour's Contribution to the Philosophy of Science and Religion.
	Identify patterns, themes, and contradictions in Barbour's thinking about
	The relationship between science and religion.
	Evaluate the suitability of Barbour's ideas to cultural, scientific, and contexts.
Interpretation of Results	Religion at the Time of Its Writing.
	Synthesis and interpretation of key findings in thought
	Barbour on the relationship between science and religion.
	Consider the implications and relevance of Barbour's thought in context
Withdrawal of Conclusion	Contemporary.
	Summarize the findings and interpretations of the study, and draw conclusions
	on the relevance and contribution of Ian G. Barbour's thought to
	our understanding of the relationship between science and religion.
	Identify also potential future research areas inspired by

This table helps to organize qualitative research measures on Ian G. Barbour's thoughts on the philosophy of science and religion that can be systematically traced.

RESULTS AND DISCUSSION

Barbour's View on the Relationship of Science and Religion

Barbour maps views on the relationship between science and religion in four typologies: conflict, independence, dialogue, and integration.

Types of Conflicts

This typology of conflict involves scientific materialism and biblical literalism. According to Barbour, the view of conflict emerged in the 19th century through two influential books, namely History of the Conflict between Religion and Science by J.W. Draper and A History of the Warfare of Science and Theology in Christendom by A.D. White. Some recent historians point out that the evidence they present is highly selective and alternative views on the relationship between science and religion have been widely embraced for centuries. Today, the popular portrait of science's war against religion is sharpened by the media because the

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controversy between scientific materialism and biblical literalism appeals far more to audiences than to moderate positions [43].

The theological spectrum can be mapped as follows: naturalism (including materialism), pantheism, liberalism, neo-orthodoxy, traditionalism, conservatism, and biblical literalism (or fundamentalism). Barbour places these two extremes in a conflicted relationship of two seemingly alienating views. The reason is that scientific materialism and biblical literalism both claim that science and religion give opposite statements in the same domain (natural history) so one must choose one among the two. They believe that people cannot believe in evolution and God at the same time. Each of these things gathers adherents by taking opposing positions. The two clashed with war rhetoric [44].

Type of Independence

One way Barbour tried to avoid conflict between science and religion was to separate the two fields into two different areas. The two can be distinguished based on the problem under review, the domain referenced, and the method used. Here Barbour uses his analysis with the philosophical methods of existentialism and neo-orthodoxy as well as analytic philosophy. These are kinds of clear distinctions, but overall they build independence and autonomy in both areas. If there is a jurisdiction, science and religion must tend to be selfish and not interfere with others. Each mode of research is selection and has its immortality. This separation of territories is motivated not only by the will to avoid unnecessary conflicts, but also by the desire to recognize the differences in character of each of these areas of life and thought. We will first examine science and religion as two separate domains and then examine the differences in language and function of each [45], [46].

The way to separate science and religion is to interpret science and religion as two unrelated languages because their respective functions are completely different. Among philosophers of the 1950s, logical positives established scientific statements as the norm for all cognitive assertions and rejected any statement that was not based on empirical verification. Language Analytics in response to this, emphasizes that these different languages serve different functions and need not reduce each other. Each language game (Wittgenstein's term) is distinguished by its function in a social context. Science and religion work very differently and therefore, each other cannot judge each other by each other's standards. Scientific language primarily functions for prediction and control. Theory is used to collect data, find order in the world of observed phenomena, and produce technological applications. Science explores limited issues about natural phenomena. We must not apply science to perform functions outside of it, such as offering a worldview, philosophy of life, or an overarching set of ethical norms. Scientists are no wiser than anyone else once they get out of the lab and speculate outside the scientific framework [47].

Barbour believes that the Independence thesis is a good starting point. The thesis retains a unique character, both religious and scientific. It is a surefire strategy to respond to those who consider conflict between the two impossible to avoid. Religion has distinctive methods, problems, and functions different from science. But Barbour cautions that we should not settle for the idea that science and religion are two unrelated languages as if they were two different languages of the same world. If we seek a coherent interpretation of all experiences, we cannot avoid seeking a more unified worldview [48], [49].

If science and religion were truly independent, the possibility of conflict could be avoided, but it eliminated the possibility of constructive dialogue and enrichment between them. We live life not as detached parts. We perceive life as whole and interrelated even though we build different disciplines to study its different aspects [50].

Dialog Type

Dialogue captures a more constructive relationship between science and religion than the views of Conflict and Independence. However, Dialogue does not offer the conceptual unity that integration advocates propose. Dialogue may arise by considering presuppositions in

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scientific endeavours, exploring the parallels of methods between science and religion or analyzing concepts in one field with concepts in another. In comparing science and religion, Dialogue emphasizes the similarity of pre-suppositions, methods, and concepts. In contrast, Independence emphasizes existing differences [51].

Integration

Some authors call for a more extensive and systematic reformulation of traditional theological ideas than dialogue advocates. There are three different versions of Integration. In natural theology, there is the claim that the existence of God can be inferred from (or supported by) evidence about the design of nature, about which nature makes us increasingly aware. In the theology of nature, the main source of theology lies outside science, but scientific theories can have a powerful impact on the reformulation of certain doctrines, especially those of creation and human nature. In systematic synthesis, science or religion contributes to the development of inclusive metaphysics, such as process philosophy [52].

Natural Theology

There are several examples of natural theology from past centuries. Thomas Aquinas argued that some attributes of God can only be known through revelation in scripture, but the existence of God Himself can be known only by reason. One form of cosmological argument asserts that every event must have a cause so we must acknowledge the first cause if we are to avoid endless cycles. Another form of argument is that the whole chain of natural causes (limited or infinite) is contingent and may not have been the case before. It depends on an inevitably existing will. Aquinas' teleological argument (from telos, Greek, meaning purpose) departs from order and intelligibility as general features of the universe but shows evidence of the design of nature [53].

Natural theology has a strong appeal in the multireligious world because it departs from scientific data that has the potential to reach agreement among different cultures and religions. Furthermore, it is consistent with the personal admiration and fascination that scientists feel in their work. Proponents of design now do not claim that design arguments offer conclusive evidence for theism, they assert that the simpler the claim to believe in the Designer is certainly more acceptable than (or at least equal to) the proposals of alternative interpreters. This can help overcome barriers to belief and can lead to greater openness to forms of religious experience and participation in religious communities. On the other hand, the limitations and arguments of Divine design remain acknowledged. Viewed separately, the design argument is at best directed toward a God according to deism: A designer who is far from the world. However, design arguments can be combined with theistic beliefs based on personal religious experience and historical tradition. Proponents of the theology of nature may use design arguments but tend to give them a central position in their lives and thoughts [54].

Theology of Nature

Theology of Nature does not depart from science as Natural Theology. Instead, it departs from religious tradition and historical revelation. However, he argues that some traditional doctrines should be reformulated in the light of recent science. Here, science and religion are seen as relatively independent, but overlapping sources of ideas within their areas of interest. In particular, the doctrine of creation and the nature of man was influenced by the findings of science. If religious belief is to be aligned with the findings of scientific knowledge, we must make greater adjustments and modifications than those made by the proponents of the thesis of Dialogue. It argues that theologians should take a broad expanse of widely accepted science, rather than risk adapting it to limited or speculative theories that are likely to be abandoned in the future. Theological doctrine must be consistent with scientific evidence even if it is not directly influenced by current scientific theories [44], [45].

Our understanding of the general nature of nature influences the model of God's relationship with nature. Nature is now understood as a dynamic evolutionary process with a

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long history of emerging novelties marked by chance and laws. This characteristic changes the representation of the relationship between God and man with nonhuman nature. This in turn influences our attitude towards nature and has practical implications for environmental ethics. The problem of evil is also viewed differently in the evolutionary world than in the static world [57]–[59].

For Arthur Peacocke, biochemist and theologian, the point of departure for theological reflection was past and present religious experiences in thriving religious communities. Religious beliefs are tested by community consensus and by coherence, comprehensiveness and expediency. But Peacocke wants to reformulate traditional beliefs in response to the latest science. He discusses at length how chance and the laws work together in cosmology, quantum physics, nonequilibrium thermodynamics, and biological evolution. He described the emergence of distinctive forms of activity at higher levels of complexity, in a multilevel hierarchy of organic life and the mind. He assigns a positive role to chance and the exploration and expression of potentiality at all levels. God created through the whole process of law and chance, not by intervening in the cracks of God's process of creating in and through the process of the natural world revealed by science [21].

Cutting-edge versions of the theology of nature can be found among feminist writers. They point out the correlation between the dualisms so inherent in the Western mind: mind/body, reason/emotion, objectivity/subjectivity, domination/submission, power/love. In each case, the first term of each partner (mind, reason, objectification, dominance, and power) is identified in our culture as masculine, while the second term (body, emotion, subjectivity, resignation, and love) is feminine. Patriarchal culture, historically men holding the highest positions in power, has preserved the masculine image of God. Furthermore, the first term of each pair is seen as a character of science, primarily in its attempt to dominate and control nature. Some feminists argue that the exploration of women and nature has common ideological roots in the West. Radical ecophemins look to indigenous cultures for symbols of divine femininity and the restoration of the sanctity of nature. On the other hand, reformist feminists believe that the patriarchal nature of historical Christianity can be set aside without necessarily rejecting Christian tradition as a whole. "I am especially indebted to reformist feminists like Sallie McFague and Rosemary Radford Ruether," Barbour said [4].

Barbour believed that the theology of nature should be drawn from science and religion in its attempt to formulate environmental ethics relevant to the contemporary world. Only science can supply the data necessary to evaluate the threats to the environment that emerge from our technology and lifestyles. However, religious beliefs significantly influence attitudes toward nature and the motivations for our actions. Environmentalists offer sharp criticism of classical Christianity for its drawing a very sharp line between man and nonhuman nature and for its emphasis on God's transcendence beyond His Immanence [48], [49].

Analysis

Above, Barbour first seeks to characterize integration in general by distinguishing it from the inevitably conflicting "conflict" approaches of science and religion, or the "Independence" that the two should be, their paths. Barbour then mapped out four views in his typology, three of which were mentioned above: Conflict, Independence, Dialogue, and Integration. It is not difficult to know from the description above that Babour is more sympathetic to the last two views, especially Integration [51].

There have been several criticisms of Barbour's approach. Houston Smith (2001) and Sayyed Hossein Nasr (in some of their writings), comment on Barbour's view of Integration that here theology seems to be conquered by science. For Smith and Nasr, who were both proponents of Perennial philosophy, the opposite was true: theology precisely tradition became the yardstick of scientific theories. Like Barbour, Smith and Nasr saw science primarily in terms of its philosophical/theological relevance. While Barbour allowed conceptual changes to theology in the name of "learning from science," Smith and Nasr saw

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the theological implications of science as having to be assessed through the lens of a tradition whose true teachings had endured for millennia [60]–[62].

A view similar to but not the same as Barbour's was put forward by John F. Hought (2004), who divided the approaches to science and religion into Conflict, Contrast, Contact and Confirmation. These four views could be seen as a kind of typology like Barbour's, but Hought also sees them as a kind of journey. The conflict occurred due to the blurring of the boundaries of science and religion, both considered competing in answering the same questions so that people had to choose one of them. Hence, the first step is to draw a dividing line to show the contrast of the two, this is similar to Barbour's Independence. The next step, after the difference between these two fields is clear, then contact can be made. The move was driven by a strong psychological impulse that however different fields of science needed to be made coherent. Here the theological implications of scientific theory are drawn into theological territory, not to prove religious doctrine, but simply to interpret scientific findings in a religious framework to understand theology better. The basis is the belief that what science says about nature has relevance to our religious understanding. The torso of science itself has not changed at all, no empirical data has been touched [52].

The movement went so far as to Confirm by attempting to root science and its metaphysical assumptions on a basic religious view of realities that, in at least three monotheistic religions, is ultimately rooted in a being called God. The metaphysical assumptions of science called Hought include that the universe is a rational order. Without this, science as an intellectual pursuit cannot even take its first step. This can be imagined as a kind of Aristotelian "initial premise" of a priori nature, necessary to set in motion the first syllogism. For religious people, this "initial premise" is the object of faith [50], [51].

Regarding the discussion of the relationship between science and religion, John F. Hought (Christian theologian) and Mehdi Golshani (Muslim physicist) gave different opinions. Although the two have different opinions, there are some similarities. In some places, they even use the same metaphor: "root". Haught sought to "root science in a religious view of reality." In mentioning the distinction between what he calls "Islamic science" and "secular science", Golshani offers two reasons, one of which is that metaphysical assumptions can often be "rooted" (or rooted) in religious worldviews [48], [49].

Elsewhere, Golshani explains that reasoning. For him, as for Haught, science must inevitably assume that the nature that is the object of his study is rational: ordered and has laws. In itself, science cannot give this assumption. In secular science, this becomes a kind of "Faith" that does not need to be proven even though it is (inevitably) believed. Without the belief that there are laws that apply regularly, there is no conceptual basis for the development of scientific theories. It is here, according to Golshani, that in line with Haught, religion can be the basis for the work of science [52], [53].

Even if there is a so-called "Islamization", it means an attempt to give such religious meaning to science, while realizing that science can be developed in both religious and non-religious contexts. The "torso of science" itself is no different in these two contexts. Golshani made this point: in terms of scientific data and the discovery of natural laws, neither the West nor the East are relevant. Differences only exist when a scientist interprets the data. Again, it needs to be flawed, this is what Haught proposed in step three [15].

Golshand is arguably a newcomer to the cutting-edge discourse of Islam and science. In the l970s to mid-1990s, names that often appeared were Syed M. Naquib Al-Atas, Seyyed Hossein Nasr, Ismail Al-Faruqi, and Ziauddin Sardar. Al-Attas referred to his early idea as the "dewesternization of science"; Ismail Al-Faruqi spoke of the "Islamization of Science"; while Sardar is about the creation of a "contemporary Islamic science". All of them move primarily at the level of epistemology and a bit of metaphysics (except Al-Attas, which goes very deep into the realm of metaphysics) [65]–[67].

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The ideas of these thinkers certainly differed, and sometimes even contradicted, though sometimes inaccurately labelled the same: "Islamization of science". However, one thing that may be a weakness of this idea is that it seems to have been conceived primarily as a philosophical idea about science, and for a long time, it was not clear how it could be made relevant to practical scientific activity. This weakness has also made it easy and has been misunderstood [68]–[70].

According to Golshani, the idea of "Islamization of Science" is not a "subversive" idea as its proponents sometimes suggest: it seems to want to overhaul modern science from scratch, to provide a stronger Islamic conceptual foundation. For Golshani, even if there is so-called "Islamic science", it is a further advance than modern science, not a retreat or dismantling of what already exists. It goes further because what it aims to do is provide an epistemological and metaphysical framework for contemporary scientific activity. Explicitly, he also mentions that "the depiction of the physical aspects of the universe is entirely the work of science": Religion comes in when it wants to give a final explanation. In other words, for practical purposes, the science that Muslim students should learn is not a different kind of science (and this can be seen from Golshani's life history as a physicist). Ideally, science is equipped with a good understanding of the Islamic worldview so that it can be seamlessly assimilated into the Muslim person. This includes not only Islamic epistemology or metaphysics but also ethics (which is another role religion can play in science) [71].

On the spectrum of views on the relationship between science and religion, another position was occupied by another great Muslim thinker, Fazlur Rahman, who disagreed with the idea of "Islamization of science". Rahman's view is based on his belief that science is, more or less, value-free. The bigger problem is the ability of religionists to present an ethical system that can answer new problems caused by scientific progress. It was not difficult to find partners for Rahman in other religions, who saw that the main issue of science and religion was that of ethics capable of responding quickly and well enough to these new issues [29].

In this area, Muslim discourse during this time, which seems more lively, is related to Fiqh (law/jurisprudence). Fiqh scholars always answer contemporary issues ranging from the use of birth control devices to autopsies, organ replacements to human cloning. As Ebraheim Moosa points out, this trend has been going on for quite a long time, since the early days of the development of science in Islam [72]. The difference is, in the past Fiqh people were relatively more familiar with the new sciences so there was an epistemic coherence between fiqh and science. This has not been seen in more recent times. In Moosa's observation, this is due to the almost stagnant science education in the Muslim world since the 18th century, precisely when science developed very rapidly in the Western world [51], [52].

Thus, so far there are several forms of "integration" that have been alluded to. It appears that various integration models can be done. Different attention to certain parts of science will give rise to different types of integration, just as attention to aspects of religion (theology, metaphysics, ethics, or law) suggests different problems. Each position is built based on attention to a particular aspect of science/religion, and also based on different views on those aspects [73]–[75].

CONCLUSION

There are four typologies of the relationship between science and religion that Barbour made, namely: (1) Conflict typology, involving scientific materialism and biblical literalism; (2) Independent typology, separating the two types in two different regions. The two can be distinguished based on the problem studied, the domain to which they are referred, the methods (existentialism and neo-orthodoxy) used and the two different languages and their two functions (the analytic tradition); (3) typologies of dialogue, which consider presuppositions in scientific endeavours, or explore in the parallels of methods between science and religion; (4) Integration, consisting of natural theology, theology of nature, systematic synthesis (science or religion contributes to the development of inclusive

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metaphysics such as Whitehead's theology of process philosophy) [43], [44]. But from the typology he made, Barbour was more sympathetic to the last two views, specifically Integration. A view similar to but not the same as Barbour's was put forward by John F. Haught who divided the approaches of science and religion into conflict, contrast, contact, and confirmation. These four views could be seen as a kind of typology like Barbour's, but Haught also sees them as a kind of journey. There are some fundamental similarities between Haught, the Christian theologian, and Golshani, the Muslim physicist, in terms of the "strategy" of combining science and religion. In some places, they even use the same metaphor "root". Haught sought to "root science in a religious view of reality". In referring to the distinction between what he calls "Islamic science" and "secular science," Golshani offers two reasons, one of which is that metaphysical assumptions can often be "rooted" (or rooted) in a religious worldview. For him, like Haught, science must inevitably assume that the nature that is the object of its study is rational: ordered and has laws. In itself, science cannot make this assumption. In secular science, this becomes a kind of "Faith" that does not need to be proven even though it is (inevitably) believed. There have been several criticisms by contemporary Islamic thinkers of Barbour's typology. Among them are criticisms made by Houston Smith and Sayyed Hossein Nasr. Both criticized Barbour's integration because here theology seemed to be conquered by science, it was changed to take into account the results of scientific studies. For Smith and Nasr, both proponents of the perennial philosophy, the opposite should have been the case: theology precisely Tradition became the yardstick of scientific theories. Despite Barbour's criticism, Barbour's use of the four-variety typology above can be used to review important issues about the relationship between science and religion. His book "When Science Meets Religion," which has also been translated into Indonesian, is a valuable resource for teachers, scholars, scholars, scholars, scientists, and enthusiasts who want to be part of the fast-growing and creative interaction between science and religion.

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Author Contribution

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Conflicts of Interest

All authors declare no conflict of interest.

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