THE INTEGRATION OF SCIENCE AND RELIGION: ANALYSING RESEARCH PARADIGMS IN INDONESIAN STATE ISLAMIC UNIVERSITIES THROUGH A LAKATOSIAN LENS

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Abstract

Practical questions may arise regarding the feasibility of conducting research using the Islamic paradigm. However, within Indonesian State Islamic universities (UIN), particularly those established by the government, numerous questions have already been answered. The fundamental concept of the 'integration of science and religion' has been successfully implemented for several years in numerous UINs. Several scholarly works have emerged from this conventional paradigm. This article aims to improve the comprehension of research articles published by the UIN Bandung, known as UIN Sunan Gunung Djati Bandung. The qualitative study focuses on select works that employ this paradigm as subjects of analysis. The study design employs a literary-survey methodology, including classified lecture articles, which are subsequently examined from a Lakatosian philosophical perspective on scientific paradigms. The findings reveal that some research articles can be categorised based on their methodological coherence, aligning with the Islamic paradigm, which is denominated as the integration of science and religion. Regardless of the strict correspondence percentage with the Lakatosian paradigm, the results can be classified as follows: 1) auxiliary hypotheses, 2) justification and 3) quasi-scientific integration. Further insights indicate

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that the *Wahyu Memandu Ilmu* (*WMI*), hereinafter called 'Revelation Guiding Science' paradigm, is an evolution of the integration–interconnection concept initiated by M. Amin Abdullah.

Keywords: Integration of science and religion; Lakatos; scientific paradigm; Islamic university.

Khulasah

Persoalan praktikal mengenai kelayakan penyelidikan berparadigma Islam mungkin akan timbul. Namun, dalam konteks Universiti Islam Negeri (UIN) di Indonesia, terutamanya yang ditubuhkan oleh kerajaan, banyak persoalan sedemikian telah pun terjawab dengan jelas. Konsep asas 'integrasi ilmu dan agama' telah berjaya dilaksanakan selama beberapa tahun di pelbagai UIN. Beberapa karya ilmiah juga telah dihasilkan berdasarkan paradigma konvensional ini. Artikel ini bertujuan untuk meningkatkan pemahaman terhadap artikel-artikel penyelidikan yang diterbitkan oleh UIN Bandung, atau dikenali sebagai UIN Sunan Gunung Djati Bandung. Kajian ini bersifat kualitatif dan memfokuskan kepada karya-karya terpilih yang menggunakan paradigma integrasi ilmu dan agama sebagai subjek analisis. Kaedah penyelidikan melibatkan pendekatan tinjauan kritis, termasuk analisis terhadap artikel-artikel kuliah, yang kemudiannya dikaji daripada perspektif falsafah sains Lakatosian berkenaan paradigma ilmiah. Dapatan kajian menunjukkan bahawa beberapa artikel penyelidikan boleh dikategorikan berdasarkan koherensi metodologinya yang selari dengan paradigma Islam, khususnya konsep integrasi antara sains dan agama. Walaupun tidak semua artikel menunjukkan kesepadanan yang ketat dengan paradigma Lakatosian, hasil kajian boleh diklasifikasikan kepada tiga kategori utama: (1) hipotesis tambahan (auxiliary hypotheses), (2) justifikasi metodologi, dan (3) integrasi kuasi-saintifik (quasi-scientific integration). Analisis yang lebih mendalam turut menunjukkan bahawa paradigma Wahyu Memandu Ilmu (WMI) merupakan satu bentuk

evolusi daripada konsep integrasi-interkoneksi yang telah diperkenalkan oleh M. Amin Abdullah..

Kata kunci: Integrasi sains dan agama; Lakatos; paradigma ilmiah, universiti Islam.

Introduction

It was Imre Lakatos who asserted that the change from one scientific paradigm to another occurs frequently, echoing both Thomas Samuel Kuhn's thesis and Karl Raimund Popper's ideas.[1] For him, such changes do not necessarily entail a shift in the 'hardcore' (negative heuristic) of a research programme, but rather the development of the 'protective belt' (positive heuristic) as a means to generate new theories (series of theories).[2] Consequently, the paradigm may be aptly referred to as a prevailing tendency, occasionally endowed with a surge of enlightenment or deemed 'outmoded' as numerous instances are abandoned due to their lack of relevance.[3] This analogous phenomenon is encountered within the context of the prevailing trajectory of contemporary Islamic studies. The Islamic scientific paradigm within higher education emphasises a responsive approach, encapsulating the quintessence of an educational institution that remains consistently 'current' in addressing secular scientific issues.[4]

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[1] Imre Lakatos, *The Methodology of Scientific Research Programmes*, ed. John Worrall and Gregory Currie (Cambridge University Press, 1978), 9; Risto Hilpinen, "On the Characterization of Cognitive Progress," in *Imre Lakatos and Theories of Scientific Change* (Dordrecht: Springer, 1989), 69–80.

[2] Imre Lakatos, *Mathematics, Science and Epistemology: Volume 2, Philosophical Papers* (Cambridge: Cambridge University Press, 1980), 2: 202 & 210.

[3] John Swanson, *God, Science and the Universe: The Integration of Religion and Science* (Florida: Strategic Book Publishing, 2010), 86–89; Mohammad Muslih, *Pengembangan Sains Islam Dalam Perspektif Metodologi Program Riset Lakatosian* (Yogyakarta: UIN Sunan Kalijaga Press, 2017), 121–123.

[4] S. Brian Stratton, *Coherence, Consonance, and Conversation: The Quest of Theology, Philosophy, and Natural Science for a Unified*

The interplay between paradigms and scientific advancement invariably exerts a profound sway over institutional directives and the enduring viability of research undertakings. Moreover, the emergence of paradigms can be catalysed by multifarious challenges, encompassing economic, social and political quandaries that bear upon the fundamental tenets of education.[5] In this arena of inquiry, one apprehends the nuanced facets that encapsulate research methodology, subject matters and foundational suppositions drawing inspiration from Lakatosian philosophy of science and the continuum of theoretical 'transformation and maturation', which harmonises with Kuhn's paradigm shifts.[6] This particular feature of the 'Islamic-based research paradigm', an important aspect within the philosophy of science, has been supported by a number of research projects.

One significant study on this matter was conducted by Adi Setia, who examined the ideas of Syed Muhammad Naquib al-Attas and justified them as an operational component of knowledge development in the Islamic world.[7]

World-View (Maryland: University Press of America, 2000), 200–203; M. C. De Lange, "Reflections on Methodology and Interdisciplinarity in the Postmodern Dialogue between Theology and the Natural Sciences," *Acta Theologica* 27(2) (2007), 44–62; M. Amin Abdullah, "Islamic Studies in Higher Education in Indonesia: Challenges, Impact and Prospects for the World Community," *Al-Jami'ah: Journal of Islamic Studies* 55(2) (2017), https://doi.org/10.14421/ajis.2017.552.391-426.

[5] Bijoy Mukherjee, "Experiments and Research Programmes. Revisiting Vitalism/Non-Vitalism Debate in Early Twentieth Century," *Argument: Biannual Philosophical Journal* 2(1) (2012): 171–197.

[6] Thomas Anthony Provenzola, *The Rationality of Religious Belief in a Postmodern Age* (Deerfield: Trinity Evangelical Divinity School, 2000), 17–18, 23, 32–34, 36.

[7] Adi Setia, "Al-Attās' Philosophy of Science an Extended Outline," *Islam & Science* 1(2) (2003), 165–214; Adi Setia, 'Islamic Science as a Scientific Research Program: Conceptual and Pragmatic Issues', *Journal of Islam & Science* 3(1) (2005), 93–101; Adi Setia, "Three Meanings of Islamic Science: Toward Operationalizing Islamization of Science," *Journal of Islam & Science* 5(1) (2007); Adi Setia, "Some

Al-Attas provides a fundamental framework for 'Islamic science' termed the 'Islamisation of contemporary knowledge'[8] or 'Islamisation' of present-day knowledge[9], an enterprise that grapples with 'de-westernisation' and the simultaneous introduction of Islamic concepts[10] based on interpretive procedures (*tafsir* and *ta'wil*), drawn from original Islamic sources.[11] This remarkable project can also be found in Isma'il Raji al-Faruqi's model of 'Islamisation' with same style of rejection on some aspects of western scientific paradigm concerning 'religion and science demarcation and dichotomy'[12] which drive to the 'malaise of the *ummah*'[13] and thereby must be anticipated by 'critical reading' on western sciences especially on their basic assumption vis-à-vis with *tawhid*.[14]

We argue that both philosophers are talking about the 'Islamisation' from a theoretical perspective, rather than merely its practical aspects. As such, the intricacies of the expansion of methodology, or even smaller subsets, namely propositions or technical steps within their respective fields of study, can accommodate a range of practices and techniques in the development of knowledge in the West,

Upstream Research Programs for Muslim Mathematicians: Operationalizing Islamic Values in the Sciences through Mathematical Creativity," *Journal Islam & Science* 6(2) (2008), 127; Adi Setia, "Vision in Action: Operationalising the Islamisation of Science and Technology," in *Islamic Perspectives on Science and Technology* (Luxembourg: Springer, 2016).

[8] Syed Muhammad Naquib al-Attas, *Islam and Secularism* (Kuala Lumpur: ISTAC, 1989), xi.

[9] Al-Attas, *Islam and Secularism*, 162.

[10] Al-Attas, *Islam and Secularism*, 162–63.

[11] Syed Muhammad Naquib Al-Attas, *Prolegomena to the Metaphysics of Islam* (Kuala Lumpur: International Institute of Islamic Thought and Civilization (ISTAC), 1995), 136–37.

[12] Isma'il Raji al-Faruqi, *Islamization of Knowledge: General Principles and Workplans* (Washington DC: IIIT, 1998), 26–27.

[13] Al-Faruqi, *Islamization of Knowledge*, 5–7.

[14] Al-Faruqi, *Islamization of Knowledge*, 68–70.

provided they do not fundamentally contradict Islamic principles. Syamsuddin Arif also clarifies in several lecture series that the concept of Islamisation in al-Attas' thought can be akin to the actions of '*takhalli*' and '*tahalli*' within the Sufi tradition. Furthermore, this activity is underpinned by al-Attas' concept of 'ethics', notably recognised as '*ta'dib*', serving as a means towards attaining genuine knowledge.[15] Therefore, the essence of these activities lies in relinquishing elements that are incompatible with Islam and then instilling them with Islamic principles.[16]

Yet another undertaking, inaugurated by Indonesian scholars, can be categorised as pioneering ventures in safeguarding the 'Islamic-based research paradigm', exemplified by projects like 'Prophetic Paradigm' (*Paradigma Profetik*),[17] and 'integrated–interconnected science' (*Integrasi-Interkoneksi*),[18] alongside their sequels in UIN (further elucidated in the *Integrasi Ilmu* and hereinafter called 'integration of science'). These academics have positioned Islamic teachings, especially with regard to epistemology, ontology and axiological issues, as the essential 'core' or 'foundation'. The various paradigms of 'integration' find notable proponents in figures such as

[15] Hidayatullah et al., "Syed Muhammad Naquib Al-Attās' Exposition on the Concept of Ethics," *Afkar: Jurnal Akidah & Pemikiran Islam* 24(1) (2022), 409–446, doi: 10.22452/afkar.vol24no1.12.

[16] MA Subandi et al., "Psychotherapeutic Dimensions of an Islamic-Sufi-Based Rehabilitation Center: A Case Study," *Culture, Medicine, and Psychiatry* 46(2) (2022), 1–20, doi:10.1007/s11013-021-09738-1.

[17] Arief Muammar et al., "The Kuntowijoyo's Social Prophetics and The Theological Paradigms in Islam," *Al-Ulum* 21(2) (2021), 362–387; Anindya Aryu Inayati & Agung Barok Pratama, "Epistemology in Islam: The Integration of Science and Religion According to Kuntowijoyo and Its Correlation with the National Law Establishment," *Tasfiyah: Jurnal Pemikiran Islam* 6(1) (2022), 65–82.

[18] M. Amin Abdullah, "Religion, Science and Culture: An Integrated, Interconnected Paradigm of Science," *Al-Jami'ah: Journal of Islamic Studies* 52(1) (2014), https://doi.org/10.14421/ajis.2014.521.175-203.

Seyyed Hossein Nasr,[19] Ziauddin Sardar,[20] and Nidhal Guessoum.[21]

According to Lakatos' viewpoint, the scientific advancement must be rooted within an extensive research agenda: "The programme consists of methodological rules–some tell us what paths of research to avoid (negative heuristic) and others what paths to pursue (positive heuristic)."[22] We argue that Muslim scientists should uphold these fundamental assumptions, which are intertwined with religious values that provide the framework for the research programme. There exists a form of epistemological convergence between Lakatos' framework and the Integration of Science paradigm in the Indonesian State Islamic University.[23] Particularly noteworthy is the pronouncement within UIN Sunan Gunung Djati Bandung's paradigm (hereinafter referred to as UIN Bandung), encapsulated in the statement 'Revelation Guiding Science,'[24] from which we may derive the following conclusions: First, the UIN Bandung paradigm states unequivocally that 'revelation' serves as the standard for all

[19] Seyyed Hossein Nasr, "Islamization of Knowledge: A Critical Overview," *Islamic Studies* 30(3) (1991).

[20] Ziauddin Sardar, *How Do You Know?: Reading Ziauddin Sardar on Islam, Science and Cultural Relations, Science* (London: Pluto Press, 2006), https://doi.org/10.1037/001156.

[21] Nidhal Guessoum, "Religious Literalism and Science-Related Issues in Contemporary Islam," *Zygon: Journal of Religion and Science* 45(4) (2010), https://doi.org/10.1111/j.1467-9744.2010.01135.x.

[22] Imre Lakatos & Alan Musgrave, *Criticism and the Growth of Knowledge: Volume 4: Proceedings of the International Colloquium in the Philosophy of Science*, London, 1965 (Cambridge: Cambridge University Press, 1970), 132.

[23] Riyanto Waryani Fajar et al., *Integrasi-Interkoneksi Keilmuan: Biografi Intelektual M. Amin Abdullah (1953-…), Person, Knowledge, and Institution* (Yogyakarta: UIN Sunan Kalijaga Press, 2013), 1171, 1174.

[24] Mohammad Muslih, "Al-Qur'an dan Lahirnya Sains Teistik," *Tsaqafah* 12(2) (2016); Mohammad Muslih, "Rekonstruksi Metodologi Pengembangan Sains Berbasis Agama," *Kalam* 11, no. 2 (2017): 267–298.

scientific investigations. Second, it emphasises the significant notion that religious tenets can potentially underpin the advancement of science. Another salient observation pertains to the examination of UIN Bandung's scholarly publications, revealing a tendency to analyse multidisciplinary works through an 'Islamic teaching' infused lens.

Progressing to the subsequent tier lies the positive heuristics, akin to a protective perimeter, comprising auxiliary hypotheses that guide scientists in orchestrating the essential components of scientific advancement. Within this stratum, important theories or notions emerge, constituting the bedrock upon which a series of theoretical constructs shall be erected. Only in the ultimate stage do conclusions emerge, fortified by a nexus of the aforementioned theories.[25] This framework largely mirrors any research model. A scientific inquiry consistently incorporates foundational presumptions, methodological underpinnings and theoretical frameworks and culminates in data analysis that culminates in scientific inferences.

The aforementioned explanation is firmly rooted within the Lakatosian viewpoint, which finds applicability in decoding various scientific publications. This perspective was selected due to its alignment with the goals of the WMI paradigm, which endeavours to elucidate the intricate interplay between Islam and science. Methodologically, this approach reveals the linear trajectory and logical coherence whereby Islamic principles can serve as the foundation and source for the beginning of a discipline, a field of research or even a single scientific publication.

[25] Lakatos, *The Methodology of Scientific Research*, 48; Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes," *Philosophy, Science, and History* (2019), https://doi.org/10.4324/9780203802458-7.

Methodology

The research framework of this literature review involves an exploration of the literature associated with the WMI paradigm, which constitutes the 'Islamic-based' research paradigm institutionalised at UIN Bandung. Consequently, this study centres on a selection of linear samples of scientific works within this conversation. Employing a methodology akin to critical reading, this research adopts the perspective of Lakatos, renowned for his distinctive philosophy of science referred to as the research programme methodology.

This literature review uses qualitative research approaches. Data are sourced from both online and offline literature, encompassing multidisciplinary approaches to Islamic studies research. The emphasis is mostly on scientific contributions pertaining to the paradigm of scientific integration within UIN Bandung, known as 'WMI', the institutional scientific paradigm. The available literature readily meets this criterion; however, this study focuses on representative scientific works that bear the WMI narrative in their titles or are substantively aligned with the WMI paradigm, particularly those derived from journal articles and dissertations.

The data analysis is conducted with discerning scrutiny, employing either content analysis, in relation to article titles, or discourse analysis, focusing on article content. The analysis adheres to Lakatos' "research programme" structure, encompassing the hardcore (negative heuristic), auxiliary hypotheses (protective belt) and the series of theories. Therefore, a scientific effort is expected to possess an ideological framework, supported by a variety of theories and methodologies.[26]

Integration of Science

In general, the evolution of the 'paradigm of scholarship' in the State Islamic Religious Universities was initiated by

[26] Muslih, *Pengembangan Sains Islam*, 21–22.

scholars from UIN Jakarta and Yogyakarta. Several scholars, who later became rectors such as Mahmoed Joenoes (1899–1982),[27] Harun Nasution (1919–1998)[28] and Azyumardi Azra (1955–2002),[29] as well as ministers like Mukti Ali (1923–2004),[30] fervently supported the contemporary education paradigm. This encompassed the mastery of foreign languages and the integration of knowledge and religion,

[27] Audrey R. Kahin, "Repression and Regroupment: Religious and Nationalist Organizations in West Sumatra in the 1930s," *Indonesia* 38 (1984), 39–54; Wendy Mukherjee, "Kaum Muda and Kaum Tua in West Java: The Literary Record," in *Islam: Essays on Scripture, Thought and Society* (Brill, 1997), 309–23; Herman L. Beck, "The Rupture between the Muhammadiyah and the Ahmadiyya," *Bijdragen Tot de Taal-, Land-En Volkenkunde/Journal of the Humanities and Social Sciences of Southeast Asia* 161(2–3) (2005), 210–246; Edwin P. Wieringa, "An Unfaithful Translation of the Faithful: Indonesian Islamic Gatekeepers on the Free Poetic Acehnese Translation of the Qurʾān by Teungku Haji Mahjiddin Jusuf (1918–1994)," *Malay-Indonesian Islamic Studies: A Festschrift in Honor of Peter G. Riddell* 20 (2022), 134.

[28] Abdullah Saeed, "Towards Religious Tolerance through Reform in Islamic Education: The Case of the State Institute of Islamic Studies of Indonesia," *Indonesia and the Malay World* 27(79) (1999), 177–191; Robert W. Hefner, *Making Modern Muslims: The Politics of Islamic Education in Southeast Asia* (Honolulu: University of Hawaii Press, 2008); Imron Rosidi, "Harun Nasution's Influence on Shaping Muslim Intellectual's Development in Indonesia," *Contemporary Islam* 17(3) (2023), 1–19.

[29] Hefner, *Making Modern Muslims*, 68, 156.

[30] Karel A. Steenbrink, "The Study of Comparative Religion by Indonesian Muslims: A Survey," *Numen* 37(2) (1990), 141–167; Ismatu Ropi, "Nine Comparative Religion, Tolerance and Islamic Higher Education in Indonesia," in *Islam, Education and Radicalism in Indonesia: Instructing Piety*, ed. Tim Lindsey (UK: Taylor & Francis, 2023); M. Amin Abdullah, "Preliminary Remarks on The Philosophy of Islamic Religious Science," *Al-Jami'ah: Journal of Islamic Studies* 36(61) (1998): 1–26.

following the trend of 'educational modernisation' in the Islamic and western worlds between 1960 and 2006.[31]

The formalisation of this academic paradigm was first initiated by M. Amin Abdullah via UIN Sunan Kalijaga Yogyakarta. During this era, the study of the philosophy of science within Islamic higher education gained momentum, serving as a means to generate 'Islamic science'. This emergence logically arose from the dialectical interaction between scientific discoveries and their societal context.[32] In this context, western science is regarded as 'normal science' undergoing 'anomalies', necessitating a paradigm shift. This serves to strengthen the Islamic intellectual heritage in a scientific way, transcending mere 'justification' or 'conciliation' as presented by Bucaillian.[33]

Drawing from the aforementioned historical facts, the notion of employing the philosophy of science as a perspective in the development of Islamic science, or at the very least an Islamic-infused 'scientific paradigm', can be substantiated. We can draw comparisons to the idea of a 'scientific community', known in the annals of scientific history and philosophy. This concept serves as the genesis of a consensus on the use of methodologies to cultivate a

[31] Azyumardi Azra, "From IAIN to UIN: Islamic Studies in Indonesia," *Islamic Studies and Islamic Education in Contemporary Southeast Asia* (Kuala Lumpur: Yayasan Ilmuwan, 2011).

[32] M. Amin Abdullah, "The Intersubjective Type of Religiosity: Theoretical Framework and Methodological Construction for Developing Human Sciences in a Progressive Muslim Perspective," *Al-Jami'ah: Journal of Islamic Studies* 58(1) (2020): 63–102.

[33] M. Amin Abdullah, "Dialog Peradaban Menghadapi Era Postmodernisme Sebuah Tinjauan Filosofis-Religius," *Al-Jami'ah: Journal of Islamic Studies* 53 (1993), 108–126; Mohammad Muslih, "Integrasi Keilmuan; Isu Mutakhir Filsafat Ilmu," *Kalimah Jurnal Studi Agama dan Pemikiran Islam* 14(2) (2016), 245-272, https://doi.org/10.21111/klm.v14i2.615; Mohammad Muslih, "Metodologi Ilmu: Dari Teori Hingga Teologi," *KALAM* 7(2) (2017), 293, https://doi.org/10.24042/klm.v7i2.456.

science rooted in the convictions of its community.[34] Nonetheless, as this Muslim community in Indonesia constitutes a majority, differing opinions on the technical attainment of 'Islamic prominence', intertwined with scientific and technological progress, naturally persist.

Numerous studies have broadly expounded that the foundation of the paradigm predominantly adopted by the majority of UIN finds its origins in several underlying issues: first, the propagation of 'Islamic revival', propelled by a romanticised notion of the triumphant knowledge prevalent during the Islamic Middle Ages;[35] second, most Muslims across diverse nations face unfavourable conditions in various areas of life, including politics, economics, society, culture, legality and more;[36] and third, a formidable pressure

[34] William A. Kornfeld & Carl E. Hewitt, "The Scientific Community Metaphor," *IEEE Transactions on Systems, Man, and Cybernetics* 11(1) (1981), 24–33; Thomas C. Walker, "The Perils of Paradigm Mentalities: Revisiting Kuhn, Lakatos, and Popper," *Perspectives on Politics* 8(2) (2010): 433–451; Ilya T. Kasavin, "Science and Public Good: Max Weber's Ethical Implications," *Social Epistemology* 34(2) (2020), 184–196; Yafeng Shan, "Science is More than Knowing," *Asian Journal of Philosophy* 2(1) (2023), 13.

[35] Gregg De Young, "Should Science Be Limited? Some Modern Islamic Perspectives," *The Monist* 79(2) (1996), 280–293; Zakia Belhachmi, "Al-Salafiyya, Feminism and Reforms in Twentieth Century Arab-Islamic Society," *Journal of North African Studies* 10(2) (2005), 111–141; Naṣr Ḥāmid Abū Zayd, *Reformation of Islamic Thought: A Critical Historical Analysis* (Amsterdam: Amsterdam University Press, 2006), 21–36; Ahmed Ragab, "In a Clear Arabic Tongue': Arabic and the Making of a Science-Language Regime," *Isis* 108(3) (2017), 612–620; Hasse Jubba et al., "The Contestation between Conservative and Moderate Muslims in Promoting Islamic Moderatism in Indonesia," *Cogent Social Sciences* 8(1) (2022), 2116162; Alizaman D. Gamon & Mariam Saidona Tagoranao, "Fostering a Knowledge Culture for Peace, Development, and Integration: Muslim Education in the Philippines," *Studia Islamika* 29(3) (2022); John Walbridge, *God and Logic in Islam: The Caliphate of Reason* (Cambridge: Cambridge University Press, 2010), 11–13.

[36] M. A. K. Lodhi, "Islamization of Attitudes and Practices in Science & Technology," *Proceedings of Workshop on Islamization of Attitudes*

emerges from the dissemination of ideologies grounded in materialism–communism, pragmatism and similar tenets. Their collective consensus over the alleged lag in scientific and technical growth within Muslim societies finds narrative expression as 'the nexus between religion and science'.[37]

The array of disparities elucidated above has engendered the concept of returning to the Quran and the Sunnah as the bedrock of Islamic doctrine. However, the resulting difference lies in how to navigate the interplay between text and context, revelation and reason, as well as religion and science, the latter encompassing both the social and natural sciences. These dual predicaments frequently culminate in a multitude of interpretations of the primary sources of Islam. The variation in interpretations frequently arises due to shifts in trends, paradigms, approaches and the

[Sic] and Practices in Science and Technology, Herndon, Virginia: February 27-March 1st 1987 AC (IIIT, 1989), 1–3; Anwar Ibrahim, "The Ummah and Tomorrow's World," *Futures* 23(3) (1991), 302–310; Abdul Hamid Abu Sulayman, *Crisis in the Muslim Mind* (Virginia: International Institute of Islamic Thought (IIIT), 2004), xiv, 166–167; Adlina Ariffin, "Revisiting the Malaise of the Ummah: A Way Forward," *Advanced Science Letters* 23(5) (2017), 4989–4992; Mohamed Akhiruddin Ibrahim et al., "*Naqli* and *Aqli* Elements in the Teaching and Learning of Chemistry Course: A Survey on *Tamhidi* Centre, Universiti Sains Islam Malaysia," *International E-Journal of Advances in Social Sciences* 3(9) (2017), 870 - 879.

[37] Hasbiyallah Hasbiyallah et al., "UIN: Studi Islam dan Arah Baru Islam Indonesia," *Jurnal Ilmiah Islam Futura* 18(2) (2019), 298–311; Khozin Khozin & Umiarso Umiarso, "The Philosophy and Methodology of Islam-Science Integration: Unravelling the Transformation of Indonesian Islamic Higher Institutions," *Ulumuna* 23(1) (2019), 135–162; Syahrial Labaso, "Paradigma Integrasi-Interkoneksi di Tengah Kompleksitas Problem Kemanusiaan," *Al-A'raf : Jurnal Pemikiran Islam dan Filsafat* XV(1) (2018), https://doi.org/10.22515/ajpif.v15i2.1462; Muhammad Shodiq et al., "Kritik Nalar Integrasi Keilmuan Pada Karya Disertasi Mahasiswa Berlatar Belakang Non-Agama Universitas Islam Negeri (UIN)," *Dialog* 42(2) (2019), 241–56; Muslih, Integrasi Keilmuan, 245-272.

general framework of Islamic studies, propelled by scholars' viewpoints on the fundamentals of Islamic inquiry itself.[38]

Nevertheless, when viewed within the ambit of the philosophy of science, this trend encounters a scarcity of individuals who genuinely comprehend that this concept constitutes an intrinsic facet of the ever-evolving Islamic scientific tradition. Unfortunately, to effectively spread the idea of scientific integration intertwined with a philosophy of science outlook, a strong intellectual exposition is necessary.[39]

The primary challenge, aside from the variations in the disposition of Muslims across different global regions, pertains to the employment of language as a conduit for communicating these concepts. The use of language is inextricably linked to the logic of thought, alongside the context that shapes its development and use. In this context, the use of language, particularly within the realm of academic discourse, constitutes a component of the metamorphosis of the trajectory of Islamic studies. Amid the shared backdrop delineated earlier, scientists frequently construct unique narratives while grappling with the issue of promulgation, contained within the boundaries of the Islamic scientific tradition. For instance, certain scholars adopt narratives such as 'the Islamisation of knowledge', 'the Prophetic paradigm' and 'the integration of science'.[40]

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[38] Hamid Fahmy, "Genealogi Liberalisasi Pemikiran Islam," *Ulumuna*, 13(1) (2009), 109, https://doi.org/10.20414/ujis.v13i1.374; Irfan Habibie Martanegara, "Implication of Al-Attās's Islamic Philosophy of Science," *International Journal of Islamic Education Ta'dibuna* 1(1) (2017), 39–46; Laina Farhat-Holzman, "Modernisation or Westernization: The Muslim World vs. The Rest," *Comparative Civilizations Review* 67 (2012), 50–62.

[39] Muslih, "Integrasi Keilmuan," 245-272.

[40] Amin Abdullah, "Religion, Science and Culture", 175; Umi Hanifah, "Islamisasi Ilmu Pengetahuan Kontemporer (Konsep Integrasi Keilmuan di Universitas-Universitas Islam Indonesia," *TADRIS: Jurnal Pendidikan Islam* 13(2) (2018), 19, https://doi.org/10.19105/tjpi.v13i2.1972.

'The integration of science' paradigm serves as the established framework within Indonesian State Islamic universities. This paradigm has been cultivated by several UIN, including UIN Syarif Hidayatullah Jakarta (2002), UIN Sunan Kalijaga (2004), UIN Maulana Malik Ibrahim (2004), UIN Sunan Gunung Djati (2005), UIN Alauddin Makassar (2005), UIN Walisongo Semarang (2012) and UIN Sunan Ampel Surabaya (2013). Additionally, several other UINs are presently working on releasing research and literature, thereby presenting possible directions for future investigation. This group encompasses UIN Sultan Syarif Kasim Riau (2017), UIN Raden Fatah, UIN Ar-Raniry and UIN North Sumatra.[41]

It can be observed that each university has its own uniqueness, following the metaphor used in explaining the scientific integration paradigm. Due to the extensive scope of study concerning paradigms of knowledge within each respective university, we have opted for UIN Bandung, which was originally established as Institut Agama Islam Negeri (IAIN) in 1968, and stands as our chosen subject. A notable uniqueness lies in its establishment in 1968, before UIN Surabaya and UIN Malang. Additionally, its intellectual paradigm was conceived as early as 2002, ultimately ratified in 2008. This temporal context highlights the paradigm's comparative antiquity in relation to its counterparts. In this instance, it becomes imperative to illuminate the scientific integration paradigm implemented at UIN Sunan Gunung Djati Bandung.

[41] Toto Suharto, "The Paradigm of Theo-Anthropo-Cosmocentrism: Reposition of the Cluster of Non-Islamic Studies in Indonesian State Islamic Universities," *Walisongo: Jurnal Penelitian Sosial Keagamaan* 23(2) (2015), 251–282; Musaddad Harahap, "Konstruksi Integrasi Ilmu Pengetahuan di Universitas Islam Riau," *MIQOT: Jurnal Ilmu-Ilmu Keislaman* 43(2) (2019), 239–260, doi: 10.30821/miqot.v43i2.676.

Revelation Guiding Science

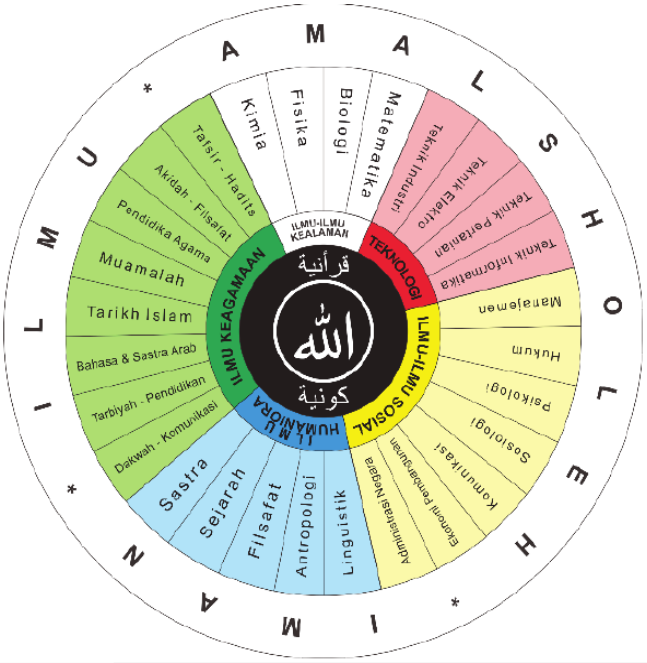
As one of the State Islamic universities championing the scientific integration paradigm, UIN Bandung has fostered the WMI paradigm with the 'Wheel of Science' (*Roda Pedati* – henceforth referred to as *RP*) metaphor as key components of this paradigm's implementation.[42] Documentation attesting to this can be found in various official campus publications, as well as in the scholarly work of lecturers and students associated with the institution. Such data serve as a genuine testament to the vibrancy ingrained in the scientific heritage at UIN Bandung. The origins of UIN Bandung trace back to Presidential Decree number 57, which pertains to the alteration of status from a State Islamic institute to the Sunan Gunung Djati located in Bandung.

UIN Bandung has undergone multiple stages of development of its unique 'Islamic-based research paradigm'. The inaugural phase, spanning 2004 to 2009, signifies the period of institutionalisation. Subsequently, the period from 2010 to 2014 marked the stage of institutional fortification. The third phase, encompassing 2015 to 2019, signifies institutional development. The current fourth phase, scheduled from 2020 to 2024, is envisaged as the 'take-off' stage. Concurrently, the fifth phase, planned for 2025 to 2029, aspires for global recognition as a 'world-class university participant'.[43] During each of these stages, dynamic changes within the scientific framework occur spontaneously. These changes include paradigm shifts as well as qualitative and quantitative enhancements to facilities, spanning teaching resources and learning support amenities.

[42] Aang Mahyani et al., "The Concept of Revelation Guiding Science as a Scientific Paradigm UIN SUNAN Gunung DJATI Bandung," *Ta'dib: Jurnal Pendidikan Islam* 10(2) (2021), 423–430.

[43] Wahyudin Darmalaksana, *Rencana Induk Pengembangan Penelitian (RIP-P) Tahun 2015-2019* (Bandung: Pusat Penelitian dan Penerbitan UIN SGD, 2015), 2–3.

Figure 1: The metaphor for the 'Integration of Science' in UIN Bandung is the Wheel of Science, or well-known 'Revelation Guiding Science' model



Implementation

In a broader context, the WMI paradigm appears to be systematically instituted. This becomes clear through the research guidelines distributed by the institution. Among these, a narrative assertion can be identified in their introductory statements: "Being a superior and competitive university based on WMI in integrating religious and general sciences in 2019 at the ASEAN level."[44] Furthermore, this same feeling reappears as the vision encapsulated by the Research and Publishing Centre of LP2M (an administrative office that oversees the university's research projects and

[44] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 3–4.

community service) at UIN Bandung, articulated as follows: "To become a research and publishing centre that excels in revelation-based innovation guides knowledge and is based on ethics and high academic responsibility".[45]

Grounded in the aforementioned figure,[46] this concrete measure was enshrined as a constituent of the developmental strategy delineated within the 2015–2019 UIN Bandung Strategic Plan as follows: enhancement and optimisation of curriculum quality, underscored by a paradigm guided by revelation, in steering scientific endeavours. This stands as one essential component of 'The Future of Research and Publishing'. Consequently, an array of manuals, textbooks and scholarly works underpinned by this paradigm come into fruition.[47]

The vision above serves as the basis for the advancement towards later stages. Initially, UIN Bandung aspires to evolve into a research-centric State Islamic university (research university), ultimately ascending to the status of an international State Islamic university (international university).[48] To materialise this plan, the project begins with the creation of research directives supported by reliable criteria and indicators, intended to channel science-oriented revelation. This initiative aims to enhance the quality of research conducted by the academic community at UIN Bandung, while promoting the development of thematic research aligned with the guidance of science through revelation.[49]

The paradigmatic approach is yet classified under the rubric of 'integration of science', pivoting around the

[45] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 6.
[46] Tim Konsorium Keilmuan Wahyu Memandu Ilmu, *Trilogi Wahyu Memandu Ilmu*, ed. Irawan, Lilis Sulastri & Fisher Zulkarnain (Bandung: Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LP2M) UIN Sunan Gunung Djati Bandung, 2016), 13.
[47] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 15.
[48] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 16.
[49] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 18–19.

overarching theme of the WMI paradigm[50]. Strategic concerns earmarked for concentrated attention encompass internationalisation, effective governance, quality-driven implementation and character cultivation, all channelled through the prism of the paradigm illuminated by the guiding light of revelation[51]. In support of the WMI paradigm, many academic works have been published. Most works emphasise revelation as central, supported by philosophical Islamic concepts, but often lack deeper exploration into educational theories, sciences, and other contributions from earlier Muslim scholars.[52]

Lakatos and WMI: A Discussion

Our argument regarding the possible creation of an 'Islamic-Based Research Paradigm' within the framework of Lakatosian philosophy is based on multiple correspondences between the elements inherent in a science or scientific product, particularly when Lakatos provides room for faith as the cornerstone for scientific and knowledge advancement. Several international journals have elaborated on various relationships between religion and science, with a more focused approach on paradigms not originally initiated

[50] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 28.

[51] Darmalaksana, *Rencana Induk Pengembangan Penelitian*, 72.

[52] We confirm a selection of prominent academic contributions that exemplify the applied methodological products within the Islamic-Based Research Paradigm in this supplementary: dx.doi.org/10.13140/RG.2.2.24133.42728/1

by the Muslim scholarly community. Among these journals are *Zygon*[53] and *Theology and Science*.[54]

Interestingly, these scientific paradigms have been widely adopted and developed within the modern Christian tradition as an effort to harmonise religion and science

[53] Nancey C. Murphy, "Acceptability Criteria for Work in Theology and Science," *Zygon*® 22(3) (1987), 279–298; Nancey C. Murphy, "From Critical Realism to a Methodological Approach: Response to Robbins, Van Huyssteen, and Hefner," *Zygon*® 23(3) (1988), 287–290; Nancey Murphy, "Ian Barbour on Religion and the Methods of Science: An Assessment," *Zygon*® 31(1) (1996), 11–20; Nancey Murphy, "Theology and Science within a Lakatosian Program," *Zygon*® 34(4) (1999), 629–642; Philip Hefner, "Theology's Truth and Scientific Formulation," *Zygon*® 23(3) (1988), 263–279; Philip Hefner, "The Role of Science in Pannenberg's Theogical Thinking," *Zygon*® 24(2) (1989), 135–151; Philip Clayton, "Disciplining Relativism and Truth," *Zygon*® 24(3) (1989), 315–334; Robert John Russell, "The Physics of David Bohm and Its Relevance to Philosophy and Theology," *Zygon*® 20(2) (1985), 135–158; Ian G. Barbour, "Response to Critiques of Religion in an Age of Science," *Zygon*® 31(1) (1996), 51–65.

[54] Victoria Lorrimar, "Are Scientific Research Programmes Applicable to Theology? On Philip Hefner's Use of Lakatos," *Theology and Science* 15(2) (2017), 188–202; Robert John Russell, "The Crucial Importance of Nancey Murphy's Deployment of Lakatos's Methodology for Theology and Science," *Theology and Science* 15(4) (2017), 401–410; Robert John Russell, *Assessing Ian G. Barbour's Contributions to Theology and Science*, *Theology and Science* 15(1) (2017), 1–4; Robert John Russell, "Theological Influences in Scientific Research Programs: Natural Theology 'in Reverse," *Theology and Science* 15(4) (2017), 378–394; John B. King Jr, "The Trinitarian Basis of Science," *Theology and Science* 15(1) (2017), 101–15; Josh Reeves, "Values and Science: An Argument for Why They Cannot Be Separated," *Theology and Science* 14(2) (2016), 147–159; James Marcum, "Exploring the Rational Boundaries Between the Natural Sciences and Christian Theology1," *Theology and Science* 1(2) (2003), 203–220; Nancey Murphy, "Religion, Theology, and the Philosophy of Science: An Appreciation of the Work of Ian Barbour," *Theology and Science* 15(1) (2017), 42–52; Nancey Murphy, "Niels Henrik Gregersen's Contribution to Theology-and-Science Methodology," *Theology and Science* 4(2) (2006), 115–119; Pawel Tambor, "Georges Lemaître: Two Paths to Truth," *Theology and Science* 21(2) (2023), 245–260.

through specific rationality schemes.[55] In the tradition of integration between religion and science in the West, the pursuit of truth via both religious and scientific channels without conflict is referred to by Russell as creative mutual interaction.[56]

Lakatos emphasises the significance of research programmes[57] in challenging Popper's 'naïve falsificationism' when not facing a 'crisis'[58] or 'malfunction', as termed by Kuhn,[59] in a scientific justification. This is because careless falsification might endanger well-established and solid theories.[60] Moreover, the incongruity between theory and observed facts doesn't necessarily mandate its falsification, as it might merely entail an inconsistency within factual propositions.[61]

Lakatos indeed supported Kuhn's claim that a 'paradigm' may be formed sociologically through consensus among scientists:

> "…These I take to be universally recognised scientific achievements that for a time provide

[55] Provenzola, *The Rationality of Religious Belief*, 33–36.

[56] Robert John Russell, *Time in Eternity: Pannenberg, Physics, and Eschatology in Creative Mutual Interaction* (Indiana: University of Notre Dame Pess, 2012); Philip Clayton, "Creative Mutual Interaction as Manifesto, Research Program, and Regulative Ideal," in *God's Action in Nature's World* (UK: Routledge, 2016), 51–64; Nancey Murphy, "Creative Mutual Interaction: Robert John Russell's Contribution to Theology and Science Methodology," in *God's Action in Nature's World* (UK: Routledge, 2016), 39–50.

[57] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 132–135.

[58] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 91 & 125.

[59] Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 2012), 92.

[60] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 103–106; Lakatos, *The Methodology of Scientific Research*, 12.

[61] Lakatos, "Falsification and the Methodology of Scientific Research," 174.

> model problems and solutions to a community of practitioners."[62]

Alternatively, it can be concluded that research based upon one or more past scientific achievements that some particular community acknowledge for a time as supplying the foundation for its further practice.[63] In this sense, the 'integrative paradigm of knowledge' or what we refer to as the thesis of the 'Islamic-Based Research Paradigm' has taken shape within the UIN community. A concrete case is identified within UIN Bandung under the label of WMI. However, we critically contend that these approaches and paradigms should be used for pragmatic purposes, and certainly not as a fundamental tenet of our belief in the ultimate veracity of these methods. For a certain level, these methodologies and paradigms will naturally evolve and shift, as asserted by their own discoverer, Thomas Kuhn, within his 'normal science – crisis – revolution'[64] circle or Popper with 'sociologism[65] – closed society – open society[66] – utopian method[67] – reinforced dogmatism – publicity of scientific method – revealed science',[68] and Lakatos with 'consistently progressive theoretical shift'.[69]

Our main criticism lies in the fact that in the philosophy of science, they still rely on the idea of continuity of 'change' and 'development' towards a state of 'maturity'. However, Islam itself is positioned within UIN as the hardcore (even though referred to as 'belief', its meaning is distinct from the belief equated with faith, since belief has verifiable physical

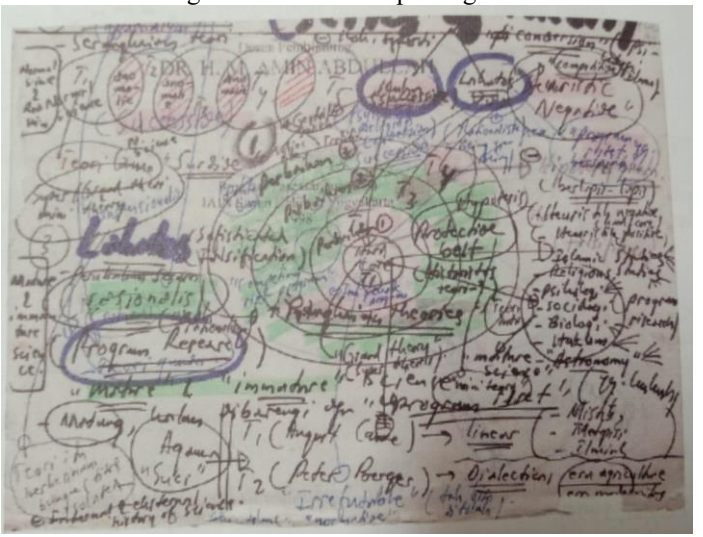
[62] Kuhn, *The Structure of Scientific Revolutions*, viii.
[63] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 66.
[64] Kuhn, *The Structure of Scientific Revolutions*, 8, 10, 37, 43.
[65] Karl Raimund Popper, *The Open Society and Its Enemies: The High Tide of Prophecy: Hegel, Marx, and the Aftermath* (London: George Routledge & Sons, 1947), 2: 202.
[66] Popper, *The Open Society and Its Enemies*, 2:152.
[67] Popper, *The Open Society and Its Enemies*, 2:143.
[68] Popper, *The Open Society and Its Enemies*, 2:203, 206–207.
[69] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 134.

and observable constraints[70]), according to al-Attas, is epistemologically mature from its inception in the revelation to the Prophet Muhammad.[71] Meanwhile, science itself, as we quote from al-Attas, operates at the level of interpretation and profound comprehension of the natural world as a metaphor created by Allah.[72]

The Lakatosian paradigm seems to be employed due to Lakatos's own assertion, critiquing Popper's falsification on the foundational assumptions in science, namely, the 'first assumption' (referred to as the naturalistic doctrine of observation by Popper)[73], which is metaphysical in nature, and termed by Lakatos as the hardcore, is something within a scientific programme that is absolutely unquestionable.[74] This bears a resemblance to what we consider faith in our religion. Thus, by utilising the Lakatosian paradigm, we can develop Islamic science without negating our faith or Islamic values in scientific pursuits. In other words, our aspiration for 'Islamic science' can be realised scientifically, methodologically and without conflicting with the realms of religion and science.[75] Furthermore, the WMI paradigm embodies the structure of 'integration of knowledge' conceived by Amin in the form of 'integration–interconnection' with the following design:

[70] Al-Attas, *Prolegomena to the Metaphysics of Islam*, 116–17.
[71] Al-Attas, *Islam and Secularism*, 24, 44–45.
[72] Al-Attas, *Prolegomena to the Metaphysics of Islam*, 136–38.
[73] Lakatos, "Falsification and the Methodology of Scientific Research," 173.
[74] Lakatos & Musgrave, *Criticism and the Growth of Knowledge*, 133.
[75] Muslih, "Integrasi Keilmuan," 245-272.

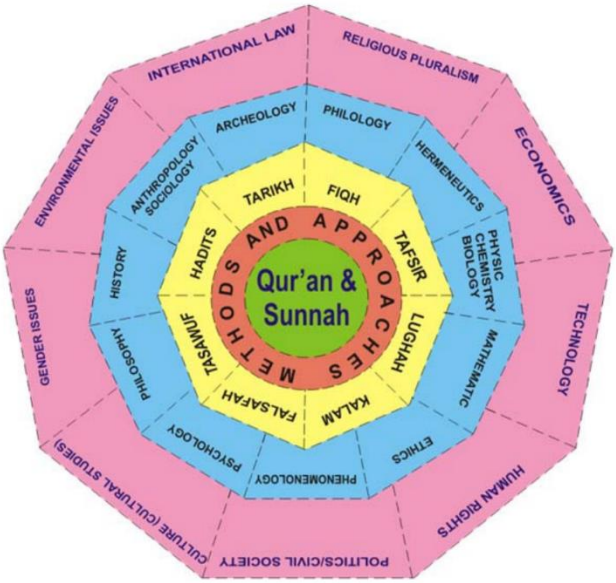
Figure 2: Original sketch by M. Amin Abdullah outlining the 'Integration of Science' paradigm at UIN[76]



Amin has indeed developed the 'integration of science' paradigm, synthesised with Lakatos's Methodology of Scientific Research Programme, to incorporate the dimension of faith (with revelation as the foundation of Islamic epistemology) within a framework of scientific development, referred to as the 'hardcore'. From this core, an intellectual paradigm is developed (protective belt), culminating in the birth of new theories (series of theories) in Islamic science through research as the realisation of '*ijtihad*' in Islam to deduce legal conclusions from specific phenomena.

[76] Waryani Fajar, *Integrasi-Interkoneksi Keilmuan*, 1174.

Figure 3: Final draft of the spider web design for the 'Integration of Science' paradigm at UIN Sunan Kalijaga Yogyakarta, now known as 'Integrasi-Interkoneksi'.[77]



Based on the resemblance depicted in the diagram, we designate Amin as the individual who first initiated and justified the potential incorporation of the Lakatosian paradigm to be synthesised with the 'integration of knowledge' concept, aimed at constructing an 'Islamic-Based Research Paradigm'. It would be more appropriately referred to as an Islamic Methodology of Scientific Research Programme to underline its Lakatosian nature. The realisation, deepening and practical application of this methodology have solidified into a course commonly referred to as *Metodologi Studi Islam* and *Studi Islam Interdisipliner* (Interdisciplinary Islamic Studies) at UIN Bandung and various other UIN. More precisely, UIN

[77] This concept evidently serves as a source of inspiration for the WMI schema shown in Figure 1.

Bandung, through LP2M, regularly initiates research proposal submissions under the heading of '*Penelitian Interdisipliner*' (interdisciplinary research). It is at this level that theories, drawing from the Lakatosian series of theories, can be developed based on established Islamic knowledge.

In essence, the type of 'Islamic-based research paradigm', commonly referred to as the 'Integration of Science' in the context of UIN Bandung, namely, WMI, is a conclusion drawn from our study. This is particularly notable considering that the scholarly paradigm of 'Integration of Science' has been extensively adopted within the UINs across Indonesia. Each UIN may designate itself with a unique name; nevertheless, fundamentally, they all trace back to the 'Integration of Science' concept pioneered by Amin. This idea successfully combines the Islamic higher education intellectual heritage with the Methodology of Scientific Research Programme. It positions religion as the 'hardcore', Islamic study methodology as the 'protective belt' and the resulting research products and scientific theories as the 'series of theory'.

Conclusion

One of the conclusions that can be drawn from this study is that the Islamic-Based Research Paradigm at the UIN level originated from the concept of integrating science, an intellectual breakthrough by Muslim thinkers in Indonesia to harmonise religion and science. This finding is substantiated by our tracing of its sources and inspirations, namely, the aforementioned pioneers in Indonesia. Despite its success, a critical viewpoint reveals that the Islamic-Based Research Programme in UIN is essentially a synthesis of the scholarly spirit among the Muslim academic community with the Methodology of Scientific Research Programme.

Simultaneously, we interpret it as a process of 'adapting' the western scholarship within the Muslim society. Regardless of the proportion of relevance between the paradigm and the study findings produced, based on the

attached supplementary materials offered previously, we have determined that several works still fall under the classification of validating verses with particular natural or social phenomena. However, a few works–albeit limited in number–have fulfilled the elements of the Lakatosian research programme, particularly in the case of some conceptual research that involves the *tafsir* and *ta'wil* of verses, as well as the thoughts of earlier Muslim philosophers.

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