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Towards a Balanced and Holistic Approach to Thinking: A Contemporary Application of the Ghazzālian Framework*

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Abstract
The article highlights, within the context of the currently prevalent tendency among contemporary Muslims, two important lessons pertaining to a balanced and holistic approach to thinking which can be derived from the major works of Abū Ḥāmid Muḥammad al-Ghazzālī (d. 1111/505): one of them concerns the relation between memorisation and thinking while the other pertains to the relation between creative thinking and critical thinking. It demonstrates that just as memorising is a necessary condition in thinking, so is logic related to creativity as modes (or aspects) of thinking. It also shows that in both memorisation and thinking (whether critical or creative), imagination plays a great role.

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Preliminaries

By and large contemporary educated Muslims do not dispute the importance and significance of thinking in their life. That Islam as their religion accords thinking a special position is also something many of them are generally aware of. Yet, there have been gross misunderstandings among them regarding the details about thinking. Two of them which are the focus of this article concern the binary relations between memorisation and thinking, on the one hand, and between creative and critical modes of thinking, on the other hand. The general impression is, in regard to the aforementioned twofold relations, the two elements or poles in each relation are rather incompatible and somewhat mutually exclusive. As a result, it is an increasingly common phenomenon that Muslims of today have been demanded to choose with an either-or frame of mind and urged to opt for one pole in the stead of the other.

As far as Islam is concerned, the foregoing penchant for bipolarisation as well as its ensuing antagonism is surely not preferable, let alone necessary.[1] On the contrary, as clearly explained and embodied in its long religious, intellectual and scientific tradition, Islam promotes and enjoins a balanced and harmonious understanding and approach which exemplifies not only the "unity-in-diversity" dimension but also the "diversity-in-unity" dimension. In this context and in regard to Islam, as indicated in our earlier work on *tadbīr* as both thinking

1. Such a penchant for bipolarisation may stem from a mind-set that subscribes to dualism. For a critical analysis of dualism, see Syed Muhammad Naquib al-Attas, *Islām and Secularism* (Kuala Lumpur: Muslim Youth Movement of Malaysia (ABIM), 1978), particularly the beginning pages of its Chapter V.

and action, *tawḥīd* understood as both process (unifying) and result (unity) represents the "unity-in-diversity" aspect of Islam while *adab*—encapsulating well Islam's due recognition of real diversity and true hierarchy—represents its "diversity-in-unity" aspect. Both notions, taken in pairs, are conceptually self-exemplified, since the two are different yet united in the metaphysics of Islam.[2]

What we intend to do here is to briefly highlight, within the context of the currently prevalent tendency among contemporary Muslims, two important lessons pertaining to the *tawḥīd*-and-*adab*-oriented approach to thinking which can be derived from the major works of Abū Ḥāmid Muḥammad al-Ghazzālī (d. 1111/505): one of them concerning the relation between memorisation and thinking while the other having to do with the relation between creative and critical modes of thinking.[3] Before doing so, it is important that we first conduct an overview of some main elements in al-Ghazzālī's thought regarding thinking which are relevant to what we shall be discussing soon.

Al-Ghazzālī on thinking[4]

In this-worldly existence, man is a being with dual aspects: the material and the spiritual. As far as his material or physical aspect is concerned, man is considered to belong biologically to the animal genus; yet, man is differentiated from the rest

2. See our work (in collaboration with Mohd Sani Badron), *Good Governance:* Adab-*Oriented* Tadbīr *in Islām* (Kuala Lumpur: Institute of Islamic Understanding Malaysia (IKIM), 2011), 9–10.

3. In fact, we had earlier, though separately, discussed these lessons in several of our articles for "IKIM Views" in the Malaysian daily *The Star* (see, for instance, "The many dimensions of creativity," 3 August 2010, p. N38; and "Exams, memorisation and the ability to think," 24 August 2010, p. N37).

4. As far as al-Ghazzālī's thought on intelligence, imagination, memory and thinking is concerned, the content of this section is almost entirely based on the findings as recorded in our earlier four works: (1) *The*

of the animals by his ʿ*aql*, which is a singular Islamic term for both reason (or *ratio*) and intellect.[5] ʿ*Aql*, which is by nature spiritual, is maintained to be man's essence and constitute his rational faculty. By means of this faculty, man is endowed with the epistemic ability to attain to that which is yet unknown from what he has already known.[6] In fact, "knowing" has been considered to be the progress of one's mind from "what-has-already-been-known" to "what-is-still-unknown," which as a whole has also been regarded as the principle regulating any genuine epistemic act.

Knowledge—be it either concept (*taṣawwur* or *maʿrifah*) or assent (*taṣdīq* or ʿ*ilmī*)—can be either necessary (*ḍarūrī*)

Sources of Knowledge in al-Ghazālī's Thought: A Psychological Framework of Epistemology (Kuala Lumpur: International Institute of Islamic Thought and Civilization (ISTAC), 2002); (2) *Kreativiti & Imaginasi dalam Psikologi Islami: Pengamatan al-Ghazzālī, al-Baghdādī dan al-Rāzī*, ed. Mohd Zaidi Ismail (Kuala Lumpur: Institute of Islamic Understanding Malaysia (IKIM), 2011), particularly its Introduction, Chapter One, and Conclusion; (3) "Imaginasi dan Kreativiti Insan menurut al-Ghazzālī dan Kemunasabahannya dalam Ruang-Lingkup Semasa," Chapter Two (pp. 27–39) in *Islam, Kreativiti dan Inovasi*, ed. Azrina Sobian (Kuala Lumpur: IKIM, 2011); and (4) "Logic in al-Ghazzālī's Theory of Certitude," *Al-Shajarah: Journal of the International Institute of Islamic Thought and Civilization (ISTAC)* 1, no. 1 & 2 (1996): 95–125.

5. For critical analyses of the Western dualistic conception of *ratio* vis-à-vis *intellectus* in contrast to the holistic and balanced understanding of *al-ʿaql* in the religious, intellectual and scientific tradition of Islam, see the works of both Syed Muhammad Naquib al-Attas and Seyyed Hossein Nasr. Of the former's works, of great relevance in this regard are *Islām and Secularism*, 30ff., and *Risalah untuk Kaum Muslimin* (Kuala Lumpur: International Institute of Islamic Thought and Civilization (ISTAC), 2001), 168ff.. As regards the latter's writings, two that directly address this issues are "Intellect and Intuition: Their Relationship from the Islamic Perspective," in *Islam and Contemporary Society*, ed. S. Azzam (n.p.: Islamic Council of Europe, 1982), and "Epistemological Questions: Relations among Intellect, Reason, and Intuition within Diverse Islamic Intellectual Perspectives," chapter 6 (pp. 93–103) in his *Islamic Philosophy from its Origin to the Present: Philosophy in the Land of Prophecy* (New York: State University of New York Press, 2006).

6. For more on reason and intellect, see Syed Muhammad Naquib al-Attas, *Prolegomena to the Metaphysics of Islam* (Kuala Lumpur: ISTAC, 1995), 119ff. and 155ff.; Karim Douglas Crow, "Islam and Reason," *Al-Shajarah: Journal of the International Institute of Islamic Thought and Civili-*

or acquired (*muktasab*). The necessary knowledge is also considered on numerous occasions to be apriori (*awwālī*) while the acquired one, discursive (*naẓarī*). The acquired, or non-necessary, knowledge is sometimes obtained through instruction (*al-taʿallum*) and, at times, by means of reasoning (*al-istidlāl*), which is also referred to by such terms as *al-fikr, al-tafakkur, al-taʾammul, al-tadabbur, al-naẓar, al-iʿtibār*, and *al-istibṣār*.

As a process, thinking or reasoning basically consists of one's intentionally obtaining new (or the third) knowledge from the combination of previously two isolatory cognitions. Such a combination must be both *formally* valid and *materially* true and certain.[7] Nevertheless, although the resulting new cognition *appears* to follow necessarily from such a combination, it is *in reality* not inherently necessary. In other words, reasoning is the mind's movement in the realm of ideas, assisted in most cases by one's faculty of imagination, in search of the enabling, connecting idea which is technically called "the middle term" (*al-ḥadd al-awsaṭ*), the completion of which process brings the mind nearer to knowing the item yet unknown. At times the mind succeeds in getting to know it, and in still some other cases, it fails to attain its objective.

With regard to thinking as *al-iʿtibār*, al-Ghazzālī once explained it as "the presenting of two cognitions (or units of

zation (ISTAC) 8, no. 1 (2003):109–137; idem, "The Intellect in Islamic Thought: Mind and Heart," *KATHA: The Official Journal of the Centre for Civilisational Dialogue* 2 (2006): 1–16; and Ibrahim Kalin, *Reason and Rationality in the Qurʾan*, MABDA English Monograph Series No. 112 (Amman: The Royal Aal Al-Bayt Institute for Islamic Thought, 2012), 13–18. See also Muḥammad ʿAlī al-Jūzū, *Mafhūm al-ʿAql wa al-Qalb fi al-Qurʾān wa al-Sunnah* (Beirut: Dār al-ʿIlm li al-Malāyīn, 1980; second impression, 1983); and Yūsuf al-Qarḍāwī, *Al-ʿAql wa al-ʿIlm fi al-Qurʾān al-Karīm* (Cairo: Maktabah Wahbah, 1996).

7. Cf. content (or semantics) vis-à-vis form or format (or syntax) in Howard Gardner, *Changing Mind: The Art and Science of Changing our Own and Other People's Minds* (Boston: Harvard Business School Press, 2006), 10ff. For further details on truth and certitude as materials of thinking, see our work, "Logic in al-Ghazālī's Theory of Certitude," 95–125.

knowledge) to the mind such that from the two, the mind is able to cross over to the third or new knowledge." However, when such a leap or crossing (*al-ʿubūr*) does not happen and one's mind remains at those two cognitions, this case is known as recollection (*al-tadhakkur*), which is simply one's bringing of the two cognitions to be present in one's mind. As such, *al-fikr* (thinking) already includes *al-dhikr* (remembrance), though the reverse is not the case.[8]

Later, in the religious, intellectual and scientific tradition of Islam, al-Ghazzālī's aforementioned conception of thinking as well as similar conceptions by other scholars became encapsulated in more precise formulations. For instance, almost two centuries after him, the theologian and Qurʾān exegete, al-Qāḍī Nāṣir al-Dīn al-Bayḍāwī (d. 1286/685), described thinking (*al-naẓar*) in his important theological treatise, *Ṭawāliʿ al-Anwār min Maṭāliʿ al-Anẓār*, as "the mental act of ordering known materials in a manner that shall lead to one's being informed of what has heretofore been unknown" (*tartīb umūr maʿlūmah ʿalā wajhin yuʾaddī ilā istiʿlām mā lays bi-maʿlūm*).[9] Similarly, al-Sayyid al-Sharīf al-Jurjānī, a Muslim polymath who died in the early 15th century C.E., related in his famous work on definitions that thinking (*al-fikr*)

8. Abū Ḥāmid Muḥammad al-Ghazzālī, *Iḥyāʾ ʿUlūm al-Dīn*, with Zayn al-Dīn al-ʿIrāqī's *al-Mughnī ʿan Ḥaml al-Asfār fi al-Asfār fi Takhrīj mā fi al-Iḥyāʾ min al-Akhbār*, 5 vols. (Beirut: Dār al-Kutub al-ʿIlmiyyah, 1986), 1: 62, and 4: 452–3. See also idem, *Mishkāt al-Anwār*, edited with introduction by Abū ʿAlā ʿAfīfī (Cairo: al-Dār al-Qawmiyyah, 1964), 73; idem, *al-Qisṭās al-Mustaqīm*, edited with introduction by Riyāḍ Mustafā (Damascus: Manshūrāt Dār al-Ḥikmah, 1986), 36–9, 75, 86–8, 109–111, and 126; and idem, *Kitāb al-Imlāʾ fi Ishkālāt al-Iḥyāʾ* in the fifth volume of the aforementioned *Iḥyāʾ ʿUlūm al-Dīn*, 27.

9. See its edition by ʿAbbās Sulaymān (Beirut: Dār al-Jīl; Cairo: al-Maktabah al-Azhariyyah li al-Turāth, 1991), 55. Cf. Edwin E. Calverley and James W. Pollock, eds. and trans., *Nature, Man and God in Medieval Islam: ʿAbd Allah Baydawi's Text* Tawaliʿ al-Anwar min Maliʿ al-Anzar *along with Mahmud Isfahani's Commentary* Matliʿ al-Anzar, Sharh Maliʿ al-Anwar, 2 vols. (Leiden, Boston, Köln: Brill, 2002), 42.

is "the mental act of (1) putting into meaningful order (2) what one has already known in order to (3) attain what one is still ignorant of" (*tartīb umūr maʿlūmah li-taʾaddi ilā al-majhūl*).[10] As is clear, all such descriptions of thinking are in fact rooted in the aforementioned regulating principle for genuine epistemic act, i.e., knowing as the progress of one's mind from "what-has-already-been-known" to "what-is-still-unknown."[11]

Since al-Jurjānī's formulation has already incorporated the essential components of thinking as conceived of by al-Ghazzālī, apart from its being the latest and most concise of all the three, we shall focus on it for our further elaboration on such components. It is fairly obvious that embedded in such a description are three central and constitutive elements:

1. One constituent, indicated by (2) above, is the units of knowledge already in one's possession—what one has already known, or what one is currently attending to

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10. Al-Sayyid Sharīf ʿAlī ibn Muḥammad al-Jurjānī, *Kitāb al-Taʿrīfāt*, ed. Ibrāhīm al-Abyārī (fourth impression, Beirut: Dār al-Kitāb al-ʿArabī, 1998), s.v. "f-k-r." For further discussion of it, see ʿAḍud al-Dīn ʿAbd al-Raḥmān ibn Aḥmad al-Ījī, *Al-Mawāqif fi ʿIlm al-Kalām* (Kaherah: Maktabat al-Mutanabbi, n.d.), 22; and its commentary by al-Jurjānī, *Sharḥ al-Mawāqif*, 8 tomes in 4 vols. (n.p.: al-Haj Muhammad Afandi, 1907), 1: 194–203.

11. For further clarification on this description and its underlying principle, see our article, "Clarity in thought for understanding," IKIM Views, *The Star*, 7 June 2011. As to how both apply to human governance, see our article, "Conceptualising *Tadbīr* as a Constituent of Governance in Islām," *TAFHIM: IKIM Journal of Islam and the Contemporary World* 3 (2010): 42–47. Regarding their application in science, see several of our earlier articles: "The Cosmos as the Created Book and its Implications for the Orientation of Science," *Islam & Science: Journal of Islamic Perspectives on Science* 6, no. 1 (Summer 2008): 47–52; "Perihal Alam Semesta sebagai Kitab Kejadian dan Kesan Ilmiahnya pada Hala-Tuju Sains Tabii: Satu Liputan Ringkas Menurut Rencana Pemikiran al-Attas," *Afkar: Jurnal Akidah & Pemikiran Islam* 8, (1428H/2007): 107–109; and "The Nature of the Cosmos and its Implications on Science Education," *Educational Awakening: Journal of the Educational Sciences* (Institute of Education, International Islamic University Malaysia (IIUM)) 5, no. 1 (2008): 103–130.

epistemically—which is regarded as the "material," or "matter," or "content" of thinking.

2. Another constituent, indicated by (1), is the way one mentally organises those units of knowledge resulting in certain mental patterns, certain arrangements. It is the way one mentally relates one unit with another, or a group of other units of knowledge, in such a manner as to allow for new units of knowledge to become manifest. This second constituent of thinking is thus considered to be the "form," or "structure," or "format" of thinking.
3. The third constituent represents the mental progress, indicated by (3) above, which is the successful movement of one's mind to new units of knowledge (such as deriving right conclusions or making correct inferences or forming new ideas) after the first and second constituents above have been obtained. In short, thinking is like one putting the right form to the right material so that one will arrive at the right product or result. Nevertheless, such mental arrival at new cognition, though appearing to be automatic, is in fact by Divine Inspiration.[12]

Apart from detailing such constituents of thinking, al-Ghazzālī had also elaborated on the close relation that exists between thinking as a peculiarly human faculty and imagination as the most refined faculty possessed by animals of which man is biologically a species. In his analysis, acts of human imaginative faculty (*al-quwwah al-mutakhayyilah*) are mainly of three types:

1. The first type consists of its associating (or composition) (*al-tarkīb*) as well as dissociating (or decomposition)

12. For a detailed explanation on al-Ghazzālī's position pertaining to Divine Inspiration in relation to human thinking, see our work, *The Sources of Knowledge in al-Ghazālī's Thought*, Chapters Two and Three.

(*al-tafṣīl*) of various particular images (or forms) and meanings that are already in one's memory. One is thereby able to "create" numerous imaginary objects and events such as unicorn, fictions and fairy tales, and the like.

2. Its second type of acts comprises resembling and likening (*al-muhākāh wa al-tamthīl*), resulting then in various kinds of symbolism. Hence, when one's intelligence divides something into branches, one's imagination likens such a portioning to the branches of a tree, or when something is ordered in different degrees, one's imagination likens such a hierarchy to a ladderlike structure.
3. The third type of acts pertains to its mediacy in human recollection such that something which one has forgotten becomes recollected. Such is the case because one's imagination, being by nature active, keeps scrutinising the many images (or forms) preserved in one's memory, moving from one form to another nearest to the former, until it comes across that form by means of which one's mind comes to remember a forgotten meaning. The relation of that form to the arrival of the meaning which is associated with it is like the relation, as discussed in formal logic, of the middle term of a syllogism to its conclusion; for through its presence, one is prepared to receive the conclusion.[13]

Yet, one may still wonder as to how imagination relates to thinking. As explained above, one of the three central and constitutive elements in thinking pertains to the way one mentally organises those units of knowledge which one is currently attending to, resulting thus in certain patterns or

13. In our estimation, this third type is precisely what mnemonics and mind-mapping as refined memorisation techniques and devices have capitalised on.

arrangements in one's mind. It is the manner one relates one unit with another unit, or a group of other units of knowledge, in order to prepare one's mind to be inspired with new units of knowledge. It concerns the numerous active compositions (or associations) as well as decompositions (or dissociations) of such units in one's mind. This constituent of thinking is hence considered to be the "form," or "structure," of thinking, which is actually the dimension of thinking that *formal* logic as a discipline of study is singularly concerned with.[14]

In fact, it is in this structure-forming act of the mind that one easily finds the defining role of human imagination. So instrumental is imagination to thinking that al-Ghazzālī also regarded it as a "cogitative faculty" *(al-quwwah al-mutafakkirah*, or *al-quwwah al-mufakkirah*).[15] In other words, cogitation as a mental act is carried out with the assistance of the imagination, in the course of intuiting more composite and higher cognitions and intelligibles. For instance, in a particular performance of the mind known as syllogism,[16] imagination is used by the mind to acquire a middle term by means of its combining and separating of the units of knowledge already in one's mind. The mind or intellect, by God's leave, will then intuit the conclusion of such a syllogistic composition. This logico-intellectual operation of the human mind actually multiplies as one progresses in knowledge. As such, and given

14. Al-Ghazzālī had himself composed several important works on formal logic the most extensive of which is *Miʿyār al-ʿIlm fi Fann al-Manṭiq*. See, for instance, its critical edition by Sulaymān Dunyā (Cairo: Dār al-Maʿārif bi-Miṣr, n. d.).

15. For a detailed explanation on the nature of human imagination and its role in al-Ghazzālī's thought, see our two earlier works, *The Sources of Knowledge in Al-Ghazāli's Thought*, 10, 13–20, 26ff., 49–59, and 62; and *Kreativiti & Imaginasi dalam Psikologi Islami*, Introduction (pp. 1–10), Chapter One (pp. 11–30), and Conclusion (pp. 69–74).

16. In logic (*ʿilm al-manṭiq*), syllogism is termed *al-qiyās*, unlike the one similarly termed in both Islamic jurisprudence (*ʿilm uṣūl al-fiqh*) and law (*ʿilm al-fiqh*) which in the logical terminology is named *al-tamthīl*.

the prevalent tendency among today's pundits of creativity to assign imagination a pivotal role in invention and innovation, that there be close connection between imagination and thinking as recognised by al-Ghazzālī and as herein outlined is particularly significant.

Having summarised al-Ghazzālī's conception of thinking and other related mental acts, we shall hereinafter attempt to see how it impacts on the aforementioned two contemporary issues pertaining to thinking as indicated at the outset, namely: the relation between memorisation and thinking, on the one hand, and the relation between creative and critical modes of thinking, on the other hand.

Memory being a necessary condition of thinking

By and large, Muslims living in the modern age, either in Malaysia or elsewhere, are no stranger to calls for reform of their educational system. One such reform has been outlined in considerable detail in the *Malaysian Education Blueprint 2013-2025: Preliminary Report*.[17] Recognising that "thinking skills" is among the six key attributes needed by every Malaysian student to be globally competitive, Malaysia's Ministry of Education spells out therein, particularly in the first of its eleven shifts, its emphasis on the inculcation of higher-order thinking skills (a.k.a. HOTS), especially as defined by Bloom's taxonomy.[18] National examinations and school-based assessments shall thereafter be revamped to gradually increase percentage of questions that test HOTS. By 2016, HOTS questions shall

17. The document in its English version is downloadable in pdf from http://www.moe.gov/userfiles/file/PPP/Preliminary-Blueprint-Eng.pdf while its Executive Summary (English, also in pdf) is accessible at http://www4.unescobkk.org/nespap/sites/default/files/Preliminary-Blueprint-ExecSummary-Eng_0.pdf.
18. *Malaysian Education Blueprint 2013-2025 (Executive Summary)*, pp. E-6, E-16, and E-19.

make up 80 per cent of questions for UPSR, 80 per cent of the Form 3 central assessment, 75 per cent of the questions for SPM core subjects and 50 per cent of the questions for SPM elective subjects.[19]

Such a blueprint and other similar attempts at educational reforms, if not properly conceptualised and explained, may exacerbate some general impressions. One such impression is that the existing system as well as its stakeholders is obsessed with examinations at the various levels of the educational ladder which have been too often criticised for placing too much emphasis on memorisation and rote learning. This has resulted in less emphasis being placed on thinking and the pertinent skills, leading then to the deplorable state of the so-called "products" of this system, the school leavers, the university graduates. As has often been claimed, they seem to be good only at memorising, displaying poor ability—if any—to think.

Yet, one may want to inquire further whether such "products" are really good at memorising. Similarly, one may want to properly assess whether they are not only poor in thinking but worse are also equally poor, if not weaker, in memorising. One may even have had on many occasions encountered remarks that such students can only remember things up to the time of examinations. That may well be so because, to them, all these are worth remembering only for the exams; other than that, they are meaningless. Surely, they have many other things which they perfectly commit to their memory; some are things they consider dear to them which they so commit almost without any difficulty. Whether or not a thing is dear to them depends very much on their attitude, their outlook, their mind-set, their aspiration, and their expectation. Such determiners, however, apart from

19. Ibid., pp. E-21 and E-38.

pertaining to their different personalities, have much to do with their religio-socio-cultural matrix which on numerous occasions can be in direct conflict with their formal education.

It is to be noted, however, that the aforementioned *Blueprint* does reiterate the importance of balance and holism as envisioned by and embedded in Malaysia's National Education Philosophy.[20] In that respect, and in accordance with Islam's emphasis on both *tawḥīd* and *adab*—the former term, as pointed out earlier, representing its "unity-in-diversity" dimension while the latter one, its "diversity-in-unity" dimension—any Muslim involved in conceptualising and implementing such a *Blueprint*, or any other similar plan of educational reforms, has to be rather careful in balancing what is normally considered to be lower-order thinking skills, which surely involve memorisation and rote learning, and what is regarded as HOTS. Mistakes of contrasting the importance of thinking with that of memorisation should in this regard be avoided or, at least, minimised.

As is clear from the foregoing explanation on al-Ghazzālī's conception of thinking, one of its three constituents pertains to the units of knowledge already in one's possession, which is regarded as the "material," or "matter," of thinking. As far as the retaining and reproducing of this constituent of thinking is concerned, strengthening and refining human memory and memorising skills is of utmost importance. Just as important is the strong will in oneself not only to gather more units of relevant knowledge but also to ascertain their veracity. In addition, since human imagination has an important role to play in memorisation and recollection, as had been pointed out earlier, it too needs invigoration and refinement.

As such, memorisation can be conceived of as being supportive of thinking. The latter indeed requires some

20. Ibid., pp. E-5, E-6, and E-16.

element of the former in order to materialise; for man can only think according to what he has already known. If, for some reasons, he has lost what he knew before, he has to regain it through some means before he can make use of it to obtain new knowledge. If he has forgotten it, he needs to recall it first—by whatever means at his disposal—before he can proceed to think. Mentally retaining intact what one has already known requires a certain ability to memorise. One may minimise this arduous task of retaining every bit of what one has epistemically possessed by storing it in some device—in fact, this is what the ICT age has empowered us to do, among others—but one cannot totally do without it without incurring some risks. In short, memorisation, though not a sufficient condition, is indeed a necessary condition of thinking.

Insofar as the past religious, intellectual and scientific tradition of Islam is concerned, one will surely come across true accounts of how great scholars were able to excel in both, in memorising as well as thinking. This simply shows that the two can grow together. What Muslims urgently need to do today, among others, is to adopt a balanced approach to dealing with the bipolar relation as well as relearn and revive the manner in which both faculties were successfully nurtured in the past.

Creativity and logic as modes, rather than kinds, of thinking

Human creativity, whether exemplified as invention or innovation, has been a subject of interest to many parties. In whatever form it is manifested, it essentially has to do with novelty. Be it novelty in science, arts, or other cultural realms, and be it ideational or practical, it is only highly regarded if and when it is beneficial. As a subject of study, it has indeed been approached from different angles, each highlighting one or some of its many dimensions. Certain studies scrutinise it by

focusing on creative *products*, some by zooming in on creative *processes*, others by zeroing in on creative *activities*, and the rest by concentrating on creative *individuals*.[21]

According to Dean Keith Simonton, a leading researcher and scholar in the field of creativity, insofar as scientific creativity is concerned, it is an issue which has been dealt with in the history of science, the philosophy of science, the sociology of science, and the psychology of science—disciplines which are termed *metasciences*. In Simonton's assessment, each discipline has a somewhat distinctive outlook on creativity and the disciplinary variation may be due partly to the contrasts in each discipline's methodological techniques and substantive interests and partly to the essential fact that such creativity can be examined from four principal perspectives: logic, genius, chance, and zeitgeist. Yet, studying each of the above categories on its own can never offer us a sufficient overall story of creativity. Many, therefore, have tried to offer a harmonious synthesis of as many reasonable perspectives as possible. In the case of Simonton, for instance, he had endeavoured to integrate all the aforementioned four perspectives by subsuming the logic, genius, and zeitgeist positions under the chance position.[22]

Whatever the case is, one can hardly doubt that creativity has to do in large part with thinking. Problems and disputes begin to arise, however, when one comes to address the details pertaining to thinking and, by extension, creativity. It is indeed unfortunate that in a number of attempts by Muslims

21. See Dean Keith Simonton, *Creativity in Science: Chance, Logic, Genius, and Zeitgeist* (Cambridge: Cambridge University Press, 2004); Hasan Langgulung, *Kreativiti dan Pendidikan: Suatu Kajian Psikologi dan Falsafah* (Kuala Lumpur: Dewan Bahasa dan Pustaka (DBP), 1991), particularly its Second Chapter, 151ff., 275–298, and 335–349; as well as Jamal Badi and Mustapha Tajdin, *Creative Thinking: An Islamic Perspective*, 1st ed. (Kuala Lumpur: Research Centre, International Islamic University Malaysia (IIUM), 2004), 154ff..

22. See Simonton, *Creativity in Science,* 3–13, and 160–184.

to account for creative thinking, one often finds it not only being differentiated from critical or logical thinking but also, influenced by the dominant view from without them, being primarily contrasted with the latter.[23] At the popular level, one is easily confronted with the belief that the human brain is divided, its left cerebral hemisphere is logical, and its right is creative.[24] In terms of results, logic is sometimes equated with the expected, though somewhat delayed, while creativity, with the unexpected. In terms of process, logic is often depicted as being discursive, analytical and pedantic whereas creativity is imaginative, intuitive and holistic. To somewhat appropriate the nomenclature popularised by such philosophers-scientists as Reichenbach and Popper, logical and creative thinking are two largely independent and distinct psychological processes, the former concerns the context of justification, and the latter, the context of discovery.[25] While such a dichotomy, if maintained on heuristic grounds, may be very helpful, it brings them nowhere when reified. On the contrary, any Muslim entertaining such a reification shall most probably end up having no other option than to choose one mode at the expense of the other, whereas in reality, they are in dire need of both. In other words, reading some of those accounts

23. For instance, ambivalence and vagueness, if not stark contrast, can be discerned in the aforementioned Badi and Tajdin's *Creative Thinking*, as well as in Madihah Mohamad Shukri, "Falsafah Kecerdasan dan Kemahiran Berfikir serta Sumbangan ke Arah Pembangunan Insan," in *Modal Insan dan Pembangunan Masa Kini*, Siri Fokus Minda 3 (Kuala Terengganu: Fakulti Pengurusan dan Ekonomi, KUSTEM, December 2006): 67–82.

24. For a brief analysis of this popular belief, see John McCrone, *How the Brain Works: A Beginner's Guide to the Mind and Consciousness*, Essential Science Series, ed. John Gribbin (London: Dorling Kindersley (DK), 2002), 61–62.

25. For further explanation on these two contexts, see, for instance, Harold I. Brown, *Rationality* (London and New York: Routledge, 1990), 30–34, 42, 142, and 183–184; and Donald Gillies, *Philosophy of Science in the Twentieth Century: Four Central Themes* (Oxford UK and Cambridge USA: Blackwell, 1993), 30–32.

may tempt one to entertain the idea that these two modes or dimensions of thinking are mutually exclusive, acting like two contradictories which cannot both be true at the same time nor be simultaneously false. Yet, are they that exclusive? Are both two non-overlapping categories of thinking?

That Muslims should avoid being trapped in this either-or mindset becomes particularly significant when they are involved in formulating, interpreting and implementing such important policies and documents as the aforementioned *Malaysian Education Blueprint 2013-2025*. It is stated therein that every student needs to master a range of important cognitive skills which include not only creative thinking and innovation but also problem-solving and reasoning. In the immediate list that somewhat details the former category of cognitive skills, one finds among others "the ability to innovate, to generate new possibilities, and to create new ideas or knowledge." In contrast, enlisted in the list specifying what is meant by the latter category are "the ability to anticipate problems and approach issues critically, logically, inductively, and deductively in order to find solutions, and ultimately make decisions."[26]

Of great relevance in this move to avoid unnecessary bifurcation of creative and critical thinking is the way thinking had been holistically viewed by al-Ghazzālī. As explained before, one of its three constituents has to do with the way one mentally organises those units of knowledge. It concerns the numerous active compositions as well as decompositions of such units in one's mind and is thus considered to be the "form," or "structure," of thinking. Interestingly, it is in this structure-forming act of the mind that human imagination plays such a great role that it also becomes to be characterised as cogitative.

26. *Malaysian Education Blueprint 2013-2025 (Executive Summary)*, p. E-16, as well as *Malaysian Education Blueprint 2013-2025 (Full)*, p. 2-5.

Another constituent represents one's mental progress, which is the successful movement of one's mind to new units of knowledge (such as deriving right conclusions or making correct inferences or forming new ideas) after the foregoing first and second constituents have been obtained. In short, thinking is like one putting the right form to the right material so that one will arrive at the right product or result. As such, defects in thinking may well be due to the defects in its material or its form, or to flaws in both. If such is how thinking is understood and formulated, in what way is logical and creative thinking different from each other? Similarly, how, if at all, are they related to each other?

Based on the foregoing description, one may explain them in terms of the manner one focuses on the result; should one be more concerned *with the novelty of and in* (3) above, then one is focused more on creativity; but if one is more preoccupied with the *correctness or validity of and in* (3) above, then one is focused more on logic.[27] Yet, one may want to be concerned with the novelty of and in (3) above as well as its correctness and validity. In such a case, at once one deals with both logic and creativity.

In addition, one may well want to seriously consider whether the various types (or figures) of correct form of thinking as heretofore gathered, analysed and scrutinised in the discipline of logic have been exhaustive enough. Perhaps, one may eventually discover new ratiocinative figure(s) which, although falling outside the existing scope of right forms of logical thinking, is equally valid. One thing, however, is sure; were one able to make such a discovery, one would then be in a better position to prove that being creative and novel does not have to be incompatible with—or worse still, antipodal to—being logical.[28]

27. See our earlier discussion as indicated by note 10 above.
28. See also a more or less similar discussion in our work, *Kreativiti & Imaginasi dalam Psikologi Islami*, 24–28.

Conclusion

It is therefore clear that if one is to adopt the *tawḥīd*-and-*adab*-oriented approach to thinking, as earlier exemplified by al-Ghazzālī in his major works, one will then not have to prefer thinking to the exclusion of memorisation, on the one hand, and similarly, one will not then have to face the dilemma of siding with creative thinking at the cost of marginalising the critical one, on the other hand. In short, just as memorising is an indispensable, necessary condition in thinking, so is logic related to creativity as modes (or aspects) of thinking, somewhat similar to the way one side of a coin is related to its other side. It is also obvious that in both mental acts—memorisation as well as thinking, whether critical or creative—imagination plays a great, instrumental role. As such, in dealing with both bipolar relations, Muslims of today urgently need to relearn the balanced and holistic understanding and approach which al-Ghazzālī had much earlier exemplified in his major works.