



The Influence of al-Ghazali on the Use of Logic as a Thinking Methodology in Islamic Sciences

HALİL İMAMOĞLUGİL 

Ankara Yıldırım Beyazıt University

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Abstract: Al-Ghazali (d. 1111) represents one of the most important turning points in the history of logic in the Islamic world. He emphasized logic in particular in his efforts to remedy the shortcomings he observed in the traditions of Fiqh (Islamic Jurisprudence) and Kalam (Islamic Theology) and to make these sciences more systematic. Al-Ghazali's terminology, views, and conceptualizations were influential in the beginning of the use of logic as a methodology of thought in Islamic sciences. Al-Ghazali's work in the field of logic, primarily directed toward practical goals in the religious sciences, presented a comprehensive example of applied logic that had not been seen before. He offered a wide range of suitable examples that could appeal to the minds of those engaged in religious sciences. His emphasis on the importance and value of logic helped spread it throughout the Islamic world and incorporate it into the madrasa curriculum. He ended the debates on logic in Islamic philosophy, thereby establishing a legitimate foundation for logic in the Islamic world. Thus, logic became an important part not only of philosophy but also of all religious sciences, especially theology. Many Islamic thinkers, especially theologians, benefited from logic to acquire knowledge.

Keywords: Al-Ghazali, Islamic sciences, Islamic theology, logic, methodology.

Introduction

Although the Greeks are often cited as the originators of logic, the Indians, Chinese, Egyptians, Persians, Phoenicians, and Mesopotamians had their own understanding of logic before them. Conceptualization techniques in Indian and Chinese philosophy, as well as measurement, counting, classification methods, and some arithmetic operations, were quite advanced in ancient Mesopotamia and Egypt. However, since the Greeks played the greatest role in establishing the systematics of this science, its center or origin is attributed to the Greeks.¹

Aristotle (384–322 BC) was the first to establish logic as a distinct and independent discipline within philosophy and to systematize it.² The work done by the Eleatic School and the Sophists before Aristotle served as preparatory work for the establishment of the science of logic. Parmenides (540-450 BC) of the Eleatic School and his student Zeno of Elea (490-430 BC) are considered the precursors of logic. Parmenides discovered important concepts of logic. The Eleatic School influenced those who came after them due to the importance they attached to logic and their contributions to it.³ Socrates (470-399 BC), Plato, and the Sophists played a pioneering role in the establishment of logic. Socrates and his student Plato put forward a number of theories about concepts and judgments.⁴ Socrates was the first to address the concept, pioneered the theory of definition, and established the principles of rhetoric, persuasion, and debate. According to Socrates and Plato, logic is a type of debate art that is inseparable from philosophy and is used in philosophical discussions, and its name is dialectic.⁵

¹ Necip Taylan, *Mantık Tarihçesi-Problemleri* (İstanbul: MÜİF Vakfı Yayınları, 1996), 23-24; İbrahim Emiroğlu, *Klasik Mantığa Giriş* (Ankara: Elis Yayınları, 2004), 38.

² Heinz Heimsoeth, *Felsefenin Temel Disiplinleri*, trans. Takiyettin Mengüşoğlu (İstanbul: Remzi Kitabevi, 1986), 36; Kâmiran Birand, *İlk Çağ Felsefesi Tarihi* (Ankara: AÜİF Yayınları, 1958), 71; Necati Öner, *Klasik Mantık* (Ankara: AÜİF Yayınları, 1991), 5; Doğan Özlem, *Mantık klasik/sembolik mantık, mantık felsefesi* (İstanbul: İnkılâp Kitabevi Yayın, 1999), 363; Taylan, *Mantık Tarihçesi-Problemleri*, 23, 26-27; Emiroğlu, *Klasik Mantığa Giriş*, 41.

³ Ernst von Aster, *İlkçağ ve Ortaçağ Felsefe Tarihi*, adapt. Vural Okur (İstanbul: İm Yayın Tasarım, 2005), 101; Birand, *İlk Çağ Felsefesi Tarihi*, 22.

⁴ Hasan Küçük, *İslâm'da ve Batıda Mantık* (İstanbul: MÜİF Vakfı Yayınları, 1988), 19.

⁵ Taylan, *Mantık Tarihçesi-Problemleri*, 26; Emiroğlu, *Klasik Mantığa Giriş*, 40-41.

After Aristotle, the Stoics, especially Chrysippus (c. 277–204), engaged with topics of logic. The Stoics sought to separate logic from metaphysics and transform it into a science concerned with form and language. Both in the Islamic world and in the West, Aristotle's understanding of logic remained unchanged and dominant for centuries. The Stoics' ideas were absorbed into Aristotelian logic, and Aristotle reigned as the sole authority.⁶ Aristotelian logic was used in later periods by both members of other religions and Muslims, and numerous important works were written about it. The influence of this logic has continued to the present day and remains as strong as ever.

1. The Introduction of Logic to the Islamic World

The study of logic in the Islamic cultural world began with the translation of Aristotle's works on logic into Arabic.⁷ Translation activities are believed to have been initiated by Khālid ibn Yazīd ibn Mu'āwiya (d. 704), one of the leading figures of The Umayyad Dynasty.⁸ After the fall of the Umayyad dynasty, translation activities were encouraged and supported by The Abbasid Caliphs such as al-Manşūr (d. 775), Hārūn al-Rashīd (Hārūnürreşīd) (d. 809), and Ma'mūn (d. 833).⁹ The translations were done by Syriac and Harra-nian translators, initially from Greek into Syriac, then from Syriac into Arabic, and later directly from Greek into Arabic.¹⁰ During the reigns

⁶ Öner, *Klasik Mantık*, 6; Birand, *İlk Çağ Felsefesi Tarihi*, 71.

⁷ H. Ziya Ülken, *Mantık Tarihi*, ed: Edebiyat Fakültesi Felsefe Zümresi (İstanbul: İÜEF Yayınları, 1942), 80-81; cf. Nihat Keklik, *İslâm Mantık Tarihi İslâm Mantığının Kaynakları Süryânilerde Mantık ve İslâm Mantıkçıları* (İstanbul: İÜEF Yayınları, 1969), vol. I, 68-69; Öner, *Klasik Mantık*, 6; Taylan, *Mantık Tarihçesi-Problemleri*, 40; Mahmut Kaya, *İslâm Kaynakları Işığında Aristoteles ve Felsefesi* (İstanbul: Ekin Yayınları, 1983), 80.

⁸ See A. Sâmi Neşşâr, *Menâhicü'l-Bahs inde Müfekiri'l-İslâm* (Alexandria: 1947), 7; Bekir Karlığa, "İslâm'da Tercüme Hareketleri", *Uluslararası İslâm Düşüncesi Konferansı 2* (25-27 Nisan 1997) (İstanbul: İBB Kültür İşleri Daire Başkanlığı Yayınları, 1997), 90; Necati Öner, *Tanzimat'tan Sonra Türkiye'de İlim ve Mantık Anlayışı* (Ankara: AÜİF Yayınları, 1967), 3.

⁹ Muhammed Âbid Câbirî, *Arap-İslâm Aklının Oluşumu*, trans. İbrahim Akbaba (İstanbul: Kitabevi, 2001), 267-269; Mehmet Bayraktar, *İslâm Felsefesine Giriş* (Ankara: TDV Yayınları, 2005), 36-40.

¹⁰ See Şemsettin Günaltay, "Kadim Felsefe İslâm Âlemine Nasıl ve Hangi Yol ile Girdi", *Darü'l-Fünûn İlahiyât Fakültesi Mecmuâsı*, Evkaf Matbaası, yr. 1, no. 2, March, 1926, 210; Keklik, *İslâm Mantık Tarihi*, vol. I, 38, 48; Bayraktar, *İslâm Felsefesine Giriş*, 37.

of Manşūr and Ma'mūn, works related to Aristotelian logic were translated more frequently.¹¹ Some of the famous Christian and Muslim translators¹² who were involved in translation activities during that period are as follows: Abdullāh ibn al-Muqaffa (d. 759), Muḥammad ibn al-Muqaffa (750-815), Yaḥyā ibn al-Biṭrīq (770-830), Al-Bara-mikah (The Barmakids) (780-840), Ibn Nā'ima al-Ḥimṣī (780-840), Ḥunayn ibn Ishāq (809-877), Ishāq ibn Ḥunayn (845-910/911), Qusṭā ibn Lūqā Kusta b. Luka (820-912), Thābit ibn Qurra (834-901).¹³

There are various reasons for the commencement of translation activities and the translation of Aristotle's works on logic into Arabic. Some of these reasons stem from necessity dictated by circumstances, while others arise from personal interest. Some of the reasons that motivated Muslims to translate works on logic during that period are as follows:

Muslims have brought equality and freedom of thought wherever they went, regardless of religious differences. They have granted everyone living in Islamic lands the opportunity and freedom to express their ideas and even to debate them. This situation has laid the groundwork for the reading¹⁴ of works on all subjects permitted by this freedom and for the study of logic.

The Jews, Christians, and other believers in the conquered lands defended their religious beliefs using the rules of logic they had adopted from the Greek world. This situation led Muslims to feel the need to organize their evidence regarding Islam according to the rules of logic. Consequently, it became necessary to recognize and learn Aristotelian logic.¹⁵

¹¹ Bayraktar, *İslām Felsefesine Giriş*, 37; İbrahim, Çapak *Anahatlarıyla Mantık* (İstanbul: Ensar Neşriyat, 2012), 33-34; Nazım Hasırcı, *Klasik Mantık El Kitabı* (Ankara: Araştırma Yayınları, 2015), 26-27. For translations related to this topic, See Keklik, *İslām Mantık Tarihi*, vol. I, 33-70; Kaya, *Aristoteles ve Felsefesi*, 80-127.

¹² Keklik, *İslām Mantık Tarihi*, vol. I, 42-47.

¹³ Nicholas Rescher, *The Development of Arabic Logic* (London: University of Pittsburgh Press, 1964), 30. See Ülken, *Mantık Tarihi*, 80; Öner, *Klasik Mantık*, 6; Kaya, *Aristoteles ve Felsefesi*, 80.

¹⁴ M. Naci Bolay, *Fârâbî ve İbni Sînâ'da Kavram Anlayışı* (İstanbul: MEB Yayınları, 1990), 2.

¹⁵ Bayraktar, *İslām Felsefesine Giriş*, 39; Emiroğlu, *Klasik Mantığa Giriş*, 43.

Theologians also preferred to use logic when addressing theological issues and defending the Islamic faith against Jewish, Christian, other beliefs, and Greek thought.

Many verses in the Qur'an contain commands and recommendations such as reasoning, examining, learning lessons, looking, seeing, becoming conscious, understanding, contemplating, reflecting, pondering, and remembering, which have encouraged Muslims to study logic. Furthermore, the fact that logic is based on reason has also led to the importance given to intellectual activities in the Islamic world.

The need to understand methods of debate also compelled Muslims during this period to translate works on logic.¹⁶

Muslims not only translated logic into their own languages, but also adapted it to themselves, adding their own views and interpretations. With the transfer of the science of logic into Islamic culture, three interconnected stages were passed through. The first of these was the translation stage, the second was the stage of understanding and assimilation, and the last was the stage of the formation of an original scientific tradition. The first stage includes all the translators¹⁷ of logic, from Abdullāh ibn al-Muqaffa to Thābit ibn Qurra and then to al-Kindī. In the second stage, logicians such as al-Fārābī and Ibn Sīnā played a crucial role in conceptualizing logic in Arabic and shaping it within the framework of Islamic thought. In the final stage, it is necessary to mention al-Ghazali, who was the main factor in the application of this science to religious sciences. If the links in this chain are severed, it will not be possible to fully understand the Islamic Tradition of Logic.¹⁸

The translation phase of the Islamic logical tradition began in the 9th century. This period, during which literal translations were made, ended with al-Fārābī. In the 10th century, with Ibn Sīnā, the phase of understanding and assimilation began, and this phase continued with

¹⁶ Emiroğlu, *Klasik Mantığa Giriş*, 44.

¹⁷ Keklik, *İslâm Mantık Tarihi*, vol. 1, 42-47.

¹⁸ Hasan Ayık, *İslâm Mantık Geleneği ve Doğuluların Mantığı (İbn-i Sīnâ'nın Mantıkü'l-Meşrikiyyîn'in Üzerine)* (İstanbul: Ensar Neşriyat, 2007), 95.

al-Ghazali.¹⁹ According to Hasan Ayık, it is quite difficult to separate these processes with clear-cut lines.²⁰

At the stage of comprehension and assimilation, the science of logic was conceptualized and formulated in Arabic, and major logical problems began to be discussed. These included topics such as the number of categories and their relationship to entities, the question of modality, and the relationship between language and logic.²¹

Each stage of this process has caused certain problems in its own right. The translation stage was marked by discussions about the stylistic and content qualities of the translated works, as well as translation errors made by translators. The comprehension and assimilation stage continued with discussions related to conceptualization and problems of positioning within the semantic world of language. The stage of establishing an original scholarly tradition has been marked by debates about the scholarly problems that the newly established scholarly tradition will raise.²²

During the period of translation activities, many translations of the same work were made, and new corrections, annotations, and commentaries were written for these works. Thus, Aristotelian logic entered the Islamic world and a systematic logical language emerged.²³ In the earliest translations of Islamic civilization, most of Aristotle's concepts of logic and philosophy were preserved as they were, while some concepts underwent many stages before taking their final form.²⁴

Ayık states that after the formation of the original scholarly tradition, thinkers such as Ibn Rushd and Ibn Khaldūn criticized it for

¹⁹ Ayık, *İslâm Mantık Geleneği*, 100-101.

²⁰ Ayık, *İslâm Mantık Geleneği*, 101.

²¹ Ayık, *İslâm Mantık Geleneği*, 100.

²² Ayık, *İslâm Mantık Geleneği*, 101.

²³ Ülken, *Mantık Tarihi*, 81.

²⁴ For example, Katiguryas, Analitiku'l-Ula, Topika, Sofistika, Rhetoric, Poetics, Barminyas, Abodiktika, Ustukus (element), Heyula (substance) v.p. after such concepts have been used for a long time, after which many attempts were made to replace them with their Arabic equivalents, and new proposals were suggested in various translations. Thus, concepts such as Makûlât, Safsata, Hiṭābah, Shi'r, Unsur became established. (Ülken, *Mantık Tarihi*, 80).

straying from its original form, and makes the following explanation:²⁵

In fact, this process undergone by the science of logic is necessary for every science transmitted through translations to be fully positioned within the intellectual environment in which it is transmitted. Every science transmitted from another culture must first pass through the translation stage. Once this stage is complete, it is assimilated and understood, and finally establishes its own tradition in the cultural environment it has arrived in. In this context, there are common problems that knowledge transmitted through translation will encounter at every stage. For example, the equivalents of the basic terms of knowledge transmitted in this way are first found by analogy in the translated language, or these terms are taken as they are. However, this is not sufficient at the stage of comprehension and assimilation. It is necessary to understand and assimilate the conceptual dimension of these terms and to reproduce them in the minds that are influenced. At the stage of the formation of the original scientific tradition, attempts are made to find answers to questions such as what the transmitted science means within the tradition of thought into which it is transmitted, whether it is necessary, and what its function might be. The answers to these questions determine the position of the knowledge in question within the intellectual environment from which it originates. Indeed, independent sections such as the subject and benefits of logic, which are not found in the first translated books on logic, are present in Ibn Sīnā 's books on logic.²⁶

During the transfer of the science of logic to Islamic culture, two types of translation can be mentioned in general terms: "literal translation" and "meaning translation." In literal translation, the first equivalent of the words to be translated in the language is taken as the basis and is first selected from the words of the spoken language. However, since the frameworks of reference have not yet been determined and the boundaries of meaning have not yet been drawn, these words cannot carry the weight of philosophical and logical terms. Naturally,

²⁵ Ayık, *İslâm Mantık Geleneği*, 101.

²⁶ Ayık, *İslâm Mantık Geleneği*, 101-102.

since some of the first translators of logic were not logicians or philosophers, these translations have a number of problems in terms of both form and content.²⁷ The method of understanding and assimilation, known as meaning translation, consists of the stages of “commentary” and “authorship.” Commentary is considered to be “the power to relate to independent meanings while disregarding phrases and words.” In commentary, meaning is presented and revived independently of history. Meaning translation is called “actually a new composition.”²⁸ One of the most significant problems in the translation process is sometimes the confusion between philosophers’ books and sometimes the attribution of works of unknown authorship to certain philosophers.²⁹

Ayık divides the translation activities undertaken by philosophers attempting to understand Greek philosophy and adapt it to Islamic thought into three categories: “summary translation”, “explanatory translation”, and “interpretive translation”.³⁰ With these types of translation, the stage of understanding and assimilation is completed, and an original scholarly tradition is formed.³¹ According to Ayık, in order to move from the translation stage to the stage of understanding and assimilation, it is necessary to go to the world of meaning of the original language of the translated work, to grasp the meaning rather than the visible words that are the form of the language. Only in this way is it possible to convey the meaning of the translated work through the meanings in the target language. Ayık quotes the logician Abū Bishr Mattā ibn Yūnus (d. 940) as saying: “While words change according to societies, meanings are common to all nations.” This common ground gives the scholar the opportunity to break through the shell of words and enter the world of meaning.³²

²⁷ Ayık, *İslâm Mantık Geleneği*, 102

²⁸ Ayık, *İslâm Mantık Geleneği*, 107.

²⁹ Kaya, *Aristoteles ve Felsefesi*, 282- 303. See Ayık, *İslâm Mantık Geleneği*, 103.

³⁰ Ayık refers these translations; firstly, al-Fārābī’s summary translations of Aristotle’s *Organon* series; secondly, his work called *fī Aghrād al-Ḥakīm fī Kullī Maqālatin min al-Kitāb al-Mawsum bi al-Ḥurūf*, which opened the doors of Aristotelian metaphysics to Ibn Sina; finally, he gives copyright works as example. Ayık, *İslâm Mantık Geleneği*, 108.

³¹ Ayık, *İslâm Mantık Geleneği*, 108.

³² Ayık, *İslâm Mantık Geleneği*, 108-109.

1.1. Criticisms Directed at the Science of Logic in the Islamic World

In the early stages of translation activities, logic was mostly accepted by Islamic philosophers, while the early theologians did not show much interest in it during this period.³³ After logic entered Islamic sciences, particularly theology, certain ideas against the science of logic emerged in the Islamic world. Foremost among these were Ibn al-Şalāh (d. 1245), Al-Nawawī (d. 1277), Ibn Taymiyyah (d. 1327), Ibn Qayyim al-Jawziyyah (d. 1350), Al-Shātibī (d. 1388), and Jalāl al-Dīn al-Suyūfī (d. 1505).³⁴ They have categorically rejected engaging in philosophy and logic, declared these sciences forbidden, and even accused those who engage in logic of blasphemy.³⁵ Indeed, hostility towards logic has increased to such an extent among Sunni scholars that the saying “whoever engages in logic becomes a heretic” has begun to be used as a proverb.³⁶ The reason for this negative attitude towards logic is as follows: Theologians had identified certain proofs to defend religious doctrines. The proofs of logic, however, refuted these proofs of the theologians. According to this view, while logic refuted the theologians' arguments, it also refuted the fundamental religious beliefs that these arguments defended. For this reason, early theologians considered engaging with logic to be an innovation or disbelief, and some theologians avoided engaging with logic.³⁷

This understanding, which distanced theologians from the science of logic, was a principle adhered to by early theologians until al-Ghazali (d. 1111).³⁸ This argument, based on the assumption that “if the evidence is invalid, the conclusion is also invalid,” means among

³³ See Öner, *İlim ve Mantık Anlayışı*, 1-10.

³⁴ See Öner, *İlim ve Mantık Anlayışı*, 10.

³⁵ Nihat Keklik, *Fârâbî Mantığı (İsâgüci-Kategoriler-Levâhik)* (İstanbul: İÜEF Yayınları, 1970), vol. II, xi; Öner, *İlim ve Mantık Anlayışı*, 10; Mehmet Şirin Çıkar, *Nahivçiler ile Mantıkçılar Arasındaki Tartışmalar* (İstanbul: İSAM Yayınları, 2009), 140. See Nazım Hasırcı, *İbn Teymiyye'nin Mantık Eleştirisi* (Ankara: Araştırma Yayınları, 2010), 18 et. al.

³⁶ Öner, *İlim ve Mantık Anlayışı*, 10; Öner, *Klasik Mantık*, 8.

³⁷ Öner, *Klasik Mantık*, 9.

³⁸ İbn Haldun, *Mukaddime*, Hazırlayan Süleyman Uludağ (İstanbul: Dergâh Yayınları, 2016), 888-889; İsmail Hakkı İzmirli, *Yeni İlm-i Kelâm*, trans. Sabri Hizmetli (Ankara: Ankara Okulu Yayınları, 2013), 80.

theologians that “that which cannot be proven must be rejected.” Thinkers such as Fakhr al-Dīn al-Rāzī (d. 1209), Sayf al-Dīn al-Āmidī (d. 1233), Sa’d al-Dīn al-Taftāzānī (d. 1390), and Al-Sayyid al-Sharīf al-Jurjānī (d. 1413), led by al-Ghazali, did not accept this claim. They stated that even if logic refutes some proofs, it does not harm the core religious creed. Later theologians, in particular, agreed that the proof (*dalīl*) is separate from the *madlūl* (the thing proven or the intended conclusion). Therefore, refuting the proof in any way does not mean that the *madlūl* (the thing proven) is also refuted and loses its validity.³⁹ Thus, logic, which had been considered blasphemous until al-Ghazali, later gained great popularity and was regarded⁴⁰ as “Farḍ al-Kifāyah” (a collective obligation), and it was accepted that it was necessary for some people in Islamic society to engage in this science.

Ali Sedad, who lived at the intersection of old and new logic and synthesized both approaches, acknowledged that the early theologians objections were not directed at the science of logic itself, but rather at the *Organon* and the books written based on it, thereby granting them a certain degree of justification in their stance. According to him, early theologians rejected not the rules of logic, but logic books written in connection with any profession. For these are logic books written to form a basis for the views of the Peripatetics. The books in question also contain topics unrelated to the science of logic.⁴¹ As Nihat Keklik stated, it is impossible today to fully reveal the real reasons behind the hostility shown towards philosophy and especially the science of logic. Nevertheless, the science of logic has become a science that not only philosophers but all Islamic scholars have benefited from.⁴²

1.2. Responses to Criticisms Directed at the Science of Logic

It is generally accepted that the first person to incorporate the

³⁹ Yusuf Şevki Yavuz, “Delil” s.v., *TDV İslâm Ansiklopedisi*, vol. 9 (İstanbul: 1994), 136-137.

⁴⁰ Öner, *Klasik Mantık*, 9.

⁴¹ Ali Sedad, *Mizānu'l-Ukûl fi'l-Mantık ve'l-Usûl* (İstanbul: Karabet ve Kasbâr Matbaası, 1303h), 4 et. al.

⁴² Keklik, *Fârâbî Mantığı*, vol. I, 12.

science of logic into Islamic methodology and apply it to religious sciences was al-Ghazali (d. 1111).⁴³ Applying logic to religious sciences, particularly to the science of jurisprudence, developing a distinct jurisprudential methodology, and thereby establishing a new methodology for religious sciences is regarded as an innovation introduced to the science of logic.⁴⁴ Al-Ghazali, who requires knowledge of logic for ijthād⁴⁵, considers this knowledge to be a “farḍ al-Kifāyah” (a collective obligation) for Muslims.⁴⁶ His work on the methodology of Islamic jurisprudence, titled *al-Mustaṣfā min ‘Ilm al-Uṣūl*, is considered a new era in the history of Islamic logic. This is because it is known as the first work to establish the methodology of Islamic jurisprudence on a logical foundation and to bring these two sciences together.⁴⁷ The following famous statement in the introduction to *al-Mustaṣfā min ‘Ilm al-Uṣūl* is also considered a turning point for Islamic sciences:

This introduction is not part of the science of methodology, nor is it specific to it. In fact, this introduction is an introduction to all sciences, and those who have not fully grasped (comprehended) this introduction cannot be trusted in their knowledge.⁴⁸

This logic has become the foundation not only of Islamic sciences but of all human sciences, leading to logic being taught as an introductory science not only for Islamic sciences but for the teaching of all sciences. This effort, which began with al-Ghazali, became a tradition, and scholars of methodology dealt with the science of logic in the first sections of their works as a tool. Thus, the science of logic has earned a rightful place in Islamic thought.

⁴³ Celâleddin es-Suyûtî, *Savnu'l-Mantık ve'l-Kelâm an Fenni'l-Mantık ve'l-Kelâm*, ed. Ahmed Ferîd el-Mezîdî (Beirut: Dâru'l-Kütübü'l-İlmiyye, 2007), 13.

⁴⁴ Ayık, *İslâm Mantık Geleneği*, 30, 151.

⁴⁵ Çıkar, *Nahivciler ile Mantıkçılar Arasındaki Tartışmalar*, 139.

⁴⁶ Taylan, *Mantık Tarihçesi-Problemleri*, 46.

⁴⁷ Çıkar, *Nahivciler ile Mantıkçılar Arasındaki Tartışmalar*, 139-140. See İbrahim Çapak, *Gazzâlî'nin Mantık Anlayışı* (Ankara: Elis Yayınları, 2005), 18.

⁴⁸ See Gazzâlî, *İslâm Hukukunda Deliller ve Yorum Medolojisi (el-Mustasfâ)*, Trans: Yunus Apaydın (Kayseri: Rey Yayıncılık, vol. I, 1994), 11. See also Ömer Mahir Alper, “Gazzâlî'nin Felsefi Geleneğe Bakışı; O Gerçekten Bir felsefe Karşıtı mıydı?”, *İÜİF Dergisi*, yr. 2001, 4 (İstanbul: 2002), 97.

Criticizing the methodology used by earlier theologians, al-Ghazali instead proposed the methods and concepts used by logicians.⁴⁹ According to him, previous logicians used a set of analogical methods. However, these methods did not resemble the logical method he proposed. There needed to be a common methodological criterion on which Muslims could agree. Without such a common criterion, it was impossible to resolve their differences. This common criterion was Aristotelian logic.⁵⁰ Furthermore, according to al-Ghazali, theologians were unable to adequately defend the fundamentals of Islam because they did not use logical arguments.

According to al-Ghazali, logic is not a science derived from Greek sources and unique to them in terms of its subject matter and scope.⁵¹ Logic is only Greek in name; it is not the property of Greek culture. The principles of thought that constitute the content of logic are a common value of all humanity in that they provide the criteria for distinguishing between right and wrong judgments.⁵²

Logic is an important part of philosophy/philosophical sciences;⁵³ but it is not unique to philosophers. It is also part of Kalām.⁵⁴ Its roots, in a sense, are found beforehand in Islamic thought and the science of Kalām (Islamic Theology) Those who wish to appear weak and intelligent, upon hearing the name “logic,” have assumed that it is a foreign

⁴⁹ The most important of Ghazali's criticisms concerns the analogy used. He made these criticisms both in terms of the form and substance of the analogy. It is not possible to prove anything through kalami-fiqhi analogy (representation) based on the principle of similarity, such as the analogy of the absent to the witness, without investigating the cause expressed in the middle term. Furthermore, the confusion between the form and the application of analogy in kalam is an indication that necessary and certain knowledge cannot be obtained. (Ali Durusoy, “Gazzâlî’de Mantık Biliminin Yeri ve Önemi”, *İslâmî Araştırmalar* (Ankara: 2000), vol. 13, no. 3-4, 306 et. al.).

⁵⁰ Mahmut Ay, “Kelâm’ın Doğuşu, Gelişimi ve İslâm Bilimleri İçindeki Yeri”, *Sistematik Kelâm*, ed. Ahmet Akbulut (Ankara: Ankara Üniversitesi Uzaktan Eğitim Yayınları, 2011), 17.

⁵¹ Gazzâlî, *el-Kistâsü'l-Müstakîm: Dosdoğru Ölçü*, trans. İbrahim Çapak (İstanbul: Türkiye Yazma Eserler Kurumu Başkanlığı Yayınları, 2016), 48.

⁵² Câbirî, *Arap-İslâm Aklının Oluşumu*, 324.

⁵³ E. Moosa, *Ghazali and the Poetics of Imagination* (Pakistan: Oxford University Press, 2005), 171.

⁵⁴ A. Treiger, “al-Ghazâlî’s Classifications of the Sciences and Descriptions of the Highest Theoretical Science”, *Dîvân: Disiplinlerarası Çalışmalar Dergisi*, 16.(30), 2011, pp. 1-32.

art unknown to theologians, and that no one other than philosophers are familiar with this art.⁵⁵

According to al-Ghazali, rational sciences are as important as religious sciences. Rational sciences are the domain of serious debates and problem-solving. Therefore, rational sciences should not be neglected. Rational sciences are not contrary to religion, and engaging in these sciences has no positive or negative religious implications. Logic is also one of the most important rational sciences. When used correctly, it is an important tool for reaching certain knowledge.⁵⁶ Logic is an essential discipline for the methodology of all sciences, primarily fiqh (jurisprudence).

According to al-Ghazali's thinking, correct reasoning can only be distinguished from incorrect reasoning by logical criteria. Therefore, logic is the measure of all sciences; because it is a science that distinguishes correct definitions and analogies from incorrect definitions and analogies, and distinguishes certain knowledge from other knowledge⁵⁷, and it is impossible to reach the essence of the sciences without knowing logic.⁵⁸ According to al-Ghazali, the “al-Qiṣṭās al-Mustaqīm” (straight measure)⁵⁹ mentioned in the Quran is nothing other than logic. The al-Qiṣṭās al-Mustaqīm is the measure mentioned by Allah (The God) in the Quran and taught to His messengers to use as a standard. Al-Ghazali bases this view on the verses in Surah Rahman: “The Most Gracious taught the Quran; He created man; He taught him eloquence (...) Allah raised the sky and established the balance, so do not tamper with the balance!” and in Surah Hadid: “We sent Our messengers with clear proofs. We sent down with them the Book and the balance so that people may uphold justice.” According to him, the “mīzān” mentioned alongside “Al-Kitāb” in these verses does not refer to a scale for weighing wheat, barley, gold, or silver, but rather to the science of logic. The nature of measuring with this measure will be

⁵⁵ Ayık, *İslâm Mantık Geleneği*, 146.

⁵⁶ Necip Taylan, *Gazzâlî'nin Düşünce Sisteminin Temelleri: Bilgi-Mantık-İman* (İstanbul: Marmara Üniversitesi İlahiyat Fakültesi Vakfı Yayınları, 1994), 33, 37, 40.

⁵⁷ Gazzâlî, *Filozofların Tutarsızlığı* (İstanbul: Klasik Yayınları, 2005), 11.

⁵⁸ Gazzâlî, *Felsefenin Temel İlkeleri (Makâsıdu'l-Felâsife)*, trans. Cemaleddin Erdemci, Ankara: Vadi Yayınları, 2001, 43.

⁵⁹ Al-Isra 17/35; Ash-Shu'arâ' 26/182.

learned from the prophets.⁶⁰ According to him, the first teacher is Allah, the second is Gabriel, and the third are the messengers. Some scholars before Muhammad and Jesus derived these measures, albeit under different names, but they learned them from the scrolls of Moses and Abraham (The Şuḥuf of Abraham and Moses).⁶¹ Aristotelian forms of analogy are also like “the measures of the Qur'an.”⁶² In this context, logic refers to the method used to explain the principles of Islamic belief and refute the claims of non-Muslims. In other words, the principles of logic, known as Aristotelian syllogisms, are actually the “mīzān” or “measures of the Qur'an”.⁶³ Therefore, logic is not contrary to Islam, nor is it a science that was introduced into Islamic thought at a later date. For this reason, there is no need to be wary of logic due to religious concerns. Engaging in logic, which is not a science contrary to religion, does not endanger one's religious beliefs. On the contrary, understanding the principles of faith mentioned in the Quran requires knowledge of logic.⁶⁴

According to al-Ghazali, who bases the source of logic on revelation, the Quran is the foundation of logic. All prophets, including the Prophet Muhammad, have used this logic. In fact, Allah is the founder and teacher of this logic, which was revealed to earth through Gabriel.⁶⁵ Al-Ghazali thus argues that logic should be used rather than opposed from a religious perspective.

According to al-Ghazali, certain knowledge cannot be obtained by any means other than logic. Without knowing logic, which is the gateway to all sciences, it is impossible to properly understand other sciences. Al-Ghazali explained the importance of logic in his books on logic and in his other books. By systematically applying this science to

⁶⁰ Gazzâlî, *el-Kistâsü'l-Müstakîm: Dosdoğru Ölçü*, 48.

⁶¹ Gazzâlî, *el-Kistâsü'l-Müstakîm: Dosdoğru Ölçü*, 48-50.

⁶² Cābirî, *Arap-İslâm Akılının Oluşumu*, 324.

⁶³ Mehmet Vural, *İslâm Felsefesi Tarihi: İslâm Düşüncesinin Tarihsel Seyri* (Ankara: Elis Yayınları, 2019), 214.

⁶⁴ Nuriye Merkit, “Gazzâlî'nin Düşünce Sisteminde Mantık İlminin Önemi”, *Journal of International Social Sciences Academic Researches Dergisi*, vol. 5, no. 1, yr. 5 (2021/1) p. 67.

⁶⁵ Gazzâlî, *el-Kistâsü'l-Müstakîm: Dosdoğru Ölçü*, 48-50.

Islamic sciences, he ensured its legitimacy in the Islamic world.⁶⁶

In his work *al-Munqidh min al-Ḍalāl*, al-Ghazali states that logic is not a science related to the principles of religion:

Logic has no connection with religion, neither in a positive nor a negative sense. ... There is nothing in logic that must be denied (opposed). On the contrary, logic falls within the scope of what theologians and those who use rational reasoning discuss in the context of argumentation.

How can this (what is explained in logic) be rejected and denied when it concerns important matters of religion (what does it have to do with things considered important in religion)? (be opposed and denied?!). If it is denied (if it is opposed), this leads to nothing other than the logicians thinking badly of the religion of the person who denies it, claiming that such denial stems from reason itself.⁶⁷

In *Mi'yār al-'Ilm fī Fanni al-Mantiq*, where he presents various logical issues intertwined with Islamic concepts, al-Ghazali emphasizes the importance of the science of logic. He states that strong and weak opinions can be distinguished through logic. He notes that any thought not measured by logical standards will be flawed and there is no guarantee that it will not lead the mind to a false conclusion.

The strong and weak (flawed and sound) aspects of rational proofs, the true and false (unhealthy) aspects, can only be distinguished from one another through this book (the science of logic). Therefore, understand well that any kind of reasoning that is not measured/weighed with this scale (balance) and not calibrated with this standard (not measured with this measure) is flawed and not free from error (there is no guarantee that it will not lead the mind to a wrong conclusion).⁶⁸

⁶⁶ For further information see Ferruh Özpilavcı, "Gazzâlî'nin Mantık İlmini Meşrulaştırmasının Mantık Tarihi Açısından Değerlendirilmesi", *İslâmî İlimler Dergisi*, yr. 7, vol. 7, no. 13, pp. 145-158.

⁶⁷ Gazzâlî, *el-Munkız min-ad-Dalâl ve'l-Mufsih Bi'l-Ahvâl: Dalâletten Kurtuluş*, published, translated, and critically edited by Mahmut Kaya & M. Cüneyt Kaya (İstanbul: Klasik Yayınları, 2022), 67.

⁶⁸ Gazzâlî, *Mi'yârul-'Ilm fī Fenni'l-Mantık*, ed. Muhyiddin Sabrî el-Kurdî (Mısır: 1329h), 22; See Gazzâlî, *Mi'yârul-'Ilm: İlmin Ölçütü*, trans. Ali Durusoy & Hasan Hacak (İstanbul: Türkiye Yazma Eserler Kurumu Başkanlığı, 2013), 30.

In the introduction to *al-Mustaṣfā min 'Ilm al-Uṣūl*, which he regarded as an introduction to methodology, he summarizes the science of logic using Islamic concepts. In *Miḥakk al-Nazar fī al-Manṭiq*, he discusses concepts entirely related to methodology. In *al-Qiṣṭās al-Mustaqīm*, Gazzālī, who claims to have derived the fundamentals of logic directly from the Qur'an, attempts to establish the science of logic based on the Qur'an.⁶⁹

He draws on logic as a basis for his efforts to dismantle the theoretical foundations of the famous Ismaili-Bāṭinī movement movement, which he regarded as the sophists of his time and which posed a serious problem in the political-social sphere.

Al-Ghazali, who addresses logical issues intertwined with linguistic topics and attempts to analyze them within language, strives to overcome the conventional structure of language and universal concepts expressing essences with essential definitions. However, in doing so, he does not delve into metaphysical topics such as the ontological basis of existence in the external world and the relationship between universal concepts and entities in the external world.⁷⁰

Al-Ghazali attempted to adapt the science of logic to Islamic culture using terms such as "mizān", "miḥakk", and "qisṭās". He replaced traditional logical terms with terms used in Islamic sciences such as fiqh and kalām. He produced new terms by selecting examples from fiqh and kalām issues. According to him, there is no difference between fiqh issues and rational problems in terms of reasoning. The need for logic in solving fiqh issues is inevitable.⁷¹

Muslims, even though they were aware that the technical meanings of logical concepts existed in Arabic, found them strange or avoided them because they did not know their content. Therefore, in order to overcome this psychological barrier, al-Ghazali consciously made changes. By changing the terms of logic, he proposed new concepts specific to religion or the Arabic language. The concepts whose

⁶⁹ See Ayık, *İslām Mantık Geleneği*, 146, 151.

⁷⁰ Ayık, *İslām Mantık Geleneği*, 150.

⁷¹ Mustafa Çağrı, "Gazzālī" s.v., *TDV İslām Ansiklopedisi*, vol. 13 (İstanbul: 1996), 496.

names al-Ghazali changed are not fundamentally different concepts. The changes he made took into account the psycho-social circumstances of his audience. What he actually wanted to achieve was the implicit acceptance of concepts that were perceived as foreign.

Most of the new terms proposed by al-Ghazali are concepts from the traditions of fiqh and kalām. Al-Ghazali argues that the concepts in this field belong to Faqīh (Islamic Jurist) and Mutakallim (Islamic theologians), that he uses the terms commonly used among these three groups, but that he himself invented the terms that are not shared among them, especially the terms related to analogy.⁷²

This conceptual transformation, which al-Ghazali resorted to in the context of legitimizing logic, subsequently found acceptance; it was embraced by other logicians and became widespread.⁷³

While being a scholar who legitimized logic in the Islamic world, al-Ghazali mentions that engaging in logic can be harmful in two ways and can damage religion in both cases. First, Muslims who learn logic from Greek philosophers may admire these philosophers excessively and trust them too much. They may think that everything the philosophers say in every field is certain and true, and thus accept their atheistic views. The second is to completely oppose these philosophers and reject everything they say. Ignorant religious people think that by rejecting all the knowledge of philosophers, they are serving and helping religion. However, what they are doing is not serving and helping religion; on the contrary, it is a great crime committed against religion. Because this situation reduces Islam to a religion that rejects certain knowledge and evidence. Thus, it causes people to stray from religion.⁷⁴

2. Al-Ghazali's Influence on Those Who Came After Him

Al-Ghazali's views on the importance of logic had a profound influence on those who came after him. Aristotelian logic, which had

⁷² Gazzâlî, *el-Kıstâsu 'l-Mustakim: Dosdoğru Ölçü*, 41.

⁷³ Özpilavcı, "Gazzâlî'nin Mantık İlmini Meşrulaştırmasının Mantık Tarihi Açısından Değerlendirilmesi", 149-150.

⁷⁴ Gazzâlî, *el-Munkız min-ed-Dalâl*, 68. See also Kasım Kufralı, "Gazzâlî" s.v., vol. 4, *İslâm Ansiklopedisi* (İstanbul: Milli Eğitim Basımevi, 1979), 753.

previously been rejected, entered Islamic sciences with al-Ghazali and was accepted as a tool for these sciences. After al-Ghazali, Aristotelian logic and philosophy were used extensively in theological matters, and logic took its place as the criterion of true knowledge in the written works of Kalām books.

After al-Ghazali, logic gained legitimacy within Islamic sciences and came to be seen as the formal criterion of true knowledge. This does not mean that the science of logic took on a fiqh or kalām identity, but rather that it was applied to these sciences. This is because logic reveals not only the laws of a particular system of thought, but also the laws of thought in general and the mind that produces it. The application of logic to other sciences is a matter of methodology.⁷⁵

After al-Ghazali, renowned Islamic scholars who wrote works on kalām and fiqh methodology sometimes penned short treatises on the science of logic, while at other times they authored extensive works. Those who dealt with the subject the least devoted a section of their works to topics in logic. For example, Fakhr al-Dīn al-Rāzī (d. 1208/1210) wrote *al-Muḥaṣṣal fī Afkārī al-Mutaqaddimīn wa al-Muta'akhhirīn*,⁷⁶ Aḥud al-Dīn al-Ījī (d. 1355) wrote *al-Mawāqif fī 'Ilm al-Kalām*,⁷⁷ and Sa'd al-Dīn al-Taftāzānī (d. 1390) begins his work *Tahdhīb al-Mantiq wa al-Kalām*⁷⁸ with an explanation of logic topics. In addition to these, Sayf al-Dīn al-Āmidī (d. 1233),⁷⁹ Sirāj al-

⁷⁵ Ayık, *İslâm Mantık Geleneği*, 29-30.

⁷⁶ Fahreddin Rāzī, *Kelam'a Giriş (el-Muhassal)*, trans. Hüseyin Atay (Ankara: AÜİF Yayınları, 1978). See also İbrahim Çapak, "Fahreddin Rāzī'nin İslâm Mantık Tarihindeki Önemi ve Bazı Mantık Konuları Hakkındaki Görüşleri", *Dini Araştırmalar*, vol. 8, 23 (Ankara: 2005), pp. 111-126.

⁷⁷ Resul Karakaya, *Adud'din el-İcî'nin Hayatı, Eserleri ve Kelâmî Görüşleri*, Fırat Üniversitesi Sosyal Bilimler Enstitüsü (Elazığ: Unpublished Master's Thesis, 2003).

⁷⁸ The first part of the work is about logic, the second part is about theology. The work was also included in the curriculum of madrasahs until recent times and was taught according to the level of education. The first part of the work is about logic, the second part is about theology. The work was also included in the curriculum of madrasahs until recent times and was taught according to the level of education. The work is about logic, the second part is about theology. The work was also included in the curriculum of madrasahs until recent times and was taught according to the level of education. See Mehmet Zahit Tiryaki, "Sa'deddin Taftazânînin Tehzîbü'l-Mantık isimli Eseri Sunuş, Tahkik, Trans", *Dîvân Disiplinlerarası Çalışmalar Dergisi*, vol. 17, 32 (İstanbul: 2012/1), 130.

⁷⁹ See İbrahim Çapak, "Seyfuddin Āmidī'nin Mantık Anlayışı", *Uluslararası Seyfuddin Āmidī Sempozyumu Bildirileri* (İstanbul: 2009), pp. 347-364.

Dīn al-Urmawī (d. 1283), Shams al-Dīn al-Samarqandī (d. 1303), Ibn Muṭahhar al-Ḥillī (d. 1325), Ṣadr al-Sharī'ah al-Thānī / al-Bukhārī (d. 1346),⁸⁰ Sayyid Sharīf al-Jurjānī (d. 1413),⁸¹ Yanyalı Esad Efendi (d. 1730),⁸² Gelenbevî İsmail Efendi (d. 1790)⁸³ and many other theologians who were well-versed in religious sciences devoted the introductory sections of their books on kalām to logic. The use of logical arguments by theologians in proving certain theological issues contributed to the consolidation of this science's place within religious sciences.

The application of logic cannot be confined to the Islamic sciences of kalām and fiqh methodology. Concepts obtained by the mind through abstraction, judgments obtained by establishing connections between concepts, and reaching unknown judgments with the help of known judgments are valid for every form of thought. Although there are some who object to logic, this must be the reason why the majority of Muslim scholars prefer logic as a method of reasoning. Islamic scholars referred to logic as the science of tools, stating that logic should be taught as preparation for other sciences and that other sciences cannot be learned systematically without knowledge of logic. With al-Ghazali, this science began to be included at the beginning of

⁸⁰ Sadru'ş-Şeria devoted the first part of his famous work *Tadīlu'l-Ulūm* to the science of logic, demonstrating his great scholarship in this field. The work consists of three parts. The first part is devoted to logic, the second to Kalām, and the last to the science of astronomy. The author commented on his work and titled it *Sharh al-Ta'dil al-ulum*. See Ömer Aydın, *Sadruşşeria es-Sāni'ye göre İnsan Hürriyeti ve Fılleri*, Atatürk Üniversitesi Sosyal Bilimler Enstitüsü (Erzurum: Unpublished Doctoral Dissertation, 1996), 12, 18.

⁸¹ Seyyid Sharīf Jurjānī's work on logic, known as *Risāle-i Kubrā* in Persian and *er-Risāletü'l-Kubrā fi'l-Mantıq* in Arabic, covers classical logic topics such as concepts, the five universals, definitions, propositions, and syllogisms without going into detail. The work does not examine the subject of categories, which Islamic philosophers debated whether it belonged to metaphysics or logic, nor the five arts, which are the field of application of logic. See Muhammet Nasih Ece, "Cürcânî ve er-Risāletü'l-Kubrā fi'l-Mantık Adlı Eseri", *İslâmî İlimler Dergisi*, yr. 9, vol. 9, 2, Güz (Ankara: 2014), 154-155; İbrahim Çapak, "Cürcânî'nin er-Risāletü'l-Kubrā fi'l-Mantık Adlı Risalesi ile Hâlidî'nin Kifāyetü'l-Mübtedi et-Tahkik fi Fenni'l-Mantık Adlı Risalesinin Karşılaştırılması", *Felsefe Dünyası*, 56 (Ankara: 2012/2), 56-57; Sadreddin Gümüş, *Seyyid Şerif Cürcânî ve Arap Dilindeki Yeri* (İstanbul: İslâmî İlimler Araştırma Vakfı Neşriyatı, 1984), 148-154.

⁸² See Kazım Sarıkavak, *Yanyalı Esad Efendi* (Ankara: Kültür Bakanlığı Yayınları, 1997), 37-76.

⁸³ See Abdülkuddûs Bingöl, *Gelenbevî'nin Mantık Anlayışı* (İstanbul: MEB Yayınları, 1993).

madrasa curricula, taught alongside linguistics or immediately after their instruction.⁸⁴ al-Abharī's (d. 1266) *İsāghūjī fi'l-Mantıq*,⁸⁵ Najm al-Dīn al-Kātibī al-Qazwīnī's (d. 1293) *al-Risālah al-Shamsiyyah fi Qawā'id al-Mantıqiyyah*,⁸⁶ al-Akhḍarī's (d. 1575) *Al-Sullam al-Munawraq fi 'Ilm al-Mantıq*,⁸⁷ Molla Fenārī's (d. 1431) *al-Fawā'id al-Fenāriyyah*,⁸⁸ Sirāj al-Dīn al-Urmawī's (d. 1283) *Maṭālī' al-Anwār fi al-Mantıq*,⁸⁹ are among the textbooks taught in the field of logic in madrasas.⁹⁰ The logic books taught in the Islamic world are generally

⁸⁴ Logic was taught in Ottoman madrasas as a part of philosophy, called hikmet-i tabiyye, after morphology and syntax, as a preparation for other sciences and as a preparation for philosophy. (Ahmet Kayacık, "Osmanlı Medreselerinde Mantık Eğitimi Üzerine", <http://www.osmanli.org.tr>).

⁸⁵ Abhari (d. 1266) wrote this work based on Porphyrios's Eisagoge. Known as *al-Risālah al-Athīriyyah fi'l-Mantıq*, this work, which is less than 10 pages long, has many commentaries and marginal notes. This work, which summarizes/explains all topics of logic, is the first logic book taught in Ottoman madrasas. (See Ahmet Kayacık, *Ebheri'nin İisaguci'sinin İlk Şerhleri (xiv.-xvi. yy)*, Erciyes Üniversitesi Sosyal Bilimler Enstitüsü (Kayseri: Unpublished Doctoral Dissertation, 1996), iii, 2, 4-5, 13-32; Ebheri, *İisaguci ve Şerhi*, Critical Edition, Translation and Commentary: Ferruh Özpilavcı (İstanbul: Litera Yayıncılık, 2017), 17; Ebheri, *İisaguci-Mantığa Giriş* text-translation-review: Hüseyin Sarıoğlu (İstanbul: İz Yayıncılık, 1998), 39).

⁸⁶ Because it was written by Qazwīnī (d. 1293) for Khwaja Shams al-Dīn Muḥammad, this work on logic became famous under the name *al-Shamsiyyah*. Among the commentaries written on this work, those by Seyyid Sharīf Jurjānī and Taftazānī were the most widely read. For further information, See Hüseyin Çaldak, "Necmeddin Ali b. Ömer el-Kātibī el-Kazvīnī, Hayatı, Eserleri ve 'Şemsiyye'si", *CÜİF Dergisi*, 3 (Sivas: 1999), pp. 491-508.

⁸⁷ This work is a poem that summarizes logic topics in both verse and prose with 144 couplets and brief definitions. For more information, Osman Kurt, *Abdurrahman Ebü Zeyd el-Ahḍarī Hayatı Eserleri ve Mantık Manzûmesi es-Süllemü'l-Münevrak fi İlmi'l-Mantık*, Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü (Isparta: Unpublished Master's Thesis, 2017), 67-69.

⁸⁸ This work is also known as *al-Fawā'id al-Fenāriyyah fi Sharḥ al-Risālah al-Athīriyyah*. This commentary, attributed to Molla Fanārī (d. 1431) and said to have been written in a single day, became famous under his name. It has been the subject of numerous commentaries and marginal notes and was used as a textbook in Ottoman madrasas for a long time. For more information see Ahmet Kayacık, "İslām Mantık Geleneğinde Fenārī'nin Yeri" (Fenārī Şerhi ve İçeriği Üzerine), *İslāmî İlimler Dergisi*, yr. 5, 2, Güz (Ankara: 2010), pp. 107-112.

⁸⁹ Many commentaries and marginal notes were written on this work by Qadi Siraj al-Dīn Maḥmūd al-Urmawī (d. 1283). The commentary by Seyyid Sherīf and the marginal notes by Kara Davud were taught in Ottoman madrasas. For further information, see Hasan Akkanat, *Kadı Sirāceddin el-Ürmevi ve Metāliu'l-Envār (Tahkik, çeviri, inceleme)*, Ankara Üniversitesi Sosyal Bilimler Enstitüsü (Ankara: Unpublished Doctoral Dissertation, 2006).

⁹⁰ Mefail Hızlı, "Osmanlı Medreselerinde Okutulan Dersler ve Eserler", *UÜİF Dergisi*, vol. 17, 1 (Bursa: 2008), 39.

the works of Muslim authors.⁹¹ These logic books are not interpretations or adaptations of Aristotle's books, but independent, self-sufficient, original logic books.⁹² This science was not limited to introductory books. Commentaries were written on existing books in the field of logic, and the books that emerged in this way began to be taught as textbooks in madrasas. This branch of science became so internalized in Islamic thought that in some works written on the subject, logical topics were treated simultaneously in both verse and prose in the form of couplets. The fundamental purpose of teaching logic as an introductory course in fields such as fiqh and kalām is to ensure that students grasp reasoning techniques and acquire the ability to think correctly.⁹³

Conclusion

Although the Greeks are often cited as the originators of logic, the Indians, Chinese, Egyptians, Persians, Phoenicians, and Mesopotamians had their own understanding of logic before the Greeks. Although the Eleatic School and the Sophists in Ancient Greece carried out work that could be considered preparatory to the establishment of logic, it was Aristotle (384-322 BC) who first made logic a special and independent discipline of philosophy and systematically established it. After Aristotle, the Stoics (especially Chrysippus (277-204 BC)) who dealt with logical issues attempted to separate logic from metaphysics and turn it into a science related to form and language. Aristotle's understanding of logic remained unchanged and dominated the Islamic world and the West for centuries. The ideas of the Stoics were absorbed into Aristotelian logic, and Aristotle reigned as the sole authority.

The study of logic in the Islamic cultural world began with the translation of Aristotle's works into Arabic. The translations were initially done by Syriac and Harranian translators from Greek into Syriac, and from Syriac into Arabic, and later directly from Greek. Through translation activities, Greek Logic entered the Islamic world

⁹¹ Kaya, *Aristoteles ve Felsefesi*, 84.

⁹² Ayık, *İslâm Mantık Geleneği*, 99.

⁹³ Hülya Altunya, "Mantık ve Dini İlimler İlişkisinin Tarihsel Gelişimi Üzerine Kısa Bir Tahlil", *SDÜİF Dergisi*, no. 30, 2013/1 (Isparta: 2013), 63-64.

and a systematic language of logic was formed.

One of the most important reasons that led Muslims to translate works of logic was their encounter with Jews, Christians, and adherents of other faiths during their conquests. Muslims, who felt the need to organize their evidence regarding the Islamic faith according to the rules of logic against those who defended their own religious beliefs with the rules of logic they had adopted from the Greek world, felt compelled to learn Aristotelian logic. In addition to translating logic into their own languages, they transformed it, added their own views, and interpreted it, producing many original works that are now accepted as fundamental sources in the modern world of science.

In the history of Islamic thought, the process of establishing methodologies for the sciences varied. While some sciences benefited from logic, others opposed it due to certain concerns and preferred to develop their own methods. With al-Ghazali, logic began to be used as a methodology of thought for almost all Islamic sciences.

After logic entered Islamic sciences, particularly theology, certain ideas against this science emerged in the Islamic world. Logic, which had been considered blasphemous until al-Ghazali, later gained great popularity and was regarded as “Farḍ al-Kifāyah” (a collective obligation). Al-Ghazali's view on the importance of logic had a great impact on those who came after him, and Aristotelian logic, which had previously been opposed, entered Islamic sciences with him and was accepted as a tool for these sciences. After al-Ghazali, Aristotelian logic and philosophy were intensively utilized in theological matters, and logic took its place as the criterion of true knowledge in the theological books that were written.

The change that the science of logic underwent within Islamic thought is that the concepts, terms, definitions, and modes of reasoning of this science took on the color of Islamic thought. Al-Fārābī conceptualized the science of logic, Ibn Sīnā discussed the fundamental issues of this science within the framework of Islamic thought and provided answers within this framework, and al-Ghazali ensured that this science was formalized by abstracting it from its content and applied to religious sciences.

Al-Ghazali attached great importance to the science of logic, emphasizing its legitimacy and necessity more than logicians did, and undoubtedly made a significant contribution to its place in the Islamic world. For this reason, al-Ghazali's importance in terms of the science of logic is great.

The science of logic, which enables one to distinguish truth from falsehood in the pursuit of certain knowledge, is a tool that leads humanity to the truth, the source of infinite happiness. However, it is not merely a tool; it is a science that serves as an introduction to all other sciences. Therefore, it is essential for those who wish to learn other sciences and acquire new knowledge in these fields to study logic. Al-Ghazali stated that the knowledge of those who do not know logic cannot be trusted. This is because it is essential for humans to know logic in order to understand the principles of faith and proofs mentioned in the Qur'an, as well as to learn other sciences for the purpose of perfecting their intellect.

Al-Ghazali incorporated the science of logic into the methodologies and principles of religious sciences. In this way, he provided all religious sciences, especially fiqh and kalām, with a systematic structure that would prevent inconsistencies and logical errors. He viewed logic as a necessary 'tool' and worked to purify it from philosophical-metaphysical 'objections' and make it more formal. On the one hand, he assigned logic an important functional role in the 'revival' of religious sciences, and on the other hand, he found religious foundations for the science of logic, thereby enabling it to gain legitimacy and become widespread.

Al-Ghazali's attempt at 'legitimization' did not go much beyond formally changing the names of terms and finding religious references and examples. He did not make any theoretical changes to the essence of logic, but he did make some changes in terms of terminology. He made important contributions to logic by addressing analogy in detail for the first time in the history of logic and by establishing the foundations for critiques of fiqh analogy.

With al-Ghazali, the science of logic began to feature prominently

in the curricula of madrasas, taught either alongside linguistics or immediately after its instruction. The renowned Islamic scholars who emerged after al-Ghazali and authored works on kalām and fiqh methodology generally wrote small or large works on logic, or at least devoted a section of their works to logical topics.

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