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## **A Difference Between Arabic Logic and Modern Logic: Al-Fikr**

Arapça Mantık İle Modern Mantık Arasında Bir  
Fark: El-Fikr

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## A DIFFERENCE BETWEEN ARABIC LOGIC AND MODERN LOGIC: AL-FIKR

### ABSTRACT

This study on the subject of Arabic logic claims that its main difference from modern logic stems from the conception of the reasoning (al-fikr). Firstly it presents compartmentalization of Arabic logic. Logical compartments are five universals, the ways of defining, propositions and their judgments, syllogism and five arts/or syllogistic matter. By analyzing quoted excerpts, it reduces Arabic logical thinking to the function of reasoning. In terms of either Arabic logic or modern Logic, logic can be reduced to correct reasoning. When reduced, the fundamental difference appears. The assessment reveals that modern logic relies only on propositional relations, while Arabic logical thinking relies on the dimidiated domain of apprehension and judgment. The aim of the study is also to reveal this. Its suggestion is that if a comparison is to be made between Arabic logic and modern logic, it should start with the concept of al-Fikr. The method used is to put forward a new thesis by synthesizing the data obtained and document analysis used in qualitative research. In addition, it is to resort to textual comparisons. The data was collected through document creation.

**Keywords:** Arabic Logic, Modern Logic, Avicenna, Al-Fārābī.



## ARAPÇA MANTIK İLE MODERN MANTIK ARASINDA BİR FARK: EL-FİKR

### ÖZ

Arapça mantık konusunu ele alan bu çalışma, onun modern mantıktan temel farkının akıl yürütme (el-Fikr) anlayışından kaynaklandığını iddia etmektedir. Önce Arapça mantığın bölümlendirilme biçimini sunmaktadır. Mantıksal bölümler, beş tümel, tanımlama yolları, önermeler ve yargıları, kıyas ve beş sanat/kıyas meseleleridir. Çalışma, alıntılanan pasajları analiz ederek Arapça mantıksal düşünüşü, akıl yürütme fonksiyonuna indirgemektedir. Arapça mantık veya modern mantık açısından mantık ilmi, doğru akıl yürütme çalışmasına indirgenebilir. İndirgendiğinde temel fark ortaya çıkmaktadır. Çalışmanın amacı, modern mantığın yalnızca önerme ilişkilerine dayandığını, Arapça dili üzerine kurulu mantıksal düşünüşün ise tasavvur ve tasdik gibi daha güçlü bir alana dayandığını ortaya koymaktır. Önerisi ise, şayet Arapça mantık ile modern mantık arasında bir karşılaştırma yapılacaksa bunun al-Fikr kavramıyla başlatılmasıdır. Kullanılan yöntem,

nitel arařtırmalarda kullanılan belge analizi ve elde edilen verileri sentezleyerek yeni tez ileri sürmektir. Bununla birlikte metinsel karşılařtırmalara bařvurmaktır. Veriler, doküman oluřturma yoluyla toplanmıřtır.

**Anahtar Kelimeler:** Arapça Mantık, Modern Mantık, İbn Sina, Farabi.



## INTRODUCTION

The discipline of logic, which was transmitted from ancient Greece to the medieval Islamic world, in addition to being used as an instrument in some parts of Islamic sciences, has been studied as an independent discipline, and the metaphysical elements it comprises have been discussed. This form of logic, which has developed as its own discipline, can be called Arabic logic, as it is written mostly in Arabic.

In the philosophy of contemporary logic, defining logic is an area of fervent discussion. There are certain differences between the meanings attributed to logic in modern logic and in Arabic logic. In our opinion, perhaps the most important difference is related to the meaning of concept of reasoning (*al- Fikr*).<sup>[1]</sup> Generally, in contemporary Western logic, reasoning has been given a meaning related to purely propositional relations. Arabic logic, on the other hand, has been attributed both an apprehensive and a judgmental meaning. That is to say, one of the reasons for the difference between the two systems of logic in question stems from their different conceptions of reasoning.

Should this aspect, which we present as one of the reasons for the difference, be considered the most fundamental difference between the two forms of logic? In other words, by reducing to a single reason, can we regard the other reasons as derivatives of that reason? In our opinion, this is possible because both systems of logic employ argumentative reasoning. The term “reasoning” herein connotes the special forms of reasoning associated with the idiosyncratic operations of logic. The term “reasoning”, however, used in contemporary Western logic and the term *al-fikr* (reasoning)\* used in the Arabic logic are not synonymous. It seems, however, that logical thinking can be reduced to reasoning in both modern logic and Arabic logic. Thus, it can be argued that the other differences also stem from these two differences of perspective. In this study, I will both assert proofs/excerpts that will support this claim through literary extracts following a chronological order

<sup>[1]</sup> Aytekin Özel, *Aristoteles'in Analitikler Kuramının Çağdař Yorumları Işığında Bir Arapça Mantık Metni İncelemesi* (Bursa: Emin Yayınları, 2012), 73-78. Our study was prepared in light of this book by Özel.

\* Instead of *al-fikr*, hereafter, reasoning.

and point to the differences in reasoning in the two systems of logic by referring to conception of modern logic. In this respect, our study has an originality.

## 1. METHOD

### 1.1. Model of the Research

The method used is to put forward a new thesis by synthesizing the data obtained and document analysis used in qualitative research. In addition, it is to resort to textual comparisons. The data was collected through document creation. Document analysis method was used to include literature review on Arabic logic and modern logic phenomena, which is a qualitative research topic. As it is known, document analysis method is a qualitative research technique<sup>[2]</sup> aimed at examining the information in the studies on the subject meticulously and systematically.

### 1.2. Data Collection Tools

The data obtained were selected and read in a way that would serve the purpose of the study and an evaluation was made.<sup>[3]</sup> The old and new data obtained on the subject were compared, and an effort was made to correct the idea of an articulation between Arabic logic and modern logic, especially by making an evaluation in the light of different logics. Social Sciences and Human Sciences are different from each other. This study is a human scientific study and also a formal study. Data is collected by recording, keeping notes, documenting and classifying.

### 1.3. Ethical Considerations

Both old and new period sources were used to understand how the subjects of fate and freedom are related to each other. In all stages of the study, scientific rules and principles were observed and research ethics were followed. The sources used were cited appropriately and included in the bibliography.

## 2. FINDINGS

### 2.1. Logical Compartments with Organon in Arabic Logic

Alexander of Aphrodisias (approximately late 2<sup>nd</sup> cent. and beginnings of 3<sup>rd</sup> cent. A.C.), who is a Neo-Platonist commentator on Aristotle, subsumed Aristo-

<sup>[2]</sup> Bilgen Kırıl, "Nitel Bir Veri Analizi Yöntemi Olarak Doküman Analizi", *Sosyal Bilimler Enstitüsü Dergisi* 15 (2020), 173.

<sup>[3]</sup> Ramazan Sak, vd., "Bir Araştırma Yöntemi Olarak Doküman Analizi", *Kocaeli Üniversitesi Eğitim Dergisi* 4/1 (2021), 230.

tle's books, *Categories*, *On Interpretation*, *Prior Analytics*, *Posterior Analytics*, *Topics*, and *Sophistical Fallacies* under the name of *Organon*<sup>[4]</sup>. It is generally believed that Aristotle himself named his aforementioned pieces *Organon*. According to David Ross, however, this name was first coined by Alexander of Aphrodisias. According to the information Ross apprised, the term logic is not even found in Aristotle's works. This term (*logica*) cannot be predated before the time of Cicero (106-43) and even in that era, it connoted dialectics. It is stated that the first philosopher to use *logikhe*, in its Greek expression, with the meaning of logic as we know it, was Alexander of Aphrodisias.<sup>[5]</sup>

Ammonius Saccas (3rd century A.D.), following the arrangement of Alexander of Aphrodisias, raised the number of the *Organon* to nine by adding Aristotle's *Rhetoric and Poetics* and Porphyry's (A.D. 234-c. 305) *Eisagoge*.<sup>[6]</sup>

Aristotle's works, the systematical foundation of the discipline of logic, subsumed under the name *Organon*, are regarded as the "compartments of logic" within Arabic logic. When referring to logic, the books/chapters in various numbers from six to nine are understood. It is obvious that this distinction is inherited from the Greek Aristotelian commentators. One of the reasons for this acquisition stems from the fact that the sorting order of logical books has become an intellectual tradition. As a proof of this, we can present the statements of Avicenna (980-1037), which he wrote while introducing *Kitāb al-Šifā*, in *al-Madḥal*, the first book of the corpus of *Kitāb al-Šifā*:

I started the incipit of the book [*al-Šifā*] with logic. With this, I aimed at arranging the books of the possessor of logic [Aristotle]... I introduced physical science after logic. However, in the most part, I could not have been parallel with the classification and the views of the man who is regarded as the pioneer [Aristotle] in this art."<sup>[7]</sup>

It is understood both this from excerpt and Avicenna's sorting order of the books of logic below that this reorganizing is a tradition. Avicenna achieved his logic studies, which correspond to the *Organon* and which were finalized by Ammonius Saccas, with the names and sorting order below, without using the title *Organon*, in his aforementioned corpus:

[4] Mehmed Bayrakdar, *İslam Felsefesine Giriş* (Ankara: Türkiye Diyanet Vakfı, 1997), 59.

[5] S. D. Ross, *Aristotle* (London & New York: Routledge, 1995), 21, 22. See for a speculation in this matter, Aytekin Özel, "Mantık ve Organon", *Hitit Üniversitesi İlahiyat Fakültesi Dergisi* 14 (2008), 147-159.

[6] Necati Öner, *Klasik Mantık* (Ankara: Bilim Yayınları, 1996) 17, quoted, İ. Madkour, *L'Organon d'Aristote dans le Monde Arabes* (Paris, 1934), 13.

[7] Avicenna, "II. Analitikler" translated "Posterior Analytics" or "On Demonstration", *Kitāb al-Šifā*, trans. Ömer Türker, A parallel Turkish-Arabic Text (İstanbul: Litera Yayıncılık, 2006), 4.

1. *al-Madḥal* (Introduction to Logic or Eisagoge)
2. *al-Maqūlāt* (Categories)
3. *al-İbāra* (On Interpretation)
4. *al-Qiyās* (Prior Analytics)
5. *al-Burhān* (Posterior Analytics/ On Demonstration)
6. *al-Ğadal* (Topics)
7. *al-Safsata* (Sophistical Fallacies)
8. *al-Hiṭāba* (Rhetoric)
9. *al-Şi'r* (Poetics)

Although the books written under these titles after Avicenna are but few, they consistently preserved their place in ranking each as a matter of logic, but for one exception. This exception is the topic discussed in *Categories*. We know from Arabic logic books and from the *madrassa* (a traditional İslamic school) programs still in existence that the chapters of logic (abwāb) are as follows:

1. Five universals (al-Kulliyyātu al-ḥamsa)
2. The ways of defining (al-Qawlu al-Şāriḥu)
3. Propositions and their judgments (al-Qaḍāyā wa Ahkāmuhā)
4. Syllogism (al-Qiyās)
5. Five arts/or syllogistic matter/or employing the domain of syllogism (al-Qiyāsu bi-ḥasabi al-māddah/al-şinā'atu al-ḥamsa).

Some logicians apprised the number to be ten by designing a chapter of words (alfāz), which is addressed in five universal chapters, as a separate chapter. Yet, according to many there remain nine chapters of logic.<sup>[8]</sup>

Although the reasons that *Categories* is not regarded as a chapter of logic are outside the scope of this study, this expression of the Avicenna commentator,

[8] Mahmūd bin Hāfiz Ḥasan al-Mağnisī, *Ğadīd-i Muğni al-Ṭullāb* (İstanbul: Rıza Efendi Matbaası, 1299), 11.

Naşīraddīn al-Ṭūsī (1201-1274), who was a influential writer of logic pieces in the Islamic world, explicitly states that *Categories* are not regarded as a chapter of logic: “There is no doubt in that the analysis of this is not among the subjects belonging to logic”.<sup>[9]</sup> Moreover, even though Avicenna discussed *Categories* in the definition inquiry in *Kitāb al-Nağāt*,<sup>[10]</sup> the summary of *al-Şifā*, he did not include *Categories* in *al-Işārāt wa al-Tanbīhāt*,<sup>[11]</sup> which was the last comprehensive philosophical summary and also one of the last five pieces he wrote.<sup>[12]</sup> His book, *al-Işārāt*, has been pivotal in logic studies in the Islamic world. As a result of his approach in *al-Işārāt*, the subject of *Categories* has not been included in almost any Arabic books on logic.<sup>[13]</sup>

## 2.2. Arabic Logic and Nuṭq or The Two Missions of The Arabic Logic

Mantiq (logic) is the Arabic translation of the word *Logike* in Greek. We know that the term logic is derived from “logos”. “Logikhos” means belonging to the logos, that is, pertaining to reason.<sup>[14]</sup> Māğid Faḥri argues that the Arabic term nuṭq corresponds to the Greek “logos” and that, like logos, it bears a dual meaning.<sup>[15]</sup> Al-Fārābī (870-950) addresses this subject:

The name of this word is derived from the nuṭq. This word (al-lafīz) has three meanings before the ancients (qudamā). The first one is the vocally issued word (al-qawl). The thing inside (aḍ-ḍamīr) is; this, verbally represented by speech (1). The second is the word which has its roots in the mind (al-nafs); these are the mental substances (al-ma‘qūlāt)<sup>[16]</sup> indicated by the words (2). The third one is the power of the mind in the genesis of the human. Human is distinguished by this power from the creatures other than itself. Human possesses the mental substances (al-ma‘qūlāt), knowledge (‘ulūm) and arts by this power. It decides on the issue of what or what not

[9] Avicenna, *al-Işārāt wa al-Tanbīhāt*, with Naşīraddīn al-Ṭūsī’s *Commentary* on it, but includes Ṭūsī’s *Commentary* at the bottom of the passages, ed. by S. Dunya, vol. 1 (Bayrut, 1992), 190.

[10] Avicenna, *Kitāb al-Nağāt*, ed. Māğid Faḥri (Bayrut, 1985), 116, 117.

[11] Avicenna, *İşaretler ve Tembihler* translated *al-Işārāt wa al-Tanbīhāt* to Turkish, A parallel Turkish-Arabic Text, trans. Ali Durusoy, Muhittin Macit, Ekrem Demirli (İstanbul: Litera Yayıncılık, 2005).

[12] D. Gutas, *Avicenna and The Aristotelian Tradition* (Leiden: Brill, 1988), 140, 145.

[13] Tahir Yaren, *İbn Sînâ Mantığına Giriş* (Ankara: Avrasya Yayıncılık, 2003), 23.

[14] Necati Öner, *ibid.*, 13, quoted, P. Foulquie, “logique”, *Dictionarie de la Lanque Philosophique* (Paris: PUF), 1885.

[15] Faḥri Māğid, *İslam Felsefesi Tarihi*, trans. Kasım Turhan (İstanbul: İklim Yayınları, 1998), 128, the footnote 24.

[16] Ma‘qūlāt is divided in two parts: The first is the meanings of individuals in the external world, such as human beings and animals. The second is the meanings that are non-existent in the external world, such as genus (al-ğins) and species (al-tur), Talha Alp, *Mantık: İsagoci Tercümesi ve Mantık terimleri Sözlüğü* (İstanbul: Yasin Yayınevi, 2007), 20.

to do with this power, distinguishes between the good and the bad deeds with this (3).<sup>[17]</sup>

Al-Fārābī states this in reserve in another study:

“The name of this art is derived from the word *nutq*. This word indicates three things according to the ancients (*qudamā*): The mental substances of the human indicate the power it can comprehend. Sciences and arts are attained with this power, the good and the evil of the deeds are distinguished with it (3). The second of these is the mental substances derived through apprehension in human’s mind, these are called “internal speech” (2). The third is to express what is inside lingually and it is called “external speech”. Art of logic, given the laws for internal speech consisting only of mental substances and given the laws common in all languages for external speech consisting only of words, for the power of speech (*nāṭīqa*), this power of speech, in both phases, is directed to the right way, and in both of them, is protected against the wrong (1)”<sup>[18]</sup>.

Regarding the resources of Arabic logic, such a generalization could be made: The mind that belongs to the human (*al-Nafsu al-Insāniyyi*), which is called the speaking mind (*al-nafsu al-nāṭīqu*), has two meanings/functions. One of them is internal speech and the other is external speech. The reason for the derivation of the name *Mantiq* (logic) is that it is implemented both on the level of external speech, meaning speech itself, and on that of internal speech, being the apprehension of mental substances. From this aspect, logic strengthens the first and leads the second in the right direction.<sup>[19]</sup>

According to al-Mağnisī, the term logic is used for *nutq*, meaning speech (*takallum*), for apprehension of the universals (*Idrāku al-kulliyyāti*), and for the laws of apprehending the universals (*qawānīnihā*). From this aspect, logic as an instrument corroborates the first, reaches the second, and matures the third. Here, this instrument is termed *mantiq* due to its three functions.<sup>[20]</sup> We can include the first of these views of al-Mağnisī in external speech and the second and third one in internal speech.

[17] See for the text translated into Turkish as a paragraph, Ali Durusoy, *Örnek Çeviri Metinlerle Mantığa Giriş*, (İstanbul: İFAV, 2010), 40, quoted, Al-Fārābī, *İhşā’ al-’ulūm*, ed. by ‘utmān Amīn, (Qāhira, 1968), 781, 782.

[18] Al-Fārābī, “al-Tawṭī’ h fī al-Mantiq”, M. Küyel, *Fārābī’nin Bazı Mantık Eserleri*, Fārābī Külliyyatı-sayı: 1, (Ankara: Atatürk Kültür, Dil ve Tarih Kurumu Atatürk Kültür Merkezi Yayınları, 1990), Arabic Text 23, Turkish Text 29.

[19] Necati Öner, *ibid*, 13.

[20] Maḥmūd bin Ḥāfız Ḥasan al-Mağnisī, *ibid*, 9.

Considering the excerpts we quoted, we can argue that they determine the ways of reasoning regarding (1) and (2). In this context, two missions of Arabic logic can be mentioned. (2) The first is the apprehension of mental substances. This is called internal speech. (1) The second is strengthening the transpiration of internal speech in becoming external speech through executing individual laws in languages.

### 2.3. Epistemic Aspect of the Arabic Logic

Aside from the distinction above, Arabic logic operates in an epistemic domain that is theoretically divided into two as apprehensions (*taşawwurāt*) and judgments (*taşdīqāt*). This distinction has subsisted in the madrasas both in the Ottoman State and in Turkey. We will now discuss this subject.

Al-Fārābī and Avicenna are two major logicians of medieval Arabic logic. Muslim logicians who regard Aristotle (384-322) as the first teacher (*al-Mu'allimu al-awwalu*<sup>[21]</sup>), regard Al-Fārābī as the second teacher (*al-Mu'allimu al-tānī*<sup>[22]</sup>). He was a philosopher who understood and summarized Aristotle in logic and in philosophy and constructed his own system on this basis.<sup>[23]</sup> As for Avicenna, a rather creative logician, he had a logical theory different than that of Al-Fārābī, despite his utilizing Al-Fārābī in comprehending the texts of Aristotle. For instance, Avicenna had a different view from Al-Fārābī even in defining logic.<sup>[24]</sup>

Naci Bolay (1942-2001) emphasizes that he has not encountered a distinction between apprehension and judgment in the works he reviewed of al-Kindī (801-873), who is known as the first Islamic philosopher. According to Bolay, this distinction is made by Al-Fārābī for the first time in the Islamic World.<sup>[25]</sup> This is true; Avicenna also embraces the very same distinction. It is not, however, directly related to the classification of logic. Rather, it is a domain related to the use of logic in that epistemic domain, based on the classification of knowing. That is to say, it is a theoretical, epistemic distinction. In the following eras, this fragmentation has occurred in the beginning of logical works as a domain where logic is being used.

[21] İbn Haldūn, *Mukaddime*, trans. Halil Kendir, Vol. 2 (İstanbul: Yeni Şafak Kültür Armağanı, 2004), 702.

[22] Mübahat Küyel, "Fārābī'nin Peri Hermenias Muhtasarı", *Araştırma*, 4, 1-10, (1966), 5.

[23] Nicholas Rescher, *Studies in the History of Arabic Logic* (Pittsburgh: University of Pittsburgh Press, 1963), 15.

[24] Tony Street, "Arabic Logic", ed. D. M. Gabbay, J. Woods *Handbook of The History of Logic, Volume 1*, (Amsterdam: North Holland, 2004), 504-536; "Logic", ed. P. Adamson, R. C. Taylor, *The Cambridge Companion to Arabic Philosophy* (Cambridge: Cambridge University Press, 2005), 257-259; Nicholas Rescher, *The Development of Arabic Logic* (Pittsburgh: University of Pittsburgh Press, 1964), 67.

[25] Naci Bolay, *İbn Sînâ Mantığında Önergeler* (İstanbul: M.E. B. Yayınları, 1994), 12.

The excerpt below substantiates that the content of apprehensions and judgments in the Islamic World for the first time also was determined by Al-Fārābī:

“Knowledge is divided into two: apprehension and judgment... In my opinion, exact judgment is judgment which is certainly true (yaqīn). Exact apprehension is to apprehend one thing with the thing that gives its essence to it as a whole in a way as to be peculiar to it. That is, apprehending one thing with the thing that its definition indicates<sup>[26]</sup>... The most deficient of apprehensions is apprehensions generated by individual wordings indicating one thing and the ones operating in this way. The most accurate of apprehensions is apprehension formed by definitions<sup>[27]</sup>... In our opinion, shortly, judgment is the belief of human (’n ya’ taqida) that the out-of-mind existence of a thing (amr) being made judgment (hukum) on is in the shape as is believed (mu’ taqidun) in the mind. Most accurate judgment is the out-of-mind situation being as it is believed in the mind... Certain is us believing in that way about the thing that judgment about it has occurred: As it is never possible that the existence of the thing we believe in about that thing (in external world) is (in the mind) different than the thing we believe in, at the same time it is not possible that this belief could be differently. Such that, considered a belief about the primary belief of a person, this belief cannot be other than the primary belief for that person and it continues like this forever... Approximately accurate judgment is dialectical (ğadalī) judgment; the mind finding peace (sukūn) in one thing is rhetorical (balāğī) judgment<sup>[28]</sup>...”

Rephrasing the fragmentation we made above in other words, in the historical process, the matters of logic are fragmented in the epistemic domain in this way:

1. Apprehensions: (a) Principles (Mabādī): Five universals (b) Purposes (Maqāṣid): The ways of defining (al-Qawlu al-Şārihu).
2. Judgments: (a) Principles (Mabādī): Propositions and their judgments (al-Qaḍāyā wa Ahkāmuhā) (b) Purposes (Maqāṣid): Syllogistic forms (al-Qiyāsu bi-ḥasabi al-şūrah) and syllogistic matters (al-Qiyāsu bi-ḥasabi al-māddah).

As will be seen later on, this conception of logic is theoretically very different from contemporary Western logic.

[26] Al-Fārābī, *Kitāb al-Burhān* translated *Posterior Analytics or On Demonstration*, trans. Ömer Türker, Ömer Mahir Alper, A parallel Turkish-Arabic Text, (İstanbul: Klasik Yayınları, 2008), 1.

[27] Al-Fārābī, *Kitāb al-Burhān*, 24.

[28] Al-Fārābī, *Kitāb al-Burhān*, p. 2.

## 2.4. Conception of Reasoning in Arabic Logic

According to Al-Fārābī, logic is “an art related with the things that lead the power of thinking in all the situations when being mistaken is possible. It is an art that teaches everything that will save from the wrong in all the matters that consist of inference through the mind.”<sup>[29]</sup> He maintains, “science of logic is an introduction for all the sciences that employ reasoning”<sup>[30]</sup>, and every judgment in every art that employs reasoning occurs in the aforementioned forms.<sup>[31]</sup> It could be easily understood that what is referred to here as reasoning is not merely reasoning, but actually correct reasoning.

We can argue that, after Al-Fārābī, reasoning has preserved its place in explaining logical thinking. This is clearer in Avicenna’s works. Avicenna divides reasoning into two parts. If we express this more precisely, the reduction of logical thinking to correct reasoning is rather explicitly apparent. He says in *Kitāb al-Burhān* that “The knowledge obtained through reasoning and occurred without being obtained through reasoning; Are two parts as that one is judgment and the other is apprehension. And the judgment obtained through reasoning occurs through a kind of syllogism for us. And the apprehension obtained through reasoning occurs through a kind of definition (had) for us.”<sup>[32]</sup>

Now, let us note Avicenna’s view in his piece called *al-İsārāt wa al-Tanbīhāt*: “I mean by ‘reasoning’ here that which a human being has, at the point of resolving, to move from things present in his mind –Apprehensions or Judgments (whether scientific, based on opinion, or postulated and already admitted) - / to things present in it. /... Thus logic is a science by means of which one learns the kinds of movements from elements realized in the human mind to those whose realization is sought, / the states of these elements, the number of types of order and form in the movements of the mind which occur in a valid manner and the types which are invalid.”<sup>[33]</sup>

[29] Al-Fārābī, *al-Tawṭī‘h fī al-Mantiq*, Arabic text p. 19, Turkish text p. 27.

[30] See for the text translated into Turkish as a paragraph, Ali Durusoy, *ibid*, p. 43, quoted, Al-Fārābī, *al-alfāzu al-Musta‘mala fī al-Mantiq*, edited by Muḥsin Maḥdī, (Bayrut, 1968), 1088.

[31] See for the text translated into Turkish as a paragraph, Ali Durusoy, *ibid*, p. 43, quoted, Al-Fārābī, *Sharḥu al-qiyās*, in Muhammad Takī Dāniş Pazuh, *al-Manṭiqiyyāt li Al-Fārābī*, (Kum, 1998), 16-17.

[32] Avicenna, “II. Analitikler” translated “Posterior Analytics” or “On Demonstration”, *Kitāb ash-Ş-hifa*, trans. Ömer Türker, A parallel Turkish-Arabic Text, (İstanbul: Litera Yayıncılık, 2006), 1.

[33] I quote this passage from English translation of *al-İsārāt wa al-Tanbīhāt*. See İbn Sīnā, *Remarks and Admonitions. Part One: Logic*, trans. S. C. Inati, (Toronto: Universa Press, 1984), 47, 48. At that place, “thought” was used for “al-fikr”. I have replaced this term with “reasoning”. “Conception” was used for “taṣawwūr” and “assent” for “taṣdīq”. I have replaced these terms with “apprehension” and “judgment”, respectively. See for the words apprehension and judgment in Avicenna, A. I. Sabra, “Avicenna on The Subject Matter of Logic”, *The Journal of Philosophy*, 77 (1980), 746-764.

In *al-Šamsiyya*, which was drawn under the impact<sup>[34]</sup> of the *al-Išārāt wa al-Tanbīhāt*, reasoning is explained as “an arrangement of known things [in the mind] that they lead to [the knowledge of] unknown things”.<sup>[35]</sup> This perspective has been preserved by Gelenbevi İsmail Efendi (1730-1790) as well, who was the last mathematician, logician, and one of the Islamic theologians of the pre-Reorganization (1839) Ottoman State and who studied on a theoretical level.<sup>[36]</sup> His logic studies are also performed within the Avicennaian tradition of logic and they are quite systematic and original.

In *Ğadīd-i Muğni al-Ṭullāb*, which is taught as a commentary on al-Abherī (or *al-Abahrī*) *Eisagoge* in contemporary illegal madrasas, the explanation of logic and reasoning is as follows:

“Logic is a canonical instrument which protects the mind from mistake in reasoning when complied with... as to reasoning is the arrangement of acquired known things in aimed at acquiring unacquired things.”<sup>[37]</sup>

In the later period of the Ottoman State, logic also is understood as reasoning. For instance, General Sırrı the Creten (1844-1895) has began his work, which he wrote in Arabic and Ottoman as follows: “Logic has two parts: Apprehensions and judgments. The purpose of logic is to know the right and wrong of reasoning. As to reasoning, is to organize a proof by drawing the known propositions as minor proposition and major proposition in acquiring the unknown judgments. As to acquiring the unknown apprehensions, it is to make a definition (*tārif*) making unification and arrangement from the genus (*ğins*) and the difference (*faşl*).”<sup>[38]</sup>

Herein, we should also discuss the conduct of reasoning in making arrangements. It moves (*harakat*) in two ways. The first is moving toward principles

[34] Nicholas Rescher, *Temporal Modalities in Arabic Logic* (Dordtrech: D. Reidel Publishing Company, 1967), 26.

[35] Nağmaddīn al-Kātībī, *ar-Risāla ash-Shamsiyya*, trans. A. Spencer, in A. Spencer ed. *Bibliotheca Indica: A Collection of Oriental Works*, no. 88: *First Appendix to the Dictionary of Technical Terms used in the Sciences of the Mussulmans, containing the Logic of the Arabians*, Calcutta: F. Carbery, (Bengal: Military Orphan Press, 1854), 2.

[36] Abdüllkuddüs Bingöl, *Gelenbevi'nin Mantık Anlayışı* (İstanbul: M.E. B yay., 1993. According to Bingöl, Galanbavî is considered the most eminent logician of his period. It is almost impossible to find independent compilations, except individual commentaries and glossaries from the 15th century to the pre-Reorganizations in Ottoman period. But Gelenbevi also wrote original compilations about logic as in other domains. A. Bingöl, “Osmanlı Dünyası'nda Mantık Bilimi ve Eğitimi”, *Felsefe Dünyası*, 29 (1999), 12-20.

[37] Maḥmūd bin Hāfız Ḥasan al-Mağniṣī, *ibid*, 9.

[38] Giridi Sırrı Paşa, *Mi'yāru al-Makāl* (İstanbul: Mekteb-i Sanāyi Matbaası, 1303), 6. For Categorical Propositions see Akman, Zehra Oruk, “The Structural Role of the Subject in Categorical Propositions and Its Existential Import”, *Journal of Social Sciences of Mus Alparslan University*, 12 (3), 2024, 1188-1196.

through conclusions (maṭālib) in order to acquire principles (mabādī). The second is moving toward conclusions through the principles in order to acquire form (ṣūrah). At this point, it differentiates from intuition (hads) because intuition is absolutely not a movement; it is comprehension (intiḳāl). That is, it requires a swift comprehension of the mind in order to move from principles towards results.<sup>[39]</sup>

This traditional perspective of logic is being maintained in existing illegal madrasas.

## 2.5. The What of Logic and The Conception of Reasoning in Modern Logic

Lukasiewicz says that,

“‘It is usual to say that logic is formal, in so far as it is concerned merely with the form of thought, that is with our manner of thinking irrespective of the particular objects about which we are thinking’ This is a quotation from the well-known text-book of formal logic by Keynes... The expression “form of thought” is inexact and it seems to me that this inexactitude arose from a wrong conception of logic. If you believe indeed that logic is the science of the laws of thought, you will be disposed to think that formal logic is an investigation of the forms of thought.”<sup>[40]</sup>

He continues:

“It is not true, however, that logic is the science of the laws of thought. It is not the object of logic to investigate how we are thinking actually or how we ought to think. The first task belongs to psychology, the second to a practical art of a similar kind to mnemonics. Logic has no more to do with thinking than mathematics has. You must think, of course, when you have to carry out an inference or a proof, as you must think, too, when you have to solve a mathematical problem. But the laws of logic do not concern your thoughts in a greater degree than do those of mathematics. What is called ‘psychologism’ in logic is a mark of the decay of logic in modern philosophy. For this decay Aristotle is by no means responsible. Throughout the whole *Prior Analytics*, where the theory the syllogism is systematically exposed, there exists not one psychological term. Aristotle knows with an intuitive sureness what belongs to logic, and among logical problems tre-

<sup>[39]</sup> Maḥmūd bin Ḥāfız Ḥasan al-Maḡnisī, *ibid*, 85.

<sup>[40]</sup> Jan Lukasiewicz, *Aristotle's Syllogistic From The Standpoint of Modern Formal Logic*, (Oxford: Oxford University Press, 1954), 12. Keynes's study in the quoted passage was noted in Lukasiewicz's footnote in that way: J. N. Keynes, *Formal Logic* (London, 1906), 237.

*ated by him there is no problem connected with a psychical phenomenon such as thinking.*"<sup>[41]</sup>

We can assume that Lukasiewicz explains the what of reasoning along with the what of logic in modern logic through this paragraph because logical thinking consists of *sui generis* reasoning. The reasoning referred to here is the logic/reasoning produced through propositional relations. The emphasis on *Prior Analytics* supports this view. Yet, this perspective, if we necessarily needed to include it, would fit into the judgment part of Arabic logic. Arabic logic consists of two types of reasoning: apprehensive and judgmental. From this perspective, logic is about the correct reasonings constructed through conceptions and propositions. Given that there are two different systems of logic, logic could, therefore, be reduced to correct reasonings. The contents of these reasonings are different; they are two different paradigms of logic.

In modern logic, the logic is generally defined as follows: "Logic in the sense of formal or deductive logic is the study of correct reasoning. Reasoning is expressed by arguments. An argument consists of a number  $n+1$  of sentences  $A_1, \dots, A_n, B$  such that the first  $n$  ones are called the premises and the last one the conclusion of the argument."<sup>[42]</sup> These statements are but another proof of the intensification of modern logic solely on propositional relations.

Correct reasonings lead us to knowledge. Considering, with regards to Arabic logic, that reasoning is a method based on apprehension, acquired knowledge is definitional/apprehensive. In fact, the attained definitions are also propositions. The reason the definitions are considered knowledge based on apprehension is because their acquisition is provided through various relations between the concepts and, what stems from the conceptions are also ideas.

On this subject, Doğan Özlem states:

"This situation has led to intense philosophical debates on whether the concepts are generated from propositions or propositions are generated from the concepts. The opinion that considers the concept as the smallest and simple unit of thinking emphasizes that the propositions are generated from the concepts. According to this opinion, there is no identicalness between a concept as an idea, an opinion and its definition made through propositions. No definition exhaustively signifies a concept. On the other hand, according to a view particularly supported by neopositivist philosophers in our century, the simplest unit of thinking is not the concept but the propo-

<sup>[41]</sup> Jan Lukasiewicz, *ibid*, 12, 13.

<sup>[42]</sup> Teo Grünberg, *Modern Logic* (Ankara: METU Press, 2002), 1.

sition. Thinking also is a performance realized only within and through the language. For this reason, concept is not something outside the language; it consists of propositions comprising the meanings of the words. But, neopositivists have developed this opinion through a parallelism they assumed between thinking and the language. However, they have not been able to prove this parallelism hitherto.”<sup>[43]</sup>

This excerpt clarifies the issue of why the definitions are included in apprehensions but not in judgments. This, however, is not the subject of this study.

Thus far, we have tried to explain the reasons and the basis of the difference between the two systems of logic. Now we will summarize the results reached throughout the article in the conclusion.

## CONCLUSION

The conception of Arabic logic has developed the logic heritage that it acquired from the peripatetic era. In this context, it determines the chapters of logic as “five universals”, “the ways of defining”, “propositions and their judgments”, “syllogism”, and “five arts”. It operates in two epistemic domains called apprehensions and judgments.

In terms of either Arabic logic or modern Logic, logic can be reduced to correct reasoning. When reduced, the fundamental difference appears. Logical arguments are comprised of correct reasonings. What is referred as to reasoning in Arabic logic is the logical arrangement of acquired known things aimed at acquiring the unacquired things regarding apprehension and judgment. As for modern logic, reasoning renders the logical arrangement of propositional relations. Therefore, it is justified that Arabic logic and modern logic are two different systems of logic that rely on the basis of theoretical perspectives. My advice is that if a comparison is to be made between Arabic logic and modern logic, it should start with the concept of al-Fikr.

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<sup>[43]</sup> Doğan Özlem, *Mantık* (İstanbul: İnkılâp Kitabevi, 1999), 68.

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