

**THE PROBLEM OF DEFINITION IN ISLAMIC LOGIC**  
A Study of Abu Maja al-Farid's *Kasr al-Mantiq*  
in Comparison with Ibn Taimiyyah's  
*Kitab al-Raddala al-Mantiqiyyin*

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in Comparison with Ibn Taimiyyah's *Kitāb al-Radd `ala al-Manṭiqiyyīn*

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## ABSTRACT

Islamic logic, as developed by al-Fārābī and Ibn Sīnā as well as many other philosophers and theologians, belongs to the traditional, i.e., pre-modern, logic; and this system of logic is considered as one of the branches of philosophy. Here the doctrine of definition constitutes a fundamental part due to the foundationalistic character of this philosophy. In the Islamic world, the criticisms of this doctrine, as well as other doctrines in logic, came from those who developed one or other kinds of philosophical system -- in its broadest sense -- such as Fakhr al-Dīn al-Rāzī (philosophical theology) and Suhrawardī ("dzawqi philosophy" or *ḥikmat*, as he calls his system), and also from those who tried to refute logic as a philosophical discipline -- and philosophy as a whole for that matter -- because of religious reasons. This thesis studies the latter group's criticisms of the philosophers' doctrine of definition as represented by Abū Najjā al-Fārīd and Ibn Taimiyyah.

In the case of al-Fārīd, who might be just another theologian involved in the wave of rejection of "ancient sciences" in the early centuries of Islam, while the criticisms themselves seem to be not substantial and the style of argumentation is awkward, they stimulate a deeper discussion of some aspects of the Islamic logic, in particular that controversial area which borders logic from language. The most important problem here concerns name as an alternative to definition; this problem has accompanied logic throughout its development up to present day. The two chapters related to the problem of definition in his treatise, *Kasr al-Manṭiq*, are translated here as an appendix.

Ibn Taimiyyah's criticisms are much more substantial, in the sense of his being very argumentative and analytic. Some of his criticisms are raised from the epistemological and metaphysical points of view, while the others concern the consistency of the logical doctrines themselves. His most important point is epistemological: that people may conceive things without definition, or they conceive them prior to forming definitions of them. Many of his criticisms are, indeed, well-grounded and shared by other later logicians. Though it cannot be said that he had refuted logic, the criticisms, theoretically, at least, should have forced the philosophers to make more modest claims, especially with regard to definition as the only means of attaining knowledge of concepts.

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## INTRODUCTION

### 1. General Background of the Problem

Islamic *falsafa* owed its birth to a great extent to the Greek philosophers, and as such was built in the same way, as far as logic is concerned.<sup>1</sup> That Aristotle was given

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<sup>1</sup> Two things need to be clarified here. *First*, we must clarify the misunderstandings that might come out of our use of the terms "Islamic philosophical tradition", "*falsafa*", "*faylasūf*", "Greek-based philosophy", and other related terms. It is an obvious fact that *falsafa* -- as this word was used in works written in Arabic in the ninth century onwards, which referred to that particular intellectual tradition in Islamic world as represented by its major proponents such as al-Fārābī, Ibn Sīnā and Ibn Rusūd -- was derived mainly from the Greek philosophy. There were, indeed, other philosophical -- in its broader sense -- traditions into which we must include even thinkers such as Ibn Taimiyya who rejected vehemently the penetration of *falsafa*, or the Greek-based philosophy, into theology and *taṣawwuf*. But even the *falsafa* tradition was not totally Greek: it started with the Greeks but departed in so many ways that even by the time of the first *faylasūf*, al-Kindī, there were so many ideas, not to mention its systematization, that could not be found in the Greek philosophical tradition. There might be many reasons to account for this; one of the most obvious is that the philosophers were "forced" to take into consideration their beliefs as Muslims in their works as philosophers -- regardless of whether they succeeded in compromising the philosophy with their personal beliefs. And in its later development there were contacts, sometimes clashes, between the rationalistic peripatetic philosophy with other traditions, which resulted in the birth of distinct traditions such as Ibn 'Arabi's, Suhrawardī's and Mullā Ṣadrā's. Even in the case of logic, which at the outset seems to have nothing to do with metaphysics, Suhrawardī proposed some different theories which have his own unique metaphysical system as their foundation, as we shall discuss later.

the title "First Teacher" in Islamic philosophical tradition due to -- according to Ibn Khaldūn in his *Muqaddima* <sup>2</sup> -- his making logic a systematic science and placing it at the head of all philosophical studies, only shows the importance given to logic in this tradition.

The term "logic" here should not be understood in its modern sense, i.e. the (highly) symbolic, formal logic, which has a very limited, if not devoid at all of, epistemological contents, compared to the traditional one. At least, it seems to be what is most commonly understood when we mention the word "logic" today. Being purified, as it were, from these philosophical problems, logic is not considered as a part of philosophy anymore, and those problems which have epistemological character are now treated in philosophy. For example, by taking definition -- one of the important issue in traditional logic, as we shall show soon -- only at its functional value, the controversial philosophical problems that had been surrounding this issue for centuries disappeared. A similar development might be observed in physics as well. As a discipline, physics -- which comes from the Greek word *physis* -- was classified under philosophy, and known as *natural philosophy* in the Western world until the last century, but later it was disengaged from philosophy completely; the problems that used to be discussed in the old physics did not disappear, but they are discussed in philosophy. In its traditional -- i.e. classical, medieval, as well as Islamic -- sense, logic, as a part of philosophy, constitutes a part of theory of knowledge within which boundaries the rest of the philosophical system is built. And one of the important characteristics of the structure of

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The *second* remark concerns our use of the general term "Greek philosophy". Indeed, Greek philosophy in its whole is not a uniform body of knowledge. On the problem of definition itself, for example, there are Greek philosophers, such as the Sophists and Sceptics, who had their own views, and rejected Plato's or Aristotle's doctrines of definition. But their influence was very much limited, and they could not overcome the influence of the latter to the early Medieval and Muslim philosophers.

<sup>2</sup> Ibn Khaldūn, *The Muqaddima*, trans. F. Rosenthal (New York: Pantheon, 1958), vol. 3, pp. 139, 249-250.



knowledge as construed in this tradition is what is called foundationalism in contemporary philosophy, in analogy to (physical) building. That is, knowledge is conceived as a kind of conceptual building having a certain foundation on which the rest of the building stands. And here definition is one of the foundations.

The best illustration for *logic as theory of knowledge and the importance of definition in it* can be found in Plato's and Aristotle's philosophical system. In Plato the foundations are definitions, which are certain. Here we find the first clear formulation of this doctrine. For Plato, definition is what makes true *knowledge*, as contrasted with *opinion*, since it is only with definitions, achieved through intellectual vision, that the "forms" (as the object of knowledge) are described. The true definitions imply *necessary* corollaries, which, in turn, constitute the whole knowledge in its specific Platonic sense.<sup>3</sup>

Within the framework of a very different philosophical system, Aristotle shared Plato's belief in the indispensability of definitions. *Epistême*, which has its equivalence in Plato's "knowledge" and as contrasted with *techne* (arts), is built upon a firm basis of necessary truths, in the forms of axioms and *theses*, which is divided into hypotheses and definitions.<sup>4</sup> Once these first premises are established, the propositions derived from them would be necessary as well, which means that the whole body of knowledge built in this way is certain as the certainty of the first premises (self-evident truths). We may find such a perfect system in Euclidean geometry. This is the best available model of *epistême*, and this kind of knowledge is what is attempted by the philosophers in this

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<sup>3</sup> Raziel Abelson, "Definition", *Encyclopaedia of Philosophy* (1967), vol. 1-2, pp. 314-324.

<sup>4</sup> Aristotle, *Posterior Analytics*, Book I, Chapter I and Book II chapter II; cf. W. D. Ross, *Aristotle* (Methuen, 1930), pp. 42-43.

tradition.<sup>5</sup> The problems then occur since, unlike Euclid's geometry, philosophy wants to speak about reality.

The importance of definition in traditional, i.e. Greek-based, logical discourse, therefore, cannot be over-emphasized. It is an essential part in the building of the whole body of philosophical sciences. This was reflected very well in Muslims' *falsafa*, which had as its most important source the Greek philosophies. This fact can be seen clearer especially in the later development of logic in the Islamic world<sup>6</sup>, when Ibn Sīnā made a re-systematization of the elaboration of logical issues which were to be followed by subsequent Muslim logicians as well as its critics. There logic is seen as consisting of two large parts: that which deals with concepts (*taṣawwur*, pl. *taṣawwurāt*), and that which deals with judgments (*taṣdīq*, pl. *taṣdīqat*). The division into concept and judgment is the broadest division of knowledge, while the means of attaining these two kinds of knowledge, which is what logic is all about, is called, respectively, explanatory phrase and argument. And the most important kind of explanatory phrase is definition. In view of the logicians' claim regarding the importance of logic in the process of

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<sup>5</sup> See for example, Brown, G. B., *Science Its Method and Its Philosophy* (George Allen and Unwin, Ltd., 1950), pp. 44-62; and Ross, *Aristotle*, pp. 44. Ross even supposes further that Aristotle might be influenced by Euclid's *Elements*, which was already available in Aristotle's time, because there were striking similarities between them, especially in their indemonstrable starting points. Aristotle's Axioms were almost identical with Euclid's Common Notions, and one of his favourite examples, "if equals are taken from equals equals remain", was even identical with one of Euclid's Common Notions. And so were Aristotle's notions of Definition and Hypotheses.

<sup>6</sup> Without going into any detail of the question of whether there is such thing as "Islamic logic", or even "Arabic logic", whenever the term "Islamic logic" is used it is meant as the system of logic that was first developed by the Greeks, then transferred to the Islamic world -- the history of which is the subject of the next chapter. So, the term "Islamic" here points more to the period in which the development of logic was led by the Muslims, or in the intellectual milieu supported by Muslim rulers in their lands. Cf. Nicolas Rescher, *Studies in the History of Arabic Logic*, (Pittsburg: University of Pittsburgh Press, 1963), p. 1.

attaining knowledge, we could see how vital definition is, since it constitutes half of logic.

The following quotations taken from Ibn Sīnā -- a Muslim *faqīh* par excellence -- concerning the purpose of logic in attaining knowledge, in general, and, especially, in philosophical sciences would suffice to show this point. In the first sentence of his *Ishārāt* Ibn Sīnā tells us that logic is a tool that preserves man from committing error in the process of attaining knowledge.<sup>7</sup> Seen in the context of the view that takes knowledge as a virtue in itself this is already a big claim. But he goes further in his *Danesh Namah* as to relate the mastering of logic with man's purity of the soul as the way to salvation.<sup>8</sup> In al-Ghazālī's formulation, in the *Maqāṣid al-Falāsifa*,<sup>9</sup> it reads as follows (which we quote at length to show the train of logic that relates logic with man's salvation):

It is said that all the beneficial things are but with regard to eternal happiness, which means to be happy in the hereafter. It is attained by perfecting the soul ..... The soul is a mirror in which the forms of existence are altogether imprinted, [on the condition that] it is purified and refined by the removal of moral vices from it. And it is impossible to distinguish virtues from vices except by knowledge. [Therefore,] it is impossible to imprint all the [forms of] existence in the soul except by knowledge; and there is no way to attain [knowledge] except through logic. Thus the use of logic is to lead to knowledge. [Since] the usefulness of knowledge is to prepare the attainment of eternal happiness, then it becomes true that the happiness is bound with

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<sup>7</sup> Ibn Sīnā, *al-Ishārāt wa al-Tanbīhāt*, Sulaymān Dunyā, ed. (Cairo: Dar al-Ma'arif, 1971), p. 117; Ibn Sīnā, *Remarks and Admonitions*, trans. Shams C. Inati (Ontario: Pontifical Institute of Medieval Studies, 1984), p. 47.

<sup>8</sup> Ibn Sīnā, *Avicenna's Treatise on Logic* (translation of *Danish Nama-i Alai*, Part One), trans. F. Zabeeh, (The Hague: Martinus Nijhoff, 1971), p. 14.

<sup>9</sup> Some claim that the views expressed here are not al-Ghazālī's as his intention in writing this treatise is to refute them later, but we need not be bothered with this problem, since our purpose here is just to show how the logicians view their discipline; and it is best expressed by the following quotation from al-Ghazālī.

[the perfection of the soul], through purification and ornamentation of it. *Thus logic becomes undoubtedly of greatest utility.*<sup>10</sup>

In face of strong claims like these, it could be understood that those thinkers who were suspicious of philosophy, not to mention laymen, would easily be stimulated to react, and they made the reactions, which were not less strong than the claims, as a defense of their religious beliefs: if happiness ultimately depends on logic, what about, for example, al-Qur'an, which was revealed to guide mankind; and what about those who has no capability of learning logic; what about those who do not even know or hear about the philosophers' logic? Such questions would easily arise. Thus the saying *man tamantaqa tazandaqa* spread; and a glance at the titles of the treatises devoted to refutation of the logicians' claims is enough to show this point: *Kasr al-Mantiq* (Destruction of Logic), *Naqd al-Mantiq* (Refutation of Logic), *Radd 'ala al-Mantiqiyin* (Refutation of the Logicians).

This is only one illustration of how the criticisms of logic arose in the Islamic world of learning. Considering the very important place reserved for definition in the traditional logic, as we have shown above, it would not be surprising too that one of the most severe attacks to logic was directed toward the doctrine of definition.

Unfortunately, however, besides few works studying these attempts at refutation of logic in general way (and many of those few, such as Goldziher's,<sup>11</sup> put emphasis more on their sociological aspects, that is, mainly on their influence on the later decline of philosophical and scientific works in Islam), so far there are not many studies done that concentrate on the criticisms themselves. It is this kind of study that

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<sup>10</sup> Al-Ghazālī, *Maqāṣid al-Falāsifa*, ed. Sulaymān Dunyā (Cairo: Dar al-Ma'arif, 1961), p. 7.

<sup>11</sup> Ignaz Goldziher, "The Attitude of Orthodox Islam toward 'Ancient Sciences'," first published in Germany (1915), its English translation is published in Merlin Swartz, trans. and ed., *Studies on Islam*, New York and Oxford, 1981, pp. 185-215.

we propose to undertake. Especially, concerning the problem of definition we believe that a discussion of this kind would also serve as an entry point to a deeper understanding of the philosophers' doctrine of definition.

By way of introduction we shall roughly characterize here the motive and the major points of criticisms; we will elaborate this characterization deeper in the subsequent chapters. First, we must make a distinction of the kinds of criticisms of logic. We may distinguish at least two kinds of them: (1) criticisms that tried to undermine logic as a discipline; we may well call these attempts "refutations". To this group belonged the so-called "orthodox Muslims" as well as scholars like Abū Sa'īd al-Sīrāfi and Ibn Taimiyyah. They might simply reject it as they rejected other branches of philosophy, such as astronomy, physics and mathematics, which were originally cultivated outside the Islamic world, on the basis of fear that these sciences would replace al-Qur'ān as the source to be consulted when they faced problems. This group oftenly offered no thoughtful arguments concerning what they rejected, instead they sought support from rulers.<sup>12</sup> Or they might be well-versed in logic, though some of them had the same fear of logic as did the first group and refuted logic in order to defend religious doctrines; the difference with the first group is that they offered sound criticisms, which ultimately aimed at showing the inadequacy of the system of logic in view of its claims.

(2) Criticisms that came from the scholars who had philosophical inclination, such as the theologian Fakhr al-Dīn al-Rāzī, or the "philosopher" like Suhrawardī who departed very much from the established philosophical tradition. Their criticisms were aimed at revision of it -- so they did not try to *refute* logic as a discipline.

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<sup>12</sup> A. I. Şabra characterizes this group as consisting mainly of *fuqahā*, who were oftenly referred to indiscriminately as "orthodoxy" in Goldziher's above mentioned article. See Şabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam", *History of Science*, vol. 25 (1987), pp. 1-21.

Secondly, there were at least three major points of criticisms of logic: *first*, is logic the only way of attaining knowledge, as claimed by the logicians? Is not there any other way? Some critics go further as to question whether there is any need for logic. The *second* criticism concerns the consistency of logical systems as elaborated by the logicians. The other criticism touches on some epistemological problems related to logic. Here the discussion mainly is about definition: for example, in Muslim logicians' construal, definition is the culmination of the process of knowing; in other words, definition of a thing is the knowledge of that thing. We try to define a thing in order to know it, and not the other way round. Here the criticism concerns the possibility of such process of knowing. In parallel with the above points, in the case of definition the questions are concerned with the claims that definition is the only way of attaining concepts, with the consistency of the theories of definition, or with the epistemological problems involved in the theories (i.e. is it possible to make a definition in accordance with the requirements or rules of forming definition as set by the logicians?). These are just a few illustrations of the criticisms.

## 2. Methodology

We have made above a characterization of the criticisms of logic in terms of the critics' motives, and divided them into two groups. This thesis will concentrate on the first group, i.e. the group that tries to criticize logic with the ultimate aim of undermining it as a discipline, or even undermining philosophy in general. From the criticisms raised by this group we would take out, to restate the problem discussed in this thesis, those related to the questions of definition.

The nature of this thesis will be one of textual and comparative study. Two texts chosen for this are Abū Najā al-Fāriḍ's *Risāla al-Khamsīn Mas'ala fī Kasr al-Manṭiq* and Ibn Taimiyyah's *Kitāb al-Radd 'ala al-Manṭiqiyyīn* in its abridged form by al-Suyūṭī. We shall translate the relevant chapters, i.e., the first two chapters, of *Kasr al-*

*Manṭiq* as an appendix to the thesis, analyze it and, in particular, compare his criticisms of the philosophers' theory of definition with criticisms raised by Ibn Taimiyyah. In the course of analyzing them we may have recourse also to other criticisms, that belong to the first as well as the second group, such as the ones that come from the grammarian al-Sirāfī, the theologian Fakhr al-Dīn al-Rāzi, or the *ḥakīm* Shihābuddīn Yahyā al-Suhrawardī. All these figures will be introduced in the first chapter.

The first and second chapter will deal respectively with the historical and theoretical background of the development of Islamic logic, especially its doctrine of definition. In the first chapter we would try to show the development of logic, including the emergence of attempts at its refutation, in the period that ranges from the end of the eighth century, when the massive translation activity in the Islamic world began, up to the thirteenth century, which, in our observation, constitutes the formative period of the discipline of logic in Islam. It is also significant to note that the last substantial, and, we can say, the best, attempt at refutation of logic occurred in the thirteenth century, i.e., the one by Ibn Taimiyyah.

The second chapter tries to give an overview of the "established" doctrine of definition and related problems within the framework of Islamic logic as a whole. There we choose the works of al-Fārābī and Ibn Sīnā to represent logic in the Islamic world. In accordance with the nature of our study here, the consideration taken for this choice is not so much historical as theoretical, that is to say, their works represent logic in its mature stages, and both of them, but especially Ibn Sīnā, set the subsequent developments of logic. Further reasons for this choice would be provided in this chapter.

Chapter Three would elaborate on al-Fārīd and his treatise *Kasr al-Manṭiq*. Since nothing is known about him except his name and this treatise, we would first try to characterize the author and estimate the date of the writing of this treatise based on the

treatise itself. Next we would give a description of the problems treated in the text, and after that an analysis of his criticisms of the theory of definition.

In Chapter Four we would discuss the criticisms of Ibn Taimiyyah, the theologian of later time who tried to refute logic from, mainly, the epistemological point of view. The focus here is the problem of definition.

The last chapter would take up a comparison of all the criticisms discussed, then we would state general conclusions of the thesis.



## **CHAPTER ONE**

### **The Development of Logic and Its Criticisms in the Islamic World**

Among the other branches of philosophy, logic was the one that was most dynamic in its development in Islamic world besides, undoubtedly, metaphysics. And since compared to metaphysics it was much more neutral in terms of its relation with Islamic beliefs -- at least, this is what was held by most major logicians -- we can say that this dynamic development was spurred more by theoretical consideration, instead of being an attempt at reconciliation with the Islamic beliefs, as was the case with metaphysics. Logic was also among the first of the "foreign sciences" that were transferred to Islamic world of learning, together with medicine.

In what follows we shall summarize this development, beginning in the early ninth century up to the thirteenth century, along with its criticisms. What is interesting is that since the first period there were already criticisms directed to logic. We may roughly divide this development into three periods: the period of translation, of original works and re-systematization and the development of logic in later theological works. Surely this division is not exhaustive of the whole story of logic in Islamic world; but our concern here is limited to the period covered in this thesis.

## 1. The period of translation and its problems

Logic was first transferred through works of translation together with the translation of medical works. Soon after the death of the Prophet Muhammad (peace be upon him), the Muslims conquered many places surrounding Arab peninsula, and one of them is the areas in which the Syriac Christians lived. Here there was a good cultivation of the Greek intellectual heritage, in the forms of translation of Greek works into Syriac and the teaching institution in which the tradition was preserved and developed.

An important fact here, in relation to logic, was the existence of the medico-philosophical tradition. In this tradition the curriculum of the teaching institutions were divided into two parts: an elementary and preparatory program, and a specialized program, consisting of medicine, astronomy and theology.<sup>13</sup> Along with mathematics, logic was included among the preparatory program, and as such every student ought to learn logic. Logic as a discipline was then identified with the nine standard books, i.e. Porphyry's *Isagoge*, and Aristotle's *Categoriae*, *De Interpretatione*, *Analytica Priora*, *Analytica Posteriora*, *Topica*, *De Sophisticis Elenchis*, *Rhetorica*, and *Poetica*.

This medico-philosophical tradition was cultivated mostly by the Nestorians, in their academy in Jundishapur. Here was the place where the first translators of Greek logical works were educated. In the end of the eighth century and the beginning of the ninth century there were already translations of the nine standard books, except the *Analytica Posteriora* and *Poetica*.<sup>14</sup> But the significant move was made by the second generation of translators as represented by Hunain ibn Ishāq (809-877) and his schools. Hunain found that the earlier translations of works on logic as well as other sciences

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<sup>13</sup> Nicholas Rescher, *The Development of Arabic Logic* (Pittsburgh: University of Pittsburgh Press, 1964). The main source for this section is this book, which has become a classic in the field.

<sup>14</sup> Rescher, *The Development*, pp. 26, 29.

were marred by very serious errors; his contribution was in the improvement -- which, in many cases, meant a whole re-translation -- of these translations and the completion of the translation of the major Greek works that were left untranslated by the previous generation. With the publication of his important treatise, *Risāla Hunain ibn Ishāq ilā 'Alī ibn Yahyā fī dhikr mā turjim min kutub Jālīnūs bi 'ilmihi wa ba`dhu mā lam yutarjam*, by Max Meyerhoff in 1926, a full appreciation of the scientific method in which he did his works had been made possible.<sup>15</sup> As we shall see soon, this stage of translation would later prove to be a crucial stage in the acceptance of the "foreign sciences".

A contemporary of Hunain, al-Kindī (805-873), the first philosopher, had already wrote the first independent works on logic, which, unfortunately, none of them are extant. But there is an extant brief treatise of his describing the content of the eight books of Aristotle's *Organon*, which is not so substantial. However, an important fact that can be seen in this treatise is about the use of the purely Greek logical terms in his treatise. This fact seems to be a general tendency among the early translators and writers, and it deserves a special discussion since it became one of the reasons of many Muslims' denial of the foreign sciences in the early period.

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<sup>15</sup> Max Meyerhoff, "New Light on Hunayn ibn Ishāq and His Period," *ISIS*, vol. VIII (1926), 4, p. 685-724. There are some passages in the *Risāla* which show Hunain's scientific method of translation. For example, in one occasion, after commenting upon a bad translation of a work, he tells us how he corrected it, that is, by collating the Syriac translations and the Greek original text; he tried to find as many manuscripts as possible and compared them; he also criticized the word-by-word translation of the previous translators and, in some cases where revision became too troublesome for him, he preferred retranslating the text completely. A scholar of the fourteenth century, al-Ṣafādī, gave testimony to Hunayn's excellent method of translation: comparing the two methods of translation, earliest translators' and Hunayn's, he says that the latter is superior since it is not merely word-by-word translation, "hence there is no need to improve [it]." Especially concerning the translation of works on medicine, logic, natural philosophy and metaphysics, he says that the Arabic translations (by Hunayn) requires no correction at all. (F. Rosenthal, *The Classical Heritage*, [London: Routledge, 1975], pp. 17-18.)

Instead of inventing Arabic terms, as was common among later translators, for the translations of the title of the books of *Organon*, for example, al-Kindi just took the Greek titles: *qaṭāghūriyās*, *bāri yarmāniyās*, *anālūtiqā*, *afūdiqīqā*, *ṭābiqā*, *ṣāfiṣīqā*, *riṭūriqā* and *būyūtiqā*. Surely these terms did not make sense to the Arabic-speaking readers, and it would not help the effort of introducing the foreign science to them. In fact, Ḥunain himself complained that most of the works of translation he encountered were almost useless as they were very difficult to be understood even by the Arabic-speaking readers. They seemed to be translated without the knowledge of the subject on the part of the translators, such that what was attempted was word-by-word translation, which were worsened by the inclusion of too many borrowed words from Greek with minimal adaptation.

Besides the problem of too many untranslated Greek words, this express concern among the early scholars about the (Arabic) language as used in the translation of philosophical works, in general, and, especially, logical works was also related to the problem of the creation of technical terms. In fact, this concern extended well into the time of al-Fārābī, who, in one of his small treatises concerning logic, touches upon the problem of the creation of technical terms in specific disciplines; while al-Rāzī (865-ca. 925), for example, wrote a special treatise called *On logic as based on technical terms of the Islamic philosophers*.<sup>16</sup>

Another important fact related to the concern about language, but in different direction, was the problem raised by grammarians of this time on whether there was a need for logic, since the Arabs already had their own grammar, which was also concerned with the creation of meaningful speech (propositions). It is interesting to note that at this early period there were already refutations of logic. The most significant one was perhaps the celebrated debate on the merits of logic and grammar by the logician

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<sup>16</sup> Rescher, *Development*, pp. 117-118.

Abū Bishr ibn Mattā (ca. 870 - ca. 940) and the grammarian al-Sīrāfi.<sup>17</sup> Though the reliability of the report of this debate can be questioned, since it is reported by people on al-Sīrāfi's side, with a clear intention of showing the incapability of Abū Bishr to answer his opponent's questions, the very fact that a debate such as that had happened indicates the tension -- a very old one -- between logic as an imported science and the indigenous science of grammar. The debate concerned the problem of the nature of language, the attainment of truth through religion or logic, and the choice between ordinary language or constructing a technical language suitable to convey the wisdoms of the great Greek philosophers.

To sum up, this period marked the beginning of efforts to transfer the Greek logic into Islamic world. As such the main occupations of the scholars were the translation of the Greek logical texts in Arabic. To enable the accomplishment of this task they, directly or indirectly, had to construct a language that could contain and convey to the readers those new ideas. Beginning with a very rude translation of the first generation translators, later translators, most important of whom was Ḥunain and his school, made significant refinements. Due, mainly, to this problem, there were already attempts at undermining logic as a science, notably from the grammarians. This period had thus arisen a concern about the potential problems on the relation of logic and language -- a concern that passed down to al-Fārābī and his contemporaries and fellow students of Abū Bishr.

## 2. The period of original works and re-systematization

It was in this period that substantial independent logical treatises were written. Though al-Kindī in the previous period did write something on logic, but, judging from

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<sup>17</sup> The report of this debate was published along with its translation by D. S. Margoliouth, "The Discussion Between Abū Bishr Mattā and Abū Sa'īd al-Sīrāfi on the Merits of Logic and Grammar," *The Journal of Royal Asiatic Society*, 1905, pp. 79-129.

very limited informations about his works and his only extant logical work, he seemed not to make significant contribution to its development, except to introduce this subject into a wider Arabic-speaking readers.

Two towering figures in this period were undoubtedly al-Fārābī and Ibn Sīnā. As we shall deal with them specifically in the next section, here we would only point to their most significant contributions that influenced the development of logic in the later period.

First thing to be noted in al-Fārābī is that he wrote his early works in the atmosphere of resentment between the logicians and the grammarians, as very well reflected in the debate between his teacher and al-Sirāfī. He, and so did his fellow students of Abū Bishr -- like Yaḥyā ibn `Adī who wrote treatises titled *On the excellence of logic* and *Demonstration of the difference between logic and Arabic grammar*<sup>18</sup> -- tried to answer the allegations directed to logic (and logicians as well) in his treatises. That seems to be the reason why we find so many space in al-Farabi's treatises devoted to clarifying some problems in logic which are related closely with what the grammarians discuss.

For example, in his *Fuṣūl*, he discusses the construction of technical terms in logic and other sciences.<sup>19</sup> Here he tries to resolve the grammarian objections to the (artificial) construction of technical terms in philosophical and logical works by showing that this practice is a very usual one, such that even the grammarians create their own technical terms, which are different from the common, ordinary use of the terms. He gives examples such as the term *raf*, which, in ordinary use means "raising", but in grammar means the vowel "u" of the nominative case; *naṣb*, or "elevation", which as a

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<sup>18</sup> Rescher, *Development*, p. 132; the treatise is translated by G. Endress, "The Debate Between Arabic Grammar and Greek Logic", *Journal for the History of Arabic Science*, vol. 1, no. 2 (November 1977).

<sup>19</sup> Al-Fārābī, *Fuṣūl*, A: 266-267, I: 274-275.

technical term in grammar means the vowel "a" of the accusative case, etc. Another example is the word *zimām*, which, literally, means the bridle (of camels), but if a secretary uses it then it means "audit". "When expressions generally known to the public are used in address in a particular art and the practitioners of the art understand by them something different from what the public understands, it is unnecessary to attend to what the public means by them, but they are employed according to what they signify among the practitioners of the art," says al-Fārābī.<sup>20</sup>

Besides treating the crucial subjects on the relation of logic and language which became one of the sources of refutations of logic, one of al-Fārābī's significant contributions, as mentioned by Seyyed Ḥossein Naṣr, was the presentation of Aristotelian logic "in a very appropriate and exact Arabic terminology which henceforth became the heritage of nearly all branches of Islamic learning."<sup>21</sup>

After al-Fārābī there were several important philosophers or theologians who wrote something on logic, such as the Mu'tazilite Abū Ḥayyān al-Tauḥīdī, who also reported the debate between Abū Bishr and al-Sīrāfī, Ibn al-Haiṭham and the Ikhwān al-Ṣafā', but none of them contributed significantly to the development of logic.

Other important developments had to wait until the coming of Ibn Sīnā. As in other branches of philosophy, especially in metaphysics, Ibn Sīnā's merit is his re-systematization of the logical discourse, which hitherto had mainly followed Aristotle, and other partial contributions such as the introduction (or the perfection) of the discussion on conditional syllogism which is a post-Aristotelian development. The re-systematization of logic attempted by Ibn Sīnā is to be found in his later works, which can be taken as containing his more mature views, such as *al-Ishārāt wa al-Tanbīhāt*, *Danish Nama*, and *al-Najāt*. The two key terms, and the specific meanings attributed to

<sup>20</sup> Al-Fārābī, *Fusūl*, A: 266-267, I: 274-275.

<sup>21</sup> Naṣr, *Three Muslim Sages*, p. 14.

them and their head-positions, in this re-systematization are *taṣawwur* and *taṣdīq*. Under these two key-terms are the whole logic. It is this logic as systemized by Ibn Sīnā which has lasted until the present day in traditional centers of learning in Islamic world.<sup>22</sup>

With these two figures, we can say that the works related to the transfer of logic into Islamic world had been completed, and logic, as presented in Arabic language, had become a full-fledged discipline and was ready to be absorbed by other intellectual streams in Islam. Concluding his discussion on the development of logic in the tenth century, Rescher makes this observation: "By the end of the tenth century, Greek logic was not only Arabicized, but also on the way to being Islamized -- both in the origin of its personnel and the geographical distribution of the foci of its pursuit."<sup>23</sup>

### 3. The development of logic in later theological works

By this time, in the wake of the opposition to the philosophical sciences, which had begun since the earliest time of their spread, by the "orthodoxy", i.e. those whose spirit was one of preservation of "pure" Islamic beliefs and were very protective against the penetration of alien teachings into Islamic sciences, logic became a special target of attack due to its position as the head of these philosophical sciences. In his very well-known study of "orthodox Muslim's" opposition to *'ulūm al-awā'il*, Goldziher says that, "While orthodoxy<sup>24</sup> expressed its distrust of [Greek metaphysics, mathematics, geometry, astronomy and physics] simply by showing a certain preventive concern, the

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<sup>22</sup> Contemporary Iranian Muslim philosophers, for example, still retain this division. See, for example, Muḥammad Bāqir al-Ṣadr, *Our Philosophy*, trans. and introd. Shams C. Inati, (London: The Muhammadi Trust, 1987), p. 39.

<sup>23</sup> Rescher, *Development*, p. 47.

<sup>24</sup> A. I. Ṣabra, giving comment on some of Goldziher's points, characterizes this group as consisting, mainly, of *fuqahā*, which were often referred to indiscriminately as 'orthodoxy' in Goldziher's article. See Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam."