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AL-FARABI

(259-339 AH/872-950 AD)

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Throughout the ages thinkers have raised the question of what the human being ought to learn in order to be in tune with his own epoch, to live intelligently in society, and to be a citizen bringing benefit both to himself and to the community; hence the importance of education. It is the aim of education which take precedence, only then come the means to realize these aims. For the most part, it is philosophy which is concerned with defining these aims, and here it may come into direct conflict with religion; the Islamic civilization has experienced numerous controversies between religious lawyers (*fuqaha*) and philosophers in this respect, each with his own opinion about gnoseology.

The aim of this paper is to present the attitudes to education of Abu Nasr al-Farabi within the framework of his philosophical system, an aspect of his work about which little was known, since researchers have been more interested in the logical, metaphysical and political aspects, to the neglect of his educational concepts. However, scholars do know that al-Farabi studied Plato's *Republic* and this work, by which he was most certainly influenced, deals mainly with education, as is now accepted by historians of philosophy.[2] It is even more unlikely that al-Farabi could have been unaware of this dimension of Plato's philosophy since he made a summary of Plato's *Laws*, a work which we know expresses his final thoughts on education.

So who is al-Farabi, and what is his contribution to education?

Al-Farabi was born in Wasij, in the province of Farab in Turkestan, in 872 AD (259 AH) of a noble family. His father, of Persian origin, was an army commander at the Turkish court. Al-Farabi moved to Baghdad, where he studied grammar, logic, philosophy, music, mathematics and sciences; he was a pupil of the great translator and interpreter of Greek philosophy, Abu Bishr Matta b. Yunus (d. 942/329) in Baghdad; he then studied under Yuhanna b. Haylan, the Nestorian (d. 941/328), in Harran. Thereby he is affiliated to the Alexandrian school of philosophy which had been located at Harran, Antakya and Merv, before definitively settling in Baghdad. As a result of these years of study, he accumulated such knowledge of philosophy that he earned the name of the 'Second Teacher', by reference to Aristotle, the 'First Teacher'.

He moved to Aleppo in the year 943 (330) and became part of the literary circle in the court of Sayf al-Dawla Hamdani (d. 968/356). Al-Farabi was given to wandering on his own in the countryside to reflect and to write, and it was probably his despair at reforming his society that inclined him towards Sufism. His travels brought him to Egypt and it was in Damascus in 950 (339) that he died at the age of 80.[3]

Al-Farabi had a great desire to understand the universe and humankind, and to know the latter's place within the former, so as to reach a comprehensive intellectual picture of the world and of society. He undertook the meticulous study of ancient philosophy, particularly of Plato and Aristotle, absorbing the components of Platonic and neo-Platonic philosophy, which he integrated into his own Islamic-Arabic civilization, whose chief source is, as we all know, the Qur'an and the various sciences derived from it.

Al-Farabi represents a turning-point in the history of Islamic philosophical thought, since he was the true first founder of epistemology which relies upon 'universal reason' and the demonstrations he gave. The intellectual, political and social circumstances prevailing in his day no doubt explain his approach since, in fact, he lived in a historical period of great turmoil, during which the central Islamic caliphate was torn apart into independent states and principalities in both the east and west; and sects and schools of thought (*madhahib*) sprang up undermining the nation's intellectual and political unity (*oumma*). Thus al-Farabi's concern was to restore unity to Islamic thought by confirming the gnoseology based on demonstration. He established logic within Islamic culture, and this is why he is known as the 'Second Teacher', as already mentioned. He was also engaged in restoring unity in politics,[4] making political science the core of his philosophy, basing himself on the system of rules which governs nature and on the Qur'an which emphasized the relationship between gnoseology and values (axiology). He believed the first aim of knowledge was knowledge of God and his attributes, a knowledge which has a profound effect on the human being's moral conduct and helps him to find the way to the ultimate aim of his existence, while indirectly arousing the intellect so that it should achieve wisdom, which al-Farabi held to be the highest level of intellectual attainment permitted to human beings in this life.[5] Thus the core of his philosophy came to be the unity of society and of the State to be achieved by unity of thought, wisdom and religion, each of these being the foundations of the community's government, which should be the same as the unity and order found in the universe. Indeed, al-Farabi often compares the order and unity of the city to that of the universe. Philosophy and religion were for him simply two expressions of a single truth, the variance between them being only in the form of expression: philosophy explains religion and provides proof of it; it is neither in conflict nor in contradiction with it. Therefore we find him also bringing together the philosophy of Plato and of Aristotle to explain the unity of intellect; for, in his opinion, there is a general unity of thought between Plato and Aristotle, the disparities being mere details.

It is especially important to note here that al-Farabi described something that was taboo in the Hellenistic era: namely, the logical category called 'demonstration' whose social and educational function he illustrated in the formation of the mind and of political awareness.

The aims of education

In fact, education is one of the most important social phenomena in al-Farabi's philosophical system. It is concerned with the human soul and makes sure that the individual is prepared from an early age to become a member of society, to achieve his own level of perfection, and thus to reach the goal for which he was created. However, while it is true that there are no writings specifically devoted to education in al-Farabi's books, anyone who follows his writings with care will come upon various texts scattered here and there containing clear educational elements corresponding to his overall philosophical views, which incline to integrate separate concepts and thoughts into a 'unified world view'.

Indeed, the whole activity of education, in al-Farabi's view, can be summed up as the acquisition of values, knowledge and practical skills by the individual, within a particular period and a particular culture. The goal of education is to lead the individual to perfection since the human being was created for this purpose, and the goal of humanity's existence in this world is to attain happiness, which is the highest perfection—the absolute good.[6]

The perfect human being (*al insan al kamil*), thought al-Farabi, is the one who has obtained theoretical virtue—thus completing his intellectual knowledge—and has acquired practical moral virtues—thus becoming perfect in his moral behavior. Then, crowning these theoretical and moral virtues with effective power, they are anchored in the souls of individual members of the community[7] when they assume the responsibility of political leadership, thus

becoming role models for other people. Al-Farabi unites moral and aesthetic values: good is beautiful, and beauty is good; the beautiful is that which is valued by the intelligentsia.[8] So this perfection which he expects from education combines knowledge and virtuous behavior; it is happiness and goodness at one and the same time.

Theoretical and practical perfection can only be obtained within society, for it is society that nurtures the individual and prepares him to be free. If he were to live outside society, he might only learn to be a wild animal.[9] Then, one of the goals of education is the creation of the ideal community, 'the one whose cities all work together in order to attain happiness'.[10]

One of the aims of education is the formation of political leaders, because 'ignorance is more harmful in monarchs than it is in the common people'[11] So, in al-Farabi's view, just as the body needs food and the ship must have a captain, moral conduct must proceed from the soul and the citizens have a real need for a leader who conducts an acceptable policy, directing their affairs in a praiseworthy manner and improving their situation. There is integration between the individual, the family and the city in social life: 'What we say about all cities is also true of the single household, and of each person'.[12] The political leader, al-Farabi considers, has the function of a doctor who treats souls and his political skill is to the well-being of the city what the physician's skill is to bodily health. The work of the politician should not be restricted to the organization and management of cities, inasmuch as he encourages people to help one another in achieving good things and overcoming evil; he must use his political skills to protect the virtues and praiseworthy activities that he has been encouraging in the citizens[13] so that they are free of failings. Among the other characteristics of the political leader is the 'consultative faculty', in other words 'an intellectual capacity by which he can draw out what is most beneficial and most fair in the search for the good among others' .[14]

The soundness of the city is a reflection of 'the good balance of morals among its people',[15] and achieving this balance is one of the most important aims of education. When moral behavior declines and there is doubt over behavior and opinions, the absence of these common values governing people's conduct disturbs the city. Morality, then, is a fundamental objective of education. Al-Farabi defines virtues as 'states of mind in which the human being carries out good and kind deeds. [...] They can be either ethical or rational; the latter are virtues of the rational element in the intelligent human being, such as wisdom, common sense, inventiveness and cleverness. The ethical virtues are, among others, temperance, courage, generosity and justice'.[16] These virtues in the individual must be internalized in the soul so that a person is ready to act upon them 'to earnestly desire them and, rather than being harmed by them, finds them attractive [...] so that he pursues always those ends which are truly good and makes them his goal'.[17]

Among the other aims assigned to education, al-Farabi includes 'proficiency in the arts', because, in his view, perfection in theoretical and practical arts is one of the expressions of wisdom; for the wise are 'those who are very proficient in the arts, and reach perfection in them'.[18]

Thus, in al-Farabi's view, one of the goals of education is to combine learning with practical action, for the purpose of knowledge is that it should be applied, and perfection lies in its being transformed into action: 'Whatever by its nature should be known and practiced, its perfection lies in it actually being practiced'.[19] The sciences have no meaning unless they can be applied in practical reality, otherwise they are void and useless. The real practical sciences 'are those which are linked to readiness for action'[20] and absolute perfection is 'what the human being achieves through knowledge and action applied together' .[21] Moreover, if the speculative sciences are learned without having the opportunity to apply them, this wisdom is marred.[22]

Concerning the realization of these aims and the supervision of education and teaching, al-Farabi agrees with Plato and the 'Twelver Shica' that it is the priest, ruler or philosopher who should be responsible.[23] And since the lawgiver is also the ruler, al-Farabi concludes that the law has an educational function: 'The meaning of *imam*, in Arabic, indicates one whose example is followed, one who is well-regarded'.[24] Issuing laws for society does not simply mean 'that citizens should be obedient and diligent, but also that they should have praiseworthy morals and acceptable behavior'.[25] Therefore al-Farabi considers that the one who prescribes the laws must be bound by them himself before expecting others to conform to them: 'The one who sets the laws must first follow them, and only then make them compulsory'.[26] For he would not be acceptable to those under his command, nor would they respect him, if they did not see him observing his own laws. In short, the law has an educational function since it leads to the inculcation of virtues when the leaders conform to it themselves and are seen as role models for the general public. For this purpose, the lawgiver must be trained from childhood in the affairs of State,[27] and the *imam*'s or caliph's aim in legislation must be to please God. Only those whom God has prepared may make laws, including the Prophet, whom al-Farabi defines as: 'He who lays down the practices and the holy laws, and admonishes the people by incitement and intimidation'.[28] The function of the caliph is to pursue the educational role previously undertaken by the Prophet.

Al-Farabi considers it a duty of the State to put aside a budget for education, taking a portion from the alms tax (*zakat*) and land tax (*kharaj*), as well as other State resources for this purpose: 'Taxes and duties are of two kinds: one is taken to support mutual assistance and the other for the education of the young'.[29]

What is education?

Al-Farabi used a large number of technical terms to describe this concept: discipline (*ta'dib*),[30] correction/assessment (*taqwim*),[31] training (*tahdhib*),[32] guidance (*tasdid*),[33] instruction (*ta'lim*),[34] exercise or learning (*irtiyad*),[35] and upbringing or education (*tarbiya*).[36]

Good manners or culture (*adab*), in his opinion, in their true educational meaning are the 'combination of all the good qualities',[37] while discipline is the 'way of creating the moral virtues, and the practical arts in the nations'.[38] Instruction (*ta'lim*) is 'creating the speculative virtues in nations and cities'.[39] Al-Farabi distinguishes between instruction (*ta'lim*) and discipline (*ta'dib*). The former is the way of acquiring a theoretical culture, and is mainly verbal. The latter forms ethical conduct, and leads to technical or practical skills. They are therefore quite different.

But al-Farabi did not insist on this division, and on another occasion he defined instruction as including discipline.[40]

Al-Farabi divides instruction between 'special' and 'general'. The special is 'that which is achieved exclusively by demonstration'.[41] This kind of instruction is directed at the elite 'who do not restrict themselves in their theoretical knowledge to what is expected by generally accepted opinions, because among nations, as among citizens, there is an elite and the general public. The general public designates those who are restricted in their theoretical knowledge - whether by obligation or not - to what is demanded by generally accepted opinions'.[42] It is the elite of the elite which exercises leadership.[43] It is for this reason that the method of instruction is different: 'Persuasive and descriptive methods are used in the instruction of common people and the masses in nations and cities; while demonstration methods [...] are used for instructing those who are destined to form part of the elite',[44] those who have been tested and found to have superior intelligence.

Al-Farabi believes that education is founded upon the basis of the human being having certain inborn aptitudes, which he calls 'nature'; 'in other words the power which the human

being possesses at the moment of birth, and which he could not have acquired'.[45] No normal human being lacks it, just as the whole is greater than the part.[46] Al-Farabi also speaks about 'primary science' and 'primary principals'.[47] He differs from Plato in that he gives a fundamental place to sensory perception. He describes the senses as 'the paths whence the human soul gains knowledge'.[48] Knowledge thus begins with the senses, then becomes an intellectual conception by way of imagination, since whatever the soul understands contains an element of imagination. Knowledge originates with the senses.[49] Al-Farabi drew attention to Aristotle's opinion in *The Book of Demonstrations* when he said: 'Whosoever loses a sensory perception loses knowledge'.[50] One function of the imagination is to preserve the sensory images[51] which, in the end, become intellectual possessions. Some of his views, dealing with what today we would call general psychology and educational psychology should be the subject of an interesting study.[52] Although he deals with sensory knowledge, he considers that the senses are only instruments of the mind, for it is the mind which has the potential of understanding. He pointed to Plato's opinion that the nature of learning is based on 'memory' and gives a metaphor of the concept of 'equality' which, in his opinion, is fixed in the mind: confronted with a piece of wood which is equal to another piece of wood, we are aware of this equality, in other words the concept of 'equality' is presented to the memory which compares it with the concept already in the mind. 'Any learner proceeds in the same way by comparing it with what is already in his mind'.[53] We find this too in al-Biruni (d. 1048/444): 'Our learning is no more than remembering what we have learned in the past [...] forgetting is the passing away of knowledge, and learning is remembering what the soul knew before it came into the body'.[54]

Teaching methods

As we have seen, al-Farabi considers that the method of instruction must be appropriate to the level of the learners, depending on whether people belong to the common people or the elite. Education, as he sees it, is necessary for every individual in the nation, since without it nobody would be able to reach perfection and happiness. So, if education must be available to all, the method of teaching should however be adapted according to the group it is intended for. There are two fundamental methods: the path of the common people, based on persuasion; the path of the elite, based on demonstration. Furthermore, the method of instruction may also vary according to the instructional material. Thus, teaching theoretical intellectual virtues is carried out by demonstration, while teaching practical arts and crafts is by way of persuasion.

The demonstrative path is achieved through speech. Aural instruction, according to al-Farabi's words, is therefore 'that in which the teacher uses speech'[55] for matters which can be taught in this way. It leads to the acquisition of theoretical virtues. The persuasive method is conducted through speech and activity together, and is suitable for teaching the applied arts and moral virtues.[56]

Following Plato's model, al-Farabi used the method of dialogue or debate,[57] although he does not consider it as the only method to escape from the world of sensory perception to arrive at the world of intelligentsia—beginning with contradictory ideas to arrive at unity. He emphasized the importance of discussion and dialogue in instruction, and indicated two methods: the method of argument and the method of discourse; both of these 'can be used orally or in writing'.[58] When speaking to the common people, the methods used must be those closest to their powers of comprehension, enabling them to grasp what they are capable of understanding.

Al-Farabi defines the discourse of persuasion as: 'persuading the listener with what will satisfy his mind, without reaching certainty',[59] as opposed to the demonstrative discourse 'whereby it is sought to instruct the truth, and to explain it in such a way as to bring about

precise knowledge'.[60] Persuasion achieves its purpose when it leads to 'the hearer doing things that he is convinced are true'.[61] Similarly, the ability to produce an imaginative impression has an effect on poetry and other arts, such as music, so that: 'the soul of the hearer will rise up to seek the thing imagined, or to flee from it; to be drawn to it or be repelled by it'.[62] To sum up, the objective of the discourse method is simply to persuade without reaching certainty, which would require precise proof; while the objective of the demonstrative method is to gain precise knowledge based on reliable proof. As for the debating method, it is used to prevail over an adversary, to make a particular idea triumph, to take an opinion to its furthest point, so that even the opponent believes that it is true, without it necessarily being so. This method is used against stubborn people.

There is another kind of discourse used by al-Farabi which he calls 'scientific discourse'; that 'by which the knowledge of something is obtained'[63] either through asking questions about the thing, or from the replies obtained or, finally, by resolving a scientific problem.[64]

Al-Farabi sums up all the foregoing in his book *Al-Alfaz*, saying that instruction has two aspects: the way of audition or learning based on speech; and the way of imitation which is based on observing other people's actions in order to imitate or apply them. Averroës agreed with him when he stated that 'there are two sorts of learning: by speech and by imitation',[65] it being understood that the latter meant adopting a model and applying it.

Al-Farabi gives imagination a clear educational function, and makes 'producing an imaginative impression' one way of instructing the common people in many of the concepts that are hard for them to grasp. So, the educator resorts to metaphors or appropriate illustrations.[66] Indeed, it is natural for the common people to be restricted in their theoretical knowledge to what is required by generally accepted opinion. The teacher uses the methods of persuasion and suggestion.[67] The power to represent things by their metaphors is useful in two fields: for instruction and guidance; and for confronting someone who stubbornly denies the way of truth.[68]

In short, it can be said that for al-Farabi the elements of instruction can be summarized as: making something understood by establishing its meaning in the mind; and by creating acceptance of what has been understood. Understanding something implies that the essence of the thing has been comprehended by the intellect and that the thing can be represented by something that resembles it. Acceptance is also internalized in two ways: demonstration leading to certainty, which is the philosophical approach; or persuasion, which is the religious method.[69]

One of the techniques that al-Farabi was concerned with is the one he called habituation, which he defined as: 'a situation whereby the human being acquires a natural disposition or moves away from some haphazard disposition; by this I mean the frequent repetition of a particular action, at short intervals, over a long period of time'.[70] Ethical virtues are acquired by habituation and repetition, until they form a deep-rooted pattern in the mind, whence issue excellent moral behaviours.[71] An admirable character is attained by habituation, and the character is admirable when its actions are marked by moderation, with neither excess nor neglect.[72] This, once again, is an Aristotelian view of the true nature of virtue and the way to acquire it, but al-Farabi demonstrates this theory by stating: 'The fact that ethical morality is only attained by habit is shown by what we see in cities: the political leaders make the citizens good by making them used to good actions'.[73] Habituation is not only a technique for teaching moral virtues, but can also be employed in teaching other things, such as writing: 'Skill in writing is acquired only when the person copies the action of a skilful scribe, and so it is with all the arts'.[74]

To sum up, the repetitive method is appropriate for teaching ethics and practical arts. This habituation takes place by persuasion and affective speech, which establishes them in the

mind, so that the learners resolve to carry them out voluntarily themselves; and by way of coercion, which is used with 'disobedient citizens who are not inclined to do what is right of their own accord, nor take any notice of what they are told; this method is used with any one of them who disobeys and continues until they grasp the theoretical sciences which are taught to them'.[75]

Al-Farabi speaks of the way of freedom and the way of slavery and subjection. Obedience is freedom, while coercion is slavery and subjection.[76] The ruler employs two types of virtuous people with technical competence to educate those, first, who accept to be disciplined voluntarily, or those, second, who need to be disciplined under duress. The same is true in families, for there are children who can be disciplined by gentleness and persuasion, and others with harshness. The total responsibility for this 'education' lies with the ruler for 'the monarch is the one who disciplines and teaches the nation'.[77]

Al-Farabi mentions another method—'learning by heart'—and divides it into two sections: learning words and expressions which the listener repeats until they are memorized, such as learning a language, the Qur'an and songs. The second goes further than simple rote learning and is designed to 'inscribe the meanings of these expressions in the listener's soul'.[78]

Al-Farabi was asked which was better, understanding or memorization and replied: 'Understanding is better than memorization, because the action of memorization deals mainly with words and expressions, in other words with details [...], which could go on forever and are hardly useful, neither for individuals nor for classes. [...] But the action of understanding concerns meanings, universals and laws - defined matters, finite, and which are valid for all. To exert oneself in these matters is beneficial. This also applies to the actions peculiar to acquiring them, such as analogy, organization, policies and consideration of the consequences. If the human being learns only the details, he is not secure from going astray. [...] When he relies on principles and general concepts, and when some new matter is presented to him, he may refer to his understanding of the principles to compare one thing with another. So it is clear that understanding is better than memorization.'[79]

The teacher and the learner

Al-Farabi lays down the conditions of both morality and learning for the teacher. He must be of good character, free from cravings and seek only the truth.[80] For educating and teaching the people, none shall be employed but 'people of virtue, trained in the logical arts'.[81] The art of teaching should be undertaken voluntarily, without obligation, except in cases of absolute necessity. The other scientific and educational prerequisites which the teacher should meet are: mastery of the fundamentals of his art (his specialization) and its rules; the ability to demonstrate everything that it is possible to demonstrate, whenever asked to do so; the ability to make others comprehend what he himself knows; the ability to guard against any distortions which might enter his art.[82]

Concerning the student, particularly if he wants to study philosophy, and in contrast to al-Ghazali (d. 1111/505) who wanted him in the first place to have 'studied the Qur'an, language, and the sciences of the Holy Law',[83] al-Farabi does not make learning the Qur'an and the sciences of the Holy Law a precondition, for he places the learning of religion (*fiqh*) and theology (*kalam*) at the end of the curriculum.

In addition, the student should possess three further qualities: he should be able to grasp concepts and understand their meaning; accept the existence of what he has grasped or understood; be able to describe what he has grasped and accepted. Al-Farabi calls these three points 'the modes of teaching' and considers that a person who brings together all these modes is indeed a teacher.[84] Likewise, Galen also considers that if the learner wishes to surpass all others in knowledge, he must have the highest intelligence and should begin with

logic, have a passionate desire to know the truth, and should study by night and day so as to understand the viewpoint of the Ancients. He is not to be content with that: he should pursue his studies for a long time so as to select those opinions that agree with the meaning and reject those that contradict it, especially in medicine.[85] In the same way, al-Farabi considers that the student must always be most eager to learn and study, and quotes the example of the little drops of water which, over time, can wear away the stone. The student should not let anything distract him from learning, since he who pays attention to too many things at once ends up with confused and disorganized ideas. Learning requires a great deal of time.[86]

If the student wishes to learn by himself from a book, al-Farabi advises that he begin by identifying the book's objective, its purpose and its structure, then its relationship to the sciences and its relative position on that branch of science.[87]

The curriculum

In every age, to reach its objectives, education has to follow a program listing the matters which will enable the individual to learn about the cultural heritage of his nation, on the one hand, and also to learn the knowledge which will lead him to maturity in his feelings, in his judgement and actions, and in developing a critical approach. Al-Farabi is considered to be the first Muslim philosopher to classify the sciences and learning, not just for the sake of enumerating them, but also with an educational objective. For al-Farabi, the sequence of learning must begin with the language and its structure, i.e. its grammar, so that the student can express himself as do the people who speak that language; without this ability, he will not be able to understand others nor they him, and he will not develop properly. Mastery of the common language, the foundation for all other kinds of knowledge, is therefore indispensable. Al-Farabi was keenly aware of the value of language since he spoke several languages himself that allowed him to compare cultures and tongues.[88]

After languages comes logic, the instrument of the sciences and their methodology, and leads to sound reflection; it is also closely connected with language. Furthermore, the Arabic word for 'logic' (*mantiq*) includes both verbal expression and intellectual procedures, and this is why, in his opinion, language comes before rules about forming the mind, and prepares the way for it.[89]

Then come mathematics, which the Muslim philosophers call 'the teachings' (*ta'alim*). Al-Farabi considers that arithmetic comes first, since it is an important stage in the hierarchy of the theoretical sciences: 'Whosoever desires to learn the theoretical art begins with numbers, then ascends to magnitudes (measures), then to the other things to which numbers and magnitudes essentially belong, like perspectives (optics)'.[90] The study of optics, astronomy and the natural sciences in general requires mathematics, and arithmetic is one of the basic tools. Al-Farabi divides mathematics into seven parts: 'numbers (arithmetic), geometry, the science of perspectives, scientific astronomy (contrasted with astrology), music, dynamics and the science of machines'.[91] Mathematics includes algebra. Al-Farabi's explanation for beginning instruction with mathematics is that numbers and magnitudes do not allow for any confusion, and perfect order reigns. They are an example of precision and clarity, and train the student's intellect in that path. The student must proceed in stages to different levels of mathematics, from the immaterial and the immeasurable, then to what needs some matter, and so on. Geometry comes after arithmetic, for it depends on demonstrations 'giving us certain knowledge and banishing all uncertainty'.[92] Geometry has two methods: that of analysis and that of structure. Then there is perspectives, astronomy, music, dynamics and last of all mechanics,[93] then the natural sciences whose subject is matter (animal, vegetable, mineral, etc.).

Following the exact sciences comes theology or metaphysics, then the human sciences (political science in particular), then jurisprudence (*fiqh*), law (*qanun*) and academic theology (*kalam*). In short, al-Farabi's curriculum is confined to a group of sciences, graded as follows: science of language, logic, the 'teachings' (mathematics), natural science, theology, civics (political science), jurisprudence and academic theology. The link between the natural sciences and theology is, in his opinion, the human soul, which he considers to be among the natural sciences, even though it has a metaphysical aspect. One can then move on to the study of the 'First Principle' of all existing beings; then return to human science, beginning with those governing society among other things, and the law which governs trade, and ending with the science which defends the beliefs on which society is founded. It should be noted that al-Farabi did not place medicine among the sciences, to which he devoted an entire treatise and mentions in many other of his works, calling it sometimes a science, sometimes an art. Nor did he mention in *Kitab al-ihsa'* (The Book of Lists) any physical exercise, but he does mention it in *Talkhis nawamis Aflatun* (Abridgement of the Laws), noting that it is beneficial to the body as well as the mind: 'When the body is sound, so is the mind'.[94]

It can be said that al-Farabi designed a mathematical curriculum in education resembling that of Plato. As a reminder of the famous words written over the door of the Academy ('Let none enter who is not a geometer'), Al-Farabi stated that 'the demonstrations used in geometry are the soundest of all demonstrations'.[95]

Al-Farabi mentions another theory, the one taken by the followers of Theophrastus, according to which education begins with reforming the morals, 'for he who cannot reform his own morals cannot learn any science correctly',[96] as well as a third theory, that of Boethius of Sidon, which begins with natural science, because its subject matter is closer to us and better known, and can be grasped by the senses; even though his pupil al-Saydawi disagreed with him and chose to begin with logic, since it is a standard whereby we can always distinguish between truth and falsehood. On these various theories, al-Farabi comments that it is possible to combine some of them. In fact, he thought that, before beginning the study of philosophy, the student must reform his own ethical values, so as to desire nothing but virtue; he must then strengthen the rational mind by training in scientific demonstration, which is geometry giving access to logic.[97]

By comparison, in his *Republic*, Plato considered the starting point to be physical exercise, then arithmetic, geometry, astronomy, music and philosophy (dialectics). However, in *Laws* he considered the starting point was ethics, because it inculcates love of good and hatred of evil. He did not pay any special importance to observation and experiment, for his was a world of ideas, not objects, while al-Farabi is quite concerned with practical aspects of each one of the mathematical sciences.

Philosophy, the queen of disciplines

But it was philosophy that al-Farabi places as the highest form of learning for mankind, for it is the knowledge of distant causes by which all beings are governed.[98] It enables us to learn about the best of things in the best possible way,[99]and it is the way to happiness. Through it, the soul of the learner is raised to the level of the rational human being in whom two elements meet: one, natural and biological, and the other intellectual or spiritual—until we reach the First Principle of existence.[100]

The ultimate objective of studying philosophy is twofold: theoretical and practical. The theoretical part is knowledge of the Creator, the Most High, the active cause of all things and the governor of this world by His wisdom and justice. The practical and ethical part for the human being consists of imitating the Creator, as far as he is able, by carrying out admirable actions.

The route which must be taken by anyone wishing to learn philosophy is that of action; so true is it that a person only reaches the goal of his deeds through complete knowledge, the purpose of which is action. To arrive at the high point of learning, it is vital to be aware of the natural sciences, then the mathematical sciences; but to achieve excellence in one's deeds, one must first reform one's self, before reforming those who share one's house and finally one's fellow citizens.[101]

As for learning about the scientific subjects that must precede the study of philosophy, al-Farabi sometimes indicates the mathematical method, at other times the ethical method, and at others the natural, without particularly favoring any one. He seems to consider them complementary, but believes that, in the final analysis in the teaching of philosophy, one should first attempt to modify the morals of the soul to direct them towards excellence,[102] then the rational soul, so that the student can understand the path of truth. This can be only be achieved in one way: mastery of the science of demonstration which is acquired through that of geometrical (mathematical) demonstration and the path of logical demonstration. Al-Farabi chose to begin with the former, but saw nothing wrong by starting with the natural sciences since they are more related than mathematics to the senses, which are the beginning of knowledge

The student of philosophy must also know its history; he starts with Plato, then Aristotle,[103] so as to know the latter's aims in his various books, his technical terms, and the various philosophical schools, and al-Farabi points out the intellectual, moral and religious qualities which the student of philosophy must possess.[104]

In his own personal philosophy, al-Farabi applied two different methods: (a) the descending method which begins from the Cause (the One) and ends with the effect (the world of the senses), which is what he applied in his book 'On the Views of the People of the Ideal City'; and (b) the ascending method, which begins with the effect and proceeds to the Cause, which he applied in his book 'Politics'.

Unlike Plato who believed that only the Greeks were capable of understanding, al-Farabi has a wider vision not considering philosophy to be a special attribute of any one nation to the exception of all others. He believed that philosophy already existed among the Chaldeans in Mesopotamia, and was then passed to the Egyptians, from them to the Greeks, the Syrians and finally to the Arabs.[105]

Ways and means of elucidation in teaching

Al-Farabi was concerned with the means of clarifying, understanding and making people aware of meanings. He recommended the use of visual observation for whatever could actually be seen, 'placing the object before the eye'.[106] In his opinion, the first step in teaching something is to use the correct name which signifies it. Then define it, and explain the various parts of this definition, and likewise explain its particular and general characteristics, so that the former part of the latter. One may use illustrations of the object, and describe its special features and its unusual features. It is also possible to make it understood by resorting to something that resembles it, or which can be compared with it; and to use the method of sub-division, induction, analogy and metaphor. Al-Farabi considers that all of these methods will facilitate both comprehension and retention.[107] This understanding of something is also supported by knowledge of the characteristics of an object, so that it may be imagined all the easier, inasmuch as by imagining its characteristics, one imagines the thing itself and thus can more easily call it to mind.

He also mentions what is called the rule of 'substitution': if some object has a popular name, this term is used instead of a more complicated one, and the object itself is defined by its constituent elements, an operation which al-Farabi calls 'division and analysis'. When it is

difficult to grasp a concept because of its abstraction, a start is made with the term used to describe it, and if it still cannot be imagined, an illustration is used representing its characteristics. Al-Farabi recalls that Aristotle used to employ substitutes for expressions to make them more intelligible—a method that gives encouragement to the learner.[108]

As with other techniques, al-Farabi recommends during learning and demonstration the use of 'geometric shapes drawn upon a board so as to stimulate the imagination, and so that the demonstration itself will not confuse the intellect, and the imagination may be busy with something similar to the thing which it is intended to demonstrate, and will therefore not obstruct the process'[109] This makes the mind completely occupied with the demonstrations, with the imagination stimulated by the drawing on the board.

Learning about astronomy, among other things, involves the use of instruments, since many of the essentials can only be learned by observations provided by such instruments. Similarly, listening to instruments is vital in the study of music; for him, musical skill is acquired 'by long application to listening'.[110] Al-Farabi was particularly interested in instruments which make the theoretical side of music easier to understand.[111] For this purpose he himself fashioned an instrument and modified some others, like the Baghdad drum (*tanbur*) and the *rabab*, so as to improve them. He considered that music is the most typical of the sciences whose principles are mostly obtained through the senses, like astronomy, optics and medicine: 'for the art of medicine takes many of its principles from natural science, and is learned principally from sensory experience acquired through anatomy'.[112]

Use of sensory perception in the theoretical art of music is a matter to which al-Farabi returned many times in his *Kitab al-musiqa al-kabir* [Great Book on Music], and he called for the making of instruments for this purpose: 'the fundamentals of the science of music are learned through perception and practice. And we have also given [...] guidance for making an instrument [...] which, if tuned in the way I have indicated to produce the notes in a scale, will enable you to hear the same notes. Hence, the rules given verbally will conform to what is heard'.[113]

In this way al-Farabi not only dealt with the theory of music, but also analyzed in detail the way of converting theory into practice: '[In our two books] we have dealt at length with the principles of this science and shown how to make them tally with what is perceived, and in them we have given guidance for making an instrument in which can be applied all the sensory aspects that these principles require'.[114] These instructions for making a training instrument are an important feature in al-Farabi's educational philosophy, who declared that his books aimed to harmonize theory with practice: 'Most of what we have summarized in this book we have made directly perceptible through well-known instruments, with the result that what was explained by words and analogy was in agreement with what is heard'.[115]

On an entirely different subject, al-Farabi turned his attention to the purpose of educational games and the function of play in human activity: 'Different types of play have serious purposes, and play is not then an aim in itself'.[116] The value of play must be considered in relation to its aim: 'The intention behind various types of play can only be truly ascertained when they have been evaluated'.[117] In his view, play overcomes fatigue and 'restores the strength required for action'.[118] As with all distractions, and like salt in food, it should be used in moderation for the aim of play is recreation which, in its turn, 'is designed to restore a person's strength to undertake more serious activity'.[119] He recommends games that stimulate a child's creativity: 'Like the child who uses doors and houses in his play acquires talents and abilities useful to him if he desires to take crafts seriously'.[120] In the same way, Plato had noted that the ancient Egyptians used an excellent method to teach children arithmetic: they were required to divide a number of apples into different groups, or flowers into bouquets of different sizes, or to distinguish containers of different metals, after they had been deliberately mixed up.[121]

Is there a place for punishment in al-Farabi's educational theory? 'The teacher,'must not be too severe, nor excessively lenient. If he is too severe, his pupils will hate him; but if he is too lenient, the pupils will not take him seriously and will be inclined to laziness and will pay no attention to his lessons'.[122] This moderate position leads him to regulate the degree of punishment in accordance with the children's attitude: 'If they are inclined to be mischievious because of some short-term pleasure, then they can be won over by offering them some pleasure when they refrain from it or if they behave in the opposite way. This is how children should be disciplined. If this is not sufficient, then one should add some inconvenience which follows immediately on the misbehavior, and makes it as unpleasant as possible'.[123] It is also possible to substitute the bad behavior with a good one giving similar pleasure, as long as the misbehavior itself is followed by a suitable punishment to make the child abandon it. Al-Farabi does not explain what kind of punishment he has in mind, confining himself to the general idea and leaving it to the educator to decide on the form of correction, depending on the pupil. But he did point out that physical punishment is more effective than psychological punishment, such as fear.

Evaluation

Al-Farabi was well aware of the concept of evaluating the outcomes of teaching. He emphasized that the aim of an examination is to find out a learner's level in the field being studied. When the time comes, in other words when a learner is thought to have completed that discipline, he is tested in it 'so as to determine his level in the discipline he is supposed to have mastered'.[124] He considers that the questions asked could have either an educational or an experimental character. In the first case, it is directed at the pupil who is supposed to know something so as to demonstrate that knowledge. But a person can also test himself to ascertain if he has made a quantitative or methodological mistake. For this purpose, instruments are made available to help us check the compass, the ruler, the scales, the abacus, astronomic summary tables, etc.,[125] which al-Farabi classifies among 'the rules which are few in number yet applicable to many things'. If we learn and remember these rules, we also learn the many matters incorporated in them.[126]

In the same way that knowledge is tested, so is intelligence: the ability to discriminate; the capacity for deductive and critical reasoning; understanding the relationship between isolated pieces of information and grasping the links between them. One of the most important ways of recognizing intelligence is through mathematical ability.[127]

The influence of Al-Farabi

Another entire study would be required to analyze the influence that al-Farabi had over contemporary philosophers and those who came after him: Yahya b. 'Adi (d. 974/374), who was his direct disciple; the Brethren of Purity (Ikhwan al-Safa); Ibn Miskawayh (d. 1130/421); al-Mas'udi (d. 956/346); Abu'l-Hasan Al-'Amiri (d. 991/381); Ibn Rushd (Averroës) (d. 1198/595); Maimonides (d. 1204/601); and Ibn Khaldun (d. 1406/808). Some of his books were translated into Latin and Hebrew. In Latin he was known as Alfarabius and Avennasar.

Elements of al-Farabi's philosophy still remain valid today, such as his emphasis on the importance of mathematics and the sciences, and the experimental method, the integration of knowledge, the importance of values and aesthetic taste. One could even add that Arabic culture has declined in relation to his educational philosophy, which was designed to form an integrated personality, in body, intellect, ethics, aesthetics and technology, an aim which no contemporary education system would neglect.

Notes

The English translations of Arabic titles of al-Farabi's writings given in these 'Notes' can be found in the 'Works by al-Farabi' which follows.

1. *Ammar al-Talbi (Algeria)* Head of the Department of Philosophy in the Faculty of Human and Social Sciences, University of Qatar. Formerly head of the Department of Philosophy in the Faculty of Human Sciences, dean of the Faculty of Islamic Sciences, both at the University of Algiers, and Director of the University Amir Abd al-Qadir at Constantine (Algeria). Author of numerous publications, such as: Ibn Badis: hayatuh wa-ara uh [Ibn Badis: His Life and Opinions]; Ara al-Khawarij al-kalamiya [The Theological Opinions of the Kharijites]; Ara Abu Bakr Ibn al-Arabi al-kalamiyya wa-naqduh lil-falsafa al-yunaniya [The Theological Opinions of AbuBakr Ibn Arabi and His Appraisal of Greek Philosophy]. Editor of the publication A azz ma yutlab [The Most Valuable Research] of Ibn Tumart, Mahdi of the Almohads.
2. Edward Zeller, *Outlines of the History of Greek Philosophy*, New York, NY, Dover Publications Inc., 1980, p. 140.
3. Tj. De Boer, *Ta' rikh al-falsafa fi l-Islam* [The History of Philosophy in Islam], translated by Mohammed ' Abd al-Hadi Abu Rida, Beirut, Dar al-nahda al-'arabiya, 1981, p. 191; Ibrahim Madkour, *La place d' al-Farabi dans l' école philosophique musulmane* [Al-Farabi's Place in the Muslim School of Philosophy], Paris, Maisonneuve, 1934; Henri Corbin, *Ta'rikh al-falsafa al-islamiya* [The History of Islamic Philosophy], translated by Nasir Marwa and Hasan Qubaisi, Beirut, Manshu-rat 'Awaidat, 1966, p. 241.
4. Mohammed 'abid al-Jabiri, *Takwin al-'aql al-'arabi*, Beirut, Markay dirasat al-wahda al-'arabiya, 1989, p. 241.
5. Frederick Copleston, *Philosophies and Cultures*, London, Oxford University Press, 1980.
6. Al-Farabi, *Tahsil al-sa'ada*, edited by Ja'afar al-Yasin, Beirut, Dar al-Andalus, 1983, p. 61.
7. Ibid., p. 89.
8. Al-Farabi, *Talkhis nawamis Aflatun*, edited by 'Abd al-Rahman Badawi, in: *Aflatan fi l-islam*, Beirut, Dar al-Andalus, 1982, p. 54.
9. Al-Farabi, *Al-siyasa al-madaniya*, edited by Fawzi al-Najjar, Beirut, Imprimerie catholique, 1964, p. 87; *Al-Siyasa al-akhlaqiya*, edited by Yuhanna Qamir, in: *Al-Farabi*, Beirut, Imprimerie catholique, 1954, p. 64.
10. Al-Farabi, *Mabadi' ahl al-madina al-fadila*, edited by Albert Nusri Nadir, Beirut, Imprimerie catholique, 1959, p. 97.
11. Al-Farabi, 'Talkhis nawamis Aflatan', in: *Aflatan fa l-islam*, op. cit. p. 55.
12. Ibid., p. 57.
13. Al-Farabi, *Kitab al-milla*, edited by Muhsin Mahdi, Beirut, Imprimerie catholique, 1968, p. 65.
14. Al-Farabi, *Tahsil*, op. cit., p. 50.
15. Al-Farabi, 'Fusil mabadi' ahl al-madina al-fadila', in: *Kitab al-milla*, op. cit., p. 24.
16. Ibid., p. 30; and *Talkhis*, op. cit., p. 40.
17. Ibid., p. 34.
18. Ibid., p. 54.
19. Al-Farabi, *Al-Tanbih 'ala sabil al-sa'ada*, edited by Ja'afar al-Yasin, Beirut, Dar al-manahil, 1987, p. 73.
20. Al-Farabi, *Al-Burhan*, manusc. Maktabat Michkat, Tehran University, No. 140/10, p. 174.
21. Al-Farabi, *Al-Da'awa al-qalbiya*, Hyderabad, India, The Ottoman Encyclopedia, 1346 H, p. 11.
22. Al-Farabi, *Tahsil*, op. cit., p. 89.
23. Al-Farabi, *Talkhis*, op. cit., p. 62.
24. Al-Farabi, *Tahsil*, op. cit., p. 93.
25. Al-Farabi, *Talkhis*, op. cit., p. 57.
26. Ibid., p. 42.
27. Ibid., p. 43.
28. Al-Farabi, *Zaynun al-kabir*, Hyderabad, India, The Ottoman Encyclopedia, 1346 H, p. 8.
29. Al-Farabi, *Talkhis*, op. cit., p. 71.
30. '*Ta'dhab al-ahdath*', in: *Talkhas nawamas Aflatan*, op. cit., p. 10.
31. *Talkhis*, op. cit., pp. 10, 17, 45, 47; *Tahsil*, op. cit., pp. 84, 85.
32. Ibid., p. 81.
33. Ibid., p. 17 : *tasdad al-anfus* [the guidance of souls].

34. Ibid., pp. 25-26; and *Talkhis*, op. cit., p. 64.
35. Ibid., pp. 43, 45.
36. Ibid., pp. 71, 82.
37. Al-Farabi, 'Al-As'ila al-lami'a wa-l-ajwiba al-jami'a', in: *Kitab al-milla*, op. cit., p. 96.
38. Al-Farabi, *Tahsil*, op. cit., p. 78.
39. Ibid.
40. Al-Farabi, *Al-Burhan*, op. cit., p. 175.
41. Al-Farabi, *Tahsil*, op. cit., p. 78.
42. Ibid., pp. 79, 86.
43. Ibid., p. 87.
44. Ibid., p. 88.
45. Al-Farabi, *Al-Tanbih ila sabal al-sa'ida*, op. cit., p. 6.
46. Ibid., p. 39.
47. *Tahsil*, op. cit., p. 49.
48. Al-Farabi, *Al-Ta'liqat*, Ed. Ja'afar al-Yasan, Beirut, Dar al-manahil, 1988, p. 39.
49. Ibid.
50. Al-Farabi, *Al-Thamra al-murdiyya fal-rasi'il al-faribiya*, edited by F. Dieterici, Leyden, Neudruck der Ausgabe, 1890, p. 21.
51. Al-Farabi, *Ajwibat masa'il su'ila 'anha*, edited by F. Dieterici, Leyden, 1890, p. 97.
52. According to Al-Farabi, in the psychological development of the child, the first to appear is the nutritional capacity, then the sensorial capacity, then the imagination, and finally the reasoning capacity or speech. *Ara' ahl al-madana al-fadila*, op. cit., p. 70.
53. Al-Farabi, *Al-Thamra*, op. cit., p. 19; Al-Farabi is using Plato's *Phaidon* as a source.
54. Al-Biruni, *Am lil-Hind min maqula maqbula fil-'aql aw mardhula*, edited by Edward Sachau, London, 1887, p. 28; here again Al-Farabi refers to Plato.
55. Al-Farabi, *Al-Alfaz al-musta'mala fil-mantiq*, edited by Muhsin Mahdi, Beirut, Dar al-Machriq, 1968, p. 86; *Al-Burhan*, op. cit., p. 178.
56. Erwin I.J. Rosenthal, *Studia Semitica, Islamic Themes*, Vol. 11, London, Cambridge University Press, 1971, p. 97.
57. Al-Farabi states: 'the debate between the one asking the questions and the one replying', the purpose being to study and examine in order to ascertain the validity (of good things) and to make a choice, *Talkhis*, op. cit., pp. 40-41.
58. Ibid., p. 19.
59. Al-Farabi, in the Preface to his book on *Logic*, manusc. Maktabat Michkat, Tehran University, No. 240/10, p. 121.
60. Ibid., p. 121.
61. Al-Farabi, *Fusul tachtamil ala jamir ma yudhtarr ila ma'rifatihi man arada al-churu'fi sina'at al-mantiq*, manusc. Maktabat Michkat, Tehran University, No. 240/10, p. 63.
62. Al-Farabi, *Fusul, p.* 63; *Ihsa'al-'ulim, p.* 67; 'Qawanin al-chi'r' in: *Kitab Aristutalis fa l-chi'r*, edited by 'Abd al-Rahman Badawi, Beirut, Dar al-thaqala, 1973, p. 151; *Charh al-'ibara*, Beirut, Imprimerie catholique, 1971, p. 52; *Kitab al-musiqa al-kabir*, edited by Ghattas 'Abd-al-Malik Khashba and Mahmud Ahmad al-Hafni, Cairo, Dar al-kitab lil-tibi'a wa-l-nachr, 1967, p. 1184.
63. Al-Farabi, *Kitab al-huraf*, edited by Muhsin Mahda, Beirut, Institut de lettres orientales, 1970, p. 164. (Collection 'Recherches')
64. Ibid. On the whole, Al-Farabi considers that demonstrative discourses are entirely justified, as are most dialectic discourses and about half of rhetorical discourses; sophist discourses are based on truth to a lesser degree and poetic discourses are entirely false since they are drawn purely from the imagination (Al-Farabi, 'Qawanin al-chi'r', edited by 'Abd al-Rahman Badawa, in: *Kitib Aristitalas fa l-chi'r*, op. cit., p. 101).
65. Averroës, *Charh urjuzat Ibn Sina*, manuscript, private collection, p. 5.
66. Al-Farabi, *Falsafat Aristutalis*, edited by Muhsin Mahda, Beirut, Dar majallat al-chi'r, 1961, p. 85.
67. Al-Farabi, *Tahsil*, op. cit., p. 86.
68. Al-Farabi, *Falsafat Aristutalis*, op. cit., p. 85.
69. Al-Farabi, *Tahsil*, op. cit., p. 90.
70. Al-Farabi, *Al-Tanbih ila sabal al-sa'aia*, op. cit., p. 8; *Talkhis nawamis Aflutan*, op. cit., p. 63.
71. Al-Farabi, *Fusul*, op. cit., p. 31.
72. Al-Farabi, *Tanbih*, op. cit., p. 7.
73. Ibid., p. 57.

74. Al-Farabi, *Talkhis*, op. cit., p. 63.
75. Al-Farabi, *Tahsil*, op. cit., p. 79.
76. He puts forward this idea concerning the acceptance of laws by citizens in *Talkhis nawamis Aflatun*: it is good if they are accepted voluntarily but obviously very bad if they are tolerated under duress.
77. Al-Farabi, *Tahsil*, op. cit., p. 80.
78. Al-Farabi, *Al-Burhan*, op. cit., p. 175.
79. Al-Farabi, *Ajwibat masa'il su'ila 'anha*, edited by F. Dieterici, Leyden, 1890. p. 86.
80. Al-Farabi, *Ma yanbaghi an yuqaddam qabla ta'allum al-falsafa*, edited by F. Dieterici, Leyden, 1890, p. 10.
81. Al-Farabi, *Tahsil*, op. cit., p. 81.
82. Al-Farabi, *Al-Jadal*, manusc. Maktabat Michkat, Tehran University, No. 240-1, p. 192.
83. Al-Shahrazuri, *Nuzhat al-arwah wa-raudat al-afrah*, undated manuscript, Cairo University Library, p. 180. De Boer, *Ta'rakh al-falsafa fi l-islam*, op. cit., p. 202, note 1.
84. Al-Farabi, *Al-Alfaz*, op. cit., p. 83, 87; *Al-Burhan*, op. cit., p. 178.
85. Averroës, 'Talkhis al-quwa l-tabi'iyya', in: *Rasa'il Ibn Ruchd al-tibbiyya*, edited by Georges C. Anawati and Sa'id Ziyid, Cairo, al-Hay'a al-misriyya al-'amma lil-kitab, 1987, p. 275.
86. Al-Farabi, *Ma yanbaghi an yuqaddam qabla ta'allum al-falsafa*, op. cit., p. 52.
87. Al-Farabi, *Al-Alfaz*, op. cit., pp. 94-95.
88. He spoke Turkish, Persian and obviously Greek, as well as Arabic which he considered as his mother tongue.
89. Ja'afar al-Yasin, *Faylasufan ra'idan*, Beirut, Dar al-Andalus, 1980, p. 80.
90. Al-Farabi, *Fusul*, op. cit., p. 96.
91. Al-Farabi, *Ihsa' al-'ulum*, edited by Uthman Amin, Cairo, Librairie anglo-egyptienne, 1968, p. 53, 93.
92. Ibid., p. 96.
93. Ibid., p. 97.
94. Al-Farabi, *Talkhis nawamas Aflatun*, op. cit., p. 76.
95. Al-Farabi, *Ma yanbaghi, op. cit.*, p. 52.
96. Ibid., p. 52.
97. Ibid., p. 53.
98. Al-Farabi, *Tanbih*, op. cit., p. 82.
99. Al-Farabi, *Fusil*, op. cit., p. 52.
100. Al-Farabi devoted a special treatise to philosophy: *Ma yanbaghi*, op. cit.
101. Ibid., p. 49.
102. Ibid., p. 53.
103. *Tahsil*, op. cit., p. 97.
104. He mentions a total of sixteen characteristics (*Tahsil*, op. cit., p. 94-95).
105. Al-Farabi, *Falsafat Aristutalis*, op. cit., p. 82.
106. Al-Farabi, *Al-Alfaz*, op. cit., p. 91.
107. Ibid., p. 87.
108. Ibid., p. 91.
109. Ibid., p. 94.
110. Al-Farabi, *Kitab al-misuqa al-kabir*, op. cit., p. 100.
111. Ibid., p. 672.
112. Ibid., p. 807.
113. Ibid.
114. Ibid., p. 482.
115. Ibid., p. 483.
116. Ibid., p. 1185.
117. Ibid.
118. Ibid.
119. Ibid.
120. Ibid.
121. *Laws*, VII, p. 818-22. Plato was already an adult when he learned mathematics, which led him to say that he was ashamed not only for himself but for the Greeks in general because of their backwardness in geometry compared to the Egyptians.
122. Al-Farabi, *Ma yanbaghi*, op. cit., p. 52.
123. Al-Farabi, *Al-Tanbah*, op. cit., p. 72

124. Al-Farabi, *Al-Burhan*, op. cit., p. 181.
125. *Ihsa' al-'ulum*, op. cit., p. 58.
126. Ibid.
127. *Al-Tanbih*, op. cit., p. 4, 6, 53-54.

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Note: These works are classified in Arabic alphabetical order [Editor].

Ajwibat masa il su 'ila anha [Replies to Questions]. Ed. F. Dieterici. Leyden, 1890.
Ihsa al-'ulum [A List of the Sciences]. Ed. 'Uthman Amin. Cairo, Librairie anglo-égyptienne, 1939.
Al-Alfaz al-musta'mala fil-mantiq [Terms Used in Logic]. Ed. Muhsin Mahdi. Beirut, Dar al-Machriq, 1968.
Al-Burhan [The Demonstration]. Manuscr. Maktabat Michkat, Tehran University, No. 240/10.
Tahsil al-sa'ada [Reaching Happiness]. Ed. Ja'afar al Yasin. Beirut, Dar al-Andalus, 1983.
Al-Ta' liqat [Commentaries]. Hyderabad, India, 1346 H.
'Talkhis nawamis Aflatun' [Summary of Plato's *Laws*]. Ed. 'Abd al-Rahman Badawi. In: *Kitab Aflutan fi l-islam*, Beirut, Dar al-Andalus, 1982.
Al-Tanbih ila sabil al-sa'ada [Guidance on the Path to Happiness]. Ed. Ja'afar al Yasin. Beirut, Dar al-manahil, 1987.
Al-Thamra al-murdiyya [The Pleasant Fruit]. Ed. F. Dieterici. Leyden, 1890.
Al-Jadal [Dialectics]. Manuscr. Maktabat Michkat, Tehran University, No. 240/10.
Al-Jam' bayna ra'yay l-hakimayn [Harmony in the Doctrines of the Two Philosophers]. Ed. Albert Nasri Nadir. Beirut, Imprimerie catholique, 1968.
Al-Huruf [The Letters]. Ed. Muhsin Mahdi. Beirut, Dar al-Machriq, 1970.
Al-Da'awa al-qalbiya [Sincere Requests]. Hyderabad, India, The Ottoman Encyclopaedia, 1346 H.
Zaynun al-kabir [Zenon the Great]. Hyderabad, India, 1346 H.
'Al-As'ila al-lami'a' [Brilliant Questions]. In: *Kitab al-milla*. Ed. Muhsin Mahdi. Beirut, Dar al-Machriq, 1968.
Al-Siyasa al-madaniya [The Policies of the City]. Ed. Fawzi al-Najjar. Beirut, Imprimerie catholique, 1964.
'Fusil mabadi' ara' ahl al-madina al-fadila' [Bases of the Inhabitants' Views in the Ideal City]. In: *Kitab al-milla*. Ed. Muhsin Mahdi. Beirut, Imprimerie catholique, 1968.
Fusil tachtamil 'alajami'i ma yudhtarr ila ma'arifatih man arada al-churu' bi-sina't al-mantiq [What You Should Know Before Tackling Logic]. Manuscript Maktabat Michkät, Tehran University, No. 240/10.
Fusil muntaza'a [Some Proverbs]. Ed. Fawzi al-Najjar. Beirut, Dar al-Machriq, 1971.
Falsafat Aristutalis [Aristotle's Philosophy]. Ed. Muhsin Mahdi. Beirut, Dar majallar al-chi'r, 1971.
Falsafat Aflatun [Plato's Philosophy]. Ed. 'Abd al-Rahman Badawi. In: *Kitab Aflatun fi l-Islam*. Beirut, Dar al-Andalus, 1982.
Ma yanbaghi an yuqaddam qabla ta'allum al-falsafa [On What One Should Know Before Learning Philosophy]. Ed. F. Dieterici. Leyden, 1890.
Mabadi' ari' ahl al-madina al-fadila [A Treatise on the Inhabitants' Views in the Ideal City]. Ed. Albert Nasri Nadir. Beirut, 1959.
Maqala [Introduction to his work on logic: Al-Mantiq]. Manuscript Maktabat Michkat, Tehran University, No. 240/10.
Kitab al-milla [On Religion]. Ed. Muhsin Mahdi. Beirut, Imprimerie catholique, 1968.
Al-Misuqa al-kabir [The Great Book of Music]. Ed. Ghattas 'Abd al-Malik Khachaba and Mahmud Ahmed al-Hafni. Cairo, Dar al-Kitab al-'Arabi, 1967.
Al-Farabi. *Idées des habitants de la cité vertueuse.* Translated by R.P. Jaussen, Y. Karam et J. Chlala. Cairo, Publications de l'Institut français d'archéologie orientale, 1949.
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