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Abu Nasr al-Farabi: The Second Teacher! A Giant in Philosphy, Metaphysics and Teaching Methodology! (872 – 950)

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(Disclaimer: Compilation of his account is based on various sources and it's not an original research article. References and sources are given at the end. We are grateful to the original writers for their valuable work)

Abu Nasr Mohammad Ibn al-Farakh Farabi a great philosopher, renowned scholar and alchemist was born in a small village Wasij, near Farab in Turkistan in 259 A.H. (870 A.D.). He undertook the meticulous study of ancient philosophy, particularly of Plato and Aristotle. Farabi represents a turning-point in the history of Islamic philosophical thought, since he was the true first founder of epistemology (theory of knowledge; its methods, validity, scope, its distinction between justified belief and opinion) which relies upon 'universal reason' and the demonstrations. He served as a tremendous source of aspiration for intellectuals of all times and made great contributions in philosophy, logic and sociology; for which he stands out as an Encyclopedist. As a philosopher, he was the first to separate philosophy from theology. It is difficult to find a philosopher both in Muslim and Christian world from Middle Ages onwards who has not been influenced by his views.[1] He placed heavy emphasis on logic and believed that each human individual possesses the ability to discern between good and evil, which he considered the basis for all morality. He is credited by historians for preserving the works of Aristotle that otherwise might have been forgotten and subsequently destroyed during the Dark Ages. He earned the nickname Muallamm-e-Sani (Second teacher), after Aristotle, who was considered the first master. He made study of logic easier by dividing it into two categories; idea and proof.[2]

Farabi reasoned that a political system could be made to adhere to Islamic beliefs through the combined study of philosophy, hard sciences, mathematics, and religion. Such a political theology would result in an orderly & disciplined society that recognizes the need for community and a hierarchal structure that revolves around divine laws and the true messengers' explanation through words and deeds! Farabi divided his studies into two distinct categories, which he labeled physics and metaphysics. Physics applied to the physical sciences and phenomenology, and metaphysics applied to ethics, philosophy, and theology.

He established logic within Islamic culture, and engaged in restoring unity in politics, 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 (philosphy of knowledge and cognition) 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 is the highest level of intellectual attainment permitted to human beings in this life. 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 State Government, which

should be the same as the unity and order found in the universe. Indeed, Farabi often compares the order and unity of state 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 in details only!

It is especially important to note here that 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 in political awareness.

The perfect human being (al-insan al-kaamil), thought 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. 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". In 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 state in social life: 'What we say about all states is also true of the single household, and of each person. The political leader, Farabi considers, has the function of a doctor who treats souls and his political skill is to the wellbeing of the state what the physician's skill is to bodily health. The work of the politician should not be restricted to the organization and management of state, 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 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.

The soundness of the State is reflection of "the good balance of morals among its people 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 society! Morality, then, is a fundamental objective of education. 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'. 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 "goals".

Thus, in 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 it's being transformed into action: 'Whatever by its nature should be known and practiced, its perfection lies in it actually being practiced'. 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' and absolute perfection is 'what the human being achieves through knowledge and action applied together'. Moreover, if the speculative sciences are learned without having the opportunity to apply them, this wisdom is marred.

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".[1] 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; head of the state's aim in legislation must be to please God. Only those whom God has prepared may make laws, including the Prophet, whom Farabi defines as: "He who lays down the practices and the holy laws, and admonishes the people by incitement and intimidation". The function of the caliph is to pursue the educational role previously undertaken by the Prophet peace be upon him.

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".[1] Farabi used a large number of technical terms to describe this concept: discipline (ta'dib), correction/assessment (taqwim), training (tahdhib), guidance (tasdid), instruction (ta'lim), exercise or learning (irtiyad), and upbringing or education (tarbiya). Good manners or culture (adab), in his opinion, in their true educational meaning are the 'combination of all the good qualities, while discipline is; "The way of creating the moral virtues, and the practical arts in the nations". Instruction (ta'lim) is 'creating the speculative virtues in nations and cities. 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.

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, those who have been tested and found to have superior intelligence.

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". No normal human being lacks it, just as the whole is greater than the part. Farabi also speaks about "primary science' and 'primary principals". 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".

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. Farabi drew attention to Aristotle's opinion in The Book of Demonstrations when he said: "Whosoever loses a sensory perception loses knowledge". One function of the imagination is to preserve the sensory images which, in the end, become intellectual possessions. Some of his views, dealing with what today we would call general psychology and educational psychology appear to not only modern but way ahead of the time! 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 and 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 Farabi's words, is therefore 'that in which the teacher uses speech' 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. He emphasized the importance of discussion and dialogue in instruction, and indicated two methods: the method of argument and the method of discourse; Persuasion achieves its purpose when it leads to the hearer doing things that he is convinced are true. 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". 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 Farabi which he calls 'scientific discourse'; "by which the knowledge of something is obtained" either through asking questions about the thing, or from the replies obtained or, finally, by resolving a scientific problem.

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. Ibn Rushd agreed with him when he stated that "there are two sorts of learning: by speech and by imitation", it being understood that the latter meant adopting a model and applying it.

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. 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. 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.

In short, it can be said that for 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.

One of the techniques that 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']. Ethical virtues are acquired by habituation and repetition, until they form a deep-rooted pattern in the mind, whence issue excellent moral behaviours. An admirable character is attained by habituation, and the character is admirable when its actions are marked by moderation, with neither excess nor neglect. This, once again, is an Aristotelian view of the true nature of virtue and the way to acquire it, but Farabi demonstrates this theory by stating: "The fact that ethical morality is only attained by habit is shown by what we see in the society : the political leaders make the citizens good by making them used to good actions". 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 skillful scribe, and so it is with all the arts'.

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'.

Farabi speaks of the way of freedom and the way of slavery and subjection. Obedience is freedom, while coercion is slavery and subjection. 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'!

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'.

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 one-self 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.'

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. For educating and teaching the people, none shall be employed but “People of virtue, trained in the logical arts. 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”.

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. Farabi calls these three points ‘the modes of teaching' and considers that a person who brings together all these modes is indeed a teacher. 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. In the same way, 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.

If the student wishes to learn by himself from a book, 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.

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. 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 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.

Farabi was keenly aware of the value of language since he spoke several languages himself that allowed him to compare cultures and tongues. After languages come 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.

Then come mathematics, which the Muslim philosophers call 'the teachings' (ta'alim). 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)'. The study of optics, astronomy and the natural sciences in general requires mathematics, and arithmetic is one of the basic tools.

Farabi divides mathematics into seven parts: 'numbers (arithmetic), geometry, the science of perspectives, scientific astronomy (contrasted with astrology), music or sound dynamics and the science of machines'. Mathematics includes algebra. 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'. Geometry has two methods: that of analysis and that of structure. Then there is perspectives, astronomy, music, dynamics and last of all mechanics, 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, 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 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'.

It can be said that 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'), Farabi stated that 'the demonstrations used in geometry are the soundest of all demonstrations'.

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, 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.

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 Farabi is quite concerned with practical aspects of each one of the mathematical sciences.

But it was philosophy that Farabi places as the highest form of learning for mankind, for it is the knowledge of distant causes by which all beings are governed. It enables us to learn about the best of things in the best possible way, 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 .

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.

As for learning about the scientific subjects that must precede the study of philosophy, 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, then the rational soul, so that the student can understand the path of truth. This can be only 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. 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 Farabi points out the intellectual, moral and religious qualities which the student of philosophy must possess.

In his own personal philosophy, 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 State'; 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, 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.

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'. 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 subdivision, induction, analogy and metaphor. Farabi considers that all of these methods will facilitate both comprehension and retention. 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 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. Farabi recalls that Aristotle used to employ substitutes for expressions to make them more intelligible—a method that gives encouragement to the learner.

As with other techniques, 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' . This makes the mind completely occupied with the demonstrations, with the imagination stimulated by the drawing on the board.

On an entirely different subject, 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'. 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". In his view, play overcomes fatigue and "restores the strength required for action". 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". 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'. 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.

Is there a place for punishment in 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'. This moderate position leads him to regulate the degree of punishment in accordance with the children's attitude: 'If they are inclined to be mischievous 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. 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. 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.

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'. 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., which 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.

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].

Another entire study would be required to analyze the influence that 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 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.

With coming of the final prophet and messenger of Allah and final ever protected and ever fresh miraculous divine book Quran a big ban occurred in the fields of science and medicine. Needless to say that the Europe was in utter darkness at that time and that period in history is known as "Dark ages"; but for Muslims and for entire mankind it was the most glorious period of progress when foundations of all modern sciences were laid down!

Accepting things without critical analysis is bad! Only things with solid foundations stay; others perish! After Greek era Muslim era was ushered while Greek era was known for mythology and philosophy with almost no hard laboratory bench work, Muslim era had solid hard work, utmost honesty, boldness, myth breaking and clear moral and ethical guidance provided by Quran and exemplified by life and sayings of prophet Muhammad. The result was spectacular laying of modern sciences on solid verifiable grounds! First step in analysis of previous work is translation of knowledge in reader's own language. This of course requires learning the language

Farabi work paved the way for subsequent follower researchers! Abu Ali Sina was bogged down in a problem! He prayed to God for help!Shortly afterwards he heard a voice from street by an old book street vendor that only a lucky person will buy this book as this book is really superb! Sina bought the book and there was solution to his problem! The book was that of Farabi!

Before Farabi philosphy has no real guidance! Farabi was lucky to have Quran as his guide which provided clear answers and prevented him not only from derailing but also provided immense tranquility and strength! Ma'mun Rashid and Mehmood Ghaznawi later tremendously contributed towards growth of sciences through generous patronage and support for translations and original research work! Ma'mun paid hefty amount to translations of good books as much as equal to weight of the book in gold and Ghaznawi spent all his wealth earned from 17 conquests against Indian dictator rulers on research and spread of knowledge! This sprit was seen in most Muslim victors including Slahuddin Ayyubi who exhausted all his money on education and research so much so that he could not do pilgrimage to Makkah because of lack of money!

Farabi experimented on sound and its effects on human temperament and psychae! He was not a musician per see as some writings suggest! Musicians hardly ever engage in painstaking hard work like that of Farabi. Farabi has worked on curricula, teaching philosophies and teaching methodology! He is believed to have written more than one-hundred books on a wide-range of scientific, sound, religious, and philosophical topics during his lifetime. Of these works, only one-fifth are believed to have survived.[2]

In sociology he wrote several books out of which Ara Ahl al-Madina al-Fadila became famous. His books on psychology and metaphysics were largely based on his own work. Although many of his books have been lost, 117 are known, out of which 43 are on logic, 11 on metaphysics, 7 on ethics, 7 on political science, 17 on medicine and sociology, while 11 are commentaries. Some of his more famous books include the book Fusus al-Hikam, which remained a text book of philosophy for several centuries at various centres of learning and is still taught at some of the institutions in the East. The book Kitab al-lhsa al 'Ulum discusses classification and fundamental principles of science in a unique and useful manner. The book Ara Ahl al-Madina al- Fadila 'The Model City' is a significant early contribution to sociology and political science.[3]

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