

Between science for others and science for itself

بين العلم لغيره والعلم لذاته

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Abstract:

The student of knowledge needs to possess the instrument that leads to knowledge, so that the acquisition of this instrument is not intended for its own sake but for the sake of acquiring another science. Therefore, it is necessary to distinguish between the sciences that are sought as a means to others and the sciences that are sought for their own sake. This distinction is the basis on which Muslims relied in classifying the sciences, and this distinction is very common in Islamic religious sciences.

The aim is to emphasize the role of science as a tool for other disciplines without diminishing its status as an independent field of study. Similarly, logic, although often used as a tool, is still recognized as an independent science. This concept extends to other fields within computer science, which enhances the inseparable integration between computer science and natural sciences.

The descriptive-analytical approach was used to clarify the positions of scholars in distinguishing between the purposes of science, i.e. those sought as a tool or sciences intended for their own sake. Through the approach, we prove the result of enhancing the integration between the various sciences, whether for themselves or as a means to others

Keywords: Classification of sciences; Theoretical sciences; Applied Science; instrumental sciences; final sciences.

ملخص:

يحتاج طالب العلم إلى امتلاك الآلة الموصلة إلى العلم، فلا يكون تحصيل هذه الآلة مقصودا لذاته بل من أجل تحصيل علم آخر. ولهذا وجب التمييز بين العلوم التي تطلب كوسيلة لغيرها وبين العلوم التي تطلب في ذاتها. وهذا التمييز هو الأساس الذي اعتمد عليه المسلمون في تصنيف العلوم، وهذا التمييز شائع جدا في العلوم الشرعية الإسلامية.

والهدف التأكيد دور العلم كأداة للتخصصات الأخرى لا يقلل من مكانته كمجال مستقل للدراسة. وعلى نحو مماثل، فإن المنطق، على الرغم من استخدامه في كثير من الأحيان كأداة، لا يزال يُعترف به كعلم قائم بذاته. ويمتد هذا المفهوم إلى مجالات أخرى ضمن علوم الكمبيوتر، مما يعزز التكامل غير القابل للفصل بين علوم الكمبيوتر والعلوم الطبيعية.

وقد تم استخدام المنهج الوصفي التحليلي لغرض توضيح مواقف العلماء في التمييز بين أغراض العلوم أي التي تطلب كآلة أو العلوم المقصودة لذاتها. وعن طريق المنهج ثبتت النتيجة المتمثلة في تعزيز التكامل بين مختلف العلوم سواء لذاتها أو التي هي وسيلة لغيرها. كلمات مفتاحية: تصنيف العلوم؛ العلوم النظرية؛ العلوم العملية؛ علوم الآلة؛ علوم الغاية.

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Introduction:

Sciences today are classified into three main categories: formal sciences such as logic and mathematics, natural sciences like physics and biology, and human and social sciences such as sociology, psychology, and history. These classifications can vary depending on the principles or criteria applied. Among the oldest classifications we know today is the distinction between theoretical and practical sciences, established by Aristotle and followed by many Muslim philosophers who wrote extensively on this subject. According to Aristotle, science includes theoretical, practical and productive aspects. Theoretical sciences include engineering, astronomy, music, arithmetic, mathematics and metaphysics. As for the practical sciences, they include ethics, economics and politics, while the productive sciences include poetry, rhetoric and debate (Muhammad bin Isma'il al-Sayyid Ahmad, 1988, p.12.).

1..Classification of sciences according to the most famous philosophers of Islam:

Muslim philosophers have paid great attention to this question of classification, producing numerous works and varying approaches. For example, Al-Kindi divided the sciences into divine and human, although his definition of the human sciences differs from that used in contemporary classifications. Al-Farabi, in his classification, divided knowledge into five categories. One of these categories is the sciences of language, which includes grammar, syntax, morphology, poetry and reading; sciences of reasoning including propositions, questions, measurements, proofs, debates, sophistry, poetry and rhetoric; then mathematics which covers numbers, geometry, figures, stars, music and magic tricks. Following these disciplines are the natural and divine sciences which deal with animals, plants, inanimate things, man and the soul, followed by the post-natural sciences, and finally the civil sciences, jurisprudence and theology (Muhammad bin Isma'il al-Sayyid Ahmad, 1988, p.17).

Ibn Sina did not deviate from the Aristotelian classification but slightly detailed it, also distinguishing between theoretical sciences and practical sciences in his work "Kitab al-Shifa" "The Book of Healing". The same goes for Al-Tahanawi in his book "Kashf al-Isti'lāḥāt" "Revelation of the terms of the arts

and sciences", which provides details on the theoretical and practical aspects of the sciences. With Ibn al-Nadim, this question of classification is extensively discussed in his work "Al-Fihrist", as well as with Al-Khwarizmi in "Mafatih al-Ulum" "The keys to the sciences", Al-Ghazali in "Tahafut al-Falasifah" "The Inconsistency of the Philosophers", Tashköprüzade in "Miftah al-Sa'adah wa-Misbah al-Siyadah fi Mawdu'at al-'Ilm" "The Key to Happiness and the Lamp of sovereignty in the subjects of knowledge", Al-Akfani in "Irshad al-Qasid ila Asna al-Maqasid" "The Seeker's Guide to the Noblest Objectives", Haji Khalifa in "Kashf al-Zunun 'an Asami al -Kutubwa-l-Funun" "Unveiling Suspicions Concerning the Names of Books and Sciences", and Al-Mar'ashi in "Tarikh al-'Ulum"; "History of Sciences", and so on .

However, most Muslim philosophers, while largely following Greek classifications, notably those of Aristotle, developed a unique classification, specifically Arab-Islamic in our view.

2. Instrumental sciences and intentional sciences in the Islamic classification:

Any classification, whatever its theme, is based on specific criteria. Thus, a subject can belong to one category according to a given criterion, while simultaneously falling under another category according to a different criterion. Muslim philosophers noted that knowledge can be sought for its own sake or as a means to attaining other knowledge. For example, a student needs to master a tool not as an end goal, but as a means. This is why it is essential to distinguish between instrumental sciences and those pursued for their own sake. This distinction constitutes the basis on which Muslims have based their own classification of sciences. They call the first type (sciences sought for their own sake) intentional sciences, and the second type (sciences necessary as a means to others) instrumental sciences. This distinction is particularly notable in Islamic religious sciences.

Ibn Sina, for example, who classifies the sciences into theoretical and practical, also classifies them according to another criterion into principles and branches. According to him, the principles include logic, which is a theoretical science, and that which is not logical but useful in worldly affairs, etc. Al-Farabi, on the other hand, classifies the sciences into five categories, placing the sciences of language and their branches as well as the logical sciences and their branches

at the top because of their importance as instrumental sciences. In his work "Isagoge", he explains the function of language sciences as instrumental sciences for other disciplines and underlines their importance: "In each nation, the science of language is a tool to correct its terms and improve its expressions, it must therefore be prioritized over all other sciences (Ibn al-Farabi (Abu Nasr), 1968, p. 59.)." As for logic, which is categorized following the language sciences, it is considered by him to be an indispensable tool for all fields of knowledge, just as metrics are essential for the poet.

Therefore, the relationship among sciences may involve overlap, where some are subsumed under others, such as a branch under its principle or a part under the whole. However, this relationship can also manifest differently, like the necessity of one science for another as a tool. Ibn al-Akfani al-Ansari (d. 1348 CE) pointed out this meaning in the introduction to his book "Guidance for the Seeker in the Best of Aims in the Types of Sciences," (Ibn al-Akfani, Muhammad ibn Ibrahim al-Ansari, 1990 p. 92.) stating that the purpose of his book is "to inform about the condition of each science in itself and its rank in relation to other sciences." This implies that sciences do not stand on the same level in terms of their function and value; rather, they are interrelated.

Regarding whether a science is pursued for its own sake or for the sake of others, Ibn al-Akfani distinguishes: "Every science is either pursued for its own sake or not: the former being the speculative sciences, and by speculation is meant the completion of the rational soul in its theoretical and practical abilities according to human capacity. The former is achieved by obtaining certain beliefs in the knowledge of existents and their conditions. The latter is achieved by purifying the soul through acquiring virtues and avoiding vices. As for the latter, which is not pursued for its own sake but as a means to another end, it is either for meanings, such as the science of logic, or for what is reached through it in terms of meanings in expression and writing, such as the science of literature." (Ibn al-Akfani, Muhammad ibn Ibrahim al-Ansari, 1990, p. 106)

He further discusses literature, which he also considers among the instrumental sciences: "It is a science by which understanding is gained of what lies within consciences through the evidence of words and writing; its subject matter is words and writing. Its benefit lies in expressing the meanings within a person's soul and conveying them to another human being, whether present or

absent. It adorns speech and writing, distinguishing human appearance from that of other animals. It is prioritized because it is the first tool of perfection, and thus those who neglect it do not concern themselves with other perfections. Its objectives are confined to ten sciences: language, conjugation, semantics, rhetoric, eloquence, prosody, grammar, laws of writing, and reading. This is because its perspective either concerns words or writing." (Ibn al-Akfani, Muhammad ibn Ibrahim al-Ansari, 1990, p.109)

In summary, Ibn al-Akfani's insights highlight the intricate relationships among sciences, where some serve as foundational to others, while others are instrumental in achieving broader intellectual and communicative goals within human societies.

When it comes to instrumental sciences, they include logic, which is a tool for understanding meanings, and the study of words and writing, which is literary art. Linguistic, grammatical and stylistic sciences are essential for understanding the sacred texts and prophetic words of Muhammad, peace and blessings upon him (Ibn al-Akfani, Muhammad ibn Ibrahim al-Ansari, 1990, p.118).

Logic is the key to mental science and the criterion of meaning, comparable to grammar for words and metrics for poetry. Al-Ghazali stressed that one who does not master logic cannot be considered reliable in his knowledge, designating it as the standard of knowledge. Ibn Sina called it "servant of knowledge", indicating that it is an instrument for other sciences, while Al-Farabi considered it "head of sciences". In this context, Al-Tahanawi, in his work "Kashf al-Mahjub," elucidates that logic serves as an instrumental science, with the aim of making the implicit explicit, thereby bolstering the speculative sciences (Al-Tahani, Mohammed Ali, 1996, p.45). Regarding the division of sciences into practice and theory on the one hand, and mechanics and non-mechanics on the other hand, Tahanawi details that the theoretical domain concerns that which does not relate to functioning, while the practical domain focuses on the operation itself. For example, logic and practical medicine fall under the practical domain because they deal with functioning, whether mentally (internal) like logic, or physically (external) like medicine. However, the term "practical" can have another meaning depending on the context given to this word. Thus, Islamic law, grammar, and logic are not considered practical sciences if we understand "practical" as referring to the manual, because they do

not require active practice unlike professions like sewing, carpentry and weaving, which require active practice for mastery. Therefore, the primary meaning of "practical" is broader than its secondary meaning which refers to the division of industries.

Regarding the division of sciences into mechanical and non-mechanical, he states that "the sciences are either mechanical or non-mechanical, because they are either instruments aimed at achieving something else for themselves (mechanical) , or instruments aimed at something else without being desired for their own sake (non-mechanical)". He specifies that the fact that a science is in itself an instrument does not mean that it is self-sufficient for what it seeks to achieve in comparison with others, nor that what it applies to is necessarily self-sufficient. The term "mechanical" refers to how something works and not its self-sufficiency, while the term "non-mechanical" indicates that it is not an instrument for something else. He adds that the name "mechanical" is based on its relation to the instrument, because mechanical science includes matters that require an instrument for their existence (Al-Tahani, Mohammed Ali, 1996, p.6), which is most apparent because not all knowledge requires other knowledge.

3..The hierarchy of instrumental sciences and objective sciences in attainment:

Thus, sciences are means and ends. For example, the science of the principles of exegesis is a means for the science of the objective which is exegesis, and the science of the terms of hadith is a means for the science of the objective which is hadith, of even as the science of language is a means for the science of the objective which is belief (and other sciences). As for the science of the principles of jurisprudence, it is a means for the science of the objective which is jurisprudence.

However, the author of "Kashaf Ashtilahat al-Funun" reduces these divisions (namely the division of sciences into theoretical and practical, and into mechanics and non-mechanics) to a single principle, because they are interdependent and interconnected. It brings the meaning of "mechanical" to the practical domain and the meaning of "non-mechanical" to the theoretical domain, because what is an instrument for achieving something else must be related to the way in which it functions. In this context he asserts that "the meaning of the two divisions is the same because the two divisions are

interdependent. Something that serves as a means to achieve another goal must be connected to the manner in which that goal is attained, emphasizing its operational function. Conversely, elements related solely to functionality may not serve as instruments for other purposes. Likewise, those not linked to operational functionality may also not serve as instruments for other purposes. Thus, "theoretical" and "non-mechanical" effectively converge into a single category (Al-Tahani, Mohammed Ali, 1996).

According to the authors, the aim of studying computer science is not an end in itself but rather a means to achieve something else, indicating that their ultimate goal lies beyond the study itself. In contrast, the goal of studying non-computing sciences is to achieve those sciences themselves, even if it leads to something else. These sciences are sought for their own sake. Al-Tahanawi, in "Kashaf", explains that computer science aims to understand and clarify functioning, its objective being to carry out an action, whether that action is an end in itself or serves some other end goal. Non-computing sciences aim to be done for their own sake, as they are intrinsically valuable, although they may also result in other benefits (Al-Tahani, Mohammed Ali, 1996)

But there is a question that arises: which is more important to acquire, the science of machines or the science of objectives? This question, despite its apparent simplicity in its formulation, puts us in a delicate situation: if we say naturally, and based on what has been put forward previously, that machine sciences, as a tool and means without which the science of objectives cannot be obtained, are more important to acquire and pursue, this could be challenged by saying: but if these sciences are not themselves the objective sought, then the science of objectives should be given priority for the study. If it is argued that the non-mechanical sciences are more important to acquire and study because they represent the ultimate goal, this could be challenged by asserting that their attainment is dependent on the support of the mechanical sciences and technology.

This is why some think that as long as machine sciences are not themselves the specific objective, one should not engage in their study because it distracts from the targeted sciences. They should be studied only to the extent that they serve the purposes of knowledge, and it is unnecessary to explore them in depth

because they are vast, complex and require a lot of time on the part of those who study them.

Ibn Khaldun criticizes the tendency to become overly engrossed in the study of technical sciences and their remote branches, including grammar, morphology, and logic. It suggests that only minimal knowledge of these disciplines is necessary to master the essential sciences and understand their objectives. In his work "introduction", he distinguishes two categories of sciences: those which have a purpose in themselves, such as religious sciences (exegesis, hadith, jurisprudence, and theology), natural and metaphysical sciences (philosophy), and those which are tools for these sciences, such as grammar and mathematics for religious sciences, and logic for philosophy.

Ibn Khaldun believes that the study of applied sciences can be deepened by subdividing questions and exploring evidence, thereby helping students master these subjects and clarify their meanings. On the other hand, sciences that are tools for other disciplines, such as grammar and logic, should be studied only to the extent that they serve those disciplines, without unnecessarily extending the discourse or subdividing the issues, as this would distract from their primary goal. Ibn Khaldun warns that focusing too much on these sciences could prevent mastery of the essential sciences, due to their complexity and diversity (Ibn Khaldun, Abdul Rahman, Al-Muqaddimah, 1992, pp.1036-1037). He concludes that excessive focus on these sciences is a waste of students' time, because their priority should be the final sciences.

This phenomenon occurred specifically with latecomers in the fields of grammar, logic, and even legal principles, because they devoted a lot of time and attention to these disciplines to the point of making them objectives in themselves. In fact, many have specialized in and explored computer science without benefiting greatly from the purpose sciences for which these disciplines were originally designed. It is not excluded, for example, that those who devote themselves to meter and rhyme have never composed a single verse of poetry.

However, we find some hesitation and contradiction in Ibn Khaldun's own text regarding his position on computer science. He asserts that the student of religious sciences - which are sciences aimed at in themselves - must acquire computer sciences, such as grammar, conjugation, and eloquence, etc. Moreover, he ranks them in importance ahead of the objective sciences. He states in other

passages of the introduction: "...then the examination of Quran and hadith requires the pre-eminence of linguistic sciences, because they depend on it...". (Ibn Khaldun, Abdul Rahman, Al-Muqaddimah, 1992, p. 781) He discusses linguistic sciences—encompassing language, grammar, eloquence, and literature—stating, "Their knowledge is essential for legal scholars, as all religious sciences originate from the Quran and the Sunnah. These primary sources are in Arabic, transmitted by the Companions and the Arab Successors, and their subtleties can only be fully understood through the Arabic language."

It is therefore necessary to know the sciences linked to this language for those who seek religious sciences (Ibn Khaldun, Abdul Rahman, Al-Muqaddimah, 1992, p. 1055). Thus, his remarks about "the linguistic sciences must precede" and "it is necessary to know the sciences related to this language for those who seek the religious sciences" simply indicate that the computer sciences, including the linguistic sciences, are indispensable and primordial in relation to the sciences of objectives, because what cannot be achieved otherwise is therefore necessary.

Conclusion:

This persistent dilemma as to which discipline should take precedence reveals the inherent complexity of our original question. However, it emphasizes the importance of fully integrating computer science and purpose science. Thus, asking this question does not yield a clear answer, as it suggests the necessity of choosing between two awkward and untenable positions.

Moreover, the role of science as a tool for other disciplines does not diminish its status as an independent field of study. Similarly, logic, though often utilized as a tool, is still recognized as a science in its own right. This concept extends to other fields within computer science, further reinforcing the inseparable integration between computer science and the natural sciences.

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