

Avicenna



Ibn Sina (Persian: ابن سینا; 980 – June 1037 CE), commonly known in the West as **Avicenna** (/ˌævɪˈsɛnə, ɑːvi-/), was a polymath who is regarded as one of the most significant physicians, astronomers, philosophers, and writers of the Islamic Golden Age,^[4] and the father of early modern medicine.^{[5][6][7][8]} Sajjad H. Rizvi has called Avicenna "arguably the most influential philosopher of the pre-modern era".^[9] He was a Muslim Peripatetic philosopher influenced by Greek Aristotelian philosophy. Of the 450 works he is believed to have written, around 240 have survived, including 150 on philosophy and 40 on medicine.^[10]

His most famous works are *The Book of Healing*, a philosophical and scientific encyclopedia, and *The Canon of Medicine*, a medical encyclopedia^{[11][12][13]} which became a standard medical text at many medieval universities^[14] and remained in use as late as 1650.^[15] Besides philosophy and medicine, Avicenna's corpus includes writings on astronomy, alchemy, geography and geology, psychology, Islamic theology, logic, mathematics, physics, and works of poetry.^[16]

Name

Avicenna is a Latin corruption of the Arabic patronym **Ibn Sīnā** (ابن سینا),^[17] meaning "Son of Sina". However, Avicenna was not the son but the great-great-grandson of a man named Sina.^[18] His formal Arabic name was **Abū ʿAlī al-Ḥusayn bin ʿAbdullāh ibn al-Ḥasan bin ʿAlī bin Sīnā al-Balkhī al-Bukhārī** (أبو علي الحسين بن عبد الله بن الحسن بن علي بن) أبو علي البخاري البلكخي البخاري).^{[19][20]}

Circumstances

Avicenna created an extensive corpus of works during what is commonly known as the Islamic Golden Age, in which the translations of Byzantine Greco-Roman, Persian and Indian texts were studied extensively. Greco-Roman (Mid- and Neo-Platonic, and Aristotelian) texts translated by the Kindi

Avicenna Ibn Sina

ابن سینا



Portrait of Avicenna on an Iranian postage stamp

Born	980 <div>Afshana, Transoxiana, Samanid Empire</div>
Died	22 June 1037 (aged 56–57) ^[1] <div>Hamadan, Kakuyid dynasty</div>
Monuments	Avicenna Mausoleum
Other names	Sharaf al-Mulk (شرف الملك) · Hujjat al-Haq (حجة الحق) · al-Sheikh al-Ra'is (الشيخ الرئيس) · Ibn-Sino (Abu Ali Abdulloh Ibn-Sino) · Bu Alī Sīnā (بو علی سینا)

Philosophy career

Notable work *The Book of Healing*

school were commented, redacted and developed substantially by Islamic intellectuals, who also built upon Persian and Indian mathematical systems, astronomy, algebra, trigonometry and medicine.^[21]

The Samanid dynasty in the eastern part of Persia, Greater Khorasan and Central Asia as well as the Buyid dynasty in the western part of Persia and Iraq provided a thriving atmosphere for scholarly and cultural development. Under the Samanids, Bukhara rivaled Baghdad as a cultural capital of the Islamic world.^[22] There, Avicenna had access to the great libraries of Balkh, Khwarezm, Gorgan, Rey, Isfahan and Hamadan.

Various texts (such as the 'Ahd with Bahmanyar) show that Avicenna debated philosophical points with the greatest scholars of the time. Aruzi Samarqandi describes how before Avicenna left Khwarezm he had met Al-Biruni (a famous scientist and astronomer), Abu Nasr Iraqi (a renowned mathematician), Abu Sahl Masihi (a respected philosopher) and Abu al-Khayr Khammar (a great physician). The study of the Quran and the Hadith also thrived, and Islamic philosophy, *fiqh* and theology (*kalaam*) were all further developed by Avicenna and his opponents at this time.

Biography

Early life and education

Avicenna was born in c. 980 in the village of Afshana in Transoxiana to a family of Persian stock.^[23] The village was near the Samanid capital of Bukhara, which was his mother's hometown.^[24] His father Abd Allah was a native of the city of Balkh in Tukharistan.^[25] An official of the Samanid bureaucracy, he had served as the governor of a village of the royal estate of Harmaytan (near Bukhara) during the reign of Nuh II (r. 976–997).^[25] Avicenna also had a younger brother. A few years later, the family settled in Bukhara, a center of learning, which attracted many scholars. It was there that Avicenna was educated, which early on was seemingly administered by his father.^{[26][27][28]} Although both Avicenna's father and brother had converted to Ismailism, he himself did not follow the faith.^{[29][30]} He was instead an adherent of the Sunni Hanafi school, which was also followed by the Samanids.^[31]

Avicenna was first schooled in the Quran and literature, and by the age of 10, he had memorized the entire Quran.^[27] He was later sent by his father to an Indian greengrocer, who taught him arithmetic.^[32] Afterwards, he was schooled in Jurisprudence by the Hanafi jurist Ismail al-Zahid. Some time later, Avicenna's father invited the physician and philosopher Abu Abdallah al-Natili to their house to educate Avicenna.^{[27][28]} Together, they studied the *Isagoge* of Porphyry (died 305) and possibly the *Categories* of Aristotle (died 322 BC) as well. After Avicenna had read the *Almagest* of Ptolemy (died 170) and *Euclid's Elements*, Natili told him to continue his research independently.^[28]

	<i>The Canon of Medicine</i>
Era	Islamic Golden Age
Region	Middle Eastern philosophy <ul style="list-style-type: none"> Persian philosophy
School	Aristotelianism, Avicennism
Main interests	Medicine · Aromatherapy Philosophy and logic <i>Kalām</i> (Islamic theology) Science · Poetry
Influences	[show] Hippocrates · Aristotle · Galen · Neoplatonism · al-Farabi · Rhazes · Al-Biruni · al-Masihi · Abul Hasan Hankari
Influenced	[show] Al-Biruni · Omar Khayyám · Al-Ghazali · Ibn Rushd · Shahab al-Din Suhrawardi · Tusi · Ibn al-Nafis · Ibn Tufail · René Descartes · Albertus Magnus · Maimonides · Duns Scotus ^[2] · Aquinas · William of Ockham · Abu 'Ubayd al-Juzjani · Enlightenment philosophers · Hossein Nasr ^[3]

By the time Avicenna was eighteen, he was well-educated in Greek sciences. Although Avicenna only mentions Natili as his teacher in his autobiography, he most likely had other teachers as well, such as the physicians Abu Mansur Qumri and Abu Sahl al-Masihi.^{[26][32]}

Career

In Bukhara and Gurganj

At the age of seventeen, Avicenna was made a physician of Nuh II. By the time Avicenna was at least 21 years old, his father died. He was subsequently given an administrative post, possibly succeeding his father as the governor of Harmaytan. Avicenna later moved to Gurganj, the capital of Khwarazm, which he reports that he did due to "necessity". The date he went to the place is uncertain, as he reports that he served the Khwarazmshah (ruler) of the region, the Ma'munid Abu al-Hasan Ali. The latter ruled from 997 to 1009, which indicates that Avicenna moved sometime during that period. He may have moved in 999, the year which the Samanid state fell after the Turkic Qarakhanids captured Bukhara and imprisoned the Samanid ruler Abd al-Malik II. Due to his high position and strong connection with the Samanids, Avicenna may have found himself in an unfavorable position after the fall of his suzerain.^[26] It was through the minister of Gurganj, Abu'l-Husayn as-Sahi, a patron of Greek sciences, that Avicenna entered into the service of Abu al-Hasan Ali.^[33] Under the Ma'munids, Gurganj became a centre of learning, attracting many prominent figures, such as Avicenna and his former teacher Abu Sahl al-Masihi, the mathematician Abu Nasr Mansur, the physician Ibn al-Khammar, and the philologist al-Tha'alibi.^{[34][35]}



Map of Khurasan and Transoxiana

In Gurgan

Avicenna later moved due to "necessity" once more (in 1012), this time to the west. There he travelled through the Khurasani cities of Nasa, Abivard, Tus, Samangan and Jajarm. He was planning to visit the ruler of the city of Gurgan, the Ziyarid Qabus (r. 977–981, 997–1012), a cultivated patron of writing, whose court attracted many distinguished poets and scholars. However, when Avicenna eventually arrived, he discovered that the ruler had been dead since the winter of 1013.^{[26][36]} Avicenna then left Gurgan for Dihistan, but returned after becoming ill. There he met Abu 'Ubayd al-Juzjani (died 1070) who became his pupil and companion.^{[26][37]} Avicenna stayed briefly in Gurgan, reportedly serving Qabus' son and successor Manuchihr (r. 1012–1031) and resided in the house of a patron.^[26]

In Ray and Hamadan

In c. 1014, Avicenna went to the city of Ray, where he entered into the service of the Buyid amir (ruler) Majd al-Dawla (r. 997–1029) and his mother Sayyida Shirin, the *de facto* ruler of the realm. There he served as the physician at the court, treating Majd al-Dawla, who was suffering from melancholia. Avicenna reportedly later served as the "business manager" of Sayyida Shirin in Qazvin and Hamadan, though details regarding this tenure are unclear.^{[26][38]} During this period, Avicenna finished his Canon of Medicine, and started writing his Book of Healing.^[38]

In 1015, during Avicenna's stay in Hamadan, he participated in a public debate, as was custom for newly arrived scholars in western Iran at that time. The purpose of the debate was to examine one's reputation against a prominent local resident.^[39] The person whom Avicenna debated against was Abu'l-Qasim al-Kirmani, a member of the school of philosophers of Baghdad.^[40] The debate became heated, resulting in Avicenna accusing Abu'l-Qasim of lack of basic knowledge in logic, while Abu'l-Qasim accused Avicenna of impoliteness.^[39] After the debate, Avicenna sent a letter to the Baghdad Peripatetics, asking if Abu'l-Qasim's claim that he shared the same opinion as them was true. Abu'l-Qasim later retaliated by writing a letter to an unknown person, in which he made accusations so serious, that Avicenna wrote to a deputy of Majd al-Dawla, named Abu Sa'd, to investigate the matter. The accusation made towards Avicenna may have been the same as he had received earlier, in which he was accused by the people of Hamadan of copying the stylistic structures of the Quran in his *Sermons on Divine Unity*.^[41] The seriousness of this charge, in the words of the historian Peter Adamson, "cannot be underestimated in the larger Muslim culture."^[42]



Coin of Majd al-Dawla (r. 997–1029), the *amir* (ruler) of the Buyid branch of Ray

Not long afterwards, Avicenna shifted his allegiance to the rising Buyid *amir* Shams al-Dawla (the younger brother of Majd al-Dawla), which Adamson suggests was due to Abu'l-Qasim also working under Sayyida Shirin.^{[43][44]} Avicenna had been called upon by Shams al-Dawla to treat him, but after the latter's campaign in the same year against his former ally, the *Annazid* ruler Abu Shawk (r. 1010–1046), he forced Avicenna to become his vizier.^[45] Although Avicenna would sometimes clash with Shams al-Dawla's troops, he remained vizier until the latter died of colic in 1021. Avicenna was asked by Shams al-Dawla's son and successor Sama' al-Dawla (r. 1021–1023) to stay as vizier, but instead went into hiding with his patron Abu Ghalib al-Attar, to wait for better opportunities to emerge. It was during this period that Avicenna was secretly in contact with Ala al-Dawla Muhammad (r. 1008–1041), the *Kakuyid* ruler of Isfahan and uncle of Sayyida Shirin.^{[26][46][47]}

It was during his stay at Attar's home that Avicenna completed his *Book of Healing*, writing 50 pages a day.^[48] The Buyid court in Hamadan, particularly the *Kurdish* vizier Taj al-Mulk, suspected Avicenna of correspondence with Ala al-Dawla, and as result had the house of Attar ransacked and Avicenna imprisoned in the fortress of Fardajan, outside Hamadan. Juzjani blames one of Avicenna's informers for his capture. Avicenna was imprisoned for four months, until Ala al-Dawla captured Hamadan, thus putting an end to Sama al-Dawla's reign.^{[26][49]}

In Isfahan



Coin of Ala al-Dawla Muhammad (r. 1008–1041), the *Kakuyid* ruler of Isfahan

Avicenna was subsequently released, and went to Isfahan, where he was well received by Ala al-Dawla. In the words of Juzjani, the *Kakuyid* ruler gave Avicenna "the respect and esteem which someone like him deserved."^[26] Adamson also says that Avicenna's service under Ala al-Dawla "proved to be the most stable period of his life."^[50] Avicenna served as the advisor, if not vizier of Ala al-Dawla, accompanying him in many of his military expeditions and travels.^{[26][50]} Avicenna dedicated two Persian works to him, a philosophical treatise named *Danish-nama-yi Ala'i* ("Book of Science for Ala"), and a medical treatise about the pulse.^[51]

During the brief occupation of Isfahan by the Ghaznavids in January 1030, Avicenna and Ala al-Dawla relocated to the southwestern Iranian region of Khuzistan, where they stayed until the death of the Ghaznavid ruler Mahmud (r. 998–1030), which occurred two months later. It was seemingly when Avicenna returned to Isfahan that he started writing his *Pointers and Reminders*.^[52] In 1037, while Avicenna was accompanying Ala al-Dawla to a battle near Isfahan, he was hit by a severe colic, which he had been constantly suffering from throughout his life. He died shortly afterwards in Hamadan, where he was buried.^[53]



The Mausoleum of Avicenna,
Hamadan, Iran

Philosophy

Avicenna wrote extensively on early Islamic philosophy, especially the subjects logic, ethics and metaphysics, including treatises named *Logic* and *Metaphysics*. Most of his works were written in Arabic—then the language of science in the Middle East—and some in Persian. Of linguistic significance even to this day are a few books that he wrote in nearly pure Persian language (particularly the *Danishnamah-yi 'Ala'*, *Philosophy for Ala' ad-Dawla*). Avicenna's commentaries on Aristotle often criticized the philosopher,^[54] encouraging a lively debate in the spirit of *ijtihad*.

Avicenna's Neoplatonic scheme of "emanations" became fundamental in the *Kalam* (school of theological discourse) in the 12th century.^[55]

His *Book of Healing* became available in Europe in partial Latin translation some fifty years after its composition, under the title *Sufficiencia*, and some authors have identified a "Latin Avicennism" as flourishing for some time, paralleling the more influential Latin Averroism, but suppressed by the Parisian decrees of 1210 and 1215.^[56]

Avicenna's psychology and theory of knowledge influenced William of Auvergne, Bishop of Paris^[57] and Albertus Magnus,^[57] while his metaphysics influenced the thought of Thomas Aquinas.^[57]

Metaphysical doctrine

Early Islamic philosophy and Islamic metaphysics, imbued as it is with Islamic theology, distinguishes between essence and existence more clearly than Aristotelianism. Whereas existence is the domain of the contingent and the accidental, essence endures within a being beyond the accidental. The philosophy of Avicenna, particularly that part relating to metaphysics, owes much to al-Farabi. The search for a definitive Islamic philosophy separate from Occasionalism can be seen in what is left of his work.

Following al-Farabi's lead, Avicenna initiated a full-fledged inquiry into the question of being, in which he distinguished between essence (*Mahiat*) and existence (*Wujud*). He argued that the fact of existence cannot be inferred from or accounted for by the essence of existing things, and that form and matter by themselves cannot interact and originate the movement of the universe or the progressive actualization of existing things. Existence must, therefore, be due to an agent-cause that necessitates, imparts, gives, or adds existence to an essence. To do so, the cause must be an existing thing and coexist with its effect.^[58]

Avicenna's consideration of the essence-attributes question may be elucidated in terms of his ontological analysis of the modalities of being; namely impossibility, contingency and necessity. Avicenna argued that the impossible being is that which cannot exist, while the contingent in itself (*mumkin bi-dhatihi*) has the potentiality to be or not to be without entailing a contradiction. When actualized, the contingent becomes a 'necessary existent due to what is other than itself' (*wajib al-wujud bi-ghayrihi*). Thus, contingency-in-itself is potential beingness that could eventually be actualized by an external cause other than itself. The metaphysical structures of necessity and contingency are different. Necessary being due to itself (*wajib al-wujud bi-dhatihi*) is true in itself, while the contingent being is 'false in itself' and 'true due to something else other than itself'. The necessary is the source of its own being without borrowed existence. It is what always exists.^{[59][60]}

The Necessary exists 'due-to-Its-Self', and has no quiddity/essence (*mahiyya*) other than existence (*wujud*). Furthermore, It is 'One' (*wahid ahad*)^[61] since there cannot be more than one 'Necessary-Existent-due-to-Itself' without differentia (*fasl*) to distinguish them from each other. Yet, to require differentia entails that they exist 'due-to-themselves' as well as 'due to what is other than themselves'; and this is contradictory. However, if no differentia distinguishes them from each other, then there is no sense in which these 'Existents' are not one and the same.^[62] Avicenna adds that the 'Necessary-Existent-due-to-Itself' has no genus (*jins*), nor a definition (*hadd*), nor a counterpart (*nadd*), nor an opposite (*did*), and is detached (*bari*) from matter (*madda*), quality (*kayf*), quantity (*kam*), place (*ayn*), situation (*wad*) and time (*waqt*).^{[63][64][65]}

Avicenna's theology on metaphysical issues (*ilāhiyyāt*) has been criticized by some Islamic scholars, among them al-Ghazali, Ibn Taymiyya and Ibn al-Qayyim.^[66] While discussing the views of the theists among the Greek philosophers, namely Socrates, Plato and Aristotle in *Al-Munqidh min ad-Dalal* ("Deliverance from Error"), al-Ghazali noted that the Greek philosophers "must be taxed with unbelief, as must their partisans among the Muslim philosophers, such as Avicenna and al-Farabi and their likes." He added that "None, however, of the Muslim philosophers engaged so much in transmitting Aristotle's lore as did the two men just mentioned. [...] The sum of what we regard as the authentic philosophy of Aristotle, as transmitted by al-Farabi and Avicenna, can be reduced to three parts: a part which must be branded as unbelief; a part which must be stigmatized as innovation; and a part which need not be repudiated at all."^[67]

Argument for God's existence

Avicenna made an argument for the existence of God which would be known as the "Proof of the Truthful" (Arabic: *burhan al-siddiqin*). Avicenna argued that there must be a "necessary existent" (Arabic: *wajib al-wujud*), an entity that cannot *not* exist^[68] and through a series of arguments, he identified it with the Islamic conception of God.^[69] Present-day historian of philosophy Peter Adamson called this argument one of the most influential medieval arguments for God's existence, and Avicenna's biggest contribution to the history of philosophy.^[68]

Al-Biruni correspondence

Correspondence between Avicenna (with his student Ahmad ibn 'Ali al-Ma'sumi) and Al-Biruni has survived in which they debated Aristotelian natural philosophy and the Peripatetic school. Abu Rayhan began by asking Avicenna eighteen questions, ten of which were criticisms of Aristotle's *On the Heavens*.^[70]

Theology

Avicenna was a devout Muslim and sought to reconcile rational philosophy with Islamic theology. His aim was to prove the existence of God and His creation of the world scientifically and through reason and logic.^[71] Avicenna's views on Islamic theology (and philosophy) were enormously influential, forming part of the core of the curriculum at Islamic religious schools until the 19th century.^[72] Avicenna wrote a number of short treatises dealing with Islamic theology. These included treatises on the prophets (whom he viewed as "inspired philosophers"), and also on various scientific and philosophical interpretations of the Quran, such as how Quranic cosmology corresponds to his own philosophical system. In general these treatises linked his philosophical writings to Islamic religious ideas; for example, the body's afterlife.

There are occasional brief hints and allusions in his longer works, however, that Avicenna considered philosophy as the only sensible way to distinguish real prophecy from illusion. He did not state this more clearly because of the political implications of such a theory, if prophecy could be questioned, and also because most of the time he was writing shorter works which concentrated on explaining his theories on philosophy and theology clearly, without digressing to consider epistemological matters which could only be properly considered by other philosophers.^[73]

Later interpretations of Avicenna's philosophy split into three different schools; those (such as al-Tusi) who continued to apply his philosophy as a system to interpret later political events and scientific advances; those (such as al-Razi) who considered Avicenna's theological works in isolation from his wider philosophical concerns; and those (such as al-Ghazali) who selectively used parts of his philosophy to support their own attempts to gain greater spiritual insights through a variety of mystical means. It was the theological interpretation championed by those such as al-Razi which eventually came to predominate in the madrasahs.^[74]

Avicenna memorized the Quran by the age of ten, and as an adult, he wrote five treatises commenting on suras from the Quran. One of these texts included the *Proof of Prophecies*, in which he comments on several Quranic verses and holds the Quran in high esteem. Avicenna argued that the Islamic prophets should be considered higher than philosophers.^[75]

Avicenna is generally understood to have been aligned with the Sunni Hanafi school of thought.^{[76][77]} Avicenna studied Hanafi law, many of his notable teachers were Hanafi jurists, and he served under the Hanafi court of Ali ibn Mamun.^{[78][76]} Avicenna said at an early age that he remained "unconvinced" by Ismaili missionary attempts to convert him.^[76] Medieval historian Zāhīr al-dīn al-Bayhaqī (d. 1169) also believed Avicenna to be a follower of the Brethren of Purity.^[77]

Thought experiments

While he was imprisoned in the castle of Fardajan near Hamadhan, Avicenna wrote his famous "floating man"—literally falling man—a thought experiment to demonstrate human self-awareness and the substantiality and immateriality of the soul. Avicenna believed his "Floating Man" thought experiment demonstrated that the soul is a substance, and claimed humans cannot doubt their own

consciousness, even in a situation that prevents all sensory data input. The thought experiment told its readers to imagine themselves created all at once while suspended in the air, isolated from all sensations, which includes no sensory contact with even their own bodies. He argued that, in this scenario, one would still have self-consciousness. Because it is conceivable that a person, suspended in air while cut off from sense experience, would still be capable of determining his own existence, the thought experiment points to the conclusions that the soul is a perfection, independent of the body, and an immaterial substance.^[79] The conceivability of this "Floating Man" indicates that the soul is perceived intellectually, which entails the soul's separateness from the body. Avicenna referred to the living human intelligence, particularly the active intellect, which he believed to be the hypostasis by which God communicates truth to the human mind and imparts order and intelligibility to nature. Following is an English translation of the argument:

One of us (i.e. a human being) should be imagined as having been created in a single stroke; created perfect and complete but with his vision obscured so that he cannot perceive external entities; created falling through air or a void, in such a manner that he is not struck by the firmness of the air in any way that compels him to feel it, and with his limbs separated so that they do not come in contact with or touch each other. Then contemplate the following: can he be assured of the existence of himself? He does not have any doubt in that his self exists, without thereby asserting that he has any exterior limbs, nor any internal organs, neither heart nor brain, nor any one of the exterior things at all; but rather he can affirm the existence of himself, without thereby asserting there that this self has any extension in space. Even if it were possible for him in that state to imagine a hand or any other limb, he would not imagine it as being a part of his self, nor as a condition for the existence of that self; for as you know that which is asserted is different from that which is not asserted and that which is inferred is different from that which is not inferred. Therefore the self, the existence of which has been asserted, is a unique characteristic, in as much that it is not as such the same as the body or the limbs, which have not been ascertained. Thus that which is ascertained (i.e. the self), does have a way of being sure of the existence of the soul as something other than the body, even something non-bodily; this he knows, this he should understand intuitively, if it is that he is ignorant of it and needs to be beaten with a stick [to realize it].

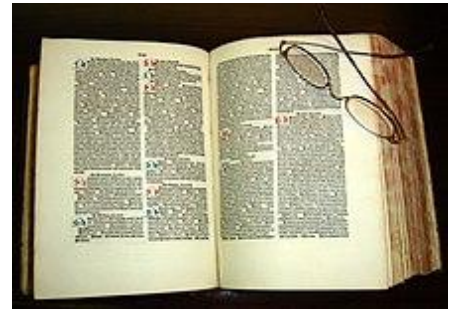
— Ibn Sina, Kitab Al-Shifa, On the Soul^{[62][80]}

However, Avicenna posited the brain as the place where reason interacts with sensation. Sensation prepares the soul to receive rational concepts from the universal Agent Intellect. The first knowledge of the flying person would be "I am," affirming his or her essence. That essence could not be the body, obviously, as the flying person has no sensation. Thus, the knowledge that "I am" is the core of a human being: the soul exists and is self-aware.^[81] Avicenna thus concluded that the idea of the self is not logically dependent on any physical thing, and that the soul should not be seen in relative terms, but as a primary given, a substance. The body is unnecessary; in relation to it, the soul is its perfection.^{[82][83][84]} In itself, the soul is an immaterial substance.^[85]

Principal works

The Canon of Medicine

Avicenna authored a five-volume medical encyclopedia: *The Canon of Medicine* (*Al-Qanun fi't-Tibb*). It was used as the standard medical textbook in the Islamic world and Europe up to the 18th century.^{[86][87]} The *Canon* still plays an important role in Unani medicine.^[88]



Canons of medicine book from Avicenna, Latin translation located at UT Health of San Antonio

Liber Primus Naturalium

Avicenna considered whether events like rare diseases or disorders have natural causes.^[89] He used the example of polydactyly to explain his perception that causal reasons exist for all medical events. This view of medical phenomena anticipated developments in the Enlightenment by seven centuries.^[90]

The Book of Healing

Earth sciences

Avicenna wrote on Earth sciences such as geology in *The Book of Healing*.^[91] While discussing the formation of mountains, he explained:

Either they are the effects of upheavals of the crust of the earth, such as might occur during a violent earthquake, or they are the effect of water, which, cutting itself a new route, has denuded the valleys, the strata being of different kinds, some soft, some hard ... It would require a long period of time for all such changes to be accomplished, during which the mountains themselves might be somewhat diminished in size.^[91]

Philosophy of science

In the *Al-Burhan* (*On Demonstration*) section of *The Book of Healing*, Avicenna discussed the philosophy of science and described an early scientific method of inquiry. He discussed Aristotle's *Posterior Analytics* and significantly diverged from it on several points. Avicenna discussed the issue of a proper methodology for scientific inquiry and the question of "How does one acquire the first principles of a science?" He asked how a scientist would arrive at "the initial axioms or hypotheses of a deductive science without inferring them from some more basic premises?" He explained that the ideal situation is when one grasps that a "relation holds between the terms, which would allow for absolute, universal certainty". Avicenna then added two further methods for arriving at the first principles: the ancient Aristotelian method of induction (*istiqra*), and the method of examination and experimentation (*tajriba*). Avicenna criticized Aristotelian induction, arguing that "it does not lead to the absolute, universal, and certain premises that it purports to provide." In its place, he developed a "method of experimentation as a means for scientific inquiry."^[92]

Logic

An early formal system of temporal logic was studied by Avicenna.^[93] Although he did not develop a real theory of temporal propositions, he did study the relationship between *temporalis* and the implication.^[94] Avicenna's work was further developed by Najm al-Dīn al-Qazwīnī al-Kātibī and became the dominant system of Islamic logic until modern times.^{[95][96]} Avicennian logic also influenced several early European logicians such as Albertus Magnus^[97] and William of Ockham.^{[98][99]} Avicenna endorsed the law of non-contradiction proposed by Aristotle, that a fact could not be both true and false at the same time and in the same sense of the terminology used. He stated, "Anyone who denies the law of non-contradiction should be beaten and burned until he admits that to be beaten is not the same as not to be beaten, and to be burned is not the same as not to be burned."^[100]

Physics

In mechanics, Avicenna, in *The Book of Healing*, developed a theory of motion, in which he made a distinction between the inclination (tendency to motion) and force of a projectile, and concluded that motion was a result of an inclination (*mayl*) transferred to the projectile by the thrower, and that projectile motion in a vacuum would not cease.^[101] He viewed inclination as a permanent force whose effect is dissipated by external forces such as air resistance.^[102]

The theory of motion presented by Avicenna was probably influenced by the 6th-century Alexandrian scholar John Philoponus. Avicenna's is a less sophisticated variant of the theory of impetus developed by Buridan in the 14th century. It is unclear if Buridan was influenced by Avicenna, or by Philoponus directly.^[103]

In optics, Avicenna was among those who argued that light had a speed, observing that "if the perception of light is due to the emission of some sort of particles by a luminous source, the speed of light must be finite."^[104] He also provided a wrong explanation of the rainbow phenomenon. Carl Benjamin Boyer described Avicenna's ("Ibn Sīnā") theory on the rainbow as follows:

Independent observation had demonstrated to him that the bow is not formed in the dark cloud but rather in the very thin mist lying between the cloud and the sun or observer. The cloud, he thought, serves as the background of this thin substance, much as a quicksilver lining is placed upon the rear surface of the glass in a mirror. Ibn Sīnā would change the place not only of the bow, but also of the color formation, holding the iridescence to be merely a subjective sensation in the eye.^[105]

In 1253, a Latin text entitled *Speculum Tripartitum* stated the following regarding Avicenna's theory on heat:

Avicenna says in his book of heaven and earth, that heat is generated from motion in external things.^[106]

Psychology

Avicenna's legacy in classical psychology is primarily embodied in the *Kitab al-nafs* parts of his *Kitab al-shifa* (*The Book of Healing*) and *Kitab al-najat* (*The Book of Deliverance*). These were known in Latin under the title De Anima (treatises "on the soul"). Notably, Avicenna develops what is called the

Flying Man argument in the Psychology of *The Cure* I.1.7 as defence of the argument that the soul is without quantitative extension, which has an affinity with Descartes's *cogito* argument (or what phenomenology designates as a form of an "*epoché*").^{[82][83]}

Avicenna's psychology requires that connection between the body and soul be strong enough to ensure the soul's individuation, but weak enough to allow for its immortality. Avicenna grounds his psychology on physiology, which means his account of the soul is one that deals almost entirely with the natural science of the body and its abilities of perception. Thus, the philosopher's connection between the soul and body is explained almost entirely by his understanding of perception; in this way, bodily perception interrelates with the immaterial human intellect. In sense perception, the perceiver senses the form of the object; first, by perceiving features of the object by our external senses. This sensory information is supplied to the internal senses, which merge all the pieces into a whole, unified conscious experience. This process of perception and abstraction is the nexus of the soul and body, for the material body may only perceive material objects, while the immaterial soul may only receive the immaterial, universal forms. The way the soul and body interact in the final abstraction of the universal from the concrete particular is the key to their relationship and interaction, which takes place in the physical body.^[107]

The soul completes the action of intellection by accepting forms that have been abstracted from matter. This process requires a concrete particular (material) to be abstracted into the universal intelligible (immaterial). The material and immaterial interact through the Active Intellect, which is a "divine light" containing the intelligible forms.^[108] The Active Intellect reveals the universals concealed in material objects much like the sun makes colour available to our eyes.

Other contributions

Astronomy and astrology

Avicenna wrote an attack on astrology titled *Resāla fī ebṭāl aḥkām al-nojūm*, in which he cited passages from the Quran to dispute the power of astrology to foretell the future.^[109] He believed that each planet had some influence on the earth, but argued against astrologers being able to determine the exact effects.^[110]

Avicenna's astronomical writings had some influence on later writers, although in general his work could be considered less developed than Alhazen or Al-Biruni. One important feature of his writing is that he considers mathematical astronomy as a separate discipline to astrology.^[111] He criticized Aristotle's view of the stars receiving their light from the Sun, stating that the stars are self-luminous, and believed that the planets are also self-luminous.^[112]

He claimed to have observed Venus as a spot on the Sun. This is possible, as there was a transit on 24 May 1032, but Avicenna did not give the date of his observation, and modern scholars have questioned whether he could have observed the transit from his location at that time; he may have mistaken a sunspot for Venus. He used his transit observation to help establish that Venus was, at least sometimes, below the Sun in Ptolemaic cosmology,^[111] i.e. the sphere of Venus comes before the sphere of the Sun when moving out from the Earth in the prevailing geocentric model.^{[113][114]}



Skull of Avicenna, found in 1950 during construction of the new mausoleum

He also wrote the *Summary of the Almagest*, (based on Ptolemy's Almagest), with an appended treatise "to bring that which is stated in the Almagest and what is understood from Natural Science into conformity". For example, Avicenna considers the motion of the solar apogee, which Ptolemy had taken to be fixed.^[111]

Chemistry

Avicenna was first to derive the attar of flowers from distillation^[115] and used steam distillation to produce essential oils such as rose essence, which he used as aromatherapeutic treatments for heart conditions.^{[116][117]}

Unlike al-Razi, Avicenna explicitly disputed the theory of the transmutation of substances commonly believed by alchemists:

Those of the chemical craft know well that no change can be effected in the different species of substances, though they can produce the appearance of such change.^[118]

Four works on alchemy attributed to Avicenna were translated into Latin as:^[119]

- *Liber Aboali Abincine de Anima in arte Alchemiae*
- *Declaratio Lapis physici Avicennae filio sui Aboali*
- *Avicennae de congelatione et conglutinatione lapidum*
- *Avicennae ad Hasan Regem epistola de Re recta*

Liber Aboali Abincine de Anima in arte Alchemiae was the most influential, having influenced later medieval chemists and alchemists such as Vincent of Beauvais. However, Anawati argues (following Ruska) that the de Anima is a fake by a Spanish author. Similarly the Declaratio is believed not to be actually by Avicenna. The third work (*The Book of Minerals*) is agreed to be Avicenna's writing, adapted from the *Kitab al-Shifa (Book of the Remedy)*.^[119] Avicenna classified minerals into stones, fusible substances, sulfurs and salts, building on the ideas of Aristotle and Jabir.^[120] The *epistola de Re recta* is somewhat less sceptical of alchemy; Anawati argues that it is by Avicenna, but written earlier in his career when he had not yet firmly decided that transmutation was impossible.^[119]

Poetry

Almost half of Avicenna's works are versified.^[121] His poems appear in both Arabic and Persian. As an example, Edward Granville Browne claims that the following Persian verses are incorrectly attributed to Omar Khayyám, and were originally written by Ibn Sīnā:^[122]

از قعر گل سپاه تا اوج زحل
کردم همه مشکلات گیتی را حل
بیرون جستم ز قید هر مکر و حیل
هر بند گشاده شد مگر بند اجل

From the depth of the black earth up to Saturn's apogee,
All the problems of the universe have been solved by me.
I have escaped from the coils of snares and deceits;
I have unraveled all knots except the knot of Death.^{[123]:91}

Legacy

Classical Islamic civilization

Robert Wisnovsky, a scholar of Avicenna attached to McGill University, says that "Avicenna was the central figure in the long history of the rational sciences in Islam, particularly in the fields of metaphysics, logic and medicine" but that his works didn't only have an influence in these "secular" fields of knowledge alone, as "these works, or portions of them, were read, taught, copied, commented upon, quoted, paraphrased and cited by thousands of post-Avicennian scholars—not only philosophers, logicians, physicians and specialists in the mathematical or exact sciences, but also by those who specialized in the disciplines of 'ilm al-kalām (rational theology, but understood to include natural philosophy, epistemology and philosophy of mind) and usūl al-fiqh (jurisprudence, but understood to include philosophy of law, dialectic, and philosophy of language)."^[124]

Middle Ages and Renaissance

As early as the 14th century when Dante Alighieri depicted him in Limbo alongside the virtuous non-Christian thinkers in his *Divine Comedy* such as Virgil, Averroes, Homer, Horace, Ovid, Lucan, Socrates, Plato and Saladin. Avicenna has been recognized by both East and West as one of the great figures in intellectual history. Johannes Kepler cites Avicenna's opinion when discussing the causes of planetary motions in Chapter 2 of *Astronomia Nova*.^[125]

George Sarton, the author of *The History of Science*, described Avicenna as "one of the greatest thinkers and medical scholars in history"^[126] and called him "the most famous scientist of Islam and one of the most famous of all races, places, and times". He was one of the Islamic world's leading writers in the field of medicine.

Along with Rhazes, Abulcasis, Ibn al-Nafis and al-Ibadi, Avicenna is considered an important compiler of early Muslim medicine. He is remembered in the Western history of medicine as a major historical figure who made important contributions to medicine and the European Renaissance. His medical texts were unusual in that where controversy existed between Galen and Aristotle's views on medical matters (such as anatomy), he preferred to side with Aristotle, where necessary updating Aristotle's position to take into account post-Aristotelian advances in anatomical knowledge.^[127] Aristotle's dominant intellectual influence among medieval European scholars meant that Avicenna's linking of Galen's medical writings with Aristotle's philosophical writings in the *Canon of Medicine* (along with its comprehensive and logical organisation of knowledge) significantly increased Avicenna's importance in medieval Europe in comparison to



Inside view of the Avicenna Mausoleum, designed by Hooshang Seyhoun in 1945–1950

other Islamic writers on medicine. His influence following translation of the *Canon* was such that from the early fourteenth to the mid-sixteenth centuries he was ranked with Hippocrates and Galen as one of the acknowledged authorities, *princeps medicorum* ("prince of physicians").^[128]

Modern reception



A monument to Avicenna in Qakh (city), Azerbaijan



Image of Avicenna on the Tajikistani somoni

Institutions in a variety of counties have been named after Avicenna in honour of his scientific accomplishments, including the Avicenna Mausoleum and Museum, Bu-Ali Sina University, Avicenna Research Institute and Ibn Sina Academy of Medieval Medicine and Sciences.^[129] There is also a crater on the Moon named Avicenna.

The Avicenna Prize, established in 2003, is awarded every two years by UNESCO and rewards individuals and groups for their achievements in the field of ethics in science.^[130]

The Avicenna Directories (2008–15; now the World Directory of Medical Schools) list universities and schools where doctors, public health practitioners, pharmacists and others, are educated. The original project team stated:

"Why Avicenna? Avicenna ... was ... noted for his synthesis of knowledge from both east and west. He has had a lasting influence on the development of medicine and health sciences. The use of Avicenna's name symbolises the worldwide partnership that is needed for the promotion of health services of high quality."^[131]

In June 2009, Iran donated a "Persian Scholars Pavilion" to the United Nations Office in Vienna. It now sits in the Vienna International Center.^[132]

In popular culture

The 1982 Soviet film *Youth of Genius* (Russian: Юность гения, romanized: *Yunost geniya*) by Elyor Ishmukhamedov recounts Avicenna's younger years. The film is set in Bukhara at the turn of the millennium.^[133]



Avicenna at the sickbed, miniature by Walenty z Pilzna, Kraków (ca 1479-1480)



The statue of Avicenna in United Nations Office in Vienna as a part of the Persian Scholars Pavilion donated by Iran

In Louis L'Amour's 1985 historical novel *The Walking Drum*, Kerbouchard studies and discusses Avicenna's *The Canon of Medicine*.

In his book *The Physician* (1988) Noah Gordon tells the story of a young English medical apprentice who disguises himself as a Jew to travel from England to Persia and learn from Avicenna, the great master of his time. The novel was adapted into a feature film, *The Physician*, in 2013. Avicenna was played by Ben Kingsley.

List of works

The treatises of Avicenna influenced later Muslim thinkers in many areas including theology, philology, mathematics, astronomy, physics and music. His works numbered almost 450 volumes on a wide range of subjects, of which around 240 have survived. In particular, 150 volumes of his surviving works concentrate on philosophy and 40 of them concentrate on medicine.^[10] His most famous works are *The Book of Healing*, and *The Canon of Medicine*.

Avicenna wrote at least one treatise on alchemy, but several others have been falsely attributed to him. His *Logic*, *Metaphysics*, *Physics*, and *De Caelo*, are treatises giving a synoptic view of Aristotelian doctrine,^[134] though *Metaphysics* demonstrates a significant departure from the brand of Neoplatonism known as Aristotelianism in Avicenna's world; Arabic philosophers have hinted at the idea that Avicenna was attempting to "re-Aristotelianise" Muslim philosophy in its entirety, unlike his predecessors, who accepted the conflation of Platonic, Aristotelian, Neo- and Middle-Platonic works transmitted into the Muslim world.

The *Logic* and *Metaphysics* have been extensively reprinted, the latter, e.g., at Venice in 1493, 1495 and 1546. Some of his shorter essays on medicine, logic, etc., take a poetical form (the poem on logic was published by Schmoelders in 1836).^[135] Two encyclopedic treatises, dealing with philosophy, are often mentioned. The larger, *Al-Shifa'* (*Sanatio*), exists nearly complete in manuscript in the Bodleian Library and elsewhere; part of it on the *De Anima* appeared at Pavia (1490) as the *Liber Sextus Naturalium*, and the long account of Avicenna's philosophy given by Muhammad al-Shahrastani seems to be mainly an analysis, and in many places a reproduction, of the *Al-Shifa'*. A shorter form of the work is known as the *An-najat* (*Liberatio*). The Latin editions of part of these works have been modified by the corrections which the monastic editors confess that they applied. There is also a *حکمت مشرقیه* (*hikmat-al-mashriqqiyya*, in Latin *Philosophia Orientalis*), mentioned by Roger Bacon, the majority of which is lost in antiquity, which according to Averroes was pantheistic in tone.^[134]

Avicenna's works further include:^{[136][137]}

- *Sirat al-shaykh al-ra'is* (*The Life of Avicenna*), ed. and trans. WE. Gohlman, Albany, NY: State University of New York Press, 1974. (The only critical edition of Avicenna's autobiography, supplemented with material from a biography by his student Abu 'Ubayd al-Juzjani. A more recent translation of the Autobiography appears in D. Gutas, *Avicenna and the Aristotelian Tradition: Introduction to Reading Avicenna's Philosophical Works*, Leiden: Brill, 1988; second edition 2014.)^[136]
- *Al-isharat wa al-tanbihat* (*Remarks and Admonitions*), ed. S. Dunya, Cairo, 1960; parts translated by S.C. Inati, *Remarks and Admonitions, Part One: Logic*, Toronto, Ont.: Pontifical Institute for Mediaeval Studies, 1984, and *Ibn Sina and Mysticism, Remarks and Admonitions: Part 4*, London: Kegan Paul International, 1996.^[136]
- *Al-Qanun fi'l-tibb* (*The Canon of Medicine*), ed. I. a-Qashsh, Cairo, 1987. (Encyclopedia of medicine.)^[136] manuscript,^{[138][139]} Latin translation, Flores Avicenne,^[140] Michael de Capella, 1508,^[141] Modern text.^[142] Ahmed Shawkat Al-Shatti, Jibrān Jabbur.^[143]

- *Risalah fi sirr al-qadar (Essay on the Secret of Destiny)*, trans. G. Hourani in *Reason and Tradition in Islamic Ethics*, Cambridge: Cambridge University Press, 1985.^[136]
- *Danishnama-i 'ala'i (The Book of Scientific Knowledge)*, ed. and trans. P. Morewedge, *The Metaphysics of Avicenna*, London: Routledge and Kegan Paul, 1973.^[136]
- *Kitab al-Shifa' (The Book of Healing)*. (Avicenna's major work on philosophy. He probably began to compose al-Shifa' in 1014, and completed it in 1020.) Critical editions of the Arabic text have been published in Cairo, 1952–83, originally under the supervision of I. Madkour.^[136]
- *Kitab al-Najat (The Book of Salvation)*, trans. F. Rahman, *Avicenna's Psychology: An English Translation of Kitab al-Najat, Book II, Chapter VI with Historical-philosophical Notes and Textual Improvements on the Cairo Edition*, Oxford: Oxford University Press, 1952. (The psychology of al-Shifa'.) (Digital version of the Arabic text)
- *Risala fi'l-Ishq (A Treatise on Love)*. Translated by Emil L. Fackenheim.

Persian works

Avicenna's most important Persian work is the *Danishnama-i 'Alai* (دانشنامه علائی, "the Book of Knowledge for [Prince] 'Ala ad-Daulah"). Avicenna created new scientific vocabulary that had not previously existed in Persian. The *Danishnama* covers such topics as logic, metaphysics, music theory and other sciences of his time. It has been translated into English by Parwiz Morewedge in 1977.^[144] The book is also important in respect to Persian scientific works.

Andar Danesh-e Rag (اندر دانش رگ, "On the Science of the Pulse") contains nine chapters on the science of the pulse and is a condensed synopsis.

Persian poetry from Avicenna is recorded in various manuscripts and later anthologies such as *Nozhat al-Majales*.

See also

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- Al-Qumri (possibly Avicenna's teacher)
 - Abdol Hamid Khosro Shahi (Iranian theologian)
 - Mummia (Persian medicine)
 - Eastern philosophy
 - Iranian philosophy
 - Islamic philosophy
 - Contemporary Islamic philosophy
 - Science in the medieval Islamic world
 - List of scientists in medieval Islamic world
 - Sufi philosophy
 - Science and technology in Iran
 - Ancient Iranian medicine
 - List of pre-modern Iranian scientists and scholars

Namesakes of Ibn Sina

- Ibn Sina Academy of Medieval Medicine and Sciences in Aligarh
- Avicenna Bay in Antarctica
- Avicenna (crater) on the far side of the Moon
- Avicenna Cultural and Scientific Foundation
- Avicenne Hospital in Paris, France
- Avicenna International College in Budapest, Hungary
- Avicenna Mausoleum (complex dedicated to Avicenna) in Hamadan, Iran
- Avicenna Research Institute in Tehran, Iran
- Avicenna Tajik State Medical University in Dushanbe, Tajikistan
- Bu-Ali Sina University in Hamedan, Iran
- Ibn Sina Peak – named after the Scientist, on the Kyrgyzstan–Tajikistan border

- Ibn Sina Foundation in Houston, Texas^[145]
- Ibn Sina Hospital, Baghdad, Iraq
- Ibn Sina Hospital, Istanbul, Turkey^[146]
- Ibn Sina Medical College Hospital, Dhaka, Bangladesh
- Ibn Sina University Hospital of Rabat-Salé at Mohammed V University in Rabat, Morocco
- Ibne Sina Hospital, Multan, Punjab, Pakistan^[147]
- International Ibn Sina Clinic, Dushanbe, Tajikistan

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 - (page 113) "For one thing, it means that he[Avicenna] had a Persian cultural background...he spoke Persian natively and did use it to write philosophy."
 - (page 117) "But for the time being, it was a Persian from Khurasan who would have commentaries lavished upon him. Avicenna would be known by the honorific of "leading master" (al-shaykh al-ra'is)."
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يجب أن يتوهم الواحد منا كأنه خلق دفعةً وخلق كاملاً لكنه حجب بصره عن مشاهدة الخارجات وخلق يهوى في هواء أو خلاء هويماً لا يصدمه فيه قوام الهواء صدماً ما يحوج إلى أن يحس وفرق بين أعضائه فلم تتلاق ولم تتماس ثم يتأمل هل أنه يثبت وجود ذاته ولا يشكك في إثباته لذاته موجوداً ولا يثبت مع ذلك طرفاً من أعضائه ولا باطناً من أحشائه ولا قلباً ولا دماغاً ولا شيئاً من الأشياء من خارج بل كان يثبت ذاته ولا يثبت لها طولاً ولا عرضاً ولا عمقاً ولو أنه أمكنه في تلك الحالة أن يتخيل يداً أو عضواً آخر لم يتخيله جزء من ذاته ولا شرطاً في ذاته وأنت تعلم أن المثبت غير الذي لم يثبت والمقرب غير الذي لم يقربه فأذن للذات التي أثبت وجودها خاصة على أنها هو بعينه غير جسمه وأعضائه التي لم تثبت فأذن المثبت له سبيل إلى أن يثبت على وجود النفس شيئاً غير الجسم بل غير جسم وأنه عارف به مستشعر له وإن كان ذاهلاً عنه يحتاج إلى أن يقرع عصاه.

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