

تاريخ  
المسلمين  
في  
إسبانيا

*Muslim Spain  
Its History and Culture*

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# 9

## The Sciences and Education

THE following chapters will show that al-Andalus indeed produced in the Arabic language a great literature, covering every subject known in medieval times: religious studies, language, history, belles lettres, geography, medicine, mathematics, astronomy, philosophy, and finally, poetry, the most expressive artistic manifestation of the Arabs in pre-Islamic and Islamic times. This intellectual efflorescence was taking place at a time when most of Europe was going through a period of transition and slumber. The highly advanced Arabic culture directly influenced later Spanish life and thought; in addition, through the translation of Arabic works into Latin or Romance, the Arabic heritage indirectly affected European culture from the eleventh century onward. The following statements give a panoramic view of the fecund Arabic culture as well as several leading conceptions of the sciences.

The year 711 marks not only the conquest of the Iberian Peninsula but also the beginning of a new chapter in its cultural history. This chapter, covering eight centuries, witnessed many changes in linguistic distribution and practices, the religion and social manners of the Spaniards, and Spanish arts and crafts — most of which are discernible even to the present day.

At first, the Arab conquerors had very little in common with the conquered population; they differed in language, religion, and customs. They constituted a minority and remained so long after the conquest. They were even outnumbered by their coreligionists, the Berbers. It is doubtful that there were many

literate Arabs at the time of the conquest. In the early part of the eighth century, intellectual life as manifested in the Arabic language was still in its infancy, even in the East. However, the Arabic language did have the Qur'ān, some oral traditions and legends, and poetry. On the whole, the Qur'ān and poetry could be said to have contributed the first and most important literary elements on Spanish soil, and thus served as the principal ingredients for future development. To them may be added official documents, coins, sermons, and the like, which constitute the main documentary evidence from the eighth century.

It was in the ninth century however that the process of Arabization of the Peninsula made great strides, especially among the urban populations, containing a large number of Christians and Jews. With the dissemination of the language over a broader population there emerged a literature, mainly dependent on that of the East and consisting for the most part of poetry. Literary activities were encouraged by rulers who appreciated scholarship and surrounded themselves with scholars. For one, 'Abd al-Rahmān II was greatly inclined toward religious and secular sciences, poetry, and music, and secured books from the East. During his reign the famous singer Ziryāb<sup>1</sup> arrived in Cordova and enjoyed his generous patronage. Among the other interesting personages of his court were 'Abbās Ibn Firmās (d. 888) and Yahyā al-Ghazāl (d. 865). Ibn Firmās was a man of unusual abilities. He invented a formula for manufacturing crystals, constructed a simulated sky with lightning and thunder, and conceived the possibility of flying. Al-Ghazāl was an able poet and satirist. He was reputed for his sharp tongue and quick answers, for which he was feared even by the powerful jurist Yahyā Ibn Yahyā.<sup>2</sup> The encouragement and generous patronage of learning by the Umayyad emirs, principally 'Abd al-Rahmān II, contributed enormously to the establishment of a literary tradition that continued at the Umayyad court in succeeding generations and bore fruits in the tenth and eleventh centuries.

For education, al-Andalus counted at first on a large body of scholars who had received their education in the East and who had brought back many works of outstanding Eastern scholars. The numerous mosques became educational centers for anyone who wished to learn. Private and public libraries were founded in great numbers. All of these paved the way for enormous literary activity in the tenth century. Cordova was the nerve center of politics and the major intellectual center of al-Andalus. On it converged many students from all over the country to study at the feet of scholars. This center reached the pinnacle of its glory during the reigns of 'Abd al-

Rahmān III and his son al-Ḥakam II. They sponsored the leading intellectuals of the day: Ibn 'Abd Rabbihi,<sup>3</sup> al-Qālī,<sup>4</sup> al-Zubaydī,<sup>5</sup> and Ibn al-Qūṭiyah,<sup>6</sup> among many others. Moreover, al-Ḥakam II founded a number of schools, thereby making education available to anyone who sought it.

The pursuit of learning continued unhampered after al-Ḥakam II's death in 976, although Ibn Abī 'Āmir attempted to restrict freedom of thought and even to purge al-Ḥakam's library of materials that seemed offensive to the religious scholars.<sup>7</sup> However annoying these restrictions were, al-Andalus continued its intellectual upsurge in the eleventh century, though Cordova lost ground as the principal intellectual center. This decline took place in 1009 when the city's gorgeous palaces, libraries, and other monuments became objects of wanton destruction. The famous library of al-Ḥakam II was sacked, and many books were sold and found their way into other cities. In later years, Cordova was overshadowed by the capital cities of the party-kings, each of which tried to recapture Cordova's former glory. This kind of competition in the midst of constant quarrels and bloody wars may have saved literary activities from stagnation or even dissolution. Cities such as Seville, Almería, Badajoz, Granada, Toledo, Valencia, Málaga, and Denia became centers to which scholars converged to receive rulers' patronage. No doubt many scholars were inconvenienced and uprooted, but they always found patrons. It seems that the poet had the best chance of success, and for this reason, perhaps, the period 1031–1090 produced an enormous number of poets, who overshadowed the rest of the scholars. The 'Abbādid rulers of Seville, like other rulers, could count among them a number of able poets. The emir al-Mu'tamid, for instance, was an outstanding poet, as was his vizier and boon-companion Ibn 'Ammār (d. 1086).<sup>8</sup> The great poet Ibn Zaydūn (1003–1071)<sup>9</sup> and his beloved princess-poetess Wallādah are examples of many outstanding poets of the century.

Besides poets, many outstanding men of letters appeared in the eleventh century. The gifted scholar Ibn Ḥazm (994–1064) may be considered the first intellectual giant of Muslim Spain and one of the greatest thinkers in the intellectual history of Islam. He was a poet, theologian, jurist, historian, moralist, and one of the ablest polemicists in Islam. He always spoke what he thought at a time when discretion would have guaranteed him the highest honors at any court of his days. As a polemicist it is said of him that his "tongue was as sharp as the sword of al-Ḥajjāj."<sup>10</sup> When his books were ordered to be burned by the ruler of Seville, he defiantly retorted in a famous poem "Although you may burn the paper, you shall never burn what is

on it, for this will remain in my breast."<sup>11</sup> Among other outstanding savants of the eleventh century were the blind lexicographer Ibn Sīdah (d. 1066),<sup>12</sup> the historian Abū Marwān Ibn Ḥayyān (d. 1075),<sup>13</sup> the traditionalist Yūsuf Ibn 'Abd al-Barr (d. 1071).<sup>14</sup>

However noteworthy the literary accomplishments, the political conditions were becoming chaotic by the end of the century and had repercussions on all aspects of life. The coming of the Almoravids and later the Almohads from North Africa brought temporary stability. Both dynasties came to power with strong religious platforms, and both imposed heavy restrictions on free thought. Nonetheless, great intellectuals appeared during their rule in the twelfth and thirteenth centuries. Subjected by the less educated Berbers, the Andalusian authors displayed their national pride by emphasizing native talents<sup>15</sup> in anthologies such as those of Ibn Bassām (d. 1148), Ibn Khāqān (d. 1137), and Ibn Bashkuwāl (d. 1183),<sup>16</sup> who dealt for the most part with the men of the century in which they lived. Among other prominent names one may mention the geographers al-Idrīsī (d. 1115)<sup>17</sup> and Ibn Jubayr (d. 1217),<sup>18</sup> the physician Ibn Zuhr (d. 1162),<sup>19</sup> the botanist Ibn Bayṭār (d. 1248),<sup>20</sup> and the two great mystics Ibn 'Arabī (d. 1240)<sup>21</sup> and Ibn Sab'īn (d. 1269).<sup>22</sup> It is significant to note that philosophy now flourished for the first time on Andalusian soil, paradoxically in the midst of religious intolerance. The major philosophers<sup>23</sup> were Ibn Bājjah (d. 1138); Ibn Ṭufayl (d. 1185); Ibn Rushd, better known as Averroës (d. 1198); and Maimonides (d. 1204). Their influence was felt beyond al-Andalus, especially in the rise and development of Christian Scholasticism in the thirteenth century.

From about the middle of the thirteenth century, Muslim ascendancy in al-Andalus was being shattered at its very foundations. The Muslim domain comprised only a small pocket in the southern fringes of the Peninsula ruled by the Naṣrid dynasty (1232–1492) and constantly in a precarious position. In Granada Arabic culture had extended life but none of the vigor that had characterized it in former times. The single exception was Ibn al-Khafīb, who was an able statesman and thinker. However, the dynasty excelled in erecting great buildings and monuments, among which is the famous Alhambra, still one of the most magnificent monuments in the world.

In 1492, the Reconquista attained its ultimate objective by liquidating the last Muslim hold on the Peninsula. The loss of political power led to the decline of the culture that was expressed in the Arabic language. In fact, there was a concerted effort to erase the influence of Arabic culture and to forbid the use of Arabic as the medium of written or spoken expression.

Under the circumstances, persecuted Muslims complied with the wishes of the inquisitors and expressed themselves in a local Spanish dialect, but they used Arabic characters. This literature, known as *aljamiado*, represented the last cultural vestiges; it consisted of poems, stories, and religious and legal accounts. Such was the fate of a fascinating, if not brilliant, chapter of intellectual adventure.

The Andalusians had developed a strong tradition for learning. That they were avid students of Muslim culture is attested by their great literary legacy in all branches of knowledge. As already indicated, they sought knowledge wherever they could find it. They travelled far and wide in its pursuit, often risking their lives. Moreover, they were great and devoted teachers. They built numerous libraries, which became not only the symbol of learning but also a mark of prestige among non-scholars who found it fashionable to have libraries in their homes.

As a result the pursuit and dissemination of knowledge became one of the most precious goals of the Andalusians. Many Prophetic Traditions emphasizing the importance of knowledge were put to work. The classical tradition, "Seek knowledge even if it were in China," became a maxim among Muslim scholars. Its pursuance and dissemination were conceived to represent the highest attainment in this world and in the Hereafter, especially if the knowledge happened to bear upon religion. In this case, it was tantamount to an article of faith.

All in all, Muslim scholars pondered not only on the meaning of knowledge (*'ilm*), but on its various kinds, and its utility. The Arabic term *'ilm* denotes "knowledge," "learning," "intellect," or "science." As a rule, the connotation of science or sciences is conveyed in the plural formation (*'ulim*). The term *'ilm* is also attached to a particular discipline, such as *'ilm al-hisab*, the literal meaning being "the knowledge of accounting," mathematics; *'ilm al-nabāt*, "the knowledge of plants," botany;<sup>24</sup> and so forth.

In this connection, the tenth-century belletrist Ibn 'Abd Rabbihi devoted a whole book to knowledge and education in *al-Iqd al-farid* (*The Unique Necklace*).<sup>25</sup> No doubt, Ibn 'Abd Rabbihi reiterated an already established tradition among Eastern scholars concerning knowledge and education. He faithfully reproduced Muslim conceptions on the subject as they occurred in the *adab* works of his Eastern predecessors and contemporaries. He stressed the importance of knowledge, its usefulness, and its virtues; he exhorted people to pursue it; and he presented the reflections of his predecessors on its various aspects. He referred to leading scholars, their qualities

and prominent positions. He defines knowledge and education as "the pillars upon which rest the axis of religion and the world. They distinguish man from the beast, and the rational from the irrational being. They are the substance of the intellect, the lantern of the body, the light of the heart, and the pole of the soul. . . . The proof is that the intellect grasps the sciences in the same manner sight receives colors; and hearing receives sounds. Indeed, the intelligent person who is not taught anything is like not having intellect (*'aql*) at all. And if a child were not educated and taught to read and write he would be the most stupid of animals and the most wandering beast."<sup>26</sup>

Thus, knowledge is not only useful but indispensable for every man. Although the sciences are many, Muslims should interest themselves in all of them. Some sciences are indispensable for people who occupy certain positions. For instance, kings should know about genealogy and history; warriors about biography; and merchants about mathematics.<sup>27</sup> There are two types of knowledge: that of the body and that of religion.<sup>28</sup> He who pursues one discipline is called a scholar, and the one who pursues various disciplines is an educated man. However, blemishes may be found among the three kinds of people: those who seek religion through philosophy do not escape heresy, those who seek wealth through alchemy do not escape poverty, and those who seek rare traditions are not safe from lies.<sup>29</sup> All in all, knowledge serves as a distinctive mark among people who are either learned or grubs. It is for this reason that knowledge should be the aim of every individual for it is the best possession, as expressed in the admonition "Let knowledge be your possession and education your ornament."<sup>30</sup> The famous philologist al-Khalil Ibn Ahmad was asked, "Which is better, knowledge or wealth?" He said, "Knowledge." Then he was asked, "Why do scholars then gather at the doors of kings and not these at the doors of scholars?" He replied, "It is because scholars know the position of kings, but kings are ignorant of the position of scholars."<sup>31</sup> Finally, knowledge is acquired through education, which has five stages: the first stage is silence, the second listening, the third learning by heart, the fourth action, and the fifth dissemination.<sup>32</sup>

These conceptions held by Eastern scholars soon became known to Andalusians, and it was for Ibn 'Abd Rabbihi in the tenth century to articulate them in *al-Iqd al-farid*, which became one of the major tools in the educational system of al-Andalus. Thus, the Andalusians from the tenth century on were pondering knowledge and received further impetus from their Eastern

counterparts regarding its nature, nobility, and content.<sup>33</sup> The three great philosophers al-Kindi,<sup>34</sup> al-Fārābī,<sup>35</sup> and Ibn Sīnā,<sup>36</sup> the mathematician al-Khwārizmī,<sup>37</sup> and other Eastern scholars not only contemplated knowledge but attempted in the manner of the Greeks before them to classify the sciences in terms of their value, utility, and nobility. They were followed by Andalusians who did likewise. Three men of the eleventh century deserve mention. They are Ibn 'Abd al-Barr (d. 1071), Ibn Ḥazm (d. 1064), and Ṣā'id (d. 1070). Ibn 'Abd al-Barr was a religious scholar who wrote a work on knowledge and its excellence.<sup>38</sup> The work consists of a number of traditions attributed to the Prophet Muḥammad and his companions concerning knowledge and its virtue; its superiority over all pursuits, including piety; the need for seeking it; the relationship of teacher to pupil and that of scholar to ruler.

But the most comprehensive and articulate treatment of the subject of knowledge and sciences is contained in the works of Ibn Ḥazm, mainly in *Marātib al-'ulūm (Categories of the Sciences)*<sup>39</sup> and in *Kitāb al-akhlāq (Book of Conduct)*,<sup>40</sup> consisting of his admonitions and reflections on the good and virtuous life. In the latter, Ibn Ḥazm devoted to the sciences a chapter which began: "Even if knowledge did not have any purpose other than making the ignorant respect and honor you and the scholar esteem and do honor to you, it would suffice to pursue it."<sup>41</sup> He went on to inquire, How is it possible not to seek knowledge in the light of its many other advantages in this world and in the Hereafter? The anathema of ignorance causes harm both in this world and in the Hereafter. Ibn Ḥazm conceived knowledge as having a great utility for practicing virtue. Knowledge enables the individual to see the ugliness of vices and the manner of avoiding them.<sup>42</sup> He expressed his delight with scholars when he was ignorant and was taught by them, and when he became scholar and conversed with them.<sup>43</sup> Moreover, in wealth, social station, and health, one should compare himself with those who have less, but in religiosity, sciences, and virtue, one should compare himself with those who have more.<sup>44</sup> Knowledge ought to be disseminated, but its dissemination among untalented and inept people is not only a waste of time, but prejudicial as well,<sup>45</sup> for a great harm is done to the sciences by these intruders and inept people who pretend that they are scholars, but who actually are ignorant.<sup>46</sup> Those who aim at acquiring honors, wealth, and pleasure seek the company of people who, by virtue of their qualities, resemble angry dogs and shifty wolves.<sup>47</sup> However, he who is greedy with his knowledge is worse than one who is greedy with his material possessions. All in all, knowledge is associated with virtue, and ignorance with vices

— though he qualifies this statement by saying that he knew untutored people whose conduct was irreproachable, whereas that of some scholars was such as to make them the vilest and most corrupt people on earth.<sup>48</sup> This leads him to the conclusion that virtues are, after all, gifts from the Almighty, who bestows or denies them as He pleases.

These reflections of Ibn Ḥazm are for the most part reiterated in *Marātib al-'ulūm*, in which he reflects on the sciences, their actual worth, and the manner of pursuing them. The treatise is very important since it was the first work of its kind known in al-Andalus. It shed light on the sciences as conceived by a thinker who attempted to classify them according to their value, and to distinguish the spurious from the genuine sciences. It consisted of two major parts: the first dealing with the education of the individual, and the second with the division of the sciences according to an Islamic framework.

To Ibn Ḥazm, knowledge is beneficial to its seeker in this world and in the Hereafter as well.<sup>49</sup> However, "he who seeks knowledge in order to be boastful about it or to be praised or to acquire wealth and fame is far away from success, for his object is to ascertain something other than knowledge."<sup>50</sup> Acquiring knowledge is as much of a virtue as transmitting it,<sup>51</sup> from which follows the importance of the teacher and of books. He considers books to be the best tools for transmission. Contrary to the view that an abundance of books is harmful, he maintains that the more books there are the better.<sup>52</sup>

Ibn Ḥazm attaches a great importance to the religious sciences, or *Shar-i'ah*. After praising God, he describes Muḥammad as "the best of mankind and the purest of the descendants of Adam" and says that Muḥammad "was sent to guide and save his followers from the darkness of unbelief and blind ignorance [and bring them] to the light of knowledge."<sup>53</sup> He continues that the Almighty God preferred man to all his other creatures and distinguished him with freedom to pursue the sciences and the crafts. In consequence, it is incumbent upon the individual neither to squander nor to neglect this gift but to use and discharge it to the fullest extent. Reflecting back on history, Ibn Ḥazm sees that the sciences and conditions differ from time to time and from place to place. The ancients had sciences which they transmitted to posterity. Some of these survived and others disappeared, leaving no trace except in name. There are blameworthy sciences such as music, melody, sorcery, magic, and alchemy, whose claimants are swindlers, liars, and insolent. For instance, the alchemist, who intends to convert copper

into gold, or vice versa, is like converting a man into a donkey or a donkey into a man. Such a pursuit cannot be called a science. On the other hand, there are legitimate, useful sciences which should be pursued gradually, starting with those having immediate bearing on this world and ending with those pertaining to the Hereafter. This is so because this world is a temporary abode and the sciences concerning it are utilitarian, aiming at the acquisition of wealth and the preservation of health. These limited and narrow objectives are easy to obtain, and occupation with them is both troublesome and devious. Their pursuers confront the thorniest road in acquiring them and use a supreme quality, reason, for acquiring a stone without knowing when it is going to leave them, or vice versa. They are like the person who made a beautiful sword but used it for cutting bones and grass; or they resemble the one who built a mansion and used it for depositing waste! All in all, the pursuit of the sciences for personal gains in this world is of little benefit, although it may appear that the conditions of these seekers is more respectable than scholars'. He remarks, "We ask God's help and may He protect us from desertion."<sup>54</sup>

On the other hand, Ibn Ḥazm conceives that the best sciences are those which lead to eternal salvation. The student of these sciences, unlike the one pursuing sciences aimed at worldly gains, is amply rewarded. He gives little but receives much in return; that is, he labors little and receives the tranquility of an eternal life.

After stating the two main objectives of the sciences, Ibn Ḥazm passes on to show the manner of attaining them, the extent to which they should be pursued, and a classification of those possessing supreme qualities and values and those not possessing them. He says that any intelligent person is fully aware that he cannot attain the sciences without searching, and that searching requires hearing, reading, and writing.

As a result, a child should be entrusted to a teacher by the time he is about five years old, or when he is able to understand and communicate. At this stage, he should be taught how to write legibly and spell correctly. Anything beyond this, such as an emphasis on the aesthetic value of writing, is superfluous and wastes time. Here Ibn Ḥazm seems to have little or no appreciation for the art of calligraphy. This art, in his opinion, would not serve any constructive purpose except as a pretext to attach oneself to the court of a ruler, thereby wasting a whole life "in the shadow of people drafting documents with false items and lies."<sup>55</sup> Here, as in other instances, Ibn Ḥazm shows his contempt for rulers and, most probably, for the rulers

of his day. At any rate, he compares the expert in decorative and intricate writing with the person who secures a lot of musk for charming the soul but instead uses it to delight the beasts or spills it wastefully on the road.

As for reading, the student should acquire proficiency such as to enable him to read any book that should fall in his hand. Of course, he should begin with the Qur'ān, which will serve both as a drill in recitation and as a meritorious obligation.

Next come grammar and lexicography, which should be studied until one grasps the structure and morphology of the language and the meaning of most frequently used words and expressions. Anything beyond the material contained in some standard grammar or *The Book of Sibawayhi* is rather useless since the time spent in such pursuits could be put to a better use. The same is true of the study of lexicography, which could stop after acquainting oneself with the lexicons of Abū 'Ubayd<sup>56</sup> and of al-Zubaydi.<sup>57</sup>

To reinforce grammatical and lexical studies, Ibn Ḥazm suggests with great reluctance the study of poetry, but only poetry containing counsels and good examples. He was fully aware of the strong attachment the Andalusians had for poetry and suspected he would be criticized severely for his stringent limitations. He defends his position by calling attention to his knowledge in the field and his contribution to the art of versification. Though fully aware of its merits, he strongly feels that poetry is not good material for educating the young, since most of it is not edifying but instead adversely affects the individual. The poetical forms that should be avoided are: (1) love poetry (*ghazal*), which provokes fervent longings, invites temptations, incites youth, turns the soul to dissipation and pleasure, and leads to deceit, passion, corruption of religious sentiments, extravagant spending, and other objectionable pursuits; (2) poetry of separation (*tagharrub*) and description of deserts which encourages abandonment of dwellings and has other adverse effects; (3) poetry connected with destitution and wars which agitates the soul and leads to destruction and crimes, and other abominable actions; (4) satirical poetry (*hijā'*), which is the vilest of all since it leads the individual to the company of insolent people, dope addicts, and street sweepers; in addition, it aims at tearing people's honor to pieces, and at indulging in imperfections and defilements; and (5) panegyrics (*madh*) and eulogy (*rithā'*) which may be licit but are distasteful since they tend to exaggerate, distort, and falsify.

After studying writing, reading, grammar, lexicography, and selected poetry, the student should pass on to study the science of numbers (*'ilm*

*al-'adad*). He should master addition, subtraction, multiplication, division, fractions, and plane geometry (*masāḥah*). Then he should take arithmetic, which is the science of the nature of number ('*ilm tabi'at al-'adad*). He should read and grasp Euclid's work, which will gain him knowledge about the earth and its surface, about the celestial bodies, their positions, distances, and so forth. He should also read Ptolemy's *Almagest*, which teaches him about the eclipses, the width and length of countries, the duration of day and night, the rising tide, the rise and setting of the sun, moon, and the bright stars.

At this point, Ibn Ḥazm interjects his thought on the supposed influence of the stars on people. He says that such an influence defies experimentation or proof. Thus, the belief that the stars can change the course of things is absurd since "there is no way of changing the species or eliminating the nature of things."<sup>58</sup> Such pursuits are unscientific, and those who occupy themselves in them are outcasts who look for something which they will never find. He further refutes the validity of astrology by saying that if kingdoms fall, it is because of wars, raids, poor conditions, corruption, and similar factors, and not because of the influence of the stars.

At this stage, the individual should take up logic and the science of the species ('*ilm al-ajnās*) and related subjects in order to get at proofs (*burhān*) and contentions (*shaghab*). It is by means of logic that the individual is able to learn the truth and distinguish it from falsehood and to understand the natural sciences, atmospheric conditions, the composition of the elements, animals, plants, minerals, and medicine. Of course, he should not neglect the history (*akhbār*) of ancient and contemporary people; he should learn about their decline, destruction, and the causes of these processes, and he should study people of virtue in order to imitate them. All these are useful and teach things leading in turn to the knowledge of their Maker.

The scholar should also seek proof whether or not the world is created, and if so, he should inquire whether it has a creator. Once this answer is obtained, he should inquire further whether the creator is one or more than one. Then, he should ponder whether or not prophecy is possible. He should find out that it is possible and within the will of God. This will lead to the confirmation of Muḥammad's prophecy as attested in the Qur'ān, which contains God's covenants.

This brings Ibn Ḥazm to the most important subject which an individual should pursue: the religious law (*shari'ah*). He who neglects its study in preference to something else not only errs, but does great injustice to himself,

for he "espouses the base and less useful pursuits for the loftiest and most useful."<sup>59</sup>

After a digression on the virtue of teaching, the true objective of knowledge, the evil company of the sultan, and the usefulness of books, he divides the sciences into seven groups which are, he says, universal among all peoples. The first three (law, history, and language) distinguish one nation from another, whereas the remaining four (astronomy, number, medicine, and philosophy) are common to all people.

After stating that the religious law (*shari'ah*) is the only true law, he recognizes its main components which constitute the following discipline:

1. Religious law (*shari'ah*)
  - a. Qur'ān: reading and meaning (*ma'na*)
  - b. Prophetic Traditions (*ḥadīth*): texts (*matn*) and chain of transmitters (*ruwāt*)
  - c. Jurisprudence (*fiqh*): Qur'ānic ordinance, *ḥadīth* ordinance, consensus (*ijmā'*)
  - d. Theology (*kalām*)
2. Language
  - a. Grammar
  - b. Lexicography
3. History
  - a. Dynastic (*mamālik*)
  - b. Annalistic
  - c. Countries
  - d. Categories (*ṭabaqāt*)
  - e. Genealogy
4. Astronomy
5. Numbers: Ascertaining their rules and then their proofs
6. Logic, rational or metaphysical and sensory
7. Medicine: Spiritual medicine and corporeal medicine

Perhaps as an afterthought he adds poetry, rhetoric (*balāgha*), and idioms ('*ilm al-ibārah*). He argues that anything which is known can be called knowledge (*fa kull mā 'ulima fa huwa 'ilm*) and thus commerce, construction, tailoring, weaving, shipbuilding, agriculture, horticulture, and the like can be called science ('*ilm*). But these are limited to this world for gaining a livelihood.

Ibn Ḥazm makes other recommendations to students, and he concludes with reflections on the interrelationship of the various disciplines and with criticisms of those persons not meeting the standards of good and wholesome

education. The latter would include those who have little knowledge yet make pretence of knowing it all or those who have a specialized knowledge and frown on the rest of the sciences. It is worthwhile to scrutinize his views in some detail. He cautions that a person should not attribute fault to what he does not know, for this would prove his shortcoming; nor should he be conceited in what he knows, or his virtue may become obliterated; nor should he be envious of those more knowledgeable than he or look down on those who are less knowledgeable; nor should he talk about a science without knowledge of it or use his knowledge for worldly gain alone.

Ibn Ḥazm reiterates his initial points and states that all the sciences are connected and none can dispense with the others, for "pursuing the sciences aims at learning the knowledge of what the Almighty God had wished for us"<sup>60</sup> — which, in the final account, is knowledge of the religious law, its promulgation, and conformity with it. Therefore, one cannot reach true knowledge without knowing God's ordinances as revealed in the Qur'ān, and knowing what Muḥammad and his companions commanded us to do. Consequently, reading the Qur'ān becomes imperative. However, such reading could not be possible without a knowledge of Arabic lexicography and grammar. Also, true knowledge requires some knowledge of poetry; the knowledge of genealogy to determine who is eligible for the caliphate; arithmetic to determine the position of the *Qiblah*; the knowledge of astronomy (*hay'ah*), theology, and medicine for determining defects, diseases, and their cure; writing, rhetoric, and even astrology so that one can distinguish between right and wrong.

However, if the individual is not able to master all of the sciences, it becomes necessary for him to have a smattering of each one, however small this may be. Ibn Ḥazm argues for a general and integrated education in all the sciences by comparing the outcome to the construction of a building which requires the participation and interdependence of many skillful hands. He also points to the interdependence of the disciplines by indicating the need of man to live and participate with his fellows, with whom he exchanges knowledge. A man will perform the noblest task when he is able to teach the religious disciplines. In consequence, Ibn Ḥazm cautions against those who have some knowledge and who are basically ignorant but who claim erudition. He also reproaches the specialist who downgrades all the sciences except his specialty; as an example he mentions the religious scholars who frown on the secular sciences when actually they should know them for the performance of their religious tasks. For instance, the knowledge of

the Qur'ān is not sufficient without a knowledge of Prophetic Traditions and related disciplines and without the knowledge of language, medicine, and other disciplines. Thus, if the religious scholar intends to make a legal decision without the knowledge of the various sciences, he would be like a donkey which cannot distinguish right from wrong. Similarly, there are those who boast knowledge of the various sciences, yet they neglect the most important of these, that is, the *shari'ah*, without which life in this world and in the Hereafter is meaningless. He concludes: "It does not follow that we wish to take away anything from these sciences. God forbid — for if we did, we would enter the company of those whom we are criticizing and we would have embarked upon despicable belief. But he who aims at a short cut for attaining a science will do violence to and belittle the rest of the sciences. If a person is unable to pursue all the sciences and to recognize their merit, he is still charitable, laudable, and virtuous, for he cannot be blamed for what the Almighty God did not make available to him. In the same manner, he who studies what he needs from all the sciences, and uses his knowledge as he should, is the most virtuous person because he has attained nobility of soul conducive to enrichment in this world and bliss in the Hereafter. He has rescued himself from the circle of the ignorant people and those who make use of the sciences for utilitarian purposes."<sup>61</sup>

Ibn Ḥazm could find justification for his views concerning the pursuit of knowledge and its dissemination in the Prophetic Traditions. The religious scholar Ibn Khayr in his *Faḥrasah*<sup>62</sup> includes a number of traditions concerning knowledge, its pursuits, and its dissemination. The following traditions are revealing:

There is nothing greater in the eye of God than a man who learned a science (*ta'allama 'ilman*) and who taught it to people.<sup>63</sup>

A Muslim cannot bestow on his brother a better gift than a word of wisdom. If the brother hears, grasps, and then transmits it, God will guide him, and divert him from evil, since the word of wisdom leads to the uplifting of the soul.<sup>64</sup>

The bearers of knowledge (*ḥamlah*) are the successors of the prophets in this world and martyrs in the Hereafter.<sup>65</sup>

Scholars and teachers are partners in reward, and there is no better people than they.<sup>66</sup>

The knowledge that is not used is like a treasure from which nothing is spent. Its possessor labored in collecting it, but never benefited from it.<sup>67</sup>

And if God directs you to one single man [who is learned], it is better for you than the whole world and all in it.<sup>68</sup>



The exaltation of knowledge and its acquisition among the Muslims may account, no doubt, for the abundant literary activities in al-Andalus. These activities also contributed to the belief that knowledge, or the possession of erudition in the sciences, constituted a mark of distinction among the several peoples of the world and an index for determining the degree of their civilization. Arabic authors referred to various peoples as civilized or barbarian on the basis of what they possessed or lacked of knowledge. This tendency is conveyed quite clearly by the eleventh-century Šā'id in his *Ṭabaqāt al-umam (The Categories of Nations)*.<sup>69</sup> Abū Qāsim Šā'id Ibn Aḥmad was born in 1029 in Almería, and became a judge in Toledo, where he died in 1070. In addition to his *Ṭabaqāt*, he wrote a universal history, a history of al-Andalus, and a work on astronomy, in which he had a keen interest.

It is particularly interesting to note that Šā'id, unlike Ibn Ḥazm and Ibn Khayr, is more inclined to the speculative and the natural sciences — mainly philosophy and astronomy — than to the linguistic and religious sciences. This tendency is evident in his *Ṭabaqāt*. Moreover, Šā'id does not, like Ibn Ḥazm, attempt to exalt one science over another or to imply that the acquisition of the religious sciences constitutes the culmination of knowledge. On the contrary, the *Ṭabaqāt* has a plan and a specific theme to show the extent of the sciences among the various people from antiquity to his own time. Thus, the work offers a cultural history of the various peoples with reference to their governments, geographic position, customs, religions, and more important, to the sciences and their leading representatives. The *Ṭabaqāt* is important in two main respects: first, it gives an insight into the origin and cultivation of the sciences as they were known by the Andalusians of the eleventh century, and second, it enables us to gauge the extent of their cultivation and appreciation on Andalusian soil.

Šā'id distinguishes seven groups of people — Persians, Chaldean-Assyrian-Babylonians, Greco-Romans, Copts, Turks, Indians, and Chinese — all of whom differ mainly in language, history, and religion.<sup>70</sup> He then places people into two main categories: those who have cultivated the sciences and those who neither possessed nor cultivated them.

Those who did not interest themselves in the sciences are the Chinese, Turks, Khazars, Slavs, Russians, Berbers, Sudanese, Negroes, and other related groups.<sup>71</sup> Although the Chinese excel in the practical crafts (*al-ṣanā'i' al-'amaliyyah*) and the Turks in the art of war, they all to some degree resemble beasts more than human beings; all are victims of geographic

accident, either by extreme cold or heat. He compares Chinese craftsmanship with that of the bees and ants and Turkish military dexterity with the lion's prowess. In both instances, the characteristics are more animal than human.

Those who interest themselves in the sciences are the Indians, Persians, Chaldeans, Greeks, Romans, Egyptians, Arabs, and Jews. He devotes a section to each of these and describes them as "The quintessence (*ṣafwah*) of God's creation and the humblest of His servants because they directed their attention to attaining the virtues of the active and rational soul (*fadā'il al-nafs al-nātiqah al-ṣāni'ah*) which is characteristic of the human specie."<sup>72</sup> He adds, "Scholars (*aḥl al-'ilm*) were the lamps of darkness and the banners of guidance, the lords of people, and the choicest of nations, who understood what the Almighty expected of them and knew the objective assigned for them."<sup>73</sup>

He devotes ample space to those people who interested themselves in the sciences. Following are some of the salient points of his evaluation:

India is called "the pasture of Wisdom" because of its devotion to the sciences and because it is "the treasure-trove of wisdom and the fountain of justice and political management (*siyāsah*)."<sup>74</sup> In spite of the fact that its people were nearly black, they were devoted to mathematics, geometry, astronomy, virtuous conduct, and perfect government.<sup>75</sup> Moreover, they are the most knowledgeable in medicine and the most discerning in determining the effects of drugs.<sup>76</sup> The Arabs are indebted to them in these disciplines, and owe them the famous book of fables, *Kalīlah wa-Dinnah*.<sup>77</sup>

Persia,<sup>78</sup> "the King of Kings," is famed for its long and orderly duration of government with an excellent administration and for knowledge of medicine and astronomy.

The Chaldeans<sup>79</sup> excelled in mathematics, metaphysics, and astronomy. Hermes was the most renowned and venerable of their scholars in the field of astronomy.

The Greeks<sup>80</sup> had the richest language; their scholars are called "philosophers," who "occupy the loftiest position and are most highly regarded among scholars for their genuine interest in the various aspects of wisdom pertaining to the sciences of mathematics, logic, the natural sciences, metaphysics, and domestic and city management."<sup>81</sup> They had Empedocles, Pythagoras, Socrates, Plato, Aristotle, Apollinus, Euclid, and Ptolemy, who greatly influenced Muslim scholars such as al-Rāzi, al-Fārābī, and al-Kindī.

The Romans<sup>82</sup> appear to be the intermediary between the Greeks and the Muslims through the Syriac-speaking people who transmitted Greek lore

into Arabic. Those "Romans" include the Bakhtishū' family, Hunayn Ibn Ishāq, Thābit Ibn Qurrah, and others, who were translators and also physicians and authors of books on the various sciences.

The Egyptians<sup>83</sup> had a great culture, as attested by their monuments and temples which are unequalled anywhere.<sup>84</sup> Their early knowledge in medicine and astronomy is traced again to a "Hermes" who built the pyramids and temples against the forthcoming flood. Afterward, the Egyptians cultivated philosophy, mathematics, the natural sciences, talisman, and chemistry.

The Arabs<sup>85</sup> are treated in greater detail. In fact, he devotes more than half of the *Ṭabaqāt* to them, taking into consideration three main periods by regions: pre-Islamic times,<sup>86</sup> Islamic times,<sup>87</sup> and al-Andalus.<sup>88</sup>

Among the pre-Islamic Arabs, there are those who did not leave any traces of knowledge and those who did. Among the latter are the Southerners, or Qahtānites, who left a great legacy and who include the Ḥimyārites, Lakhmids, and others. The Northerners, on the other hand, were sedentary people, cultivators and merchants who did not possess any scholar to speak of. Others were simply Bedouins. He observes that the Arabs did not have any gift for philosophy and to the best of his knowledge no one excelled in it in pre-Islamic or Islamic times except al-Kindī, who was generally known as the "philosopher of the Arabs."<sup>89</sup> However, the Arabs took pride in their language, poetry, oratory, stories, and legends.

At the time of the emergence of Muḥammad, the Arabs were disorganized, having only their customary laws and some notion of medicine. Muḥammad led them to believe in God. Muḥammad's successors established a great empire, through which they came into contact with many peoples. Šā'id believes that the Umayyads of Damascus (661-750) did not improve the situation much with regard to the sciences.<sup>90</sup> It was only with the coming of the 'Abbāsids (750-1258), particularly with the emergence of the second caliph al-Manšūr (754-775), that interest in philosophy and astronomy was given impetus by the rulers. This interest continued unabated, reaching its apogee with the caliph al-Ma'mūn (813-833), who "sought knowledge of the various subjects and brought it from its hiding place."<sup>91</sup> He got from the Byzantines the works of Plato, Aristotle, Galen, Euclid, Ptolemy, and others and committed them into Arabic. The process of translation led to the cultivation of the philosophical and natural sciences; there was al-Kindī and his pupil al-Sarakhsī, who wrote numerous works on the various sciences; al-Rāzī was a physician, logician, and philosopher; and al-Fārābī was known

as "the philosopher of the Muslims." In addition to these celebrities (*mashāhīr*), who had a wide range of knowledge, a large number excelled in a particular discipline. There were the Banū Shākīr—Mūsā and his sons Muḥammad, Aḥmad, and Ḥusayn — who excelled in astronomy, a subject that was pursued by many others.<sup>92</sup>

After he mentions a large number of Iraqīs, Syrians, and Egyptians who excelled in the various sciences, Šā'id then passes on to his homeland, al-Andalus.<sup>93</sup>

Except for the language and law, al-Andalus did not possess any science before the coming of the Arabs, according to Šā'id. It was only after the coming of the Muslims that al-Andalus began to cultivate the various sciences. He describes their dramatic development, reaching an apogee under al-Ḥakam II, whose great library contained books about all the sciences. Al-Ḥakam II was known for collecting books on philosophy, mathematics, and astronomy. Ibn Abī 'Amir, the ambitious general and chamberlain, purged them and committed many to the fire. This notwithstanding, the intellectual life continued, and a great number of mathematicians, astronomers, physicians, and philosophers appeared.

Šā'id concludes his book with the Jews.<sup>94</sup> He says that the Jews did not have any philosophy, but their main concern was with religious law and biographies of prophets. They are "the people of prophecy and the recipients of Revelation from among the descendants of Adam";<sup>95</sup> they possessed an exact system of calculating legal transactions and of figuring the lunar calendar. They inhabited a portion of Syria but were exiled all over the world under the Romans. It was in the various countries of exile, mainly in the Muslim world, that some of them interested themselves in the sciences and served Muslim rulers.

Finally, one can hardly omit Ibn Khaldūn's long discussion of the sciences in his valuable *al-Muqaddimah*.<sup>96</sup> Here Ibn Khaldūn devotes an ample space to man's ability to think, learn, and cultivate the various sciences — Qur'anic studies, Prophetic Traditions, jurisprudence and its subdivisions, theology, Sufism, dream interpretation, mathematics and geometry, astronomy, logic, physics, medicine, agriculture, metaphysics, sorcery and talisman, the secrets of letters, and alchemy. He surveys all these sciences and refutes some such as astrology and alchemy as being both spurious and harmful. Some of Ibn Khaldūn's reflections on the manner of and the tools for acquiring the sciences are quite incisive and interesting. For instance, he believes that severity to students is extremely harmful<sup>97</sup> and that travelling in quest of

knowledge will enhance enormously the education of a scholar.<sup>98</sup> Unlike Ibn Ḥazm<sup>99</sup> Ibn Khaldūn contended that a superabundance of books constitutes a major obstacle to attaining sound scholarship. The student would have to familiarize himself with all of them and the various methods used therein. This would be impossible, since the student's lifetime would not suffice to know all the literature in a single discipline, let alone in the various fields.<sup>100</sup>

Ibn Khaldūn's statement was no doubt influenced by the existence of an abundant and overwhelming literature in the Arabic language, most of which comprised compendia, commentaries, and commentaries on commentaries. At any rate, it is evident from the previous paragraphs that the Andalusians had a high regard for knowledge and attempted to pursue and disseminate it to the fullest extent. The search for education did not know any boundaries. Ordinarily, elementary education consisting of memorizing the Qur'ān, reading, and writing began at home and was given by the parents of the child or by a tutor. It might continue there depending on the educational level of the parents or their affluence. Also, the student was able to seek his education at the mosque, which was the main educational center. There he would receive his training in the Qur'ān, Prophetic Traditions, jurisprudence, grammar, lexicography, and other related subjects. This training could be received at all levels and under seasoned teachers who often were renowned authorities in this or that discipline.

Both Ibn Ḥazm and Ibn Khayr<sup>101</sup> give us a good idea of the content of the curriculum and of the ways and the manner of acquiring an education. Scholars travelled far and wide in search of knowledge; they sought the great authorities wherever these may have been, in Cordova, Seville, or Saragossa, or in the East in cities such as Qayrawān, Alexandria, Kūfah, Baṣrah, or Baghdād. They came into contact with leading teachers and intellectuals and received diplomas (*ijazah*) from them upon the completion of a certain work or works. Once in full command of their subject, they became teachers (*mudarrisūn* or *mu'addibūn*), and were respected and in great demand at the court of rulers and in the homes of notables. They were often self-employed. There are references to the effect that teachers conducted classes at home and some of them had dozens of students. Aḥmad Ibn Sa'īd al-Anṣārī (d. 403/1012), a professor (*shaykh*) of Toledo used to have as many as forty students in his home, which was comfortably furnished and heated during the winter. At mealtime, students were served olives, meat, yoghurt, and sweets.<sup>102</sup>

Seeking training under a particular professor offered the advantage of getting the type of education or specialty the student wanted. For instance, the teaching of philosophy and the natural sciences was not favored by the religious scholars, and it was left for the student to pursue such subjects under scholars who seem to have conducted their classes in a clandestine manner. As a result, al-Andalus produced a good number of scholars in those disciplines.

Scholars, rulers, and notables had salons or literary clubs (*majālis*, sing. *majlis*)<sup>103</sup> in their homes which were attended by select people. Literary debates pertaining to grammar, lexicography, poetry, religion, law, and other topics took place. Often the host presided over those debates and supplied food and entertainment afterward. Bookshops also served as a meeting place for leading scholars who conducted spirited discussions on almost every conceivable subject.

By and large, rulers were men of culture, encouraged learning, and took pride in having the best talents at their court. Moreover, they established a great number of libraries and vied for the honor of having the best collection of books.<sup>104</sup> Their agents brought them books from distant places, and scribes copied books which were not readily available. They sponsored the establishment of a number of schools as to make education available for all. All in all, libraries — public and private — were the hallmark of culture and a source of pride even for those who did not have much interest in books.<sup>105</sup>