

Islamic Jurisprudence and Environmental Planning

OTHMAN ABD AR-RAHMAN LLEWELLYN*

Introduction

Throughout the history of Islamic civilization, Muslim jurists have derived from the Qur'an and the practice of the Prophet Muhammad, on whom be blessings and peace, laws applicable to all aspects of the Islamic society, including environmental planning. By environmental planning is meant all planning pertaining to the use of land and water, plants and animals: including range, wildlife, and watershed management, soil and crop management, forestry, regional planning, and landscape architecture.

This paper is written in the belief that Muslim jurists shall again formulate laws pertaining to these, as well as other aspects of planning and administration. In the meantime, however, since the Muslim planning process has been in abeyance and the Islamic land use has been replaced by European models, present day Muslim planners may not generally be aware of the Islamic laws and values pertaining to their field. The paper is therefore addressed primarily to Muslims involved in planning and administration. The purpose is to outline some important aspects of Islamic legal methodology in the context of their field, and to suggest an Islamic approach to the use of land, water, vegetation, and animals.

It must be emphasized that Islamic law is value-centered. Unlike Positivist Law, which denies ethical or ideological content to legislation and which remains an overriding influence in Western legal systems - expressed in statements such as "you can not legislate morality" - Islamic law is unequivocally value-centered. Ethics and laws are not strictly differentiated in Islam, and all rulings of the *Shari`ah* concerning social transaction aim at realizing certain divinely ordained value goals. For an Islamic civilization, then, the purpose of all planning must be to realize the ultimate objectives of Islamic law (*maqasid al-Shari`ah*).

* Othman A. Llewellyn is a Researcher in the Haj Research Centre, Ummul Qura University, Makkah al-Mukarramah, Saudi Arabia.

Traditionally, in Islamic society, clear religious directives and shared religious values comprised a framework for the use of the land and its resources. There was little need for formal planning. State intervention was rare and generally related to specific institutions such as reserves for livestock and wildlife, land grants, and the construction and maintenance of major roads, waterworks and waterways. However, under conditions of rapid expansion, new technology, and the intrusion of alien influences, the traditional framework has been weakened and largely replaced by more centralized planning. The results have generally not been favourable. There is need now to reestablish the traditional framework, and to produce genuinely Islamic planners for areas where planning is required.

Because the role of planning in administration has vastly expanded in recent times, the subject is not fully developed in Islamic legal literature; it is incumbent on present and future jurists to extend legal thought (*fiqh*) to cover new problems. Adherence to the details of the *fiqh* worked out by jurists of the past can sometimes lead to formalistic and impractical solutions which are in fact unworthy of those jurists. With different, more effective technologies, the nature of problems differs from those addressed by the earlier jurists. For example, fixing at a radius of twenty five or forty cubics or the length of the well's rope (as did some schools), the inviolate zone (*harim*) around a well, which protects the well and the aquifer and provides animals a place to rest, is appropriate for small dug wells, but in the case of contemporary pumped wells, such a measurement beats no relation to the purpose of *harim* (Husaini, pp.79-80). But if the 'traditionalist' scholars have been too rigid, the methods of the 'modernists' or 'reformists' have been worse. Selecting the most appropriate legal rulings from different schools of law (the processes of *takhayur* and *talfiq*) is not an adequate remedy; for this is a patchwork approach with no coherent methodology. Furthermore, it comes from an interest only in the ruling desired, without concern for the strength of the evidence upon which it is based. The use of legal fictions (*hiyal*) to evade rulings inappropriate to present needs is unacceptable, for this amounts to an attempt to transfer the value of one act to another, without regard to the purposes of the acts as intended by Divine Lawgiver⁽¹⁾. And if jurists seek means to bend the *Shari'ah* to make it fit the latest ideas and practices of the West, as these 'reformists' tend to do, they risk losing their credibility with Muslims.

The most positive and practical approach to extending legal thought to cover new problems is to concentrate on the ultimate purposes or objectives of the *Shari'ah*, the science of which was developed by al-Shatibi, Ibn Qayyim al-Jawziyah, and others⁽²⁾. It is particularly crucial that these objectives never be violated in a time of change when laws are being revised. Uncompromising firmness in fundamental values maintains integrity in the details of application, whereas rigidity in detail may sometimes obscure and negate the fundamental values. To return to the example of a modern pumped well's *harim*, since its purpose is to protect the well and the aquifer and to prove a resting and watering area for livestock, its extent may be best determined in accordance with local hydrological conditions and the needs of livestock and humans (Husaini, pp. 79-80). The science of

1. Masud, pp. 279-280, 284-285, 288 with ref. to al-Shatibi; Mahmassani, Subhi, *Falsafat al-Tashri' fi al-Islam*: The Philosophy of Jurisprudence in Islam, pp.123-126.

2. See 'Abd-Allah, pp. v-vi, 364 (footnotes); Masud, pp.164-165, 317-322. Other prominent jurists who examined the ultimate objectives of the *Shari'ah* include 'Izz al-Din ibn 'Abd al-Salam (d.660h/1263c), Shihab al-Din Ahmad ibn Idris al-Qarafi (d. 684h/1285c), and Taqi al-Din Ahmad ibn 'Abd al-Halim ibn Taymiyah (d.728h/1328c). See Mahmassani, *Falsafat...*, p. 105m 'Abd Allah, pp. vi, 52 (footnotes).

maqasid al-Shari'ah is the basis of an integrative or systemic approach to Islamic values, and involves distinguishing between universal goals and principles on the one hand, and instrumental goals and specific applications on the other, so as to define the hierarchy of values in Islamic law⁽³⁾.

1. *Maqasid Al-Shari'ah: The Objectives of The Shari'ah*

Jurists have defined the fundamental purpose of the *Shari'ah* as the welfare (*maslahah*) of Allah's creatures⁽⁴⁾.

Ibrahim ibn Musa al-Shatibi discussed the Qur'anic basis for the principle of *maslahah*, and the inductive reasoning by which it is discovered⁽⁵⁾.

The Qur'anic verses 4:165; 21:107; 11:7; 67:2; 2:195; 4:36; 16:90; 18:7; 28:77; 29:69 and 39:10 clearly indicate that the Islamic ethic draws no limit either to the number and kinds of creatures that the Muslim is required to benefit by his good works, or to the extent of the good that he or she is required to do them. This is further emphasized in *ahadith* or reports of the actions, sayings and approvals of the Prophet Muhammad, on whom be blessings and peace, such as the following:

Created beings are the dependents of Allah, so the creature dearest to Allah is he who does most good to Allah's dependents⁽⁶⁾.

The merciful are shown mercy by the Allah-Merciful. Show mercy to those on earth, and He in Heaven will show mercy to you⁽⁷⁾.

Allah, be He blessed and exalted, has prescribed goodness toward everything⁽⁸⁾.

3. Al-Shatibi, d.790h/1388c, vol.2, pp. 6/53; Masud, pp.225-236, 288; Husaini, pp.8, 82-83; `Abd Allah, pp. vi, footnote. All rulings of the *Shari'ah* and public goods are hierarchically ordered as absolute necessities (*daruriyat*), including religion and morality, life, reason, posterity and property; needs (*hajiyat*); and refinements which beautify life and perfect ethics and honour (*tahsiniyat*).

4. Al-Shatibi, *Al-Muwaqat*, vol.2, pp.331-333; also see vol.2, pp.127-129, 196-202; Masud, pp.256, 265, 269, 279, 319-320. See Anderson, pp.1-16. The principle of *maslahah* may be considered an integral principle that unifies the *Shari'ah*, provides stability and gives direction to legal judgements. See Masud, p.322. Despite philosophical differences regarding the ability of human reason to comprehend the benefits or *masalih* under lying divine commands and prohibitions or to discover *masalih* which are not contained in texts and analogical rulings, jurists are agreed that the commandments of the All-Merciful constitute *maslahah* or welfare of His creatures. See also Shams al-Din Abi `Abd Allah Muhammad ibn Abu Bakr, known as Ibn Qayyim al-Jawziyah d.751h/1350c., *Ilam al-Muwaqqa 'in 'an Rabb al-Alamin*, ed., Muhammad Muhiy al-Din `Abd al-Hamid, Dar al-Fikr, Beirut, 1374h/1955c., vol.3, pp.14-15; also see Izz al-Din ibn `Abd al-Salam, d.660h/1263c., *Qawa'id al-Ahkam fi Masalih al-An'am*, Dar al-Kutub al-Ilmiyah, Beirut, n.d., p.62 (also see ref. to Ibn `Abd al-Salam in Ramadan, P.87) Husaini, pp.82-83, 144-145 and p.99, ref. to Ibn Khaldun, d.784h/1382c. *The Muqaddimah: An Introduction to History*, vol.1, pp.385-388; vol.2, pp.137-139, 300; to Rabi, Muhammad M., *The Political Theory of Ibn Khaldun*, E.J. Brill, Leiden, 1967, pp.29-113, 127-136 and to Mahdi, Muhsin, *Ibn Khaldun's Philosophy of History*, George Allen and Unwin Ltd., London, 1957, pp.236-248, 263, 267-276, 280-284.

5. Al-Shatibi, *al-Muwaqat*, vol.2, pp. 6-8; on the effective causes (*ilal*) of specific rulings, see also Ibn Qayyim al-Jawziyah, Vol.1, p. 197ff.

6. *Mishkat al-Masabih*, compiled by Wali al-Din Muhammad ibn `Abd Allah al Khatib al-Tabrizi in 737h/1337c. al-Maktab al-Islami li'l Tiba'ah wa'l-Nashr, 1380- 2h/1961-2c., Vol.2, p.613, nos. 4998, 4999; transmitted by Abu Bakr Ahmad ibn al-Husayn al-Bayhaqi, d.458h/1066c. in *Shu'ab al-iman*, on the authority of Anas ibn Malik and `Abd Allah ibn Mas'ud; see also al-Bayhaqi, Kitab al-Iman, *Shu'ab al-Iman. Faid al-Qadir*. vol.3, p.505, cited in Abdul Latif, Syed, *The Mind at Qur'an Builds*, Hyderabad, India 1971, p.16. A similar *hadith* is transmitted by Abul Qasim Sulayman ibn Ahmad al-Tabarani in al-Mujam, on the authority of Anas ibn Malik; and by al-Shihab in his *Musnad*, on the authority of `Abd Allah ibn `Abbas cited in Ramadan, p.63.

7. *Mishkat al-Masabih*, vol.2, p.608, no.4969; transmitted by Abu Dawud Sulayman ibn al-Ash'ath Muhammad ibn `Isa al-Tirmidhi, on the authority of `Abd Allah ibn `Amr.

8. *Mishkat al-Masabih*, vol.2, p.424, no.4969; transmitted by Muslim ibn al-Hajjaj al Qushayri, on the authority of Shaddad ibn Aus.

The ultimate purpose of the *Shari'ah* is thus the universal common good, the welfare of the entire creation (*masalih al-khalqi kaffatan*)⁽⁹⁾. This means that all of the measurable effects of an action both immediate and ultimate, on all beings must be weighed by the planner, designer or administrator, to maximize benefit and minimize harm to the totality. For every atom's weight of good and every atom's weight of harm that has resulted from his actions will be weighed on the Day of Judgement. (Qur'an, 99:7-8; 45:15; 53:31) Not a single creature, present or future, may be excluded from consideration in deciding a course of action, and the maximum possible net benefit to the totality must be striven for⁽¹⁰⁾.

The Objectives of the *Shari'ah* and Environmental Planning

An Islamic philosophy of the use of land and water, plants and animals, may be described in light of the objectives of Islamic law. All creatures are sustained by one *Rabb* or Lord and Sustainer, and He has created them in measure and proportion and has ordered and balanced them so as to sustain them by means of each other. Nothing is created without value and purpose. The purpose of each creature is to serve the Sustainer of all by filling its ordained role, thereby contributing to the cosmic design and purpose, to the welfare of the totality. All beings are thus united in aim, and benefiting the whole is a value that pervades the universe⁽¹¹⁾.

For human beings this role is expanded to the special responsibility of trusteeship (*amanah* and *khilafah*) over the earth *Ihsan*, the most comprehensive term expressing nobility, denotes the perfection of moral rightness, practical benefit, and esthetic artistry, and is due from humans toward everything, for the essence of worship is to do the greatest good to the entire creation.

These values regarding the creation and its purposes are revealed in the following Qur'anic verses, among Others:

Allah is that which splits the seed and the date stone, brings the living from the dead and the dead from the living: That is your God - how can you be turned away?
6:95⁽¹²⁾

*We did not create the heaven and earth and all between them without purpose.
Such is the view of those who disbelieve, and woe to the disbelievers from the fire!
Shall we treat those who believe and do good works as those who work corruption
in the earth? Shall we treat those who are careful of their duty as the evildoers?*
38:27-28

And do good; for Allah loves those who do good. 2:195

He who created death and life to try you, which of you do work the most good.
67:2

9. Ibn `Abd al-Salam, vol.2, p.70, cited in Mahmassani, *Falsafat...*, pp.105-106; Husaini, pp.82-83, 144-145; and p.99, ref. to Ibn Khaldun.

10. Husaini, pp.116, 144-145; Azzam, pp. 121-122. That the wider interests (of the community and the creation) always take precedence over the more limited interests (of individuals and groups) is one of the most important principles of Islamic law. See `Abd Allah, pp. 277-278, ref. to al-Shatibi, *al-I'tisam*, vol.2, pp. 292-293.

11. Ibn `Abd al-Salam, vol.2, p.58; Husaini, pp.1-2, 5-6, 144-145; al-Zarqa, M. Anas, unpublished notes; Azzam `Abd al-Rahman, pp.42, 46, 49, 96; Maududi, Sayyed Abul A'la, pp.2-4, 6, 23-24, 71-74; Azad, Abul Kalam, pp.8-9, 19-95, 193-194; Abdul Latif, pp.32-33, 37, 44-54; Idem, pp.8-9, 69, 72-73, 89-90, 198-200; Idem, pp.92-93.

12. Also verses 25:2; 32:7; 30:26 and 44:38-39.

Ihsan is translated into explicit administrative goals and legally enforceable principles through the duties of *Islah*: rightness, beneficency, suitability, betterment of conditions, cultivation of earth, and establishment of peace, prosperity, and civilization. If the primary objective of Islamic law is to realize *ihsan* and maximize the welfare of the creation, the purposes of environmental planning may be defined as *islah*, revival of dead lands (*ihya al-mawat*), and *tahsin al-ard*: enrichment, enhancement, and beautification of the earth. The Prophet Muhammad, on whom be blessings and peace, declared that thus fructifying the earth is a profoundly ethical act.

Whoever revives dead land, for him is reward in it; and whatever any creature seeking food eats of it shall be reckoned as charity from him⁽¹³⁾.

There is no Muslim who plants a tree or sows a field, and a human, bird, or animal eats from it, but it shall be reckoned as charity from him⁽¹⁴⁾.

2. *Usul al-fikh: Sources and Methods of Islamic jurisprudence*

These ultimate objectives of the *Shari'ah* are translated into legal principles by the source-methods of Islamic legal thought (*usul al-fiqh*). The principles of agricultural land use are concerned primarily with the rights of Allah's creatures (*huquq al-ibad*), which include the rights of the self, the rights of humans toward each other, and the rights of animals toward humans⁽¹⁵⁾. They are found mainly in the branch of Islamic law known as *mu'amalat* or interactions and transactions, under topics such as revival of dead lands (*ihya' al-mawat*) the use of water for irrigation and livestock (*shirb*), 'land grants (*iqt'a*), leases (*ijarah*), maintenance (*nafaqah*), laws of hunting and slaughter (*sayd* and *dhaba'ih*), property (*milk* and *mal*), economic transactions (*buyu'*), endowments (*awaqaf*); and alms and taxes (*zakah*, *sadaqah*, *'ushr* and *kharaj*), which are discussed in both *mu'amalat* and ritual devotions (*ibadat*). Principles related to land use are also found in the branch of law dealing with public policy and administration (*siyasah*); and in the branch covering crimes and penal law (*jnayat* and *'uqubat*), under usurpation (*ghasb*) and damages (*talqf*).

Rather than review specific rulings by subject, I will review the *usul* or source-methods of Islamic legal thought by which universal principles are derived from the provisions of the *Shari'ah* so that they may be applied to specific problems⁽¹⁶⁾, and will cite examples of some important legal precepts. Each school (*madhhab*) of Islamic law has its own rules for deriving rulings from these sources, and not all of the sources which I mention are accepted by every school. Such differences, however, are beyond the scope of this paper⁽¹⁷⁾.

13. *Mishkat al-Masabih*, vol.1, p. 600, no.1916; *Kitab al-Kharaj*, p.82, no.259; Taxation in Islam, vol.1, p.64; Also see *Kitab al-Amwal*, pp. 285-286, no. 800.

14. *Mishkat al-Masabih*, vol. 1, p. 597, no.1900; Also see Yahya Ibn Adam, p.82, no. 260; tr. Ben Shemesh, p.64; and *Nur al-Islam*, vol.3, p.86, tr. in Eng. supplement vol. 3, nos.7, 8, p.24. Nur al-Din 'Ali Abu Bakr al-Haythami, pp. 67-68, transmitted by Ahmad ibn Hanbal and by al-Tabarani in *al-Mu'jam al-Kabir*, on the authority of Abul-Darda.

15. See Ibn 'Abd al-Salam, vol.1, pp.131-142; and Masud, p. 162. Al-Shatibi's definition of *mu'amalat* in Masud, p. 345.

16. Qadri, p.234; Masud, p. 204, reference to al-Shatibi.

17. The source-methods discussed in this paper are common to the Hanbali and Maliki schools of law, though they do not apply them identically. The other schools of Islamic law accept some, but not all, of these sources. For a summary of the source methods of the four Sunni schools of law, see 'Abd Allah, pp.121-128; for a summary of Ibadi law, see Ennami, Amr K., pp.81:117; for a summary of the Shi'i schools, see Fyzee, A.A.A., pp. 113-131; and Tabatabai, 'Allamah Sayyid Muhammad Husayn, *Shi'ite Islam*, tr. & ed., S. Hossein Nasr, State University of New York Press, Albany, 1975.

Texts of the Qur'an and Sunnah Relating to Land Use

The two primary sources in all schools of Islamic law are the conclusive legal texts (*nusus*) of the Qur'an and the Prophetic *sunnah* or normative practice. Both have rules of interpretation to safeguard the purposes of the *Shari'ah*. (see `Abd Allah, pp. 146-195).

Qur'anic Texts: Principles of land use contained in verses of the Qur'an include Allah's exclusive ownership of all things in the universe; (20:6; 57:7-10) His ordaining sustenance in the earth for all humans and other creatures; (41:10; also 11:6; 51:22; see Husaini, pp.144-145, and Qadri, p.310) the serviceability of all things for beneficial human use;⁽¹⁸⁾ the sanction of farming, raising livestock and of hunting for legitimate reasons;⁽¹⁹⁾ the injunction to enjoy all good and beautiful things provided for sustenance, and the prohibition of excessive or wasteful consumption (5:90-91; 6:141; 7:13-32; 26:150-152), of destruction of crops and livestock, and of corruption in the earth.⁽²⁰⁾ Principles of slaughter and sacrifice are established in the Qur'an. (22:27-37) Qur'anic economic principles govern social spending and redistribution of wealth.⁽²¹⁾ They establish the right to private property for both men and women, and protect private property from wrongful appropriation. (2:188; 4:32-33. See Qadri, pp. 320, 344) Allah commands that a share of the harvest must be reserved for the needy, and stipulates that this share must be good, and not defective.⁽²²⁾ The right of human beings and animals alike to the resources of the earth are established in the Qur'an. (79:30; 80:24-32) Allah also declares water to be the essential resource of which He has made all living things,⁽²³⁾ and establishes the legal right of humans and animals to quench their thirst. (56:65; 79:30-33; 80:24-32; see Maktari, p.22) Finally, Allah commands that people do good; this commandment is unlimited; it includes goodness toward all created beings. (2:195; 4:36; 16:90; 18:7; 28:77; 29:69; 39:10; 29:69; 76:8; 90:12-17; 99:7-8).

Ahadith: The above Qur'anic principles are all of a general and universal nature. The *ahadith* are the primary source of the *sunnah*, and provide both universal principles and specific applications of which the underlying values known in Islamic jurisprudence as *hikam*, may be either explicit or implied. It is important to distinguish the applications from the universal principles. Interpretation of *ahadith* demands knowledge of the significance (*ma'na*) of a saying or action of the Prophet, blessings and peace be upon him, the capacity in which he said or did it (i.e., as a universal lawgiver, or an advisor to a particular individual, or an administrator handling a specific situation), the context and circumstances, the facts and definitive principles which pertain to it, whether it is normative and the degree of obligation, and the regularity or irregularity of the *hadith*. (`Abd Allah, pp.155-195, 467-469, ref. to al-Qarafi) Only thus can one know the values and purposes realized in the obligations and prohibitions.

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18. Qur'an, 2:21-22,29; 7:10; 14:32-34; 16:5-18,66-69, 80-81; 23:18-22; 31:20; 40:79-80; 45:13; 55:5-13; 67:15; 79:27-33.
 19. Qur'an, 5:2-5, 97-99; 6:99, 141-145; 13:3-4; 16:5-14,66-99, 80-81; 23:18-22; 36:33; 40:79-80; 55:5-13; 79:27-33.
 20. Qur'an, 2:205; 5:36; 7:56; 26: 150-152; 28:77. For a discussion of the Qur'anic text, see Abu Yusuf Ya'qub ibn Ibrahim, pp.105-106; tr. by A. Ben Shemesh, vol.2, pp.74-75.
 21. Qur'an, 2:177, 188, 219, 233, 261-281, 286; 3:180, 195; 4:5-7, 29-33; 6:164-165; 8:60; 9:34-35, 60,79, 103; 11:87; 17:15; 20:6; 24:33; 25:67; 28:77; 35:18; 39:7; 41:9-10; 47:36-38; 51:19; 53:38-41; 57:7-10; 59:7-9; 64:16; 70:15-25; 90:4-18; 102:1-2. See Husaini, pp.81, 31-133.
 22. Qur'an, 6:141; 2:167; see Yahya ibn Adam, pp. 124-130; tr. Ben Shemesh, vol.1, pp.83-86, 88; Abu Yusuf, pp. 56-57, tr. Ben Shemesh, vol.3, pp. 132-133.
 23. Qur'an 21:30; see Norvelle, Michael E., pp. 39, 93; and Maktari, A.M.A, p.22; and Caponera, D.A., vol.1, P.11.

One of the most important universal principles found in *ahadith* is the maxim, "There shall be no injury and no mutual infliction of injury"⁽²⁴⁾ which protects a person from injury and prohibits him from causing injury to his neighbour, to society or to the creation as a whole. The right to enjoy private property and protection of private property from usurpation are secured in the *ahadith*⁽²⁵⁾ as is public ownership of scarce and indispensable resources, including water, pasture, and fire.⁽²⁶⁾ Muhammad, upon whom be blessings and peace, established these resources as well as forests, wild-life and minerals as free goods under the trusteeship of the Muslim community. (Husaini, p.192; Abu Sulayman Abdul Hamid A. pp.15-20) He abolished the institution of private reserves (*ahmiyah*) by which the Arab aristocracy had appropriated the best grazing lands for their personal use, but he established public reserves for both conservation and production for the protection, of woody vegetation and wild-life, and for the horses of the Muslim army.⁽²⁷⁾ He established inviolate zones (sing *harim*) along roads and around wells to prevent accidents, to provide resting and watching space for livestock, and to protect aquifers from impairment.⁽²⁸⁾ In establishing *harim* zones around Makkah, Madinah and Ta'if within which no native trees could be cut and no wild-life could be disturbed,⁽²⁹⁾ an extremely important precedent for conservation was laid down. The endowment of wells, land, etc. for beneficial purposes has its precedent in his asking Companions to buy the well of Rumah for the Muslims which was done by `Uthman ibn `Affan and in his urging `Umar ibn al Khattab to give his land in Khaybar as a trust for charity.⁽³⁰⁾ A co-owner's right of option on his partner's share and of pre-emption (*shufah*) if it is sold to some one else is affirmed in the *ahadith*,⁽³¹⁾ in accordance with Islamic values of social solidarity and cooperation.

With regard to *zakah* on agricultural produce, the Prophet Mohammad, may blessings and peace be upon him, encouraged land reclamation by setting a lower rate for irrigated lands - one twentieth of the harvest - than the tenth required of lands watered by the rain.⁽³²⁾ He also forbade harvesting in such a manner as to exclude the needy from attending and receiving their share, as harvesting secretly by night. (Yahya ibn Adam, pp.130-131, nos. 422-424; tr. Ben Shemesh, vol.1, p.93).

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24. Yahya ibn Adam, pp.97-98, nos. 303,304; tr. Ben Shemesh, vol.1, pp.70-71; `Abd Allah, p.227; Norvelle, pp.67, 81-82; Maktari, p.36.
25. *Mishkat al-Masabih*, vol.2, pp.118-123, nos. 2938, 2944, 2946, 2958-2960; Yahya ibn Adam, pp. 84-90, nos. 266-284, tr. Ben Shemesh, vol.1, pp.65-68.
26. *Mishkat al-Masabih*, vol.2, p.135, no.3001; Yahya ibn Adam, pp.101-102, nos. 315-320, tr. Ben Shemesh, p. 72; Abu Yusuf, p. 126; Norvelle, p.23, ref. to Ibn Qudamah; Caponera, p.13; Maktari, p.14.
27. *Sahih Muslim*, tr. `Abdul Hamid Siddiqi, Sh. Muhammad Ashraf, vol.2, p.689, no. 3169; Muwaffaq al-Din ibn Qudamah, vol.5, pp.528-529; `Uthman ibn Fudi, tr. F.H. El Masri, pp.37-38 text, p.70 tran.; Abu Yusuf, p.104, tr. Ben Shemesh, vol.3, p.121; Maktari, pp. 12-13.
28. Yahya ibn Adam, pp.97, 102-106, nos. 303, 318, 323; also nos. 324-332, 334-336; tr. Ben Shemesh, pp.70, 72-74; Caponera, p.12; Norvelle, pp.62-64; al-Sawwaf, Mujahid, pp. 10-11; Husaini, pp.74, 79-80.
29. *Sahih Muslim*, vol.2, pp.682-691, nos. 3139-3143, 3153-3154, 3168-3169, 3172- 3176; *Mishkat al-Masabih*, vol.2, pp.61-70, nos. 2715-2716, 2726,2729, 2732,2747- 2749, p.133, no.2992; Abu Yusuf, pp.104, 112, tr. Ben Shemesh, vol.3, pp.121-122; Maktari, pp.12-13; Ibn Ishaq, p.617.
30. *Mishkat al-Masabih*, vol. 2, p.138, no. 3008; Maktari, pp. 15,22; Caponera, p. 12; Al-Sawwaf, p.8; Norvelle, p.40, ref. to Ibn Qudamah.
31. *Mishkat al-Masabih*, vol.2, pp.124-126; nos. 2961-2971; Yahya ibn Adam, pp.80, 98, nos. 253, 305; tr. Ben Shemesh, vol.1, pp.63, 71. Some *ahadith* affirm the neighbour's right of option as well, while others deny it.
32. Yahya ibn Adam, pp.115-123, nos. 364-395; tr. Ben Shemesh, vol.1, pp.78-82; Abu Yusuf, pp.51-52, 54, tr. Ben Shemesh, vol.3, pp.130-133; Caponera, p.12.

The Prophet, upon him be blessings and peace, established the rule that one acquires unowned land through one's own efforts, and to the extent of one's own labour, in its revival. He encouraged land reclamation by declaring that whoever revives dead lands acquires title to what he has revived.⁽³³⁾ He established the legal right of humans and animals to enjoy free access to drinking water, the basis of all life, and forbade monopolization of water by declaring it as common property and forbidding its sale except in containers.⁽³⁴⁾ He recognized senior rights of usufruct but not absolute ownership of water. The *ahadith* establish the rule that on a stream with insufficient water for all potential users, the upstream user irrigates before lower, but is restricted to the amount needed by his crops and is forbidden to withhold excess water from the lower users.⁽³⁵⁾ His limitation on the owner's liability for accidents at wells further encourages generosity and free access to water. (Caponera, p.12, ref. to al-Bukhari, al-Sawwaf, pp.7-8).

When the Prophet, upon whom be blessings and peace, admonished a man who was washing for prayer not to waste the water, "even at a flowing river", he made it clear that *israf* or wastage of resources is forbidden, whether in cases of scarcity or abundance. (*Mishkat al-Masabih*, vol.1, p.133, no.427). He prohibited urination in water sources.⁽³⁶⁾ and in the holes of animals (*Mishkat al-Masabih*, vol.1, p.115, no.345). The value underlying these prohibitions may apply to the pollution of critical resources and habitats in general. Likewise, he prohibited the cutting of any tree in the desert which provides valuable shade or sustenance to humans or animals,⁽³⁷⁾ and this prohibition may apply to the destruction of valuable habitat in general. Such rulings are not isolated prohibitions; they must be understood as specific applications of wider values, and carefully examined for their underlying purposes.

The rights of both domestic and wild animals to humane treatment are explained in detail in the *ahadith*. Human beings are under legal obligation to provide proper maintenance (*nafaqah*) for any animals under their care,⁽³⁸⁾ and are morally obliged to provide for any other needy animal they encounter for "there is a reward on every living thing".⁽³⁹⁾ Moreover, people are warned of punishment in hell fire for causing an animal to starve to death⁽⁴⁰⁾.

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33. *Mishkat al-Masabih*, vol.2, pp.120,133, nos. 2944, 2991; Yahya ibn Adam, pp.84-90, nos. 266-284; tr. Ben Shemesh, vol.1, pp.65-68; Maktari, pp.9-13; Abu Sulayman, pp.15-27.
34. *Mishkat al-Masabih*, vol.2, p.135, no.3001; Yahya ibn Adam, pp.101-102, 107- 109, nos. 315-320, 338-344; tr. Ben Shemesh, vol.1, pp.72, 74-75; Abu Yusuf, pp.94-98, 102; tr. Ben Shemesh, vol.3, pp.120, 125-127; Maktari, pp.14, 16, 22; al-Sawwaf, p.7; Caponera, pp.11-13; Norvelle, pp. 23-24, 38-39, 60.
35. *Mishkat al-Masabih*, vol.2, pp.134-136, nos. 2993-2995, 3005; Yahya ibn Adam, pp.99-103, 106, 109, nos. 309-322, 337, 345; tr. Ben Shemesh, vol.1, pp. 71-75; Abu Yusuf, p.102 tr. Ben Shemesh, vol.3, p.124, al-Sawwaf, p. 10; Caponera, p.12; Norvelle, pp. 23-24, 46-49, 51-52, 60; Maktari, pp.16-17, 22, 29, 44.
36. Al-Sawwaf, p.5, ref. to Abu Dawud, al-Bukhari, Ahmed ibn Hanbal, Ibn Majah, al-Nasa'i, and al-Tirmidhi.
37. *Mishkat al-Masabih*, vol.2, p.125, no.2970; also see *Ma'jam `al-Zawa'id*, vol.4, p. 69; vol.8, p.115.
38. Muhammad al-Khidr Husayn, pp. 86-87; English supplement, p. 24; al-Zarqa, unpublished notes.
39. Al-Sayyid Sabiq, vol.3, pp. 564-565; Maktari, pp. 21-22; al-Sawwaf, p.7, *Mishkat al-Masabih*, vol.1, p. 597; no.1902; Muhammad al-Khidr Husayn, p. 86; English supplement, p. 24.
40. *Mishkat al-Masabih*, vol.1, p. 597, no.1903; also in Muhammad al-Khidr Husayn, p. 87; English supplement, p.64; and in as-Sayyid Sabiq, vol.3, pp.564-565.

While the Islamic laws of hunting permit the taking of life for food or other necessities, the Prophet Muhammad, upon whom be blessings and peace, prohibited the taking of any living thing as a target (i.e. taking any life for sport), and cursed whoever does so.⁽⁴¹⁾ He forbade causing of any creature's death without sufficient cause. For example, he ordered a man who had taken unfledged birds from a nest to return them to their mother which was trying to protect them.⁽⁴²⁾ Likewise, he commanded a man who needlessly lit a fire on an anthill to put it out,⁽⁴³⁾ and warned of the pleading, on the day of resurrection, of a creature killed in sport and of whose death no good use was made. (*Majma' al Zawa'id*, vol.4, p.30). Other than slaughtering for food or other valid needs, or killing an animal dying slow death, he forbade the killing of anything unless it is harmful. (*Majma' al-Zawa'id*, vol.4, p.42). Causing any needless pain or injury to animals is forbidden in *ahadith* which prohibit mutilation, (*Mishkat al-Masabih*, vol.2, p.119, no. 2941; *Majma' al-Zawa'id*, vol.4, p.32) setting fights between animals, (*Mishkat al-Masabih*, vol.2, p.429, no.4103) and striking or branding an animal on the face. (*Mishkat al-Masabih*, vol.2, p.424, nos. 4077, 4078).

Laws of slaughtering prescribed by the Prophet, upon whom be blessings and peace, include prohibition of prolonging the slaughter⁽⁴⁴⁾ and prohibition of inhumane pre-Islamic methods. (*Mishkat al-Masabih*, vol.2, p.426, no.4090). Anything killed or slaughtered must be killed as painlessly as possible.⁽⁴⁵⁾

Allah, be He blessed and exalted, has prescribed goodness toward everything: so when you kill, kill with goodness and when you slaughter, slaughter with goodness. Let one of you sharpen his knife and thus give ease to the animal he is slaughtering⁽⁴⁶⁾.

Islamic law thus requires that in using animals, the best and least injurious methods be employed⁽⁴⁷⁾.

Additional Sources of the Sunnah: *Fatawa* of the Companions, *Athar*, the 'Amal of A1-Madinah and *Ijma'*.

Sources for understanding the Prophetic *sunnah* other than the *ahadith* may include the legal opinions (*fatawa*) of the companions of the Prophet, upon whom be blessings and peace, reports of their deeds and sayings (*athar*), the established practice (*amal*) of al-Madinah, the early Islamic capital where most of the Companions lived, and rulings on which there was universal or near universal consensus (*ijma'*) by the early generations. Of these, *ijma'* is authoritative in every school of Islamic law, while the others have varying degrees of authority in the different schools, all of them being employed by the Hanbali and Maliki schools⁽⁴⁸⁾. Interpretation of these sources, as of the *ahadith*, requires knowledge of the context and significance of each case and the principles which pertain to it.

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41. *Mishkat al-Masabih*, vol.2, p.424, nos. 4075, 4076; Muhammad al-Khidr Husayn, p.86, English supplement, pp.23-24; *Majma' al-Zawa'id*, vol.4, pp.31-32.
42. *Mishkat al-Masabih*, vol.1, p.729, no.3377; Muhammad al-Khidr Husayn, p.89, English supplement, p.29.
43. Muhammad al-Khidr Husayn, p.89, English supplement, p.29.
44. *Mishkat al-Masabih*, vol.2, p.424, no.4074; *Majma' al-Zawa'id*, vol.4, pp.31-33.
45. See Muhammad al-Khidr Husayn, p.85, English supplement, p. 23; Maududi, pp. 132-133.
46. *Mishkat al-Masabih*, vol. 2, p. 424, no. 4073, transmitted by Muslim on the authority of Shaddad ibn Aus.
47. *Majma' al-Zawa'id*, vol. 8, pp. 196-197, pp. 132-133; `Azzam, pp. 60-61; Muhammad al-Khidr Husayn, p. 87.
48. `Abd Allah, pp. 161-169, 195-204, 379-514; Qadri, p.227. The *fatawa* of *sahabah* such as Abu Bakr, `Umar, `Uthman, `Ali, `Aishah, `Abd Allah ibn Mas`ud, `Abd Allah ibn `Abbas, Anas ibn Malik, and `Abd Allah ibn Zubayr are considered particularly authoritative.

This group of sources has provided important principles of land use. The Khalifah `Ali ibn Talib, Allah be pleased with him, eloquently expressed the Islamic encouragement of revival of dead lands, telling a man who had dug canals and reclaimed neglected land:

Partake of it with joy, as long as you are a benefactor, not a corruptor, a cultivator, not a destroyer⁽⁴⁹⁾.

The Khalifah `Umar ibn al-Khattab, Allah be pleased with him, affirmed the right of one man to dig an irrigation canal through another's land after ascertaining that the latter would not be injured thereby. In doing so he further established prevention of injury to others as a principle of land use, and established the invalidity of a landowner's preventing a benefit to others if the benefit does not cause injury to the landowner himself⁽⁵⁰⁾. He established the right to quench one's thirst or the thirst of one's livestock at a well whether public or private, and to assert that right by force if necessary. Under extreme circumstances such as famine or the threat of starvation, he ruled that the right of private ownership is modified, when confronted by the need of the community, the latter takes precedence⁽⁵¹⁾. If a person dies of thirst or starvation, he ruled that those who refused him water or food are responsible for paying his bloodmoney⁽⁵²⁾.

The Khalifah `Uthman ibn `Affan, Allah be pleased with him, extensively exercised the right of the state to assign state lands to cultivators in order to have them reclaimed⁽⁵³⁾. The Khalifah `Umar ibn al-Khattab, Allah be pleased with him, ruled that revival, not mere enclosure of land, constitutes acquisition; in so doing he established the right of the state to take back lands granted for revival if they are misused or not revived, so as to grant them to other cultivators⁽⁵⁴⁾. He established additional public reserves for the animals of the needy and the army⁽⁵⁵⁾.

The Khalifah Abu Bakr al-Siddiq, Allah be pleased with him, enforced rules of war based on statements of the Prophet Muhammad, upon whom be blessings and peace, prohibiting devastation of the enemy's crops, orchards, and livestock, and allowing the army to take only what was necessary for food⁽⁵⁶⁾. Such a prohibition under the extreme circumstances of war demonstrates the high value placed on cultivation, and the strong disapproval of its destruction.

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49. Yahya ibn Adam, p.63, no. 196, on the authority of Sa'id al-Dabbi; tr. Ben Shemesh, vol.1, p.53.
50. Yahya ibn Adam, pp. 110-112, nos. 348-351,353; tr. Ben Shemesh, vol.1, pp.76- 77; Yamani, p.23; al-Sawwaf, p. 10.
51. Abu Yusuf, p.97; tr. Ben Shemesh, vol.3, p. 127; Yahya ibn Adam, p. 112, no.355; tr. Ben Shemesh, vol.1, p.77; Husaini, p. 74; al-Sawwaf, p. 10; Caponera, p. 13; Maktan, pp. 21-23; Yamani, p. 27; also see Abu Sulayman, pp.15-16, 18-20.
52. Yahya ibn Adam, p. 111, no.352; tr. Ben Shemesh, vol.1, p.76; Husaini, p. 74; Caponera p. 13; Yamani, p. 28.
53. Qudamah ibn Ja'far, part. 7, tr. Ben Shemesh, vol.2, pp.35-36; Yahya ibn Adam, p.79, nos. 250, 251; tr. Ben Shemesh, vol.1, p.63; Abu Yusuf, p.62; tr. Ben Shemesh, vol.3, p.77.
54. Yahya ibn Adam, pp.78, 90-93, nos. 247, 286-288, 293-294; tr. Ben Shemesh, vol.1, pp.62, 68-69; Abu Yusuf, pp.61-62, tr. Ben Shemesh, pp.76-77. Qudamah ibn Ja'far, p.33; Husaini, p.75.
55. Ibn Qudamah, *al-Mughni*; vol.5, pp.529-530; Abu Yusuf, p.104, tr. Ben Shemesh, vol.3, pp.121-122; `Uthman ibn Fudi, pp.37-38 text; p.70 tr.; Draz, Omar, pp.20; Idem, no.06732: E-1, 1969, p.1.
56. Hamidullah, Muhammad, pp. 204-208, 312-316; Qadri, pp. 278-279; Husaini, p.200; Abu Yusuf, pp.64-65, 91-93, 97, tr. Ben Shemesh, vol.3, pp.118, 122-123, 127.

The principle that if an animal's owner does not provide it with adequate maintenance (*nafaqah*), the state must force him to do so or sell the animal, is based on rulings of Companions⁽⁵⁷⁾. The declaration of the Khalifah `Umar ibn al-Khatib that "If a kid dies on the bank of the Euphrates, I fear that Allah will ask `Umar about it", (Uthman ibn Fudi, p. 140 text; p. 160 English Translation) attests to the state's responsibility for the welfare of animals; and a declaration by Abu Hurayrah that even the wild bustard might starve as a result of the ruler's tyranny may similarly imply the ruler's responsibility for the welfare of wild-life. (*Mishkat al-Masabih*, vol.2, p.641, no.5136).

Ijtihad

Ijtihad is a jurists' exertion of his reason to formulate the principles of the revealed law and apply them to new problems or new situations. It is on one hand a source of Islamic law when one draws upon the opinions of previous jurists; on the other, it is the methodology of reasoning to make independent judgements. In following the independent judgements, it is absolutely essential to understand the objectives of the *Shari'ah* so that they may be realized and preserved, and not negated⁽⁵⁸⁾. Methods of *ijtihad* include reasoning by juristic analogy (*qiyas*), judging according to the hierarchy of Islamic values by preferring the stronger or universal values over the weaker or instrumental values (*istihsan*), and where there is no precedent, making judgements on the basis of public welfare (*al-masalih al-mursalah*).

Jurists such as al-Subki, al-Suyuti, and Ibn Nujaym formulated universal maxims of Islamic law by comparative study of similar rulings, as `Umar ibn al-Khattab's instructions to the judge Abu Musa al-Ash'ari enjoined⁽⁵⁹⁾. Among the maxims which clarify the objectives of the *Shari'ah* in land use planning are the following, from the *Majallah*, which was written in the late Ottoman period and remains the most important and influential attempt to codify Islamic law:⁽⁶⁰⁾

<i>Injury may not be met by injury.</i>	(Article 19)
<i>Injury is to be repaired.</i>	(Article 20)
<i>An injury cannot be removed by the commission of a similar injury.</i>	(Article 25)
<i>A private injury is tolerated to ward off a public injury.</i>	(Article 26)
<i>Severe damage is removed by lighter damage.</i>	(Article 27)
<i>In the presence of two wrongful acts, the one whose injury is greater is avoided by commission of the lesser.</i>	(Article 28)
<i>The lesser of two evils is preferred.</i>	(Article 29)
<i>The repelling of evil takes precedence over the acquisition of benefits.</i>	(Article 30)
<i>Injury is to be removed as far as possible.</i>	(Article 31)
<i>When prohibition and exigence conflict, preference is given to prohibition.</i>	(Article 46)

57. Abu Faraj `Abd al-Rahman ibn Rajab, p.32, precept no.23; al-Sayyid Sabiq, vol.3, pp.564-565; Muhammad al-Khidr Husayn, p.87.

58. Al-Shatibi, *al-Muwafaqat*, vol.4, pp.105-106, 162ff., cited in Mahmassi, *Falsafat...*, p.94, and Masud, pp. 310-311.

59. Qadri, pp. 213-214; Ramadan, p.25, ref. to Ibn Qayyim al-Jawziyah; Mahmassi, *Falsafat...*, pp. 149-152.

60. The maxims quoted are maxims nos. 19-20, 25-31, 46, 58, 87-88, 92-93, and 96-97 of the *Majallah*. See The *Mejelle*, tr. C.R. Tyser, D.G. Demetriaides, Ismail Haqqi Effendi, pp. 1-15. These maxims are quoted and discussed in Mahmassi, *Falsafat...*, pp. 155-159, 203-207; and in Husaini, pp. 76-79. Also see Qadri, pp.319-320, 341-343, and 350-351 for elaboration on some of them.

- Management of citizens' affairs is dependent upon public welfare.* (Article 58)
Liability is an obligation accompanying gain; that is to say, a person who enjoys the benefits of a thing must submit to the disadvantages attaching thereto. (Article 87)
- The burden is in proportion to the benefit and the benefit to the burden.* (Article 88)
Liability lies on the direct author of an act, even though acting unintentionally. (Article 92)
- No liability lies on a person who is the (indirect) cause of an act unless he acted intentionally.* (Article 93)
The dealing by one person with the property of another, without his leave, is not lawful. (Article 96)
No person may take the property of another without legal cause. (Article 97)

Among the most important principles of land use which safeguard the objectives of Islamic law is the concept of the abuse of rights. Malik ibn Anas and Abu Hanifah formulated the principles that the exercise of a right is permitted only for the achievement of the purpose for which the right was created, that the exercise of a right is illegal where it results in excessive harm, and that the exercise of a right is illegal if used to bring injury to others rather than for benefit⁽⁶¹⁾. Malik restrained landowners from any use of their property resulting in injury to others without corresponding benefit to themselves. In cases concerning neighbourly relationship, placement of windows, division of tenancy in common property and ownership of uncultivated land, he imposed restrictions where necessary in order to prevent excessive injury⁽⁶²⁾. Abu Yusuf restricted both the individuals' and the authorities' right in cultivating virgin land where its exercise would result in excessive injury⁽⁶³⁾. Hanbali jurists reasoned likewise that since Allah is the real owner of all property, human rights of usufruct must not be abused⁽⁶⁴⁾. According to later jurists, a person is considered to have abused his right if he intended to cause injury to others, if its exercise did not result in benefit to the possessor but resulted in injury to others, if the exercise of the right resulted in general injury to the community, or if, as a result of the exercise of the right, an excessive injury was caused to others⁽⁶⁵⁾.

Specific precepts regarding land use which jurists have developed by *ijtihad* include the ruling that on a small stream with insufficient water, the senior irrigation rights of upstream users are subject to prior appropriation. Security is thereby provided for the investment of energy, time and money in revival of dead lands, by the emphatic protection of the previously established irrigation rights⁽⁶⁶⁾. The ruling that the amount of irrigation retained by the senior user should vary according to the requirements of the specific soils, crops, seasons of irrigation, condition of the land, and the volume of water available, is likewise derived through *ijtihad*. (Maktari, pp. 29-30, 34, ref. to al-Mawardi and Ibn Hajar al-Haythami). Share of irrigation water in a jointly owned canal, if disputed,

61. Yamani, pp.22-25; Mahmassani, *Falsafat...*, p. 158; Husaini, p.80; Qadri, pp.312, 341-343.

62. *Al-Mudawwanah al-Kubra*, cited in Yamani, pp.23-24; Qadri, p.312.

63. Abu Yusuf, pp.64-65, 91-93, 97, tr. Ben Shemesh, vol.3, pp.118, 122-123, 127.

64. Ibn Rajab, quoted in Mahmassani, Subhi, vol.1, pp.181-182; Qadri, pp.311, 313, ref. to Ibn Rajab; Yamani, pp.25, 27-28.

65. Yamani, pp.25-26, ref. to Ibn `Abidin; also see Qadri, pp.310-313, 341-343.

66. Norvelle, pp.49-51, 56, 68, 79 & 81 with ref. to al-Bahuti and Ibn Qudamah, and pp.90-93; Caponera, pp.18, 19, 21-22.

is allocated according to the labour and expenditure invested in excavation and maintenance by the users, or if these investments are unknown, according to need as determined by the sizes of their cultivated plots. (Maktari, pp.15, 28; Norvelle, pp. 53-54, 59, 78; Caponera, p.18) Other rules developed by jurists include the precept that it is forbidden to adversely affect a neighbour's well by lowering the water table or by pollution of the aquifer, (Norvelle, pp. 66-67, 81-82) the precept that an abandoned well if needed by the public becomes public property, (Norvelle, p.65; Maktari, pp.15, 38) and the precept that public waters are to be maintained by the state⁽⁶⁷⁾.

3. Implications of Islamic law for Environmental Planning

i. The Universal Common Good

The fundamental criterion for all planning decisions in Islam is the service of Allah by realizing the greatest possible good to His creatures as a whole. The *Shari'ah* is the only legal system in existence which explicitly aims at the universal common good of the entire creation, both immediate and ultimate. This reflects a conviction that the best interests of species, nations, regions, classes, and individuals are ultimately in harmony and not in conflict.

ii. Masalih and Mafasid

In contemporary secular planning, costs and benefits are largely measured and weighed in the language of financial profit and loss. Planning according to the objectives of Islamic law, however, must maximize total benefits or *masalih*, and minimize total costs, or *mafasid*. Here the concepts of *masalih* and *mafasid* are not precisely equivalent to western ideas of benefits and costs. Actions must be evaluated in terms of their consequences with regard to all of the absolute necessities (*daruriyat*: religion and morality, life, reason, posterity, and property), and all social needs (*hajiyat*), and requirements for the perfection of ethics and honour (*tahsiniyat*), as these complement and preserve the absolute necessities. In this context, it is clear that Islamic law requires that the lives, sanity, and maintenance of all created beings must be taken into account, and that the posterity of all species be carefully preserved.

However, a more complete and accurate means of assessing effects on all creatures, than the language of finance, has yet to be developed and made easy to apply in planning. Planning according to the objectives of Islamic law therefore requires that in allocating and managing scarce resources such as water and arable land, the land uses, crops, management techniques and so forth should not be selected merely on the basis of the highest financial return. They must of course be financially viable, but they must also be socially and ethically beneficial - nutritious food crops or useful fibers should be favoured over tobacco, for example. Furthermore, public need takes precedence over private interests, The maxim of Islamic law that "the repelling of evil takes precedence over the acquisition of benefits" subordinates purely utilitarian economic and political benefits to the criteria of ethics and social justice (Husaini, p.80).

67. Abu Yusuf, pp.97-100, 110; tr. Ben Shemesh, vol.3, pp. 106, 127-129; al-Sawwaf, pp. 6-7; Caponera, p. 23.

iii. The Use of Natural Resources

The Qur'anic prohibition of corruption in the earth wastage or excess and destruction mandates the use of techniques which maximize the conservation and beneficial use of resources. In lands without renewable aquifers, for example, rain water, harvesting and runoff farming should, where feasible, be preferred over the extraction of non renewable groundwater; for the preservation of aquifers is regarded very seriously in Islamic law. These Qur'anic prohibitions like-wise require policies which favour intensive use and recycling of products over the extravagant extraction and consumption of resources. The most efficient and selective, and least destructive techniques of pest control are required, as well as careful timing of their use, so as to achieve protection of crops with minimum waste of life.

Islamic laws of livestock maintenance, slaughtering, and hunting require that humane methods be used in livestock and wild-life management. Some of the techniques accepted in secular countries are unacceptable by Islamic standards. Hunting is permitted for food, but hunting for sport and trophies is forbidden. This demands a philosophy of wild-life management oriented toward the food hunter and the wild life, rather than the sportsman.

All human beings, and not only humans, but livestock and wild-life as well, enjoy rights to their share of the resources of the earth. The abuse of any resources is forbidden, and the best possible use of all resources, both living and lifeless, must be made⁽⁶⁸⁾.

iv. The Role of Government

Islamic planning is, however, ineffective without government to implement and enforce it. As Ibn Taymiyah declared, government is one of the most important requirements of Islam, for the fundamental obligation to command the right and forbid the wrong cannot be discharged without power and authority⁽⁶⁹⁾. Of course, the government must be one which implements the *mu'amalat* of Islamic law rather than a European code or British common law, if the objectives of the *Shari'ah* are to be realized.

v. Public Property

In the Qur'an, Allah has ordained sustenance for all humans and other creatures, and the state has an obligation to see to the sustenance and welfare of all⁽⁷⁰⁾. The state is the trustee of all public property. It is the custodian of transportation systems and public waters, and is responsible for their maintenance. It is the custodian of all public lands, including state lands, commons, endowments, and unowned lands. Most objects of nature, such as game, fish, and woods, are not property in their natural state, and become property only when actually secured. Unowned lands are, secured by cultivation. Indispensible resources such as water, pasture, fire, air, sunlight, and commons, public road, and public gardens, are for the common use of all, subject to the condition that their use does not cause injury to the community⁽⁷¹⁾. Today when human impact is so greatly magnified, the

68. Husaini, pp. 144-145, 127-128 ref. to Qur'an 11:87; Maududi, pp.132-133, Qur'an 11:6; 25:48-50; 41:10; 55:10-13; 79:30-33; 80:24-32.

69. Husaini, p.92, ref. to Rosenthal, E.I.J., p.53.

70. Qadri, p.310; al-Shatibi, vol.2, pp. 364-368; Masud, pp. 282-283; Yamani, pp. 43- 44; Abu Sulayman, pp.15-20.

71. Abu Yusuf, p.64-65, 81, 96-100, 102-103, 110; tr. Ben Shemesh, vol.3, pp.106, 120-121, 126-129, 137; Qadri, pp.308, 314-315, 317-319; Abdur Rahim, pp.264-267, 280-281, 385-386, 390; Husaini, p. 128; Abu Sulayman, pp.15-17.

use of the extensive common lands in the Muslim world and of all free things must be closely regulated so that, their use does not result in injury to the community and creation as a whole.

The state is, the ultimate guardian of endowments and institutions for the benefit of the public. Charitable endowments must be managed and supervised for the greatest benefit to the needy and the community as a whole⁽⁷²⁾. The target beneficiaries of state funds are the needy, and the state has an important economic role in directing social spending and the redistribution of wealth⁽⁷³⁾.

The role of the government in an Islamic state should include assigning suitable lands for revival, and setting aside suitable lands as reserves for public purposes, such as emergency grazing, watershed improvement, and preservation of wild-life habitat and forests. The state must undertake public works for the benefit of humans and other creatures. The example of the great planner, Zubaydah bint Ja'far, is particularly worthy of emulation in this regard. It was she who had wells and cisterns constructed at intervals of a day's journey along the road from Baghdad to Makkah, who built the aqueducts of Beirut and whose waterworks and aqueducts have continued to supply Makkah for over eleven and a half centuries (al-Sawwaf, pp.8-9).

vi. Private Property

According to Islamic law, Allah is the ultimate owner of all things, and human beings must manage them in accordance with the will of their Sustainer for the greatest good to all His creatures. Human beings enjoy the rights of, usufruct in the property with which they are entrusted⁽⁷⁴⁾. The right of men and women to private property is established to safeguard the individual's full freedom for creative, beneficial use of property, and it cannot be revoked by anyone in authority except for a clear public need and for prompt and just compensation, or in a clear case of misuse or mistreatment⁽⁷⁵⁾. Islamic law dearly does not permit the degree of collectivization or regulation by the state found in contemporary socialistic regimes.

The exercise of private property rights is, however, circumscribed by the greater needs of the community, and the individual is emphatically forbidden to use his property in ways resulting in net harm to society or the creation, as a whole, according to the Islamic principles of social solidarity (*takaful*) and the abuse of rights. The rights of ownership are thus limited by the similar rights of others and by the public interest, and ownership ceases if the welfare of the community demands or if the need of another individual reaches extreme necessity⁽⁷⁶⁾. Nor does the owner have an absolute right of disposal over his property. The *Shari'ah* particularly limits his right of disposal with

72. Qadri, pp. 319-320; Abdur Rahim, p. 303-310, 385-386, 390; Cattan, Henry, pp. 203-222; Azzam, p. 97.

73. Husaini, pp. 80-81, 129-136, 140-145; Abu Sulayman, pp.18, 20, 27-30, 35-36; Ibn `Abd al-Sa`lam, vol.1, p.69.

74. Qadri, pp. 310-313; Mahmassani, pp.181-182; Abu Sulayman, pp.15-20; Yamani, pp.20, 25, 27-28. Also see Mahmassani, pp.179-191; Abdur Rahim, pp.261-279; Qadri, pp.310-320; Abu Sulayman, pp.9-54.

75. Qadri, pp.145, 225, 311-312, 315, 341-343; Abu Sulayman, pp.18-21, 27-30d; Abdur Rahim, pp.263, 270-271; Yamani, pp.27-28; Husaini, pp.82-83; Ibn Qudamah, *al-Mughni*, vol.7, pp.634-635; Ibn Rajab, p.32; al-Sayyid Sabiq, vol.3, pp.564-565.

76. Qadri, pp.310-313; Abdur Rahim, p.270; Mabmassani, pp.182, 186-187; Abo Sulayman, pp. 15-20, 27-30.

regard to living things; he is forbidden to mistreat his animals or kill them except for proper purposes and by proper methods⁽⁷⁷⁾. Other important limitations on private property rights concern easements, protection of women's privacy with regard to the design of buildings and placement of windows, and prevention of land reclamation where its results would be injurious⁽⁷⁸⁾. Islamic law in principle places more restrictions on the use of property than does *laissez-faire* capitalism⁽⁷⁹⁾.

vii. Standards and Intervention

The Islamic state can and must set standards and provide incentives and compensation for economic losses, favouring the most beneficial land uses and the best and most humane management techniques so as to realize the betterment of civilization and encourage goodness. Nuisances and cruelty are emphatically prohibited, and the state is empowered to take and sell animals which are mistreated or property which is misused to cause excessive injury⁽⁸⁰⁾. It has been suggested that according to the principle that "the repelling of evil takes precedence over the acquisition of benefits", an industry causing excessive injury by pollution could be closed inspite of the economic loss (Husaini, p. 80).

The role of the office of inspection (*hisbah*) is particularly important with regard to enforcement of standards, removal of nuisances and prevention of the abuse of rights, misuse of property, and mistreatment of animals, and this institution should be revived and further developed⁽⁸¹⁾.

The revival of this institution, headed by an expert in Islamic law and working with the *Shari'ah* court; would seem essential for the implementation of Islamic environmental and land use law. Matters which may require further elaboration for the full repair of injuries suffered by non-human creatures include their representation in court, assessment of injuries to them, and awarding of relief to them⁽⁸²⁾.

4. Empirical Factors in the Islamic Framework

To lead to prosperity in the present and hereafter, planning, design and management must be done in accordance with the ways of Allah (*sunan Allah*) or "laws of nature". The revelations (*aiyat*) of Allah's *sunan* are found in the Qur'an, in the environment, and within the souls⁽⁸³⁾. The role of the first in Islamic law has been discussed; the roles of the latter two in the planning process must also be examined.

77. Ibn `Abd al-Salam, vol.1, p.141; Ibn Qudamah, *al-Mughni*; vol.7, pp.634-635; Abdur Rahim, pp.263, 271, ref. to M. Amin Ibn `Umar Ibn `Abidin, vol.4, p.3.

78. Ibn Qudamah, *al-Mughni*; vol. 5, pp. 516-517, 520-525, 530; Abdur Rahim, pp.272, 281-282; Qadri, pp.312-315, 341-343, 349; Abu Yusuf, pp.64-65, 91-93, 97; tr. Ben Shemesh, vol.3, pp. 118, 122-123, 127; Yamani, pp.24-25.

79. Husaini, pp. 94, 127-128; Abdur Rahim, pp.263, 270-271; Qadri, pp.315, 341-343.

80. Ibn Qudamah, *al-Mughni*, vol.7, pp.634-635; Abdur Rahim, pp.263, 270-271; Qadri, pp.225, 315, 341-343; al-Sayyid Sabiq, vol.3, pp.564-565; Muhammad al Khidr Husayn, p.87, English supplement, pp.24-25; `Azzam, pp.60-61; Ibn Rajab, p.32.

81. Ishaq Musa al-Husaini, vol.10, nos. 3-4, 1966, pp.69-83; Levy, Reuben, pp.334- 338; Williams, pp. 127-129, ref. to Ibn al-Ukhuwah, *Ma`alin al-Qubra & al-Marghinani*, and p.209, ref. to Ibn Taymiyah; Qadri, pp.308-309; Husaini, pp.99, 110; Qadri, pp.341-358.

82. Stone, Christopher D., *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, William Kaufman, Inc., Discuss Books, pub. by Avon Books, N.Y., 1975.

83. Qur'an 2:163-164; 3:190-191; 7:9; 12:109; 22:45-46; 30:19-27; 41:53; 42:29; 45:3-6; 51:20-23. Masud, p.217; Husaini, pp.2-3, 9, 26,79, 81, 87; Abdul Latif, pp.42-54.

i. Social Factors: inhabitants' and users' desires

Once the requirements of Islamic law have been fulfilled, there remains a wide scope for freedom of choice in planning and design. The Qur'an requires that Muslim conduct affairs through mutual consultation (*shura*). Accordingly, a region's plan must be responsive to the inhabitants' and other users' desires, which might be seen as *ayat* or indications of the divine will, provided that they do not violate the revealed law⁽⁸⁴⁾. Natural desires, lawful pleasures and esthetics are, as al-Shatibi maintained, stimuli which excite man to acquire what he and his fellow beings need; since this requires cooperation, each individual works for the benefit of others while fulfilling his own desires. Thus they are designed to serve the purposes of the *Shari'ah*. If they were not good, he held, they would not have been mentioned in the Qur'an as among Allah's favours⁽⁸⁵⁾.

Such desires, when in the best interests of Allah's creatures, could be considered *masalih* of the grade of *tahsiniyat*. Like needs (*hajiyat*) and absolute necessities (*daruriyat*), they might be discovered by anthropological and sociological methods and by open meetings for consultation (*shura*), within the framework of Islamic law. It is essential that people of all social and ethnic groups affected be consulted equally, in accordance with the Qur'an (3:159; 4:58,135; 5:8; 6:153; 16:90; 42:38; 49.10,13) and *sunnah*⁽⁸⁶⁾, and the policy of the first four Khahfahs to hold the weakest of their subjects as the strongest until his rights were fully established, and to hold the strongest as the weakest until he complied fully with the law⁽⁸⁷⁾.

ii. Natural or environmental factors

The plan must also be in accord with the natural processes or *sunan Allah* in the environment, which by making specific sites most suitable for particular uses, are indications (*ayat*) of the divine will. Planning, design, and management may thus be based on enhancement of these divinely ordained natural processes rather than resisting them. Natural factors must be inventoried, analyzed, synthesized, and evaluated in terms of the opportunities offered and constraints imposed on each desired land use.

Favourable locations may then be correlated with the users' needs and desires. The potential uses may be weighed by specialists in the legal, natural, and social sciences, and by the users - all the users - of the land. Trade offs may be made according to the hierarchy of Islamic values, and the plan may be finalized and revised as necessary through *shura* or consultation (Husaini, pp.82-83, 93-94, 111-119).

84. Husaini, pp.2-3, 9, 26, 79, 81, 87, ref. to Faruki, pp.148-150, 198-200, 243 ff.; Masud, pp.294-295, ref. to al-Shatibi, *al-Muwafaqat*, vol.3, p.265; Qur'an 5:52-53.

85. Al-Shatibi, *al-Muwafaqat*, vol.2, pp.175-179, 196-202, 222; Masud, pp.267-270.

86. *Mishkat al-Masabih*, vol.2, p.321, nos. 3685, 3688; p.606, nos. 4953-4955, 4957; p.607, no.4961; p.611, no.4987; p.632, no.5095; p.640, no.5134; p.641, no. 5135; Abu Sulayman, p.17; Azzam, pp.240-241; Yamani, pp.36-45; Abdul Latif, pp.177-180.

87. Ibn 'Abd al-Salam, vol.1, p.69; 'Uthman ibn Fudi, pp.135, 138 text; pp.155, 158 English tr.; Abdul Latif, p.192; Abu Yusuf, pp.12-13, 117-119; tr. Ben Shemesh, vol.3, pp.45, 112-114; Yamani, p.43; Azzam, pp.140-141; Numani Shibli, tr. Zafar Ali Khan, vol.1, p. xvi; Abd Allah, pp.42-43, 198; Ramadan, p.35, ref. to Ibn Qayyim al-Jawziyah; Abu Sulayman, pp.15-20.

Environmental Planning at the Design Scale

A plan is finally implemented at the design scale. Islamic civilization's values of moral, material, and esthetic goodness (*ihsan*) and revival, betterment, and enhancement of the earth are realized in the Islamic tradition of landscape architecture. It is a utilitarian orchard tradition, maximizing benefit for Allah's creatures by providing fruit for humans, fodder for livestock, habitat for wild-life, and water for all. At the same time, its esthetics emphasize the principle of divinely ordained design in nature, centered around life-sustaining water. It is furthermore an earthly approximation of the Qur'anic description of paradise, maximizing beauty for all the senses: fragrant smells, sublime views, sounds of running water, birds, and rustling foliage, delicious fruits, and refreshing shade and water-cooled breezes - the greatest possible intensification of lushness and abundance⁽⁸⁸⁾. As such it is an expression of human Khilafah or trusteeship: in making nature prosper to the utmost, man enjoys and benefits from nature to the utmost, thus establishing a relationship of reciprocity or symbiosis (*takaful*) so that the fundamental objective of Islamic law, the welfare of the entire creation is realized.

References

- 'Abd Allah, 'Umar Faruq,** *Malik's Concept of 'Amal in the Light of Malik Legal Theory*, Chicago: The University of Chicago, Ph.D. dissertation, 1978.
- Abdul Latif,** *Bases of Islamic Culture*, Hyderabad, India: Institute of Indo-Middle East Cultural Studies, 1959.
- Abdul Latif,** *The Mind al-Qur'an Builds*, New York: Asia Publishing House, 1962.
- Abdul Latif,** *Islamic Cultural Studies*, Lahore, Pakistan: Shaikh Muhammad Ashraf, 1969.
- Abdur Rahim, M.A.,** *The Principles of Muhammadan Jurisprudence*, Madras, India: S.P.C.K. Press, 1911.
- Abu Sulayman, Abdul Hamid A.** "The Theory of the Economics of Islam". *Contemporary Aspects of Economic Thinking in Islam*, Takoma Park: American Trust Publications., 1976.
- Abu Yusuf, Ya'qub ibn Ibrahim,** (d.182h/798c) *Kitab al-Kharai*, edited by Muhib al Din al-Khatib, Cairo: al-Matba'ah al-Salafiyyah wa Maktabatuha, 1302H.
- Anderson, J.N.C.,** *Islamic World*, West-Port, Connecticut: Greenwood Press, 1975.
- Azad, Abul Kalam,** *The Tarjuman al-Qur'an*, translated by Sayed Abdul Latif, New York.: Asia Publishing House, 1962
- Azzam, Abd al-Rahman,** *The Eternal Message of Muhammad*, translated by Caesar F. Farah, New York: The Devin-Adair Co., 1964.
- Caponera, D.A.,** *Water Laws in Moslem Countries*, Rome: Food and Agriculture Organisation, Irrigation and Drainage (U.N.), 1973.
- Crowe, Sylvia,** *Garden Design*, London: Country Life, 1958..
- Crowe, Sylvia, and Sheila Haywood.** *The Gardens of Mughal India*, London: Thames and Hudson, 1972.
- Draz, Omar,** "Range Improvement in the Western Province in Saudi Arabia", Unpublished, 1969.
- Draz, Omar,** "The 'Hema' System of Range Reserves in the Arabian Peninsula", Food and Agriculture Organisation of the United Nations, No. 06732: E-1, 1964.
- Elden, Sedad, H.,** *Turk Bahceleri*, Turkey: Kultur Bakanligi Turk San'.at Eserteri, 1, n.d..
- Encyclopaedia of Islam*, New Edition, Leiden: E.J. Brill, 1960.
- Ennami, Amr K.,** *Studies in Ibadism (al-Ibadiyah)*, Beirut: University of Libya, Faculty of Arts, Dar al-Qalam Press.

88. Newton, Norman T., pp. 30-54; Crowe, Sylvia, pp. 17-19,24-30; Adam and Charles Black, pp.26-27, 35-36, 46-55; Laurie, Michael, pp. 14-16.

- Faruki, Kemal A.**, *Islamic Jurisprudence*, Karachi: Pakistan Publishing House, 1382H/ 1962C.
- Fyze, A.A.A.**, "Shi'i Legal Theories", in Khadduri, M. and Liebesny, H.J., *Law in the Middle East*, Washington: Middle East Institute, 1955.
- Hamidullah, Muhammad**, *The Muslim Conduct of State*, Lahore, Pakistan: Shaikh Muhammad Ashraf, 1973.
- al-Haythami, Nur al-Din `Ali Abu Bakr**, (d.807H./1405C.) compiled by *Majma'az Zawa'id wa Manba' al Fawa'id*, Beirut: Dar al-Kitab, .1967.
- Hourani, Albert**, *Arabic Thought in the Liberal Age*, London: Oxford University Press, 1939.
- al-Husaini, Ishaq Musa**, "Hisba in Islam", *The Islamic Quarterly*, London: The Islamic Center, 1966.
- Husaini, S.W. Ahmad**, *Islamic Environmental Systems Engineering*, London: The Macmillan Press Ltd, 1980.
- Ibn Ishaq** (d.151H.), *The life of Muhammad*, translated by A. Guillaume, Karachi: Oxford University Press, 1978.
- Ibn Khaldun** (d.784H./1382C.), *The Muqaddimah: An Introduction to History*, translated by F. Rosenthal, U.S.A.: Princeton University Press, 1967.
- Ibn Taymiyah, Taqi al-Din Ahmed** (d.728H./1328C.), in Bani Taymiah, (*Majd al-Din Abul-Barakat `Abd al-Salam ibn Abd Allah, Shihab al-Din `Abd al-Halim ibn `Abd al-Salam, and TaqiI al-Din Ahmad ibn `Abd al-Halim*) *al-Musawwadah fi Usal al Fiqh*, Cairo: Matba'ah al-Madami.
- Ibn Qudamah**, *Rawdah al-Nazir wa-Jannah al-Manazir*, Cairo: al-Matba'ah al-Salafiyah wa Maktabatuha, 1385H.
- Ibn Rajab, Abu Faraj `Abd ar-Rah man** (d.795H./1393C.), *al-Qawa'id fil-Fiqh al Islam*, edited by Taha Abdar Ra'uf Sa'd, Maktabah al kulliyat al-Azhariyah, 1392H./1972C.
- Jellicoe, G.A. and S. Water**, *The use of Water in Landscape*, London: Adam and Charles Black, 1971.
- al-Khidr Husayn, Muhammad**, "al-Rifq bi'l-Hayawan" in *Nur al-Islam*, al-Azhar, Cairo: Matba'ah al-Ma'ahid al-Diniyah, 1351 H./1933C.
- Laurie, Michael**, *An Introduction to Landscape Architecture*, New York: American Elsevier Publishing Co., 1975.
- Lehrman, Jonas**, *Earthly Paradise: Garden and Courtyard in Islam*, Berkeley and Los Angeles: University of California Press, 1980.
- Levy, Reuben**, *The Social Structure of Islam*, Cambridge: Cambridge University Press, 1969.
- MacDonall, Elizabeth and Richard Ettinghausen**, eds., *The Islamic Garden*, Washington D.C.: Dumbarton Oaks, Trustees for Harvard University, 1976.
- Mahdi, Muhsin**, *Ibn Khaldun's Philosophy of History*, London: George Allen and Unwin Ltd., 1957.
- Maktari, A.M.A.**, *Water Rights and Irrigation Practices in Lahj*, Cambridge University Press, 1971.
- al-Masri, F.H.**, (ed., and tr.), *Bayan Wujub al-Hijrah Ala'l-'Ibad*, Sudan: Khartoum University Press.
- Masud, Muhammad Khalid**, *Islamic Legal Philosophy*, Islamabad, Pakistan: Islamic Research Institute, 1977.
- Maududi, Sayyid Abul A'la**, *Towards Understanding Islam*, translated by Khurshid Ahmad, Tokoma Park, Maryland: International Graphics Printing Service,1977.
- Newton, Norman T.**, *Design on the Land, the Development of Landscape Architecture*, Cambridge, Mass: Harvard University Press, 1971.
- Norvelle, Michael E.**, *Water Use and Ownership According to Texts of Hanbali Fiqh*, McGill University, Master's Thesis, 1974.
- Nu'mani, Shibli**, *Al-Faroq: Life of Umer the Great*, translated by Zafar Ali Khan, Lahore: Shaikh Muhammad Ashraf, 1970.
- Qadri, Anwar A.**, *Islamic Jurisprudence in Modern World*, Lahore, Pakistan: Shaikh Muhammad Ashraf, 1973.
- Ramadan, Sa'id**, *Islamic Law, Its Scope and Equity*, London: P.R. Macmillan Ltd., 1961.

- Rosenthal, E.I.J.**, *Political Thought in Medieval Islam*, Cambridge University Press, 1958.
- al-Sayyid Sabiq**, *Fiqh al-Sunnah*, Beirut: Dar al-Kitab al-Arabi, 1391H./1971C.
- Sarakhsi, Abu Bakr Muhammad ibn Ahmad A.S.** (d.490H.), *Usul al-Sarakhs*, Beirut: Dar al-Ma'rifah li'l-Tha'ah wa al-Nashr.
- al-Sawwaf, Mujahid**, "Water in Islam", in *The Muslim World League*, Chicago: Medina Printers.
- Schacht, Joseph**, *Origins of Muhammadan Jurisprudence*, Oxford: Clarendon Press, 1975.
- al-Shatibi, Ibrahim ibn Musa**, *al-Muwafaqat Fi Usul al-Shari'ah*, edited by `Abd-Allah Draz, Cairo: al-Maktabah al-Tijariyyah al-Kubra.
- Stone, Christopher D.**, *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, New York: William Kaufman, Inc. Discuss Book, published by Avon Books, 1975.
- Tabatabai, A.S.H.**, *Shi'ite Islam*, translated and edited by S. Hossein Nasr, Albany: State University of New York Press, 1975.
- al-Turki, `Abd Allah ibn `Abd al-Muhsin, *Usul Madhab al-Imam Ahmad ibn Hanbal*, Cairo: Matba'ah Jami'ah Ayn Shams, 1394H./1974C.
- "Transactions in the Shari'ah", in *Law in the Middle East*, edited by M. Khadduri and H. Liebesny, Washington, D.C.: Middle East Institute, 1955.
- The Mejelle*, translated by C.R. Tyser, D.G. Demetriades, Ismail Haqqi Efendi, Lahore: All Pakistan Legal Decision, 1967.
- Villiers-Stuart, C.M.**, *Gardens of Great Mughals*, London: A. and C. Black, 1913.
- Villiers-Stuart, C.M.**, *Spanish Gardens*, New York: Charles Scribner's Sons, 1929.
- Wilbur, Donald**, *Persian Gardens and Garden Pavilions*, Rutland, Vt. and Tokyo: Charles E. Tuttle Co., 1962.