

Falaj Communities in Oman: A Case for Local Governance?

Ibādī Legal Rulings and Spatial and Ethnohistorical Observations

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Abstract

This contribution studies the complex arrangement of legal, socio-economic, and technical aspects of the *aflāj* (s. *falaj*) water distribution and irrigation system, and how they have shaped communities and built environments in Oman, where the *falaj* has provided the virtual lifeline of oasis life since the first millennium BCE. Three case studies of *falaj* communities are presented, Birkat al-Mawz, al-Ḥamrā', and Misfāt al-'Abriyīn, which developed during the prosperous early-Ya'rubī period in the mid-eleventh/seventeenth century. It investigates the extent to which the Ibādī-Islamic legal framework allowed flexibility for the local governance, management, and organisation of this ancient system, and its adaptation to diverse demographic, environmental, and emergent socio-political conditions.

Keywords

Birkat al-Mawz – *dawrān* – *falaj* – *fiqh* rulings – Ibādī – local governance – Misfāt al-'Abriyīn – Oman – *qanāt* – Ya'ariba

1 Introduction: Water, Tribes, and Geography¹

Human settlements in the hyper-arid Arabian Peninsula have relied heavily on intensive irrigation systems to support oasis agriculture from time immemorial. Initially, settlements harnessed surface run-offs from the *wādī* drainage system – the dry water courses activated with rainfall. As Robertson Smith suggested in his seminal contribution to the origin of the Semitic religions, surface water sources, as well as natural springs, were utilised by the early inhabitants of this region (Robertson Smith, 1927). These sources also were supported by well irrigation.

In addition to these, in Oman, the *aflāj* (s. *falaj*) irrigation system provided the virtual lifeline for oasis life, where harsh climatic conditions and insufficient and irregular precipitation impeded crop cultivation without access to artificial irrigation. Although its origins have been disputed, archaeological excavations have provided evidence for the existence of the *aflāj* in Oman since at least the first millennium BCE, predating

the Achaemenids, who are generally credited for the development of similar irrigation technology in Iran. Recent research from Oman and the United Arab Emirates has even suggested that the development and spread of the *qanāt falaj* originated in al-Ḥajar Mountains (Al-Tikriti, 2011), thereby supporting agricultural settlements (Nash, 2009, p. 59).

Aside from its sophisticated engineering, the *falaj* constitutes a complex socio-technical system playing an important role in Oman's socio-economic life (Al-Sulaimani et al., 2007). This is already embodied in the Arabic term *falaj* – the root word means “to split” – referring to the system of splitting and distributing water flow. Regulating and managing fair distribution and sharing water flow, regular *falaj* maintenance and repair works, and allowing flexibility to react and adapt to the growth of the community or changing environmental circumstances, have enabled the *falaj* systems to thrive in communities for centuries.

Focusing on three oasis settlements, Birkat al-Mawz,² al-Ḥamrā',³ and Misfāt al-ʿAbriyīn,⁴ where data was collected through extensive architectural, ethnographical, and urban documentation, we explore the interplay between Ibāḍī Islamic legal rulings (*fiqh*) regarding *falaj* management drawn from original sources and tribal political developments, and how these, in turn, shaped the *falaj* systems, communities, and built environments. We address the question of how did the Ibāḍī legal framework allow flexibility for the *local* governance, management, and organisation of this ancient water system, its adaptation to diverse environments, and emergent socio-political and demographic conditions.

This flexibility, we argue, allowed for large-scale land reorganisation in Birkat al-Mawz and al-Ḥamrā' during the eleventh/seventeenth century, resulting from collaborations between the central Yaʿariba imamate and ambitious local tribal groupings that varied in character and cohesion. The *falaj* communities introduced diverse spatial and architectonic measures to ensure the protection of *falaj* channels from environmental changes and illegal infringements arising from socio-political changes. The restoration of the *falaj* remained a communal affair, as did the determination of the length of the water cycle – subject to seasonal changes – within which the privately-owned individual water shares operated. Using the example of Misfāt al-ʿAbriyīn we demonstrate how the demands of an expanding nineteenth-century *falaj* community led to a modified water management and use system.

The three settlements, sharing a common history and demography, remain active *falaj* communities. From the mid-eleventh/seventeenth century onwards, during the Yaʿariba imamate (1033–1155/1624–1742), significant wealth was accumulated through overseas trade, the enforcement of maritime trading passes, customs duties collected at Omani ports, the occasional raiding of Portuguese overseas territories, and investments in land and irrigation systems within Oman and eastern Africa (cf. Alpers, 2014, pp. 96–7). The all-important reorganisation of land holdings resulted from changes in *fiqh* rulings, leading to extensive land development that supported the imamate treasury (*bayt al-māl*), as well as direct acquisitions by the *imam* and indirect holdings maintained by him or his agents (*dallāl*). New settlements, e.g., al-Ḥamrā' and Birkat al-Mawz,⁵ were developed in collaboration with tribes and confederations aspiring for political prominence, including the ʿAbriyīn and Banī Riyām, while smaller settlements, such as the single-tribe Misfāt al-ʿAbriyīn, underwent reorganisation and expansion.

Much like other important aspects of traditional Omani life, the *falaj* system reflected the integration of the Arab-Omani tribal structure with the Ibāḍī school of thought, the dominant form of Islam in Oman, and the quest for both strategic and pragmatic resolutions to any arising issues. Ibāḍī lawmakers (*fuqahā*; s. *faqīh*) had to develop a legal structure for all important matters in oasis towns and a jurisprudential framework that

not only conformed with Islam but applied the Ibāḍī-Omani ethos of conflict avoidance, cooperation, equity, fairness, and tolerance (Wilkinson, 2010, pp. 304–8).⁶

While the “productive assets,” or the previously established agricultural and hydraulic system predating the arrival of Islam, were absorbed under Ibāḍī Islam, it had to be matched with a very different social system, one that was tribally based and egalitarian with a horizontal social structure (Dybro, 1995).⁷ The above process, as pointed out by Wilkinson, led to the establishment of “the basic systems of institutional organisation in tribal, political, and village life” as early as the third-fourth/ninth-tenth centuries (Wilkinson, 1980, p. 122) and the traditional structure of oasis communities essentially in its current form. Without intending to repeat the authoritative and comprehensive discourse on Ibāḍī jurisprudence and its development in Oman offered by scholars, namely John C. Wilkinson (e.g., 1977, 1987, 2010), among others,⁸ this contribution aims to highlight the importance attributed to matters of the *falaj* system from the second-third/eighth-ninth centuries by Omani jurists.

The main geographical characteristic of northern Oman is the Oman Mountains, stretching in an arc from the Strait of Hormuz in the north to Ra’s al-Ḥadd in the southeast and following the Gulf of Oman coast (Figs. 1–2). Rising to over 3,000 m, this great central chain divides the north of the country into six distinct geographical

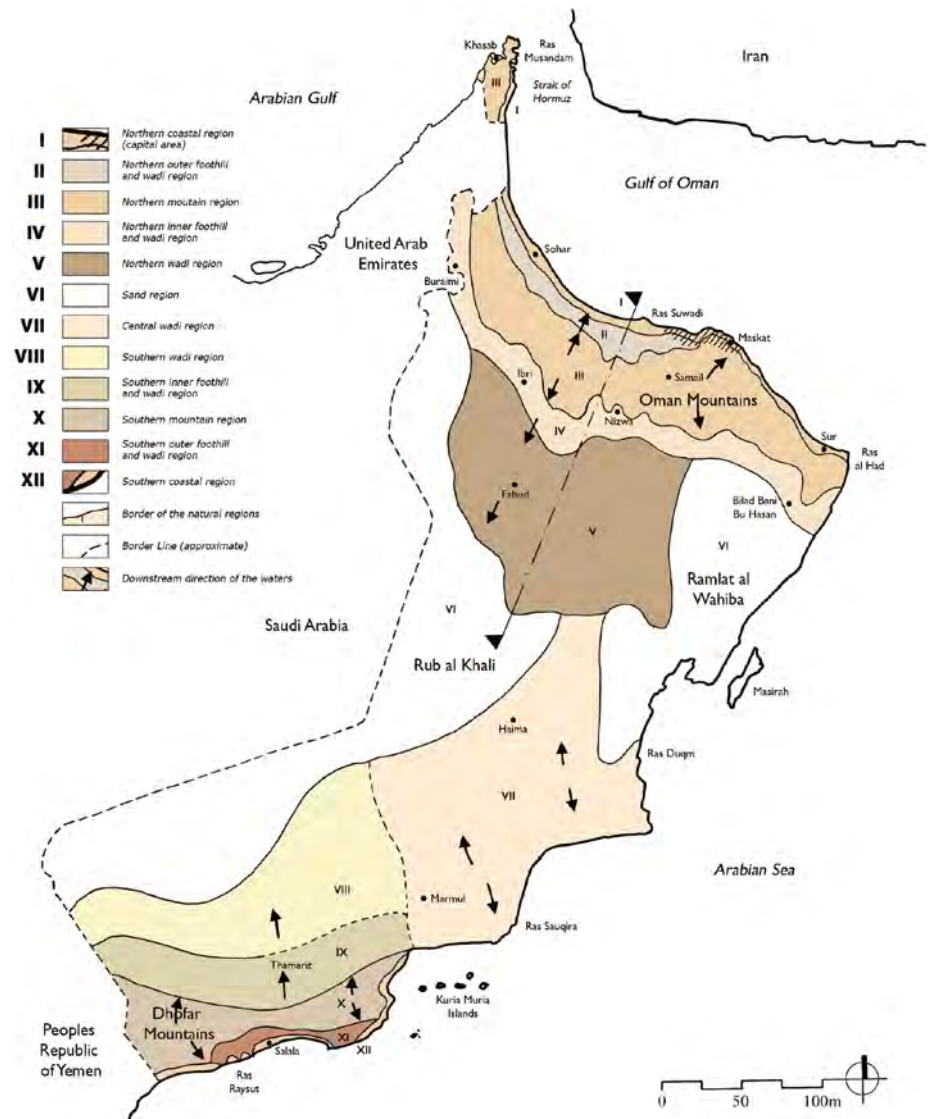


FIGURE 1
The six major geographical regions of Oman (after Scholz, 1978: 6)

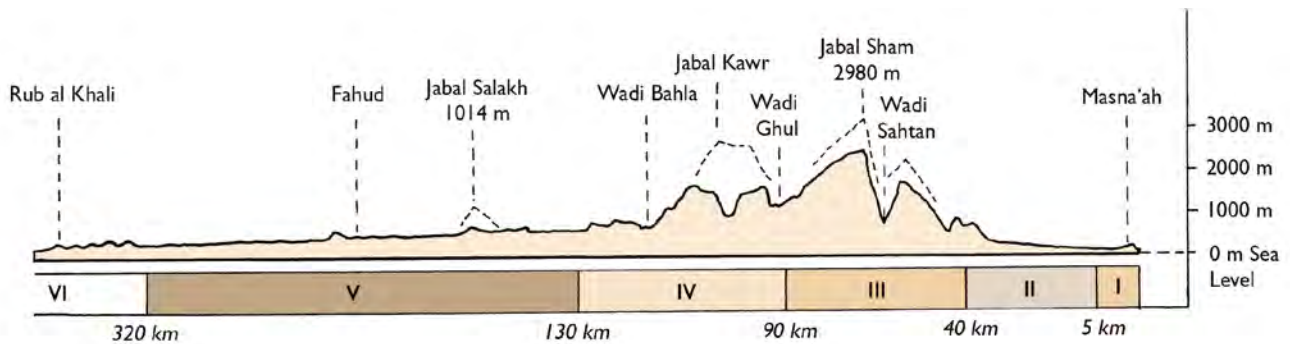


FIGURE 2
A schematic cross-section through the Oman Mountains (after Scholz, 1978: 8)

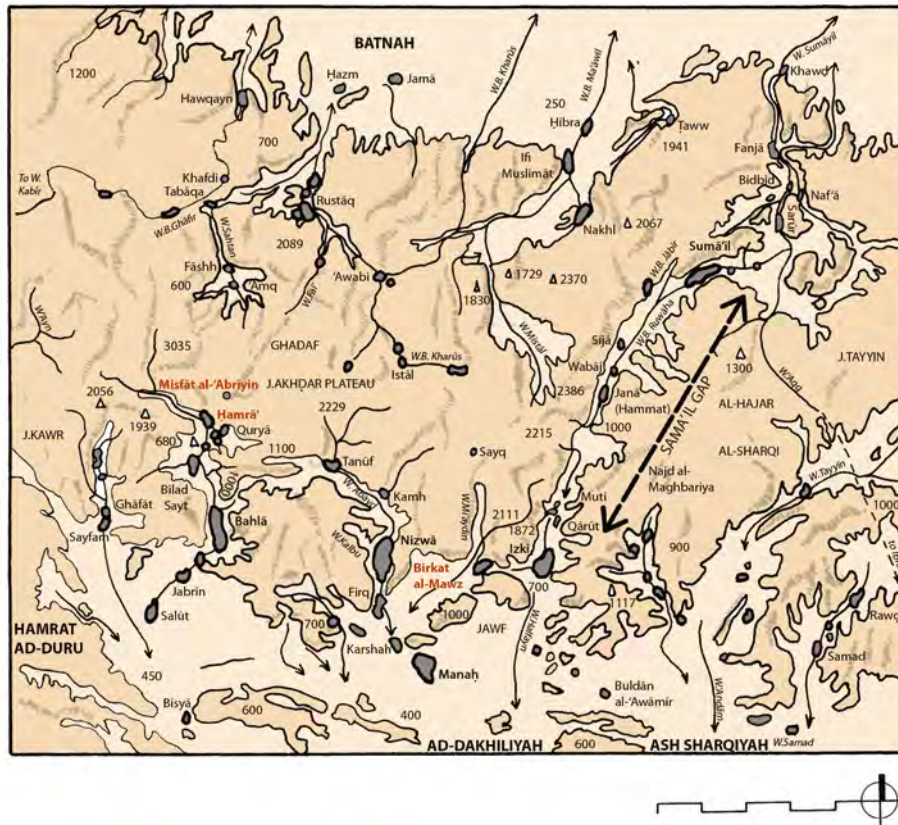


FIGURE 3
The nucleated oasis settlement pattern of the Omani interior shows the main settlements discussed (after Wilkinson, 1987: 388, map 3)

regions: i) the northern al-Bāṭinah coastal plain; ii) the outer (northern) foothill and *wādī* region; iii) the mountainous massif (al-Jabal al-Akhḍar); iv) the inner (southern) foothill and *wādī* region; v) the *wādī* alluvial fan (bajada) region; and finally, vi) the combined sand masses and barren terrain of Ar Rub‘ al-Khālī (the Empty Quarter), the Rimal ash-Sharqīya (Ash-Sharqīya Sands) and al-Wuṣṭa region. The nucleated oasis settlement pattern of the interior (the inland) stands in contrast to the continuous settlement strip of al-Bāṭinah coast. Pushed right within the folds of Jabal al-Akhḍar are a set of important settlements, e.g., al-Ḥamrāʾ, Tanūf, and Birkat al-Mawz, which were developed, or at least significantly redeveloped, during the Yaʿāriba imamate in collaboration with influential and emergent regional tribal groups, such as the ‘Abriyīn and the Banī Riyām (Fig. 3). Therefore, these Omani “new towns” maintain strong tribal links with several smaller villages perched on the heights of Jabal al-Akhḍar, e.g., Misfāt al-‘Abriyīn, Qiyūt, Sayq, and al-‘Ayn but also downstream as far as Manaḥ. Their strategically chosen locations, as we will see below, established imamate control over the *wādī-falaj* headwaters in collaboration with these tribes. The major urban centres of the region, including Bahlā, Nizwā, and Izkī, lie in a band at the foothills downstream.

Further south lies the third ring of settlements from Jabrīn, Salūt, Bisya, al-Ḥabbī, and Ma'mūrah in the west, to Karshā and Manaḥ in the centre, and to Samad ash-Sha'n, Muḍaybī, Sināw in Ash-Sharqīya region in the east.

2 The *Falaj* Irrigation System: A Techno-Socioeconomic Complex

While similar irrigation channel systems do exist under different designations, such as *Kariz*, *Foggara*, *Qanāt*, *Qanāt Romani* or *Galerias* (Al-Ghafiri, 2004, p. 27) across a wide geographical area (Al-Ghafiri, 2004, p. 28), from South America to South Europe, Yemen, North Africa, and Japan, the term *falaj* is used on the Oman peninsula for the man-made gravity-fed irrigation system to channel water from aquifers, *wādīs* or spring sources to cultivation grounds and villages. Depending on the water source, a *falaj* can be a *qanāt falaj* tapping an underground aquifer, a *falaj ghaylī* diverting water from the flow in the *wādī* bed, or a *falaj 'aynī* channelling water from a naturally surfacing spring (Figs. 4–5).

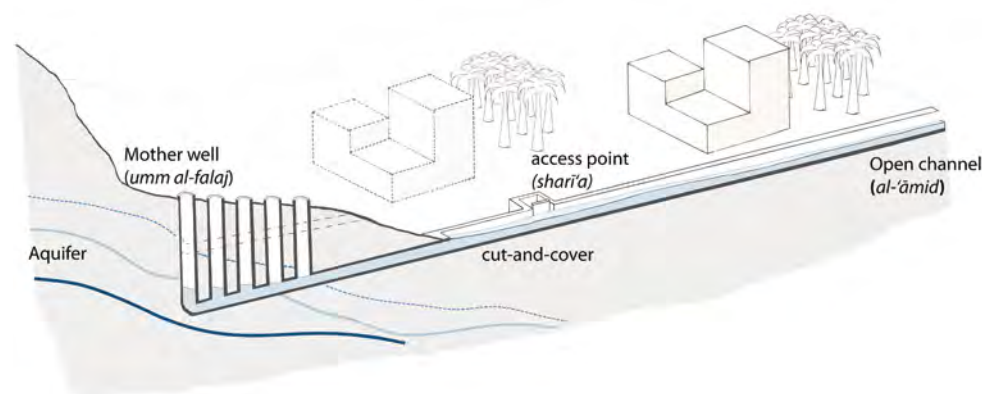


FIGURE 4
A schematic section of the *qanāt falaj* irrigation and distribution system, which taps water from underground aquifers



FIGURE 5
The source of an *'aynī falaj* in Bawshar near Muscat

The *qanāt falaj*, also called *falaj da'ūdī* (referring to the prophet Sulaimān bin Da'ūd, see below), taps groundwater from a mother well (*umm al-falaj*) dug into an aquifer at the foot of the mountains and channels it through a subterranean gallery (*sall*) with regularly placed ventilation and maintenance access shafts (*thuqub*, s. *thuqba*). The water is transported over a distance ranging from a few hundred meters to several kilometres. The channel must be constructed with a slight incline, less than the natural gradient of the aquifer, to ensure a controlled flow and avoid damage to the channel. In many cases, the water flow in the *sall* is increased through the excavation of additional “assisting” tunnels (*sawā'id*, s. *sā'id*), each with its own mother well connecting to the main subterranean channel. The subterranean channel surfaces in the village, often passing through a transitional area using a “cut-and-cover” method of construction (cf. al-Tikriti, 2011). The water is the purest where the channel surfaces, and here it's designated as an access point for drinking water collection (*sharī'a*). The *sharī'a* and the open channel were traditionally lined and finished in *ṣarīj* to reduce loss from leakage,⁹ but now it has been replaced with cement. The main channel (*al-āmid*) splits into two or more distributaries (*sawāqī*; s. *sāqīya*) further downstream. They are equipped with water-gates controlled by means of stone panels, textile or plant fibre bundles, and wooden boards, regulating water flow to individuals at a given time. Both the actual gate and the closing devices are called *suwār* or *jālāt* (s. *sūr*, *jāla*). Upon reaching the cultivation grounds, the *sawāqī* are further subdivided into small irrigation outlets for watering individual plots (*jalba*, *jil*, *uqīf*).

The flow in this hydraulic system is prone to the negative impact of extreme climatic events, including prolonged periods of drought, decreasing water flow, and flash floods causing damage or collapse of the walls and roofing of the underground channels, the washing away or blocking of channels, and damage to the agricultural terraces and walls.¹⁰ Conversely, *falaj* water flow increases during periods of rainfall, leading to reflows in areas that had run dry for long periods or were even considered “dead.”¹¹

The distribution of water to the *falaj* community (*ahl al-falaj*, *arbāb al-falaj*) is undertaken in a water cycle (*dawrān*) with a fixed number of days. The length of the *dawrān* varies considerably from one *falaj* to another, between 5–21 days. A complete day of the *dawrān* may be called *khābūra* (the term most frequently used in Omani legal works), *radda* (e.g., in Ad-Dākhilīya) or *ād* (e.g., in Al-Bāṭinah; Al-Ghafiri, 2004, p. 47). A *radda* is subdivided into two *bādda* corresponding to roughly 12 hours, which in turn are subdivided into 24 *athar*, each equalling about 30 minutes.¹² The smallest unit of practical relevance in Misfāt al-ʿAbrīyin is the *kīs* (*kīyās*) of 1.25 minutes (Bandyopadhyay *et al.*, 2016, p. 39). Al-Ghafiri (2004, p. 47) mentions the *mithqal* and *ḥabba* units of 9.36 and 0.26 seconds, respectively, for the *falaj* of al-ʿAwābī; smaller share units with fractions of seconds are relevant only to inheritance laws (Wilkinson, 1977, p. 108). Again, the actual duration connoted by the share units may vary from one area to another, and locally, a *bādda* may signify not 12 but 24 hours (Wilkinson, 1977, p. 107), as is the case in *aflāj* of Adam (Al-Mahrooqi, 2020) or in Ash-Sharqīya (Al-Ghafiri, 2004, p. 48, and supporting literature therein).

Before the widespread use of watches, various methods of time measurement were employed for water shareowners to know exactly when their turn (i.e., his right to irrigate) would start and end. During the day, sundials were used for most *aflāj*: a public facility set up at an exposed location where the shadow of an iron rod, called *lamad* would point to stone markers set in rows on the ground indicating the individual shares.¹³ At night, water share timings were managed by stargazing, where the position of particular stars or constellations would indicate the timing (Nash, 2009). This latter method, rather complex, is rapidly falling into oblivion as only a few knowledgeable

and experienced stargazers remain. A further method used during day and night is a type of water-clock employed in the villages on Jabal al-Akhḍar (Al-Ghafiri *et al.*, 2003). This *ṭāsāt or ṣaḥlat al-falaj* method consists of two copper bowls; the smaller one with a hole piercing the bottom is set into a larger bowl filled with water. The time it takes to fill the smaller bowl with water equals one specific water share, *ṭāṣā*.

Water shares are owned by individuals, with a certain number of shares retained for the *falaj*. Termed *qa'ādat al-falaj* (see Wilkinson, 1977, pp. 112–4 and the Omani sources mentioned therein; Al-Ghafiri, 2004, p. 49), these shares are usually leased in an auction (*munāda*) for shorter or longer periods to ensure the maintenance of the *falaj*, including the remuneration of its personnel and associated communal services. These *falaj* shares either constitute religious endowment holdings (*waqf*) and thus cannot be resold (Wilkinson, 1977, p. 113) or are government property (*bayt al-māl*; Al-Ghafiri, 2004, p. 16).

The length of a *falaj dawrān* mostly results from the strength of water flow – a strong flow allowing the extension of *dawrān* length, as well as the nature of the soil – a heavy loamy soil keeping the water for a longer duration, would need less frequent irrigation than a sandy or gravelly soil. However, the irrigation cycle of most *aflāj* ranges between 7–14 days (Al-Ghafiri *et al.*, 2003a). The initial decision on the quantity of *dawrān* days may depend on the number of people with rights to the *falaj* (Wilkinson, 1977, p. 101). Once fixed, the length of the *dawrān* may be extended later only under certain exceptional circumstances, such as in periods of increased water flow or to generate additional funds. This might be for *falaj* restoration, or extension works requiring the excavation of additional feeder channels for the *sall al-falaj* through the sale or rent of water rights of the additional *bādda* or *radda*. Over the course of a *falaj*'s history, water shares change hands regularly through endowment, inheritance, and sale (for *falaj* water trade, see Al-Shaqsi & Nash, 2011, p. 104). Water rights mostly are not connected to land titles, nor are they confined to *falaj* community residents. *Falaj* shares can be owned by individuals who are not part of a community's tribal makeup: shareholders may be from other villages or reside abroad temporarily and even on a permanent basis.

Following the complex interplay of environmental, historical, socio-economic, and technical factors outlined above, each *falaj* constitutes a unique and highly localized system adapted to multiple variants. These have been shaped across generations of users, always with the overarching aim of ensuring the livelihood of the *falaj* community in the harsh and resource-scarce Omani environment. This development also entails functioning management of *falaj* matters as a shared responsibility of all *falaj* owners, in addition to the designated personnel. At the helm, figures the *wakīl*, directing the affairs of the *falaj* and overseeing expenditure for repairs, who is chosen by the shareholders, has considerable decision-making authority regarding its daily affairs and can contact the main shareholders (*jubah* or *jabaha al-falaj*) for important decisions (Wilkinson, 1977, p. 120; Al-Qadahat & Al-Rahbi, 2020).

Depending on the size of a *falaj* system, management officials may hold several specialised positions, each with a defined role and responsibility, and financially compensated accordingly, usually from the proceeds of auctioning *falaj* shares (Wilkinson, 1977, p. 120; Al-Ghafiri *et al.*, 2003, fig. 1.2). The *wakīl* would be assisted by the bookkeeper (*amīn as-sijil* or *amīn ad-daftar*), who keeps a record of any changes in *falaj* share ownership through inheritance or temporary sale or lease, by the more technical position of *arīf*, overseeing the service of the *falaj*, and sometimes by additional *arīf*, one responsible for the tunnels while another cares for the above-ground channels (Al-Ghafiri *et al.*, 2003). A further role would be the auctioneer (*dallāl*), and for some communities, also an official stargazer (Nash, 2007). Farming activities are completed

by both male and female members of the farmer's family or by farm workers (*bayādīr*, s. *bīdār*), also responsible for irrigation activities, who are usually paid in kind (Al-Ghafri 2004, p. 193).¹⁴

3 Birkat al-Mawz and al-Ḥamrā': Differing Tribal Cohesion and Physical Form

Aside from topography, the differing tribal composition of *falaj* communities had an important impact on the physical form and cohesion of oasis settlements. Birkat al-Mawz is a sub-district (*nīyāba*) under the administrative district (*wilāya*, pl. *wilāyāt*) of Nizwá, in Ad-Dākhiliya governorate, located 140 km southwest of Muscat and 23 km east of Nizwá. It is adjoined by the sub-districts of Izkī, Nizwá, and Manaḥ in the east, west, and south, respectively, and the Jabal al-Akhḍar Mountains in the north. Located where Wādī al-Mu'aydin emerges from Jabal al-Akhḍar, the oasis extends between the foothills and the isolated lower hills farther south, guarding natural access to the upper reaches of the mountain. It is likely that a settlement had existed before Falaj al-Khatmeen was established during the imamate of Sulṭān bin Sayf I (1059–91/1649–80). He had ordered the continued cultivation of bananas alongside date palms and named the area Birkat al-Mawz.¹⁵ The original mother well for this *da'ūdī falaj* is situated c.2.45 km north of the oasis within the *wādī* gorge with an additional water source located nearby; a third assisting tunnel, (*sā'id*) Sā'id ar-Ruḍayda, was added close to the *sharī'a* (MRMWR, 1999a), north of Bayt ar-Ruḍayda, a palatial fortified dwelling constructed by Imam Sulṭān (Figs. 6a–b). South of Bayt ar-Ruḍayda is the mosque, Masjid al-Ya'rubī (or Masjid ash-Sharī'a), also constructed by Imam Sulṭān (Fig. 7). The main channel divides into three at the split (*ghiyāz*) downstream from the mosque. The upper two channels, snaking along the foothills through settlement quarters and watering the entire eastern part of the oasis, transport three divisions of water between them (uppermost: two; lower: one), while the lower channel waters the gardens south of the split brought two divisions (as-Ṣaqrī, 2011, interview).¹⁶ The system operates on a nine-day water cycle (*dawrān*).¹⁷

The oasis contains three main settlement quarters (*ḥārāt*; s. *ḥāra*): as-Saybanī, al-Wādī (or as-Sūq), and al-Maqasīr (Fig. 8).¹⁸ Both upper channels pass through Ḥārat as-Saybanī. The lower of the two ends in the gardens below al-Maqasīr, the uppermost winds its way through the *ḥāra* and splits into two: one progressing farther east to cover the rest of the gardens, while the other turns south into an impressive aqueduct constructed by Imam Sulṭān bin Sayf I. The latter carries water to the far southern end of the oasis beyond the low hills and eventually to the graveyard (Fig. 9). The commercial strip along the main passage through the oasis defines the northern boundary of the radially extended gardens watered by the lower channel. Ḥārat al-Wādī developed as an overspill around an existing market (*sūq*) along a tributary *wādī*, once Ḥārat as-Saybanī, reputedly the oldest quarter in the oasis, could accommodate no more, as did Ḥārat



FIGURES 6A–B
Birkat al-Mawz oasis: Bayt ar-Ruḍayda, the palatial fortified dwelling constructed during the imamate of Sulṭān bin Sayf I (1059–91/1649–80), showing state a) before restoration (photo, January 1972, courtesy John Warr), and b) after rebuilding in the early-1990s by the Ministry of Heritage and Tourism, Oman



FIGURE 7
Birkat al-Mawz oasis: Masjid
al-Ya'rubī (or Masjid ash-Sharī'a)

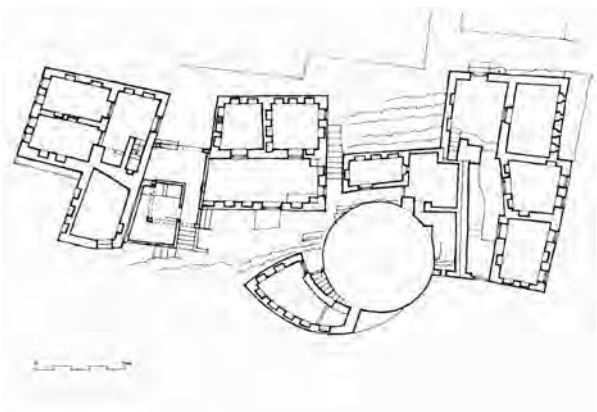


FIGURE 8
Birkat al-Mawz oasis: an aerial
photograph showing the source
and the three main channels of
Falaj al-Khatmeen and the key
settlements: A. Ḥārat as-Saybānī;
B. Ḥārat al-Wādī; C. Ḥārat
al-Maqaṣīr
Aerial photograph, 2002, courtesy
National Survey Authority, Oman

al-Maqaṣīr (Figs. 10a–b). The inhabitants of the oasis are predominantly from the Banī Riyām tribal confederation. In Ḥārat as-Saybānī, this included: the Banī Riyām – its shaykhly clan, the Awlād Rāshid, who were mainly entitled to use the surname (*nisba*), ar-Riyāmī;¹⁹ Banī Tawba, who also included ad-Daghāsha; al-Fuhūd; as-Ṣuqūr; Banī



FIGURE 9
Birkat al-Mawz oasis: an aqueduct dating from the eleventh/seventeenth century



FIGURES 10A–B
Birkat al-Mawz oasis: the tower in Ḥārat al-Maqasir settlement quarter overlooking the eastern gardens and aqueduct; a) view and b) plan

Ḥaḍramī; as-Siyābiyīn; Banī Na‘b; ash-Sharayqīyīn; and a single al-‘Abrīyīn house (Table 1; Fig. 11). While this strong tribal confederation under the paramount shaykhly leadership of the Nabāhinah wielded significant political power during the late-nineteenth and mid-twentieth centuries, which will be discussed below from two accounts of settlement reorganisation and expansion at Ḥārat as-Saybānī, the individual tribes continued operating with a degree of autonomy within their *ḥāra*. The original location of the old congregational mosque (*jāmi‘*), Masjid al-Waljah, and other civic amenities *extra-muros* is also an indication of a more “collectively formed” settlement quarter (Fig. 12).

Code	Tribe	<i>Nisba</i> (surname)	<i>Dār</i> (tribal territory)	Political affiliation (pre-1970)
A1	Al-ʿAbriyīn	Al-ʿAbri	Jabal al-Akhḍar, Al-Ḥamrāʾ	Ghāfirī
A2	Banī Naʿb	Al-Nāʿbī	Al-Ḥamrāʾ, Izkī	Al-ʿAbriyīn/Ghāfirī
B1	Banī Riyām	Al-Riyāmi	Jabal al-Akhḍar	Ghāfirī
B2	Banī Tawba	at-Tawbī	Jabal al-Akhḍar, Izkī, Nizwā, Samāʾil	Banī Riyām/Ghāfirī
A3	Al-Fuhūd	Al-Fahdī	Izkī, Jabal al-Akhḍar, Nizwā, Manah, Samāʾil	Banī Riyām/Ghāfirī
A4	As-Ṣuqūr	as-Ṣaqrī	Jabal al-Akhḍar	Banī Riyām/Ghāfirī
A5	Al-Siyābiyīn	as-Siyabī	Bidbid, Samāʾil	Ghāfirī
S1	Ash-Sharayqīyīn	Ash-Sharayqī	Jabal al-Akhḍar, Al-ʿAwābī, Nakhal	Ghāfirī
A6	Banī Ḥaḍramī	Al-Ḥaḍramī	Izkī, Nizwā, Manah, Samāʾil	Ghāfirī

TABLE 1
Birkat al-Mawz oasis: the tribes of
Ḥārat as-Saybanī quarter

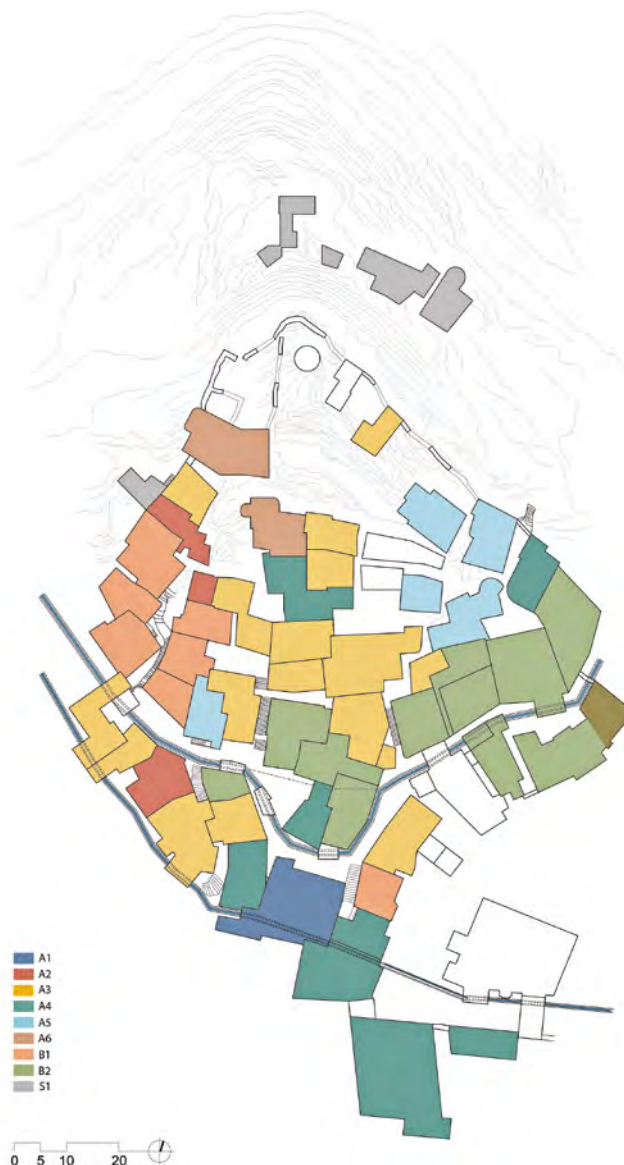


FIGURE 11
Birkat al-Mawz oasis: spatial
distribution of tribes in Ḥārat
as-Saybanī quarter (see also
Table 1)



FIGURE 12
Birkat al-Mawz oasis: the masjid al-Waljah in Hārat as-Saybanī quarter



FIGURE 13
Al-Ḥamrā' oasis: an aerial photo showing Wādī Ghūl and key tributary channels, and the source and the two main channels of Falaj al-Ḥamrā' Aerial photo, 2022, Google Earth

Al-Ḥamrā' oasis, on the other hand, demonstrated a higher degree of cohesion as it evolved, given that the groups belonged to the same tribe, 'Abriyīn. The traditional centre (*dār*) of the 'Abriyīn tribe, al-Ḥamrā' forms part of a wider *wilāya* of the same name in Ad-Dākhiliya governorate, 220 km southwest of Muscat.²⁰ The administrative district adjoins Nizwá, 'Ibrī, Bahlá, and Ar-Rustāq on the east, west, south, and north, respectively. It extends between the foothills of Jabal al-Akhḍar, which at this point provides the principal access to Jabal Shams, Oman's highest peak, and the isolated hills that extend along Wādī Ghūl (Fig. 13). This watercourse is met by several tributaries, including as-Šlīl, al-Mid'am, al-Milḥ (Wādī al-Misfāh), and as-Sha'ma, penetrating through the oasis (Al-Abri, 2015, pp. 66–70, figs. 22–4). Before Ya'āriba imamate rule, the region was known as Kudam and gained its new name, al-Ḥamrā', from the red soil of the low

hills in al-Ḥabil area surrounding the oasis from the southeast.²¹ The main settlement quarter, Ḥārat al-Wuṣṭa developed in the Ya'āribā period bordering a large fan-shaped depression which evolved into the oasis gardens. Al-Wuṣṭa and its subsequent expansions of ash-Sharqīya, al-Ālī, and al-Ḥadītha, as well as the *sūq*, form the northern edge of the oasis, while as-Ṣuḥma and al-Mansur establish the southern edge. A smaller, possibly older settlement quarter, Ḥārat Māl ad-Dākhil, is located at the heart of the oasis.

Similar to Khatmeen, Falaj al-Ḥamrā' is a *da'ūdī falaj* fed through four main source channels (*sawā'id*), namely al-Ṣlīla, al-'Wr, al-Khashba, and al-Ḥadīth. The main subterranean channel extends over 3.2 km to the *shar'ī'a* dividing into two channels (*sawāqī*), the Sāqiyat al-Bilād, extending 1.5 km, directed east towards Ḥārat al-Wuṣṭa, and Sāqiyat as-Ṣuḥma, extending 1.9 km in a southeast direction towards as-Ṣuḥma (MRMWR, 1999b; Al-Abri, 2015, pp. 151–2). The al-'Abrīyīn tribal groups who are considered to have descended genealogically from the eponymous 'Abra are the Awlād 'Alī bin Mas'ūd bin Lahī (who consists of Awlād Mālik, Awlād Ṭālib, and Awlād Khalaf; Al-'Abri, 1958, p. 6). As a result, several other groups have assimilated, particularly the Sharāmḥa, al-'Azīz, Awlād Sarā', al-Gḥdābiyīn, Awlād al-'Athim, Awlād Naṣīr, Awlād Sālim bin Mas'ūd, Awlād Rāshid bin Mas'ūd, and Awlād Khamīs bin Mas'ūd, who are collectively known as Awlād 'Amrān (Al-Abri, 2015, p. 158, citing Al-'Abri, 1958; Al-Hinai, 2010) (Fig. 14). The other tribes who resided with the 'Abrīyīn are the Banī Subḥ, Dhuhul, Banī 'Adī, Banī Khiyār, Banī Ḥaṭṭāl (Ḥaṭṭatila), al-Sharyānī, al-Mayāḥīs, al-Khawāṭr, and al-Nawāṣīr (Al-Abri, 2015, p. 158, citing Al-'Abri, 1958), some of these maintained a strong relationship with the 'Abrīyīn.

This single-tribe identity with constituent clans provided a high degree of spatial cohesion, evident from the highly organised settlement at Ḥārat al-Wuṣṭa. The first dwellings to be constructed were Bayt as-Safāh for Shaykh Muḥammad bin Yūsuf bin Ṭālib

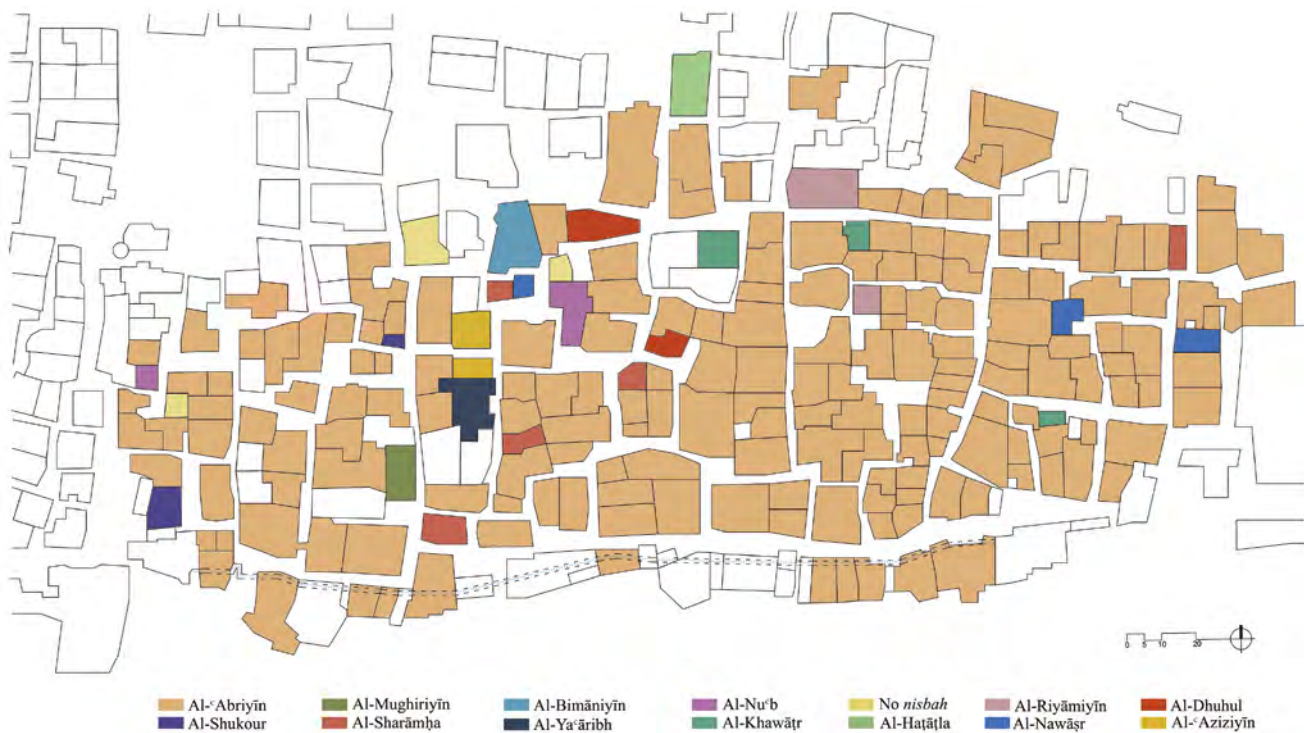


FIGURE 14
Al-Ḥamrā' oasis: spatial
distribution of the tribes and the
al-'Abrīyīn clans of Ḥārat al-Wuṣṭa
quarter (after Al-Abri, 2015)

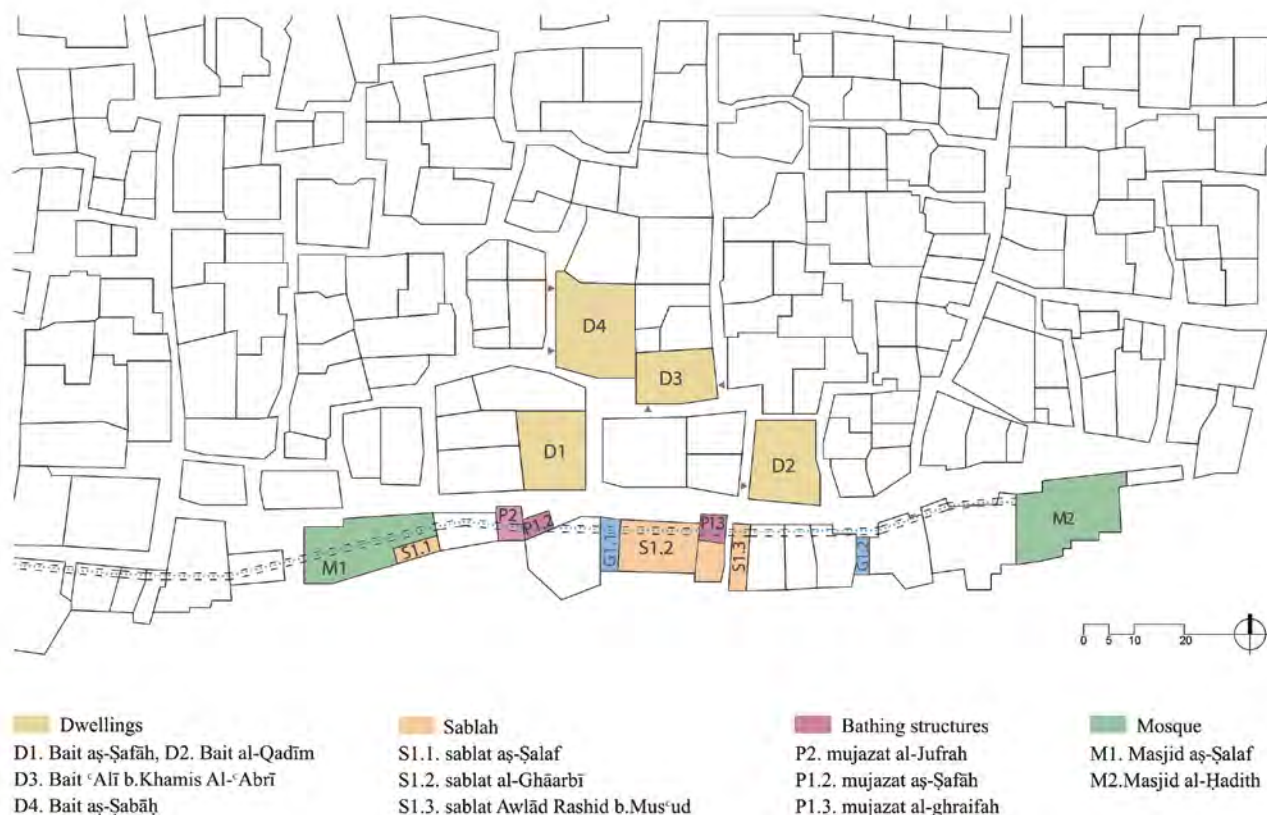


FIGURE 15
Al-Ḥamrā’ oasis: an early settlement of shaykhly families, and key *falaj* and civic amenities in Ḥārat al-Wuṣṭa quarter (after al-Abri, 2015)

bin Rāshid, Bayt al-Qadīm for Shaykh Sālim bin Khamīs bin ‘Amr bin ‘Isa, Bayt as-Sabaḥ by his brother, Rāshid bin Khamīs, and the dwelling northeast of Bayt as-Safāh by his other brother, ‘Alī bin Khamīs (Al-Abri, 2015, p. 161, also citing Al-‘Abri, 1958) (Fig. 15). These buildings formed a “civic square” facing the main channel, Sāqiyat al-Bilād. The first three mosques constructed contemporaneously to these early dwellings, with very similar layouts, were Maṣjid as-Ṣuḥma (or Maṣjid as-Ṣarūj) near the *sharī’a* of the *falaj*²² and in Ḥārat al-Wuṣṭa, Maṣjid as-Salaf southwest of Bayt as-Safāh, and Maṣjid al-Ḥadīth, reputedly the oldest mosque in the *ḥāra*, southeast of Bayt al-Qadīm.²³ These two mosques marked the edge of the *ḥāra*, on the west and the east, respectively, and established a unified series of civic amenities comprising ablution (*wuḍū’*) and drinking water access, a *madrasa*, several male meeting halls (*sabla*), and female bathing and prayer areas (*majāza*), straddling the channel that protected the course of the *falaj* (*ḥarīm al-falaj*). By adding a communal dimension and establishing the main civic passage. The subsequent dwellings followed this civic and domestic order established in the early development phase.

4 Falaj in Ibāḍī Fiqh Works: Flexible Local Governance

The *falaj* irrigation-based oasis towns of Oman developed at least in the first millennium BCE and continued to constitute one of the pillars of life throughout the early centuries of the first millennium CE. This saw the arrival of two major Arab Azd tribal migrations into Oman before the coming of Islam; the first from Yemen in the second century CE, and the second from the north and northwest, in the fifth century CE. Omanis began converting to Islam in the early first/seventh century, during the lifetime of Prophet Muḥammad. The Azd and other Omani-Arab tribes took an active role in the Islamic conquests, such as in Persia (Rawas, 1990, p. 53). The outstanding

services rendered by the Azd in such campaigns allowed them to rise to prominence in Mesopotamia, particularly in Baṣrah, where many of them had settled, and Oman was administratively linked (Rawas, 1990, p. 56). The Ibādī school, the dominant form of Islam in Oman, had its origin in Baṣrah and was a “by-product” of the Omani Azd settlers’ opposition to the Umayyads (Rawas, 1990, pp. xiii–iv), which aimed to establish an imamate based on the principles of the school. The rapid spread of Ibādī teachings in Oman during the reign of the Iraqi Umayyad governor, al-Ḥajjāj bin Yūsuf al-Thaqafī (75–95/694–704), had been significant, labelling the community an “underground organisation” posing a threat to the caliphate (Rawas, 1990, p. 125).

As the Omani Ibādī community continued to grow steadily, and after the first short-lived imamate of al-Julandā bin Mas‘ūd (132–4/750–2), and a subsequent 40-year period of internal and external strife and tribal turmoil (Rawas, 1990, pp. 166; 193f), the Ibādī Imamate was finally re-established in 177/793. The reign of Imam al-Warīth bin Ka‘b (179–92/795–807), often considered to be a “Golden Age” by the Omani Ibādīs (Rawas, 1990, p. 226), initiated a phase of stability. With the election of Imam Ghassān bin ‘Abdullāh al-Yaḥmadī (192–208/808–23), special attention was given to improving irrigation and developing agriculture (Rawas, 1990, p. 234), including the removal of corrupt government employees (As-Salīmī, *Tuhfa* 1, pp. 125–8). Under the third/ninth century Omani imamate, the economy of the Omani interior oases was finally able to recover from foreign exploitation and turmoil characterising the previous two centuries (Wilkinson, 1977, pp. 123f). The ensuing developments led to agricultural growth and prosperity marking the third/ninth-century imamate and culminated in central Oman’s agrarian society being firmly rooted in the cultural landscape of *falaj*-irrigated oasis towns, most already existing for centuries or even millennia.

From the early-Ibādī legal compilations of the second/eighth century, and more particularly since the third/ninth, matters regulating life in the oasis towns were given ample attention. The rulings aimed to ensure that these long-established agricultural communities thrived and equitable distribution of the crucial elements necessary for the survival of the oasis communities, water and arable land, were provided (Wilkinson, 1978). Climatic conditions and rainfall patterns prohibit dry farming in Oman as most areas receive less than 100 mm/yr of annual rainfall (MRMWR, 2005 cited in Nash, 2009, p. 18). Nearly all agriculture in Oman was fully dependent on artificial irrigation, and the *falaj* had been the cornerstone to the survival of the oases (Al-Gafiri & Inoue, 2003). Therefore, it is only natural that questions related to the *falaj* irrigation system and agricultural land and activities received a fair amount of discussion.

The fact that such a discussion does not take a systematic approach (Wilkinson, 1978), resulting in the construction of a structured and comprehensive legal system on *falaj* irrigation, could be viewed against the background of Ibādī legal rulings dealing with existing and probably mostly well-functioning oasis agriculture and *falaj* systems (Rohe, 2015) and communities, of which these *fuqahā* usually were members. Thus, even the terminology used in reference to *aflāj* and land titles is specifically Omani (see Qadahat & Rahbi, 2016). Moreover, famous Omani scholars and jurists, e.g., Jābir bin Zayd al-Azdī (from Farq near Nizwā; d. 93/711), Muḥammad bin Sa‘īd al-Na‘bi al-Kudamī (from Kudam, al-Ḥamrā; d. 361/972), Abū’l-Ḥawārī (from Tanūf; third-fourth/ninth-tenth centuries), al-Faḍal al-Ḥawārī (from al-Nizār, Izkī; died. 278/891), and the authors of the *Bayān ash-shar‘*, Muḥammad bin Ibrahim al-Kindī (d. 508/1115), and of *Al-Musannaf*, Aḥmad bin ‘Abdallāh al-Kindī (d. 557/1162, both from Nizwā), and countless others were brought up and lived in important *falaj*-based oasis towns and had been engaged in seeking to resolve practical and often localised legal issues within their communities.²⁴

Consequently, in their compilation of rulings pertaining to the *falaj* system, authors such as Shaykh Aḥmad bin ‘Abdallāh al-Kindī discuss concrete local cases – they would have been familiar with *aflāj* in their capacity as local residents – including the Falaj

as-Su‘ali, or the Falaj Dawt and Falaj Ghantaq in Nizwá (al-Kindī, *Al-Musannaf* 17, pp. 28–9). This leads us to a particularly noteworthy feature in the Omani *fuqahā*’s legal works (e.g., al-Kindī in *Al-Musannaf*), namely the emphasis placed on local *sunna* when discussing the social and managerial aspects of the *falaj* system. We propose that this is an indication of a functioning system of constructing, managing, and maintaining *aflāj* during the lifetime of those *fuqahā*, a system in place for a long time.²⁵

It is well established that Islamic law generally incorporated the customary law, *‘urf* of a region and its local *sunna* if it did not arouse contradiction with the teachings of Islam (Rohe, 2015a, p. 87). Several authors have elaborated on the pre-Islamic roots of Oman’s Ibāḍī land and water law (e.g., see Wilkinson, 1977; 2010; 2014; 2015; Francesca, 2005; Rohe, 2015), stating they were based on local or regional customs rather than Ibāḍī *fiqh* rulings and Islamic norms. They provided a new Ibāḍī-Islamic framework for the existing and proficient irrigation systems “on a broad customary law basis” (Rohe, 2015a). The *falaj* irrigation system constituted a system of such antiquity that it was not only designated as *nahr*, i.e., a naturally occurring stream or a river but had been actually regarded as a natural phenomenon. *Aflāj* were considered “God-given, built by Sulayman b. Dawud and his jinns!” (Wilkinson, 2015, p. 16). These sentiments led to the higher dry farming (*ba‘al*) based taxation of ten percent for *falaj* irrigated agriculture compared to five percent in the case of well irrigation, the former considered as water delivered without the input of work, while well irrigation required manual labour (Wilkinson, 2015).

Acknowledgement of established ways of doing things in the way of the people’s *sunna*, “the custom of the community” (Francesca, 2014, p. 119), the “*sunnat arḍikum*” or “the collective memory of the community” (Wilkinson, 2010, pp. 200, 266) and a pragmatism asserting not to interfere in what worked well, are traits of Ibāḍī *fiqh* traceable to its very beginnings – to the time of the Omani theologian Jābir bin Zayd al-Azdī in the first century/seventh century (Wilkinson, 2015, p. 17). Local customs were understood as the parameters for correct modes of behaviour, a benchmark where cases with doubt or disputes could be analysed, and answers proposed. Thus, Ibāḍī rulings do not question an established *falaj dawrān* and its shares; on the contrary, they seek the perpetuation of the way things have been done in the past and tend to forward decisions according to the *sunna* of a particular *falaj* and the *sunna* and *‘urf* of its community (al-Kindī, *Al-Musannaf* 18, p. 492 and other instances; cf. Wilkinson, 1977, p. 121).

As a result, during the reign of the first Omani *imam*, while the basics of Ibāḍī jurisprudence – laid down, especially by Jābir bin Zayd (Francesca, 2014) – were applied to *falaj* and land issues arising from local circumstances and conditions, the need for truly ground-breaking and potentially game-changing rulings seems to have been limited. Instead of technical aspects, they addressed matters of social equity and corporate responsibility; such cases have since been dealt with in great detail through research on the development of Ibāḍī jurisprudence (Wilkinson 2015). One of the most significant rulings in this respect, discussed at length by Wilkinson (2015), is that of Imam Ghassan in the early-third/ninth century regarding a community’s right of access to *falaj* headwaters (al-Ḥawārī, *Jāmi‘* 3, p. 51) irrespective of their location in the land of others. Hence the foundation for legal rulings under the imamate as compiled, for example, in the works of third/ninth-century *fuqahā*, including the *Jāmi‘* of al-Faḍal al-Ḥawārī, third/tenth century *al-Jāmi‘ al-mufīd* of Muḥammad al-Kudamī or the sixth/twelfth-century monumental work, *Al-Musannaf* of Aḥmad al-Kindī and *Bayān ash-shar‘* of Muḥammad al-Kindī, were based on local ways of managing, maintaining, and operating the irrigation system.

Ibāḍī law in Oman developed within communities which had their ways of life and methods of dealing with the practical issues arising from their respective agro-hydraulic

system, and as Wilkinson so aptly framed it, who “knew their own agricultural economy better than did the outsider!” (Wilkinson, 2010, p. 304). Within the overall framework of the Ibāḍī community and the teachings of Ibāḍism, the complex and locally diverse systems of *falaj* management continued to exist and develop in reaction to local circumstances, including *falaj* water-flow and the climatic, environmental, and socio-historical factors. Each community was encouraged to follow the proper *sunna* of its *falaj*. This choice, declared by the *‘ulamā*, namely Shaykh Aḥmad bin ‘Abdallāh al-Kindī citing Abū’l Ḥawārī, was thought to be the correct approach: “every people (*qawm*) follow their own *sunna*. And nobody should change that” (al-Kindī, *Al-Musannaf* 17, p. 29). Furthermore, “each *falaj* has its own acquired *sunna* – *sunna ‘alati ‘udrika ‘alayha*, which it should not give up unless it should turn out to be wrong” (al-Kindī, *Al-Musannaf* 17, p. 28). Abū Sa‘īd al-Kudamī too, when discussing the cleaning of *falaj* channels, employs the term, *al-sunna al-madrūka*, which should be followed (al-Kudamī, *Al-Jāmi‘* 3, p. 199). In a sense, this term comes close to the jurisprudential meaning of *‘urf* (al-Kindī & Bouzenita, 2018). Rohe points out that even in today’s legal handling of *aflāj* by the Omani authorities, the boundary between what is a local custom and Ibāḍī law becomes obscured (Rohe, 2015), and thus local customs are considered Ibāḍī law.

The technicalities of the *falaj* system’s construction and operation seem to be taken for granted when only mentioned in the context of arising social justice and other legal issues.²⁶ The *leitmotif* underlying the *fuqahā*’s rulings was the overriding need to preserve a community’s access to water and ensure all decisions taken with regard to *falaj*-related measures were in the general interest (Wilkinson, 1977, p. 121; Rohe, 2015). Additionally, shareholders should be treated with fairness, and the unabated aim – the safety of the *falaj* and its flow – should never be jeopardized by wrong decisions. This included key issues, e.g., the protection of the *ḥarīm* of the *falaj*, the regular maintenance of the tunnels and open channels, their restoration if required, and discussion of appropriate ways for raising required funds through measures such as the adaptative modification of the *falaj dawrān*.

5 Land Reorganisation: The Imamate-Tribal Collaboration

Settlements and supporting agricultural land and infrastructure are either developed through the vivification of “dead land” (*mawat*) land lying outside inhabited and cultivated areas or through the revivification of abandoned settlements, land, and resources. Islam makes an important distinction on how ownership rights are acquired in these two cases. For hitherto undeveloped *mawat* land, as no rights exist, ownership naturally goes to whoever develops the land. Given the antiquity of inhabitation and the continued use of the sites throughout the Islamic period, both Birkat al-Mawz and al-Ḥamrā’ oases are likely to have been revived than constructed anew (cf. Wilkinson, 1987, p. 116). Generally, agricultural property in Oman (as opposed to pastoralist and fishing rights) is exclusively owned through the alienable rules of *mulk*, that is, “they may be bought, sold, inherited or rented” (Wilkinson, 1987, p. 116). Existing property, in theory, could only be acquired through these means, which have created significant legal complexity and confusion about revived land ownership.

Correctly established *mulk* rights are held in perpetuity and cannot be automatically reallocated if the owner or their descendants cannot be tracked. In this case, the administration of the property was held by the imamate administration in trust and income was added to the governmental proceeds (*bayt al-māl*). However, when the rightful owners had been illegally evicted and were not traceable, this posed a particular dilemma for the administration because existing illegal rights could neither be

upheld nor land and agricultural infrastructure be allowed to remain undeveloped and neglected. The extended periods of conflict during the ninth/fifteenth and tenth/sixteenth centuries had resulted in several illegal acquisitions and counter confiscations,²⁷ causing widespread abandonment of settlements and agricultural infrastructure. Therefore, a pragmatic approach necessitated considerable relaxation of the long-held legal position during the Ya'ariba imamate, from the rule of Sulṭān bin Sayf I (1059–91/1649–80) onwards. A *fiqh* ruling by the chief *qadi*, Ibn 'Ubaydan, during Bal'arab bin Sulṭān's (1091/1680–c.1103/1692) rule noted if land, property or *aflāj* "cannot be proved that it had come under Muslim organisation or belonged to Muslims then it is *mawat* and belongs to whoever revives it" (Wilkinson, 1987, p. 118), effectively formalising an arrangement already put into practice during Sulṭān bin Sayf I's time.²⁸

Nevertheless, these large-scale reorganisations also blurred the boundaries between what was the private property of the *imam*, who was not allowed to have land holdings, and of members of his family, imamate governmental property (*bayt al-māl*) and endowments (*waqf*). It is highly probable that land was held through middlemen or agents (*dallāl*) who managed properties on behalf of the *imam*. In the later Ya'ariba period, significant borrowings were made from local tribal leaders, which were met by the frantic resale of land in the early-1150s/1740s when the imamate collapsed into chaos (see below under Misfāt al-'Abriyīn). During the construction of al-Ḥazm palace, which also involved a new *falaj*, Imam Sulṭān bin Sayf II (1123–31/1711–19) "expended all the wealth he had inherited from his father, and moreover borrowed lacs from the property of the mosques and religious endowments" (Al-Izkawi, 1874, p. 165). In Birkat al-Mawz, the eastern gardens (*maqasīr*) were designated government property and watered by the two *radda*, (*mabda bayt al-māl* and *baqi bayt al-māl*), emphasising the large government land holding. On the other hand, the gardens adjoining Bayt ar-Ruḍayda (watered by *ar-Ruḍayda*, also called *radda al-foq*) benefitted from their privileged position immediately after the *sharī'a* (Fig. 16).

This paved the way for large-scale land reorganisations in collaboration with ambitious shaykhs such as those from the Banī Riyām or the 'Abriyīn. The process of collaboration had begun earlier during the rule of the first Ya'ariba *imam*, Nāṣir bin Murshid (1033–59/1624–49), as he sought to bring much of interior Oman under his control. This action was realised by exerting influence and befriending important tribal groupings, such as the Banī Riyām or by forcing some tribes to subjection, such as the Banī Jūbūr, the Hinā'iyīn, and the Banī Hilāl. Nāṣir bin Murshid understood well the importance of the 'Abriyīn and the Banī Riyām alliances, who controlled settlements and passages on both sides of the Jabal al-Akhḍar and sought to appoint members of these tribes as governors (*wālī*) of settlements under his control.²⁹ The alliances ensured shared control not only over the respective tribal territories (*dār*) but also the *wādī* sources and *falaj* headwaters, which in turn allowed influence over larger and older oases downstream, e.g., Manaḥ and Bahlā.³⁰

The technical prowess of the Banī Riyām in *falaj* construction, excavation, and restoration was recognised by Sulṭān bin Sayf I, as oral historical accounts suggest (MRMWR, 2009, p. 31). In collaboration with the tribe, Sulṭān began redeveloping Birkat al-Mawz by excavating a new *falaj* channel in the gorge of Wādī al-Mu'aydin. During the excavation, a collapse in the *qanāt* gallery construction resulted in seven deaths, and the workers abandoned the excavation and fled to the Jabal. The Imam followed them to a place between Qaryat al-Mu'aydin and al-Qasud, with seeds of the *sidr* tree³¹ in his hands, which he spread while calling them to work. They agreed to continue excavating the *falaj* under the condition that they have a share instead of wages, and the Imam agreed, giving them one share and retaining two for the state. In fulfilment of the agreement,



FIGURE 16
Birkat al-Mawz oasis: a map showing the garden adjoining Bayt ar-Ruḍayda and the eastern governmental property (*bait al-māl*)

the *falaj*, upon completion, was divided into three channels carrying equal shares of water (MRMWR, 2009, p. 31).

The location of a spring in al-Ḥamrāʾ had been known. However, its flow was weak and unreliable, prone to drying, and inadequate for supporting oasis settlements of any significant scale. Imam Sulṭān bin Sayf I entered into a partnership agreement with the local inhabitants to help excavate the *falaj*, increasing water flow. The excavation began on the 1 *Jamād al-Ākhr* 1066/1 November 1656 during the time of the ‘Abriyīn shaykhs, Khalaf bin Ṭālib and Muḥammad bin Yūsuf bin Ṭālib³² (Al-‘Abri, 1958, p. 11, cited in Al-Abri, 2015, p. 150).

The first settlers to enter into an agreement during the *falaj* excavation were the Awlād (‘Alī bin) Mas‘ūd bin Rāshid group from the Sharāmikha clan of the ‘Abriyīn from al-‘Arāqī – apparently comprising about 70 men who initially set up a temporary settlement in the Māl ad-Dākhil area (Wilkinson, 1987, pp. 111–2; Al-‘Abri, 2015, p. 150). A formal settlement may have been established in al-Wuṣṭa by c.1116/1695 (Al-Adawi, 2006, p. 54, cited in Al-Abri 2015), consisting of the shaykhly dwellings mentioned earlier. Falaj al-Ḥamrāʾ was a phased development: first during the Ya‘ārība Imamate in collaboration with Awlād ‘Alī bin Mas‘ūd bin Rāshid group (late-eleventh/seventeenth century) and immediately afterwards by Awlād Ṭālib bin ‘Alī bin Mas‘ūd group (mid-twelfth/eighteenth century);³³ secondly, under the leadership of Shaykh Rāshid bin Malik al-‘Abri during the late-twelfth/eighteenth century, when a new flow called the Kumī was added;³⁴ and finally, during the shaykhdom of Muḥsin bin Zaḥran bin Muḥammad

al-ʿAbrī (1826–73) in the seventh decade of the mid-nineteenth century, when a further source (Saʿīd al-Khashba) was added increasing the flow considerably, enabling significant settlement expansion (Al-Adawi, 2006, p. 112, cited in Al-Abri, 2015, p. 151).

6 The *Harīm* of the *Falaj*: Preserving Sanctity and Community

The term *ḥarīm al-falaj*³⁵ designates a zone of protection. Within this buffer zone, the *falaj* owners are protected from illegal tapping of water or encroachment of buildings and given sufficient space for cleaning the water channels without impacting other properties. This buffer zone around the water supply has the advantage of safeguarding the *falaj* without fencing or walls so that “legitimate public access for domestic purposes is assured, the work of the community’s maintenance system is not impeded, whilst the general interest in the upkeep of a water supply is fostered through leaving it open to inspection” (Wilkinson, 1978). The stipulation of the *falaj ḥarīm* between 300 and 500 cubits *dhrāʿ* (al-Kindī, *Al-Musannaf* 17, p. 19; al-Kindī, *Bayān* 39, p. 8) was based on the estimation of potential damage (Qadahat & al-Rahbi 2020) and safeguarded water flow against diminishment as a result of well excavation or other *aflāj* in its proximity. Any changes violating the *falaj ḥarīm* or by the unauthorized digging of additional channels, private water basins, and wells (al-Kindī, *Bayān*, 39, p. 47) that could potentially have a negative effect were strictly avoided.

Apart from natural disasters and long-term environmental effects, there were ongoing socio-economic changes necessitating the *falaj* system to find responses, adapt to new situations, and water and irrigation demands. These changes would be brought about by the division of land and water shares among heirs (al-Kudamī, *al-Jāmiʿ* 3, p. 216) and by the sale of plots and shares (Shaḡsi & Nash, 2011, p. 104; Hoffmann-Ruf, 2020) according to population increases and development of new palm gardens (*amwāl*) in a *falaj* community (cf. below Misfāt al-ʿAbrīyīn *falaj*).

Therefore, the *ḥarīm* needed physical protection at different levels, from the wider oasis scale to the settlement quarters, which included both the *falaj* system and the related community, and demonstrated how defensive mechanisms responded to settlement expansion and conflicts. In Birkat al-Mawz, for example, the oasis took advantage of natural protection offered by the formidable foothills of Jabal al-Akhḡar in the north and the Wādī al-Muʿaydin in the west, any flood damage from the latter was prevented by an embankment extending north to south (Fig. 17). The formidable and fortified dwelling, Bayt ar-Ruḡayda, built by Imam Sulṡān bin Sayf I stood at the northern end of this protective landform and guarded the *sharīʿa*. Further surveillance was offered by the mosque, Masjid al-Yaʿāriba (also known as Masjid ash-Sharīʿa), which had the additional purpose of protecting the sanctity of the *falaj*, and a wide, circular tower (*burj*), Burj ash-Sharīʿa presiding over the three-way split (*ghiyāz*) of the main *falaj* channel (*al-āmid*).³⁶

The oasis also took advantage of three isolated lower hills to define its southern boundary. These were fortified by low walls extending between them until Ḥārat al-Wādī, and at least five towers were constructed along the hill ridges: al-ʿAqaba, as-Ṣāfiḡ, al-Ḥail, al-Khazina, and al-Wādī. Additional towers protected the settlement quarters (*ḥārāt*) and provided surveillance for the wider oasis. The most prominent situated along the northern edge were Burj as-Subabra in Ḥārat as-Saybānī and Burj al-Maḡasīr in Ḥārat al-Maḡasīr (Figs. 18–19). The latter provided excellent surveillance over the formidable aqueduct built by Sulṡān bin Sayf I (Al-Izkawi, 1874, p. 164; Badger 1871, p. 89), as well as the eastern fields (*maḡasīr*) belonging to *bayt al-māl*. Similar protective measures secured the *falaj* and its community in al-Ḥamrāʿ, where the oasis once again took



FIGURE 17
Birkat al-Mawz oasis: an aerial photograph showing the key defensive features protecting the *ḥarīm al-falaj*, including towers and enclosure walls
Aerial photograph, 1975, courtesy National Survey Authority, Oman



FIGURE 18
Birkat al-Mawz oasis: the tower, Burj al-Maḡasīr in Ḥārat al-Maḡasīr quarter, view east from the Ḥārat as-Saybanī quarter



FIGURE 19
Birkat al-Mawz oasis: the tower,
Burj as-Subabra above Ḥārat
as-Saybānī quarter

advantage of the major *wādī* tracts to define its outermost boundaries, supported by the protection from outlying lower hills topped with surveillance towers. Several mosques along Sāqiyat as-Suḥma offered consistent civic surveillance along the south-eastern edge of the oasis (Al-‘Abri, 2015, pp. 118–20, fig. 56).

During the chaos that ensued in the late Ya‘āribā period, the *falaj* at Birkat al-Mawz became the focus of one political battle. Muḥammad bin Nāṣir al-Ghāfirī briefly took over as *imam* (1136–40/1724–8), having served initially as the guardian of the boy-*imam*, Sayf bin Sulṭān 11. Al-Izkawi relates that upon hearing that the rival Ya‘āribā claimants, supported by a Banī Riyām group, had seized the “magazine of el-Birkeh” (Bayt ar-Ruḍayda), Muḥammad bin Nāṣir counter-attacked with a small army (Al-Izkawi, 1874, p. 179). Although partially defeated, the enemy clung to Masjid ash-Sharī‘a and possibly the southern hill, inflicting damage to the *falaj*. Muḥammad bin Nāṣir counteracted by building a tower on the lower hill overlooking the split, the Burj ash-Sharī‘a, possibly replacing an older surveillance tower, as the stalemate continued (Fig. 20). Much wider in circumference than the others along the hill ridges, this tower was evidently reconstructed to install a small mercenary presence with the intention to wrest control of the *falaj*. Eventually, incensed by the killing of one of his Maghribi horsemen, Muḥammad bin Nāṣir drove the attackers away from Birkat al-Mawz.

The source (*sharī‘a*) and the mosque, together with the women’s bathing and prayer enclosure (*majāza*) located farther downstream, complete the civic dimension of the *ḥarīm* in Birkat al-Mawz. The expansion of settlement quarters also had an impact on the *ḥarīm* in Ḥārat as-Saybānī, introducing a communal dimension to the *falaj* channel as it transited through the quarter. In Saybānī, the upper *falaj* channel once passed along the outer edge of the settlement. Following successive expansions, the water course became part of a narrow passage accommodating several communal bathing enclosures, including for women (Fig. 21). Additionally, at least three meeting halls (*sabla*) formed part of this communal arrangement along the *ḥarīm*. Unlike the many *sabla* across Omani oasis quarters, which are either stand-alone structures or associated with



FIGURE 20
Birkat al-Mawz oasis: the tower, Burj ash-Sharī'a presiding over the main *falaj* channel entering the oasis



FIGURE 21
Birkat al-Mawz oasis: Hārat as-Saybanī quarter plan, showing communal facilities along the upper and lower channels passing through the settlement

gateways (*sabāḥ*), two of these halls dedicated to specific tribal groups (Banī Riyām, Banī Tawba) were integrated into the upper levels of dwellings.³⁷ Typologically, they sat between the classic communal or tribal *sabla* and the private *majlis*, highlighting the autonomy of the tribal groups, even though they belonged to a major consolidated confederation. Despite having dwellings extended overhead, especially towards the eastern edge of the settlement, the communal character and access had largely been maintained and respected (Fig. 22).³⁸ This intimate communal character brought about by the presence of several tribal groups differed from the civic nature of Ḥārat al-Wuṣṭā in al-Ḥamrāʾ.

A final expansion of the *hāra* took place between the late-nineteenth and early-twentieth centuries, possibly during the early days when the Ibādī Imamate was reinstated (c.1913–20) (Fig. 23). This southward expansion resulted from new houses built by members of the as-Ṣuqūr (*nisba* as-Ṣaqrī) tribe and associated expansion of a date plantation, impacting significantly on the *harīm* along the lower *falaj* channel. A house had already existed along the northern edge of the *falaj* (owner: Zaher bin ʿIsa bin Sulaimān as-Ṣaqrī); however, the construction of the adjoining house (owner: ʿAlī bin ʿIsa bin Sulaimān as-Ṣaqrī) straddled a section of the *falaj* channel, which was integrated into the building. This house was constructed along with the western entrance, Sabaḥ al-Gharbī, into a newly formed civic enclosure, also accessible via the eastern gateway, Sabaḥ ash-Sharqī. Another larger Ṣuqūr house was added along the southern edge of this enclosure: Bayt al-Ḥadith (owner: Saʿid bin Sulaimān bin Muḥammad as-Ṣaqrī), by a wealthy family with East African trading links. The family also acquired extensive date palm gardens, known as Qatāʾt as-Ṣumrah, extending as far south as the *sūq*. A meeting hall, Sablat as-Sabaḥ, was added above Sabaḥ al-Gharbī for the tribe and for the wider community.



FIGURE 22
Birkat al-Mawz oasis: Ḥārat
as-Saybanī quarter, communal
washing area with dwelling
extending above

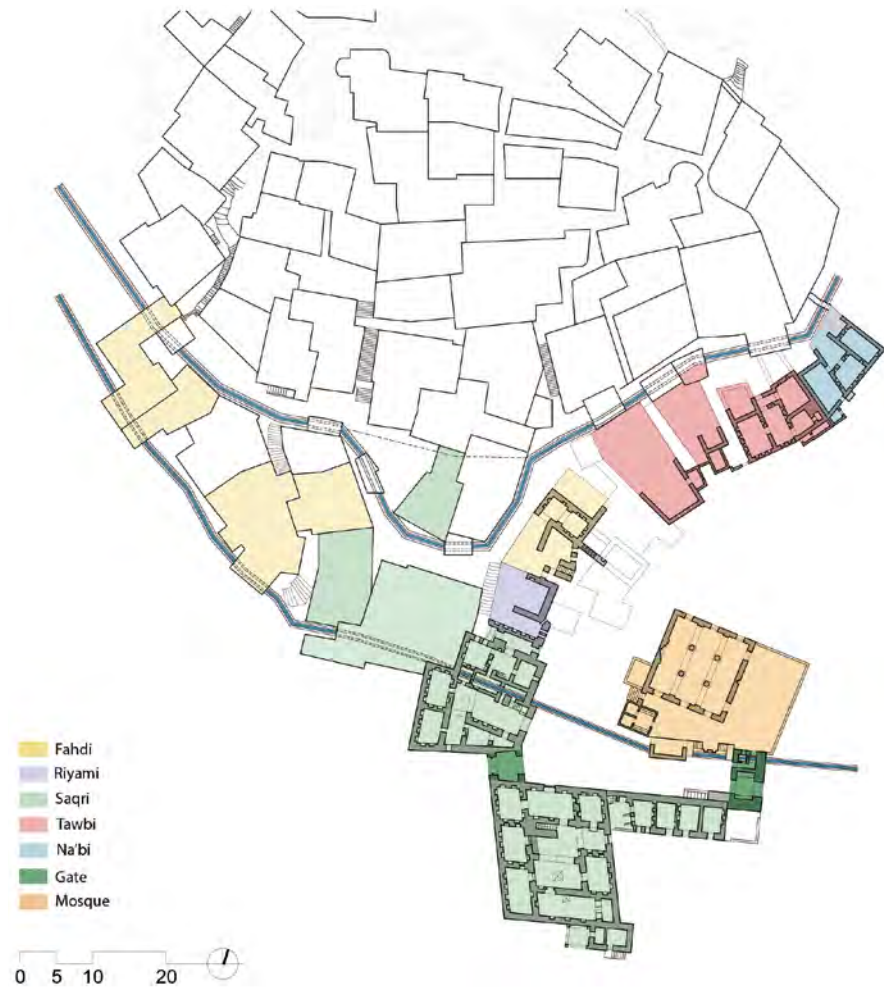


FIGURE 23
Birkat al-Mawz oasis: Ḥārat as-Saybanī quarter part plan, showing the late settlement expansion phase and formation of a new civic enclosure along the lower *falaj* channel. With this, the older, previously extra-muros Masjid al-Waljah, the *madrasah* and the *tannūr* were integrated into the settlement quarter



FIGURE 24
Birkat al-Mawz oasis: Masjid al-Waljah in Ḥārat as-Saybanī quarter, view from the south showing access to the raised terrace and the ablution, with the room for washing the deceased at *falaj* level

The creation of this quasi-civic enclosure dominated by *Ṣuqūr* dwellings meant that a section of the *falaj* channel and the associated civic facilities once outside the original *ḥāra* entrance (Mitla'ā al-Ḥujra/Mitla'ā Ḥārat as-Saybanī/Sabaḥ ad-Dakhīli) were now exclusive to it. The lower *falaj* channel ran through open ground, past the *madrasa*, the *tannūr*, and the place for sugarcane juicing before it passed through the ablution (*wuḍū'*) blocks of the mosque, Masjid al-Waljah (Fig. 24). This prayer hall, also used

for Friday congregations (*jāmi'*), was originally built during the Ya'āriba period and extended in c.1955–6 to its present form.³⁹ A room adjoining the mosque was used to prepare the deceased for funerary rites, while the imamate government gardens (for the *bayt al māl*) surrounding the mosque, Ḥārat al-Waljah, supported various activities related to the *falaj* and the mosque. All communal activities and agricultural land east of the *ḥāra* and the *ḥarīm al-falaj* were made accessible via two gateways (Gharbī and Sharqī), except during periods of extreme strife.

7 *Falaj* Maintenance and Restoration: A Communal Affair

A *falaj* irrigation system, though clearly defined, did not constitute a static arrangement: its course, number of irrigation channels and mother wells, and subterranean feeding channels were all variable. Environmental factors did play a role because mother wells dry up and the flow of water may become reduced or cease altogether following long periods of drought. On the other extreme, *falaj* systems throughout Omani history are known to have been heavily damaged or destroyed by flash floods, such as the catastrophe in 191/807 affecting Falaj al-Khaṭm in Nizwā when Imam al-Wārith bin Ka'ab drowned (al-Kindī, *Al-Musannaf* 17, p. 71). In the past, floods caused severe damage to the excavated galleries and the stone masonry construction of tunnels, shafts, and open channels, requiring major repair and reconstruction. Nowadays, sections of the tunnels and the vertical maintenance shafts are often lined with concrete and shaft openings are protected with concrete covers (Nash, 2009, p. 58).

Although the Omani *fiqh* works clearly emphasise that individual water shares are privately owned, restoration of the *falaj* is a communal affair, and costs are the responsibility of all shareowners. Even residing abroad does not relieve a shareholder of their responsibilities. Al-Faḍal al-Ḥawārī affirms in his *Jāmi'* (al-Ḥawārī, *Jāmi'* 3, p. 43) that the entire village community (*ahl al-balad*) is responsible for its water streams (*anhār*), including any deterioration (*fasad*) affecting them and the expenses necessary for excavation works (*al-ḥafr*). He refers to answers given by the scholar Muḥammad bin Maḥbūb (al-Makhzūmī, a famous *ulamā* of his time who died in 260/873), noting the responsibility of all shareowners to remove a large rock hindering the flow of the *falaj* (al-Ḥawārī, *Jāmi'* 3, p. 44). The same Muḥammad bin Maḥbūb further affirms that in the case of damage to a *falaj* where excavation is needed, people living overseas (*khalḥū'l-baḥri*) who own land and water-shares shall be partly charged for the repair, with the costs taken from their properties.

It is well documented that the *falaj* community collaborated on the restoration or mitigation measures to be taken, raising the funds, and the actual implementation. Substantial capital was involved in digging new mother wells, additional feeders and irrigation channels, and clearing existing channels from mud and debris after catastrophic events. These actions have been addressed in legal compilations such as the *Bayān ash-shar'* (al-Kindī, *Bayān* 39, p. 39), detailing the restoration cost for the destroyed Falaj Ḥubūb in Izkī amounting to 100,000 dirhams.

While the regular auctioning of a set number of *falaj* shares would suffice for periodic maintenance and cleaning,⁴⁰ it would not necessarily create the funds for more substantial works (Nash, 2009, p. 91). Accordingly, legal compilations contain much discussion about what should be done when supplemental funding is needed (*ibid.*, p. 33). The same source (*ibid.*, p. 26) affirms that in cases when funding is lacking, the *jubah* or *falaj* elders have the right to decide upon the sale of water, usually through the extension of the *falaj dawrān* by one or two *badde* or even more (As-Sālīmī, *Jawābāt* 3, p. 235). The additional water share can be sold temporarily or permanently. *Al-Musannaf* (al-Kindī,



FIGURE 25
Birkat al-Mawz oasis: Ḥārat
as-Saybanī quarter, view of the
externally accessed raised *sabla*
of the Banī Tawba tribe in the
foreground with a communal
grain mill (*raḥa*) below

Al-Musannaf 17, p. 41) and *Bayān ash-sharʿ* (al-Kindī, *Bayān*, p. 25) discuss the options available for the *jubah al-falaj* to extend the *dawrān*, designated as *ziyādat al-awād* or *ziyādat awād al-falaj* (from *ād*).

These measures also were associated with settlement quarter reorganisation, at Ḥārat as-Saybānī, for example, when the Banī Tawba tribe began settling along the upper channel.⁴¹ The channel will have defined the southern edge of a settlement built on a sharp incline, initially hosting families from two Banī Riyām groups, the Awlād Rāshid and Awlād Thanī, who settled near the southwestern boundary of the *ḥāra*. The slightly later Banī Tawba arrivals began settling downstream near the eastern edge. As the *falaj* edge became crowded, there was a need to expand near the centre when more Banī Tawba families arrived. Thus, a push southward resulted in a promontory-like projection necessitating a major re-routing of the *falaj* channel, still evident in the settlement morphology. The shift in the direction of the *falaj* channel is marked in the east by the Banī Tawba *sabla*, Sablat Khamīs bin Rāshid, prominently perched above a communal grain mill (*raḥa*) (Fig. 25).

8 *Falaj Dawrān: Adapting to Seasonal and Communal Requirements*

The *falaj* waterflow may display considerable seasonal variation. One of the cases discussed in *Al-Musannaf* (al-Kindī, *Al-Musannaf* 17, p. 29) is Falaj as-Suʿālī from Nizwā, which in wintertime had an increased flow. In line with the *sunna* of this *falaj*, the *dawrān* was seasonally increased: from ten days during the hot season to about sixteen in the wintertime. One of the additional *bādda* was auctioned (*ṭanna*) for the benefit of *falaj* maintenance, while the rest of the increased water flow was distributed among the shareholders proportionate to their shares in the summer *dawrān*, so that “someone who in the summer *dawrān* owns one *athar*, during winter would receive an *athar*-and-a-half. In this way, the *falaj*’s *sunna* was applied.” The case not only exemplifies the particular *sunna* of an individual *falaj* but demonstrates the flexibility of the jurisdiction’s

application of local *ʿurf* accommodating local and regional arrangements. It accommodated external factors, such as adverse weather events, demographic changes, drought, seasonal changes, and the resulting re-negotiation of the terms of water distribution, while always adhering to the established distribution terms and the *sunna* of the *falaj* (ibid., pp. 27f).

The proper management of *aflāj* by knowledgeable personnel, trusted and empowered to make decisions for the communal good, was one of the keys to the success and long-term survival of a *falaj*. Unsurprisingly, the topic appeared in the writings of the Omani *fuqahā* from an early stage. The legal compilations refer to people in charge of guiding the affairs of the *falaj* under various titles; frequently mentioned are the main shareholders, the *jubah* (e.g., ibid., pp. 43f, 52–8; As-Sālimī, *Jawābāt* 3, passim), the *arbāb al-falaj* (ibid., p. 63) or *ahl al-falaj* (ibid., p. 54), with specific positions such as *wakīl al-falaj* (ibid. 3, pp. 434f, specifying that the *wakīl* should only administer *falaj* money if trustworthy), the *ʿarīf* and the *dallāl* (ibid., p. 259) are also mentioned.

Looking at a legal compilation datable to the late-nineteenth and early-twentieth centuries, *Jawābāt al-imām Nūr ad-Dīn as-Sālimī* by Nūr al-Dīn ʿAbdullāh bin Ḥumaid as-Sālimī, (d. 1914), the reader is struck by the continuous referral to questions, rulings, and sources that appeared in early Ibāḍī juridical texts, for example, the right to increase the *dawrān* of the *falaj* in order to create extra revenue for its restoration (al-Ḥawārī, *Jamīʿ* 3, pp. 43f; As-Sālimī, *Jawābāt* 3, pp. 231, 235, 244, passim) or issues related to the rights and responsibilities of absentee *falaj* share owners (As-Sālimī, *Jawābāt* 3, p. 231, referring to Abū'l-Ḥawārī). The existence of absentee landowners has been a recurrent phenomenon in Omani society over the past centuries; the economic or politically motivated migration within Oman (Rawas, 1990, p. 13) and the temporary or permanent migration to East Africa and elsewhere was the usual result. Given the strong element of continuity among those living in oasis towns, we may conclude that the “people’s *sunna*” and legal decisions had retained their relevance and topicality within this environment.

9 Falaj Misfāt al-ʿAbriyīn: Adaptation to Community Growth

The example of the *falaj* of Misfāt al-ʿAbriyīn, where the definition of the *dawrān* and the distribution of water shares, the *qasmat al-falaj* (i.e., division of the *falaj*) has taken place only in the late-nineteenth century, and within oral history memory, is presented here for a discussion of how community growth necessitated an adaptive approach to the use and management of *falaj* water and how water rights have been shared between members of a closely-knit community. Misfāt al-ʿAbriyīn is a small mountain community in Wilāyat al-Ḥamrāʾ, located at c.900 m asl from the *wilāyat* centre (Fig. 26). As per the 2020 national census, its population stood at 962 inhabitants, and 61 were expatriates.⁴² The Omani population is currently composed of three different clans of the ʿAbriyīn tribe: the Awlād Sayf; the Awlād ʿUmrān, who have three sub-branches, Awlād Zāhir, Awlād Sālim bin ʿIsa, and Awlād Sālim bin Ḥumaid; and the Awlād Ṣanad. Each of the three clans has a tribal *rashīd*. The other Omani inhabitants are families of the Ḥaṭṭālī tribe who also have a *rashīd*.

Currently, all farmed land in the village – albeit much fragmented because of Islamic inheritance rules – is said to be owned by ʿAbri families from Misfāt al-ʿAbriyīn and al-Ḥamrāʾ and local Ḥaṭṭālī families. In the past, other tribes owned land in the village; most notably, the Yaʿāriba are remembered for their ownership of *falaj* shares and land. In al-Ḥamrāʾ, the Yaʿāriba had been shareholders until they sold all their properties to the ʿAbriyīn towards the end of their reign, during Imam Balʿarab bin Ḥimyar and Sayyid Sulṭān bin al-Imam Muḥanna bin Sulṭān. A major Yaʿarubi-ʿAbri land transaction

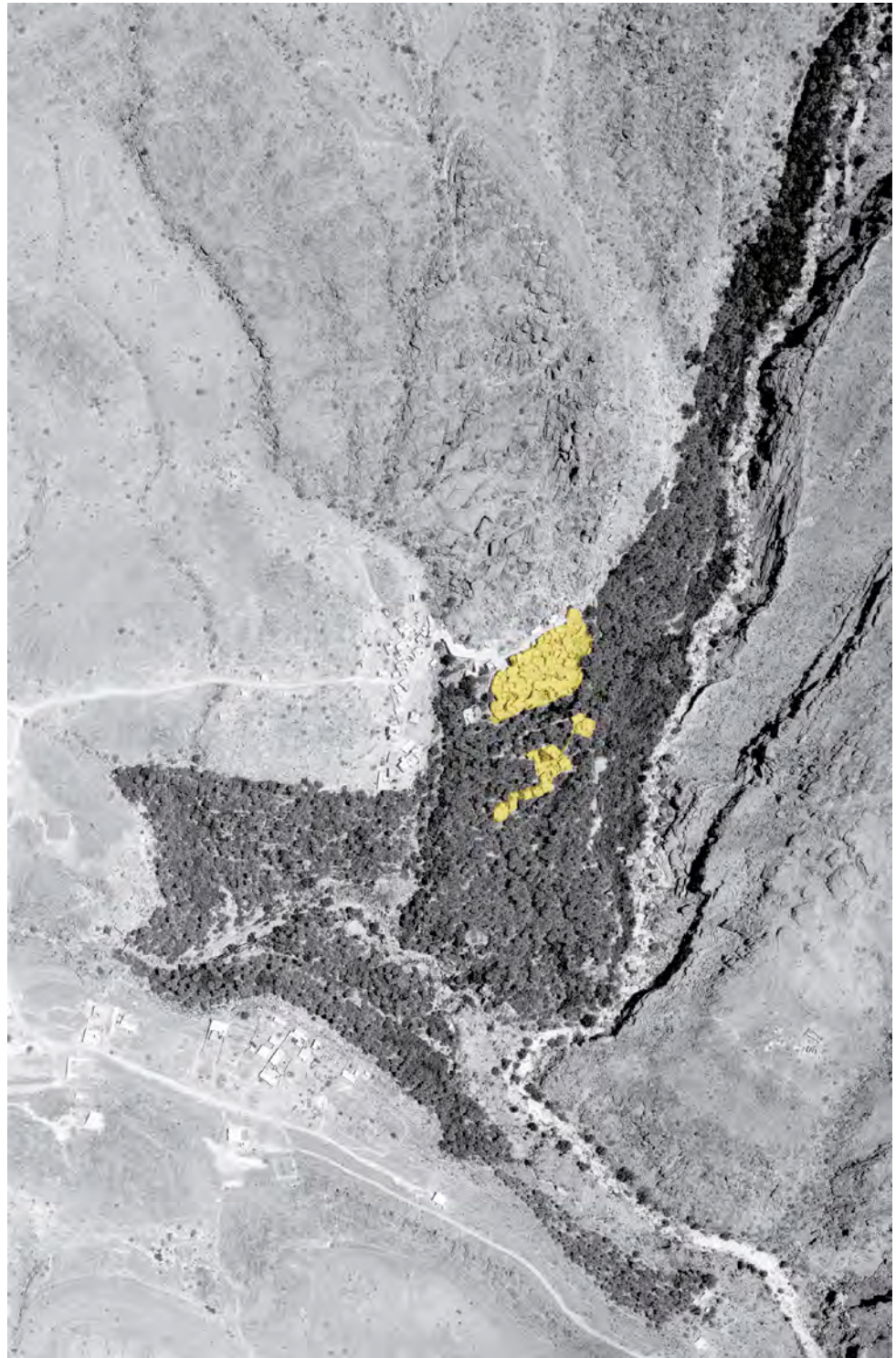


FIGURE 26
 Misfāt al-ʿAbriyīn village: an
 aerial photograph showing the
 old village and the extensive oasis
 agriculture along the western
 banks of Wādī al-Misfāt
 Aerial photograph, 1985, courtesy
 National Survey Authority, Oman

occurred in 1155/1742, and is mentioned by the ʿAbriyīn chronicler, Shaykh Ibrahim al-ʿAbri (Al-ʿAbri, 1958, pp. 23f; also see 33 above). It may be deduced that similar Yaʿarubi-ʿAbri land transactions also were completed in Misfāt (Wilkinson, 1987, p. 112). Yet other landholding tribes, whose names are no longer remembered in oral historical accounts, have their presence preserved in local toponyms of gardens and tree terraces.⁴³ The agricultural land in the village is subdivided into named areal units, referring to the respective water-gate in a channel (*suwār al-falaj*) for redirecting water flow to a different branch of the channel. The units are further subdivided into farms and terraces

identified by individual names, often referring to their current and former owners. The gardens thus designated as Suwār Banī Khusaib, Suwār Banī Amr, and Suwār al-Ghafiri, today are no longer associated with those tribes but are *waqf* holdings (Suwār Banī Khusaib), owned by Ḥaṭṭālī families (Suwar Banī Amr) or by a mix of landowners from Misfāt (Suwar al-Ghafiri). A close parallel is observed in the former Ya'ariba *falaj* share in al-Ḥamrā'. The twenty-four *athar* of the *radda*, *Raddat Awlād Ya'rub*, a designation retaining the erstwhile tribal owner's name, are used for the upkeep of the *falaj* (Shaḡsi and Nash, 2011).⁴⁴

Falaj al-Misfāt is an *'aynī falaj* fed by 'Ayn al-Lathba spring located in Wādī al-Misfāt, under a kilometre northeast and upstream from the village. The spring pool located in a cavern is surrounded by rock boulders (Figs. 27a–b). Some of these have inscriptions varying in age engraved to their surfaces, and on the reverse of one, although now illegible, is a relevant text. A village elder indicated that it refers to the amount of *ṣarūj* mortar used in the lowering of the main *falaj* channel during the twentieth century, undoubtedly to increase flow for the growing area (97-year-old Mas'ūd bin Sālīm al-Ḥaṭṭālī, 2014, interview). The main channel *sāqiyaṭ al-āmid* of Falaj al-Misfāt runs southwest from the spring to a water basin (*lijil*) at the southeast edge of the village (Fig. 28). Located along its course are the female bathing and washing facilities (*majāza*) and just before those, the area where drinking water was collected from the channel. Similar to other *'aynī* and *ghaylī aflāj*, but unlike the case with *qanāt (da'ūdī) aflāj*, there is no designated *sharī'a* spot on this *falaj*.

Two small male ablution and bathing rooms (*wuqab* s. *wuqba*) are located over the *falaj*, immediately below the *lijil* on either side of a steep stairway, accessed from the south (Figs. 29a–b). From the *lijil*, a second *sāqiya*, the *sāqiyaṭ al-foq* runs westward toward the Mbarbu quarter, where the sundial is located, and further southwest toward Sibān as-Safil. Another irrigation channel leading south also starts at the *lijil* and subdivides further after a short distance. A second somewhat smaller *lijil* is found south of Ḥārat as-Sāfil; adjoining another male ablution room located over the *falaj* channel in proximity to a small mosque (Fig. 30). A formal civic entry skilfully integrated into this *falaj* infrastructure extending towards Sibān as-Safil, was readily evident to the visitor as they approached the village from the south, past the *sūq* towards the original entrance, Sabaḡ Dars al-Khisla. The eastern group of buildings consists of a *madrasa*, the main mosque, Masjid al-'Aqba, and a *sabla*, with the central cluster comprising the *sabla*, Sablat al-Ḥadayir, and the original *sūq* (Figs. 31a–b), which formed the components of this civic space interwoven with the *ḥarīm al-falaj*. Associated with this original entrance is a large and impressive dwelling, Bayt al-Baytayn. The scholar Bashīr bin Muḥammad bin 'Alī, who was appointed by Imam Sulṭān bin Sayf I as *wālī* of Sūḡar, built its older western part.⁴⁵

Falaj al-Misfāt is locally renowned to have never run dry, a claim corroborated by data from the MRMWR's monthly monitoring. The data indicates that this *falaj* has a more



FIGURES 27A–B

Misfāt al-'Abrīyīn village: Falaj al-Misfāt, the *'aynī falaj* fed by 'Ayn al-Lathba spring located in Wādī al-Misfāt; a) aerial view of the *falaj* (courtesy M. Santana & Getty Conservation Institute, 2018) and b) view of spring source

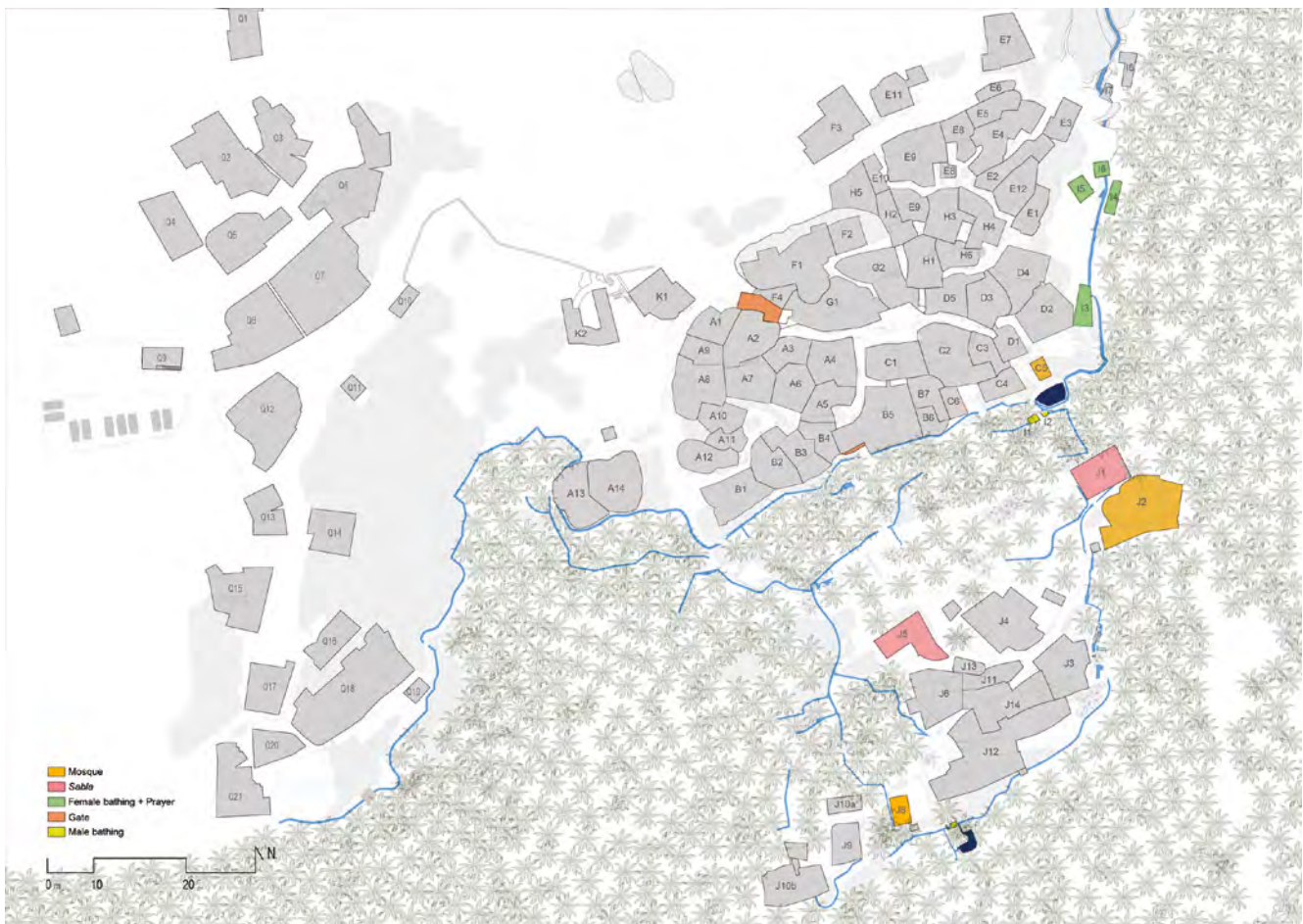


FIGURE 28

Misfāt al-'Abriyīn village: a settlement plan showing the *falaj* channels, associated water control and access facilities and civic structures

FIGURES 29A–B

Misfāt al-'Abriyīn village: the upper water basin (*lijil*) to distribute and control water flow in *falaj* channels; a) overall view and b) detail of a stone “water-gate” employed to control water on one of the outlet channels



stable flow rate than any other in the al-Ḥamrā' area, likely due to the superior storage capacity of the limestone aquifer feeding the spring and *falaj*. The *falaj* irrigation area, amounting to approximately 11 h (Nash, 2009, pp. 71; 72, fig. 7.2), waters the oasis farms extending in a northeast-southwestern direction roughly for a kilometre (Fig. 32). They cover the entire western bank of Wādī al-Misfāt, starting a short distance from 'Ayn al-Lathba, the northernmost part of the eastern bank, and the northern and southern banks of a gorge in a northwest-southeastern direction, joining Wādī Misfāt in an area called Sibān as-Sāfil. The farms on the southern bank of the ravine, below the new residential quarter of as-Sibān, are more recent, representing a late-nineteenth century



FIGURE 30
Misfāt al-‘Abriyīn village: a plan of the lower water basin (*lijil*), mosque and male ablution in the southern Ĥarat as-Sāfil area



FIGURES 31A–B
Misfāt al-‘Abriyīn village: the male community hall (*sabla*), Sablat al-Ĥadayir raised over animal pens; a) a view from the location of the original weekly market (*sūq*) and b) an interior view of the *sabla* in action
Photograph Fred Scholz, undated, courtesy Ministry of Heritage and Tourism

extension of the farmland. According to the oral history related by respected village elders of Misfāt al-‘Abriyīn,⁴⁶ an oasis and small settlement located above the spring in close proximity to Misfāt’s reputedly oldest mosque, the Masjid al-‘Ayn, originated when the ‘Abriyīn clans settled there at an unknown date. This habitation predated the



FIGURE 32
Misfāt al-‘Abriyīn village: a view of oasis gardens looking south along the western bank of Wādī al-Misfāt, showing *falaj* channel extending towards the village and a small surveillance tower (*burj*) in the left foreground on the eastern edge of the *wādī*

construction of the *falaj* and town of al-Ḥamrā’ in the mid-eleventh/seventeenth century, according to the ‘Abriyīn chronicler, Shaykh Ibrahim bin Sa‘īd al-‘Abrī (1958, pp. 12f).

9.1 *Falaj al-Misfāt: Description and Historical Context and Qasmat al-Falaj*

The early *falaj* is said to have been much shorter with only one *sāqiya*, the *āmid*. The palm groves (*amwāl*) were restricted to the western bank of the *wādī* after the spring to the perpendicular tributary valley separating as-Sibān from al-Bilād. The above-mentioned village elders explain that until the division of water rights in the late-nineteenth century, *falaj* irrigation was based on a system called *as-saqi* (e.g., irrigation, watering). Under this scheme, the *falaj* is said to have watered the land from east to west, with each garden receiving its water share. For this system to work, a strict rule was observed interdicting any increase in the overall number of palm trees, including planting replacements in lieu of old or dead trees. Cases of undivided *aflāj* with multiple owners were not infrequent and may be gathered from references pertaining to *aflāj* that are *ghayr maqsūm* in Omani legal compilations (e.g., al-Ḥawārī, *Jāmi‘* 5, p. 16; As-Sālimī, *Jawābāt* 3, pp. 241f).

The division of water rights, *qasmat al-falaj* for Falaj al-Misfāt only dates to 1894⁴⁷ and resulted from the need for an extension of farmland (cf. Nash, 2009, p. 84) and a substantial increase in the number of irrigated trees. The *qasma* implied the establishment of a *dawrān* with a specific length or number of days and its subsequent division into individual shares, requiring several decisions on the part of the *falaj* community. The village elders (*shiyāb al-balad*) deliberated on both the length of the *dawrān* and the system to follow for the division of water shares, deciding that the *dawrān* of the *falaj* should extend over eight days, as opposed to seven for al-Ḥamrā’ *falaj*.⁴⁸

As for the distribution of water shares, if the *qasma* followed the construction of a new *falaj*, it would have been proportional to the expended contributions (both labour and financial) by the concerned *falaj* owners, with a part of the shares kept aside for periodic maintenance (cf. Rohe, 2015, p. 251). However, in the case of the already existing *falaj* at Misfāt, the village elders agreed that the *qasma* of the water shares should follow the example taken in al-Ḥamrā’ *falaj* division. Hence, the initial distribution of the shares of the *falaj dawrān* was proportional to the farmed plots owned by a person. According to Hilāl bin Zāhir al-‘Abrī, these were defined as per *jil* (pl. *jijlan*; smallest

plot where one to three palm trees can be grown); and according to Sulaimān bin Nāṣir al-‘Abrī as per the number of palm trees owned by a person at the time. The quantity of *jilān* or palm trees owned decided on the number of *falaj* shares a person received. Each *jil* or single palm tree was allotted three *kiyas* (or *kīsat*, c.3.75 minutes; s. *kīs*, the smallest unit in the *dawrān* of practical relevance, 1.25 minutes) of water.⁴⁹

9.2 *Dawrān of Falaj al-Misfāt and Ownership of Shares*

The *dawrān* of Falaj al-Misfāt is eight days and nights, respectively eight *raddat* (s. *radda*, i.e., 24 hours); each *radda* has two *bāddat* (s. *badda* i.e., 12 hours), one-day *badda* and one-night *badda*. The *badda*, in turn, contains twenty-four *athar* (i.e., c.0.5 hours), and each *athar* equals twenty-four *kiyas*. Two further share units are used: the *nusf badda* (half *badda*, i.e., 12 *athar*); and the *rub‘a* (quarter, i.e., 6 *athar*). According to the *wakīl* and other local informants, almost every Omani inhabitant of Misfāt (both from the ‘Abrīyīn and Ḥaṭṭātila tribal groups) owns at least some individual share of *falaj* water. Furthermore, shares also are owned by many people from al-Ḥamrā’ and other villages. Sulaimān al-‘Abrī, the former *wakīl al-falaj*, listed the eight *raddat* of the *dawrān* and corresponding owners (Table 2). While it was not possible to retrieve a detailed account of all shareholders and their respective shares in the *falaj*, some insight into the distribution of share ownership can be gained from the *raddat* named after share-owning clans, lineages, or partnerships. From the seventh *radda* of the *dawrān* (*raddat al-waqf*) owned by the *falaj*, a third (i.e., 16 *athar*), is auctioned every 4–5 years to obtain the necessary funds for *falaj* maintenance (Nash, 2009, p. 91). Such long-term auctioning of *falaj*

Radda	Name	Notes
Radda 1	Awlād Sayf bin Ḥamad	
Radda 2	Awlād Sanad wa Awlād Sallum	
Radda 3	Awlād Rabi‘ wa Awlād Slayyim	
Radda 4	Al-Shuyukh wa Awlād Khalfān (Ḥaṭṭātila)	
Radda 5	Awlād ‘Amran	
Radda 6	Awlād ‘Alibin Musallam wa shurakā’ihim	With ‘partners’
Radda 7	Al-Waqf ^a	Religious endowments serving <i>falaj</i> , the mosque, the cemetery and the water cisterns in the surrounding mountains. ^b
Radda 8	Al-Shurāk	The ‘partners’, which include a great number of shareholders of mixed tribal origin, as well as <i>wuquf</i> for the maintenance of the communal meeting hall <i>sabla</i> and for the <i>madrassa</i> .

a The considerable importance of charitable foundations *wuquf* (s. *waqf*) has been emphasised by Wilkinson (2015). *Waqf* in Oman includes a range of different purposes mostly for the upkeep of communal installations and practices, such as the mosque, school, roads, cemeteries and several other specific purposes. The *mu‘jam al mustalahāt al-Ibādīya* 2: 1089f, for example, lists 24 different types of *waqf* categories.

b Apart from *falaj* shares, *waqf* holdings in Misfāt include palm garden plots, individual palm trees for several purposes related to communal affairs, as well as individual rooms in houses, such as the *ghurfat al-khall* room, for the production and storage of the vinegar for the *shūwa* meat prepared during religious festivals.

TABLE 2
Misfāt al-‘Abrīyīn village: the eight *raddat* of the *falaj dawrān* in Misfāt al-‘Abrīyīn

waqf is explicitly authorized in legal compilations, where it is clearly stated that nothing speaks against the auctioning of the *falaj waqf* on a yearly basis (e.g., *Jawabāt* 3, p. 572).

9.3 *Timekeeping of Falaj al-Misfāt's Water Shares*

The timekeeping of *falaj* shares in Misfāt is called *muḥāḍara*, and over time, has undergone changes as remembered in the oral history of the residents. Three different timekeeping methods had been in use prior to the prevalence of modern watches. The device originally used during daytime was the so-called *ṣaḥla* or *ṭāsa*. The small copper bowl (*ṣaḥla*), with a single perforation at its bottom, is placed in a larger ceramic vessel (*halūl*) filled with water. The time it takes to fill the *ṣaḥla* completely with water is an *athar* (Al-'Abri, 2002, p. 32; Al-Ghafiri, 2004, pp. 54, 56; Nash, 2009, pp. 50f). At some point, the *ṣaḥla* system was replaced by the sundial (*lawḥi mismār/mismār al-lamad*), also designated as *muḥāḍara*.⁵⁰ Timing *falaj* shares is determined by the shadow of a long stick falling onto twelve lines with stone markers on either side, each representing one *athar* (Al-'Abri, 2002). The sundial was located next to the old *musallat al-ʿīd* in the Mbarbu quarter, a fully exposed location in close proximity to the gardens.

Stargazing was the timekeeping method used during the night: *falaj* shares were timed by watching the stars arising over the eastern horizon. The terrace of the mosque, Masjid al-'Aqba was the preferred location for starwatching but not exclusively. Some of the important stars were al-Ghurāb, al-Sa'ūd, al-'Aqrab, al-Thurayya, and al-Kuwī (Al-'Abri, 2002, p. 33), and Nash (2009, p. 102) provides a table with the names of all stars formerly used in Misfāt. Some of those stars also appear as names in the series of stone markers on the eastern horizon, assisting people in starwatching (Fig. 33). The markers, *a'lām* (s. *'alam*) are stone pillars approximately 1.5 m high. Al-'Abri mentions that among others there are the 'Alam Kuwī, 'Alam Sa'ad, and 'Alam 'Aqrab (Al-'Abri, 2002, p. 33). Nash (2009, pp. 94, fig. 8.10; 102) writes that only four stone pillars are used for starwatching; however, she enlists five, namely *Chuwi* (a Lyrae, *Kuwi*), *Ath-Thurayya* (the Pleiades), *ash-Shubcha* (Orionis, *al-Shubka*), *al-Miyazin* (Orion's Belt), and *al-'Aqrab* (Scorpii).

9.4 *Falaj Management in Misfāt al-'Abriyīn*

Misfāt al-'Abriyīn being a relatively small oasis village provides a good example of the management and administration of the *falaj* as a straightforward community affair. The



FIGURE 33
Misfāt al-'Abriyīn village:
starmarkers on the mountain
ridge along the eastern bank,
across from the main mosque,
Masjid al-'Aqba

community appoints the *wakīl al-falaj*, the *falaj* administrator responsible for keeping records, for the smooth day-to-day operations, and decisions on necessary repair or maintenance. He is the person considered most knowledgeable about all *falaj* matters and is the one authority to be addressed for settling any *falaj-related* issues or disputes. No official register is kept for the *falaj* because *falaj* shares are known to both the *wakīl* and the individual proprietors, as explained by the former *wakīl* Sulaimān bin Nāṣir al-ʿAbrī. Unlike the case for many other *aflāj*, Misfāt al-ʿAbrīyīn, probably due to its small size, has not appointed additional *falaj* officials, such as another *wakīl* or an *ʿarīf*, or an *amīn ad-daftar* (Nash, 2009, p. 83). The village has not formed a *falaj* committee of the main shareholders (*juba al-falaj*), either. Apart from the *wakīl*, the *falaj* is the shared responsibility of the entire community who constitute the *falaj* owners, the *arbāb al-falaj*.

10 Conclusion

The paramount importance of the *falaj* irrigation system for oasis settlements in northern Oman corresponds to the considerable legal discussion on the subject since the beginnings of Ibādī legal works in Oman during the second-third/eighth-ninth centuries. The easing of the strict Ibādī land property laws under the Yaʿāriba Imamate, combined with political alliance-building, enabled the revivification of abandoned land in the eleventh/seventeenth century. This created optimal conditions for the construction of *aflāj* and the establishment or substantial redevelopment of oasis farming settlements in collaboration with ambitious tribal groups, such as the Banī Riyām and the ʿAbrīyīn. The legal framework of the Ibādī *fuqahā*'s rulings on matters related to the *falaj* system draws strongly on local customs underlining the individuality of each, which accords a *falaj* community the choice to proceed in whatever way benefits the sustainability of the water system and guarantees fairness to its shareholders. The development of oasis settlements and their irrigation systems was based on locally made conscious decisions and promoted strong community cohesion and a sense of belonging.

The examples from al-Ḥamrāʾ, Birkat al-Mawz, and Misfāt al-ʿAbrīyīn have shown the essentiality of the *falaj* for the establishment of settlements and the mutually impacting character of the *ḥarīm* of the *falaj*, settlement extensions, and the location of civic institutions. The *ḥarīm*, the spatial manifestation of a *falaj* community, was guarded through well-planned surveillance and defensive installations that took advantage of the available natural defences. Any settlement expansion considered carefully its impact on the *ḥarīm*, ensuring that the civic spaces and amenities also benefited from such reorganisation. The differing social make-up of settlements (e.g., a confederated or unified tribal system) impacted the typology and distribution of communal facilities, as well as the location and character of civic spaces and the degree to which they were communal or public.

The rules for sustaining the *falaj* system involved numerous cultural, socio-economic, and technical factors that formed a framework flexible enough to promote localised solutions, a condition that needs adequate comprehension in any future oasis regeneration planning effort. The local climatic, geomorphological, historical, and social considerations have been the crucial enabling factors for the longevity and sustainability of the *falaj* community. Consequently, when a decreased reliance on agriculture, excessive extraction of groundwater, and a range of socio-economic factors compound, the *falaj* system is no longer properly maintained and deteriorates or even stops running. This results in the disintegration of the *falaj* community's social system and its institutions, such as *waqf* holdings, which the *falaj* villages had maintained through the periodic auctioning of water.

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Bibliography

Original Sources

- Al-'Abri, Ibrahim (1958). *Tabṣīrat al-mu'tabirīn fī tarīkh al-'Abrīyīn*, manuscript. Sultan Qaboos University Library.
- Al-Ḥawārī, al-Faḍal (1985). *Jāmi' al-Faḍal al-Ḥawārī*. (5 vols). Masqat: Wizārat at-Turāth al-Qaumi wa'th-Thaqāfa.
- Al-Kindī, Abū 'Abdallāh Muḥammad bin Ibrahim (1984–2006). *Bayān ash-shar'* (72 vols), al-Ḥārithī, Sālim bin Ḥamad, ed. Masqat: Wizārat at-Turāth al-Qaumi wa'th-Thaqāfa.
- Al-Kindī, Abū Bakr Aḥmad bin 'Abdallāh bin Mūsā (1980–1984). *Al-Muṣannaf* (42 vols), Bājū, Muṣṭafa bin Sāliḥ, ed. Masqat: Wizārat al-Auqāf wa'l-Shū'un ad-Dīniya.
- Al-Kudamī, Abū Sa'īd Muḥammad bin Sa'īd (1985). *Al-Jāmi' al-mufīd min aḥkām Abī Sa'īd* (5 vols), ash-Shādhilī, Hashim, ed. Masqat: Wizārat at-Turāth al-Qaumi wa'th-Thaqāfa.
- Ministry of Regional Municipality and Water Resources (MRMWR) (1999b). *Falaj System Report: Al-Hamra, S0201 & F0201*.
- Ministry of Regional Municipality and Water Resources (MRMWR) (1999a). *Falaj System Report: Al-Khatmeen, S3071 & F3071*.
- As-Sālimī, 'Abdallāh bin Ḥumaid (1961). *Tuḥfat al-a'yāan bī sīrat ahl 'Uman* (2 vols), Abū Ishāq Ibrahim Aṭfayyish, ed. Cairo (many printings).
- As-Sālimī, 'Abdallāh bin Ḥumaid (n.d.). *Jawabāt al-imām as-Sālimī* (3 vols). Masqat: Maktabat al-Imām as-Sālimi.

References

- Al-'Abri, A. (2002). *Al-thaqāfa al-mādīya fī Misfāt al-'Abrīyīn*. BA Thesis, Department of Archaeology, Sultan Qaboos University.
- Al-'Abri, H.N. (2015). *Urban Pattern & Architecture of Traditional Omani Foot-hill Settlements: Al-Ḥamrā and Birkat al-Mawz*, PhD Thesis, Nottingham Trent University.
- Al-Adawi, A. (2006). *Ashwag al-qura li ziyarat wilāyāt Al-Ḥamrā*. Muscat: Vision Foundation.
- Alpers, E.A. (2014). *The Indian Ocean in World History*. Oxford: Oxford University Press.
- Bandyopadhyay, S. (2011). *Manah: An Omani Oasis, an Arabian Legacy. Architecture and Social History of an Omani Settlement*. Liverpool: Liverpool University Press.
- Bandyopadhyay, S., Goffriller, M., and Quattrone, G. (2016). *Al-Ḥamrā: Misfāt al-'Abrīyīn, Tourism Development Plan*. Muscat: Ministry of Tourism.
- Bandyopadhyay, S., Quattrone, G., and Reza, M.H. (2014). *Ḥārat as-Saybanī, Birkat al-Mawz (Ad-Dākhilīyah Governorate): Documentation and Heritage Management Plan*. Muscat: Ministry of Heritage and Culture.
- Bathurst, R.B. (1967). *The Ya'rubi Dynasty of Oman*, D.Phil. Thesis, Oxford University.
- Carter, J.R. (1982). *Tribes in Oman*. London: Peninsular.

- Dybro, J.E. (1995). Islamic law and the development of agricultural settlement in Oman. On the Question of Tradition and Development. *Workshop in Political Theory and Policy Analysis*. Bloomington: Indiana University (https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/1861/Islamic_Law_and_the_Development_of_Agricultural_Settlement_in_Oman%3B_On_the_Question_of_Tradition_and_Development.pdf?sequence=1&isAllowed=y, accessed on 21 September 2022).
- Francesca, E. (2014). Constructing an Identity. The Development of Ibadī Law. Ziaka A. (ed.). *On Ibadism* (Studies on Ibadism and Islam 3). Hildesheim: Georg Olms Verlag, pp. 109–33.
- Al-Ghafri, A. (2004). *Water Distribution Management of Aflaj Irrigation Systems of Oman*, PhD Thesis, Hokkaido University.
- Al-Ghafri, A., Inoue, T., and Nagasawa, T. (2003a). Irrigation Scheduling of Aflaj of Oman: Methods and its Modernization. Adeel, Z. ed. *UNU Desertification Series 5, Proceedings of a joint UNU-UNESCO-ICARDA International Workshop*, Alexandria, Egypt, 21–25 September 2002, pp. 147–66.
- Al-Ghafri, A., Inoue, T., and Nagasawa, T. (2003). Daudi Aflaj: the Qanats of Oman. *Proceedings of the Third Symposium on Xinjiang Uyghor, China*. Chiba University, Japan.
- Hoffman, V.J. Undated. *Ibadī Islam: An Introduction* (www.uga.edu/islam/ibadis.html, n.p., accessed on 21 September 2022).
- Hoffmann-Ruf, M. (2020). “*bi-ḥaddīhi wa-ḥudūdihī*” – remarks on three water sale contracts from Balad Sīt, a mountain oasis in northern Oman, *Nouvelles Chroniques du Manuscrit au Yémen*: 151–75.
- Hopper, M. S. (2015). *Slaves of One Master. Globalization and Slavery in Arabia in the Age of the Empire*. New Haven and London: Yale University Press.
- Al-Izkawī, Sirhān bin Saʿīd bin Sirhān bin Muhammad (attributed; Ross, E.C. tr.) (1874). Annals of Omān, from the Early Times to the Year 1728 AD (Kashf al-ghumma: al-jāmiʿ li akhbār al-umma). *Journal of the Asiatic Society of Bengal* 2(2), pp. 111–96.
- Al-Kindi, A., and Bouzenita, A.I. (2018). A Notion of Sunna: An Eclectic Reading in the Ibadhi Legacy. *International Journal of Islamic Thought* 14 (<https://doi.org/10.24035/ijit.14.2018.001>, accessed on 21 September 2022).
- Al-Mahrooqi, A.H. (2020). *Tauthīq at-tārīkh al-marawī li-ʿaflāj wilāyat ʿAdam (al-ʿain, al-mālīh, al-fulāj, al-shārīʿ)*. Muscat: Ministry of Heritage and Culture.
- Mershen, B. (2010). Unveiling the Past – The Role of Oral History in Understanding Oasis Development. Buerkert, A. and Schlecht, E. eds. *Oases of Oman: Livelihood Systems at the Crossroads*. Muscat: Al Roya Press, pp. 52–5.
- Michalak Pikulsa, B., and Eisener, R. eds. (2015). *Ibadī Jurisprudence: Origins, Developments and Cases* (Studies on Ibadism and Oman 6). Hildesheim: Georg Olms Verlag.
- MRMWR (2009). *Al-Mulkiyat waʿl-aʿraf wʿl-sunan waʿl-bayānāt al-mutaʿaliqa bi al-aflāj*. Muscat: Ministry of Regional Municipalities and Water Resources.
- MRMWR (2008). *Aflaj Oman in the World Heritage List*. Muscat: Ministry of Regional Municipalities and Water Resources.
- MRMWR (2005). *Water Resources in Oman*. Muscat: Ministry of Regional Municipalities and Water Resources.
- Nash, H. (2009). *Water Management: The Use of Stars in Oman*, PhD Thesis, University of Exeter.
- Nash, H. (2007). Stargazing in Traditional Water Management: A Case study in Northern Oman. *Proceedings of the Seminar for Arabian Studies* 37, pp. 157–70.
- Al-Qadahat, M., and Al-Rahbi, K. (2020). Jubāt al ʿaflāj fi ʿUmān wa dawruhum fi idā ratihā wa tawzī, miyāhumā: dirās atārīkhīya ḥatta al-qarn 6h/12m. *Journal of Oman Studies* 21, pp. 1–10.
- Al-Qadahat, M., and Al-Rahbi, K. (2016). Al-mudawunāt al fiqhīya masdaran li dirāsāt an-nashāt az-zirāʿīya fi ʿUmān: Jāmiʿ Abīʿl-Ḥawārī (d. 4 h/10 m) anmūdhijan. *Al-Manara* 22(4): n.p.
- Rawas, I.A. (1990). *Early Islamic Oman (ca – 622/280–893): A Political History*, PhD Thesis, Durham University (<http://etheses.dur.ac.uk/1497/>).

- Robertson Smith, W. (1889, reprint 1927). *Lectures on the Religions of the Semites, the Fundamental Institutions*. London: A. & C. Black.
- Rohe, M. (Goldbloom, G. tr.) (2015a). *Islamic Law in Past and Present*. Leiden: Brill.
- Rohe, M. (2015). Water and the Law. Michalak-Pikulsa, B., and Eisener, R. eds. *Ibadi Jurisprudence: Origins, Developments and Cases* (Studies on Ibadism and Oman 6). Hildesheim: Georg Olms Verlag, pp. 249–56.
- Ibn Ruzayq, Humaid bin Muhammad bin Ruzayq/Raziq bin Bakhit al-Nakhli (Salil-ibn Razik in Badger, G.P. tr.). (1871). *History of the Imâms and Seyyids of Omân (al-fath al-mubin fi sirat al-Sa'idîyin)*. London: Hakluyt Society.
- Sachedina, A. (2021). *Cultivating the Past, Living the Modern. The Politics of Time in the Sultanate of Oman*. Ithaca and London: Cornell University Press.
- Al-Salimi, A. (2001). *The Omani siyar as a literary genre and its role in the political and doctrinal development of Eastern Ibadism, with special reference to the epistle of Khwarizm, Khurasan and Mansura*. PhD Thesis, Durham University (<http://etheses.dur.ac.uk/1001/>).
- Scholz, F. (1978). *Sultanate of Oman, Aerial Photographic Atlas: Natural Regions and Living Areas in Text and Photographs 2*. Stuttgart: Ernst Klett.
- Al-Shaqsi, S.R., and Nash, H. (2011). Management of Water Shares for Falaj Al-Hamra and Falaj Al-Kasfa. *Journal of Oman Studies* 17, pp. 101–11.
- Al-Sulaimani, Z.K., Helmi, T., and Nash, H. (2007). The Social Importance and Continuity of Falaj Use in Northern Oman. *International History Seminar on Irrigation and Drainage* (https://core.ac.uk/display/12826007?utm_source=pdf&utm_medium=banner&utm_campaign=pdf-decoration-v1, accessed on 21 September 2022).
- Al-Sulaimani, Z.K., al-Hatmi, H.K., Al-Amri, S.S., and Helmi, T. (2008). Maintenance Works of Water Structures, Aflaj Challenges in the Sultanate of Oman. *The 8th Gulf Water Conference, Water in the GCC: Towards an Optimal Planning and Economic Perspectives* (DOI: 10.13140/2.1.3234.7521).
- Al-Tikriti, W.Y. (2011). *Archaeology of the Falaj: A Field Study of the Ancient Irrigation Systems of the United Arab Emirates*. Abu Dhabi: Abu Dhabi Authority for Culture and Heritage.
- Wilkinson, J.C. (2015). Contextualizing. The Development of Ibadi Fiqh. In Michalak-Pikulsa, B., and Eisener, R. eds. (2015). *Ibadi Jurisprudence: Origins, Developments and Cases* (Studies on Ibadism and Oman 6). Hildesheim: Georg Olms Verlag, pp. 15–24.
- Wilkinson, J.C. (2010). *Ibâdism: Origins and Early Development in Oman*. Oxford: Oxford University Press.
- Wilkinson, J.C. (1987). *The Imamate Tradition of Oman*. Cambridge: Cambridge University Press.
- Wilkinson, J.C. (1980). Changes in the Structure of Village Life in Oman. Niblock, T. ed. *Social and Economic Development in the Arab Gulf*. London, New York: Routledge, pp. 122–34.
- Wilkinson, J.C. (1978). Islamic Water Law with Special Reference to Oasis Settlement. *Journal for Arid Environments* 1, pp. 87–96.
- Wilkinson, J.C. (1977). *Water and Tribal Settlement in South-East Arabia: A Study of the Aflāj of Oman*. Oxford: Clarendon Press (reprinted in 2013, Hildesheim: Georg Olms Verlag).

Notes

- 1 All drawn and tabular material was prepared by Claudia Briguglio at the ArCHIAM research centre, Liverpool School of Architecture, University of Liverpool (<https://www.archiam.co.uk>). Figure 10B produced by J. Harrison. Unless otherwise noted, all photographs and drawings are copyrighted by ArCHIAM.
- 2 Fieldwork at Birkat al-Mawz was conducted by the ArCHIAM research centre, University of Liverpool, during February–March 2011, and subsequently, for the documentation and heritage management planning project commissioned by the Ministry of Heritage and Culture, Oman (now Ministry of Heritage and Tourism) (Bandyopadhyay S. *et al.*, 2014). The team for urban and architectural documentation:

- S. Bandyopadhyay, G. Quattrone, J. Harrison, M. Goffriller; ethnography: H. al-'Abri; drawing production: M. Reza. Five former residents of the Ḥārat as-Saybanī quarter were interviewed during fieldwork: Khamis bin Mansur al-Dighaishi, Mubarak bin Salām bin Hilāl at-Tawbī, Mūsa bin Mukhtar bin 'Isa as-Ṣaqrī, Ḥumūd bin Sayf bin Jaruf as-Siyabī, and 'Abdullāh bin Salīm bin Rāshid as-Ṣaqrī (transcripts were included in al-'Abri's doctoral dissertation; Al-'Abri, 2015).
- 3 Architectural and ethnographic fieldwork at Ḥārat al-Wuṣṭa in Al-Ḥamrā' was conducted by H. al-'Abri as part of his doctoral dissertation (Al-'Abri, 2015).
- 4 Fieldwork at Misfāt al-'Abriyyin was conducted by ArCHIAM in November 2013 for the heritage and tourism development plan (Bandyopadhyay *et al.*, 2016). ArCHIAM team: S. Bandyopadhyay, H. al-'Abri, C. Briguglio, D. Campolo, K. Georgiadou, M. Goffriller, and G. Quattrone. The ethnographical fieldwork on the village and its *falaj* were carried out by B. Mershen during several campaigns spanning 15 years (1998 and 2013), first as part of the joint research and documentation project, "Transformation of Oasis Settlements in Oman" and in 2013 with ArCHIAM. Research undertaken by Mershen in 2021 was funded by Gerda-Henkel-Stiftung, Duesseldorf.
- 5 Falaj al-Khatmeen in Birkat al-Mawz was one of five Omani *aflāj* inscribed in 2006 on the World Heritage Site list.
- 6 The schism that tore apart the late-first/seventh century Islamic community in Baṣrah gave rise to the Ibādī movement, directly involving many Omani intellectuals and businessmen. Toward the end of the Umayyad period, the movement was imported into some of the most disaffected regions of the caliphate and saw the return of many Omani-Ibādī personalities. These included the Berbers in North Africa and several Yemeni tribes, notably the Azd in Oman, Yemen, and the Ḥaḍramawt. The Ibādī imamate evolved as a supra-tribal state and represented a delicate balance between tribal aspirations and the power and purity of Ibādī-Islamic philosophy. Ibādīsm is a pacifist tradition, and Ibādīs continue to profess a moderate and conciliatory position, referring to themselves as "the people of straightness" (Hoffman, *nd.*).
- 7 This view is corroborated by Wilkinson (1980, pp. 127f), who emphasises the relative assimilation of agricultural workers and the term *bayādīr* (*s. būdār*) acquiring an occupational rather than social connotation. For a discussion on the position of servants and enslaved domestics in Omani village communities, see the relevant chapter in Sachedina (2021) and the literature cited there. The importance of enslaved labour increased in the nineteenth century when dates became a cash crop following increased exports to the USA, and the enrolment of enslaved persons seemed to have filled the arising manpower gap (Sachedina, 2021, pp. 174f). According to Hopper (2008, pp. 60, 62), referring to statements of S.B. Miles from 1885 and the British consul at Muscat from 1930, this would have applied almost exclusively to the production centres in al-Batinah plain with their labour-intensive *zājira*-well irrigation, rather than the *falaj* communities of the Omani interior, that did not have a high demand for labour due to their irrigation system.
- 8 Authors who contributed to the volumes, Michalak-Pikulska & Eisener, eds., 2015; Ziaka, ed., 2014.
- 9 A local mortar mix prepared from ashes, baked clay, and *wādī* pebbles.
- 10 The factors that interrupt water flow and require *aflāj* maintenance can be summarized as "prolonged drought, erosion of old structures, *wādī* floods, accumulation of lime on the beds of the channels, growth of deep-root trees near *aflāj*, [the] collapse of roofs and walls of old channels, [and] channel beds becoming filled by soil and dirt" (Al-Sulaimani *et al.*, 2008).
- 11 The information is from Wādī at-Ṭayyīn.
- 12 The actual length of the shares varies seasonally and between day and night. For a discussion of this aspect and how arising inequalities tend to be balanced, see Wilkinson, 1977, pp. 111f; Al-Ghafiri, 2004, pp. 82f.
- 13 For a detailed explanation and diagrams of this method for measuring *falaj* share time, see Nash, 2009; Al-Mahrooqi, 2020.
- 14 Today, most work on the farms is done by expatriate farm workers from the Indian subcontinent, often accommodated by the farm-owners in their former dwellings of the old residential quarter (*ḥāra*), usually in close proximity to the farms.
- 15 The location was previously known as Birkat at-Ṭalḥ (Al-Siyabi, 2012, p. 104), suggesting the presence of a deep pool and possible banana plantation (also cf. Al-Izkawī, 1874, p. 164; Wilkinson, 1987, p. 112). The name, Birkat al-Mawz, makes a direct reference to the growing of bananas (*mawz*), a crop heavily reliant on water.
- 16 Information was based on an interview with 'Abdullāh bin Salīm bin Rāshid as-Ṣaqrī (2011), who had been a keeper (*'arīf*) of Falaj Khatmeen on two occasions: the first 40 years back, and the second, over the seven years preceding the interview. This information differs from the official version, where three channels carry equal shares (see below; cf. MRMWR, 2009, p. 31).
- 17 Here the *radda* are: *al-qa'adah*; *mabda al-asyaa'lah*; *mabda bayt al-māl*; *baqi bayt al-māl*; *raddat bin Isma'īl*; *thalathat arba'a*; and *bādda wa-tisa'a*; *mukhalaf Sayf*; *ar-Ruḍayda* (as-Ṣaqrī, 2011, interview). This differs from the sequence published in MRMWR, 2009, p. 31.

- 18 For a detailed documentation and heritage management plan of Birkat al-Mawz, see Bandyopadhyay et al., 2014.
- 19 The Banī Riyām may represent a Mahri remnant (originally from the Jabal Qamr area of Dhofar) in central Oman (Carter, 1982: 114; Wilkinson, 1977, p. 245). Although the tribal confederation contains a multiplicity of tribal groups, there is only one actual section of the Banī Riyām, Awlād Rāshid (see Carter, 1982, pp. 114–5). Consequently, the Riyāmi group is likely to be the Awlād Rāshid since other tribal groups who could be either of Banī Riyām descent or consider themselves part of the Awlād Rāshid are clearly represented in as-Saybanī (e.g., Awlād Thanī, the Fahūd, Banī Tawba, and as-Ṣuqūr).
- 20 The notable village clusters in al-Ḥamrā' are: al-Ḥamrā', Qarriyat Banī Subḥ, al-'Ariḍ, Misfāt al-'Abriyīn, Dhat Khail, and al-Qal'ā.
- 21 After the western peak, Qarn Kudam a small mountain, and Ḥārat al-Qal'ā, a name suggesting a severe collision. The name Kudam was mentioned in trading documents from the nineteenth century as al-Hawza al-Kudamiya. (Al-'Abri, 2015, pp. 65–6).
- 22 The mosque was constructed with funding from 'Ayisha bint Muḥammad bin Yūsuf, wife of Shaikh Sālim bin Khamīs, who requested rendering in *ṣarūj* (Al-'Abri, 2015, p. 161, n. 85, citing Al-Adawi, 2006).
- 23 The two mosques, al-Ḥadīth, built by Shaykh Salīm bin Mas'ūd, and as-Salaf, were probably contemporaneous, sharing a similar layout but without the small cupola (*būmah*) in the former (Al-'Abri, 2015, p. 161, n. 86, citing Al-Adawi, 2006). Shaykh Salīm bin Khamīs willed any remains of his land and water shares to the mosque, as did his wife, 'Ayisha (Al-'Abri, 2015, p. 161, n. 87, citing Al-Adawi, 2006).
- 24 Until today, those *fuqahā* are remembered as members of their respective oasis town communities, which is also reflected in their continued "material" association with built heritage attributed to individual *'alīm* (pl. *ulamā*), such as mosques, and sometimes city-gates, houses, schools, tombs, and other landmarks.
- 25 This observation is supported by the results of archaeological investigations indicating the *aflāj* was an indigenous development that occurred in the Iron Age of southeast Arabia, approximately 3000 years ago (Al-Tikriti, 2011).
- 26 For example, the difficulty in excavating rocky underground compared with gravel and mud impacted the payment of workers and led to the provision that orphans should not have to excavate rock but only mud (al-Kindī, *Bayān ash-shar*' 39, p. 32). According to Wilkinson (2010, p. 304), the Ibadi ethos of fair dealings includes: "two essential overlapping features governing the *fiqh* that emerged concerning the land economy in Oman under early Ibādī government: the need to be pragmatic[ally] coupled to an ethos of helping the poor and underprivileged."
- 27 In at least one case, this resulted in a large-scale confiscation of Nabāhina property "unlawfully" owned by the *'amīr*, Sulaimān bin Sulaimān, and all untraceable property distributed to the poor or entrusted with the *imam*, 'Umar bin al-Khaṭṭab "to expend it for the glory and maintenance of the government of the Musalmāns" (Al-Izkawi, 1874, p. 142).
- 28 As al-Izkawi mentions, "it is probable that strictures were passed on him as regards his imamship on account of his engagement with commerce, as the agents who were known to trade on his account" (Al-Izkawi, 1874, p. 164).
- 29 From the beginning Nāṣir bin Murshid appointed governors from outside his tribe, the Ya'ārība, which was a strategic decision cutting across the traditional Yemen-Nizar division existing in Oman (Bathurst, 1967: 54–5). The Banī Riyām alliance allowed him to use the routes across the Jabal al-Akhḍar (Bathurst, 1967, pp. 61–2), who also came to his rescue when besieged in the Nizwā fort (Bathurst, 1967, p. 77; Al-Izkawi, 1874, pp. 158–9; Badger, 1871, p. 61). Wilkinson cites several members of the 'Abriyīn who were appointed to positions of *wālī* in the vicinity of al-Ḥamrā' (Wilkinson 1987, pp. 111; 336–7, n. 1).
- 30 This is suggested by the creation legend about Falaj al-Khatmeen, which apparently affected a pre-existing *falaj*, al-Khaṭm in Manaḥ (MRMWR, 2009, p. 31).
- 31 Also known as *nubq*, local legend relates that a *sidr* tree grew from the seeds spread by the imam, known today as the Sidrāt al-Imām.
- 32 He was from the first 'Abriyīn group who entered into a contract with Imam Sulṭān bin Sayf al-Ya'arubī to settle in al-Ḥamrā'. He was appointed *wālī* in the SIRR area by the *imam* and constructed the first house in al-Ḥamrā', Bayt as-Ṣafāh (Al-Abri, 1958, p. 17).
- 33 As the Ya'ārība imamate weakened during the 1150s–60s/1740s, the Awlād Ṭālib section acquired their shares in the *falaj* as settlement of a debt run up by the late-Ya'ārība Imamate and their families (Wilkinson, 1987, p. 112; Al-'Abri, 1958, pp. 23f); also see the later discussion under Misfāt al-'Abriyīn.
- 34 This is because the flow came from the workmanship of a Banī Kiyūm tribe member (Al-Abri, 1958, p. 12, cited in Al-Abri, 2015, p. 151).

- 35 The *ḥarīm* zoning also applies to other bodies of water, e.g., rivers, the sea, wells, and all private or communal property and roads, and constitutes an important item in Islamic legal stipulations, as presented by Wilkinson (1978) and Rohe (2015).
- 36 A mosque had often marked the point where the pure water surfaced (*sharīʿa*), either from a *falaj* or a spring (*ʿayn*), underscoring the sanctity of the source. This practice appears to continue from pre-Islamic times (cf. Bandyopadhyay, 2011, pp. 188–219).
- 37 The Riyāmī and Banī Tawba *sabla* were part of the Saʿīd bin Marhūn bin Uthman ar-Riyāmī and Khamīs bin Rāshid at-Tawbī dwellings, respectively. The third, Sablat al-Ghurfaḥ, part of the ʿAbriyīn house Bayt al-Kabīr, was for the entire community.
- 38 Leakage into buildings close to the *falaj* channel had been a problem, and collapse due to water damage was not uncommon. During the restoration of Falaj al-Khatmeen through Ḥārat as-Saybānī, some houses had to be demolished because of the damage, including the house belonging to Khamīs bin Mansur al-Dighaishī.
- 39 The expansion would have taken place shortly after the death of Imam Muḥammad bin ʿAbdallāh al-Khalīlī (1954), during the imamate of Ghālib bin ʿAlī al-Hināʿī, and possibly was supported by the then powerful Nabāhina paramount shaykh (*tamūna*) of the Banī Riyām, Sulaimān bin Ḥimyar. These years also marked the beginnings of the protracted conflict involving the sultan, the imamate, and British forces, known as the Jabal War, which saw considerable damage done to Ḥārat as-Saybānī.
- 40 In Birkat al-Mawz, for example, one *radda* (twenty-four hours), *raddat al-qaʿadah*, was devoted to the upkeep of the *falaj* (as-Ṣaqrī, 2011, interview).
- 41 There is an oral historical recollection that many families arrived farther east from Izki. This migration is plausible given that the quarters of al-Yemen and an-Nizār were embroiled in several upheavals during the so-called Hināwi-Ghāfirī civil war plaguing central Oman from the end of the Yaʿariba period.
- 42 <https://portal.ecensus.gov.om/ecen-portal/?lang=en>, accessed on 28 June 2022.
- 43 These very old land-holding records preserve names of tribes who have long since disappeared from Misfāt. As a result, they constitute a rich source of historical information (Mershen, 2010, p. 54).
- 44 A single dwelling in Ḥārat al-Wuṣṭa also preserves the memory of the erstwhile Yaʿariba presence (Al-ʿAbri, 2015, pp. 160, table-2; 163, fig.-76).
- 45 Bashīr bin Muḥammad was the son of the scholar Shaykh Muḥammad bin ʿAlī bin Masʿūd bin Lahī bin Qasīm from the Awlād ʿAlī bin Masʿūd clan of Misfāt, who was appointed *wālī* of Qarriyat Banī Subḥ by Imam Nāṣir bin Murshid. Qarriyat was the largest and most important village in the area before al-Ḥamrāʾ was built.
- 46 In particular, interviews with Masʿūd bin Saʿīd al-ʿAbri, Khalfān, Masʿūd bin Sālim al-Ḥaṭṭālī, and Sulaimān bin Nāṣir al-ʿAbri.
- 47 An interview with former *falaj wakīl* of Misfāt al-ʿAbriyīn, Sulaimān bin Nāṣir al-ʿAbri (cf. Nash, 2009, p. 84).
- 48 Interviews with Hilāl bin Zahir al-ʿAbri and former *falaj wakīl*, Sulaimān bin Nāṣir al-ʿAbri.
- 49 The transliteration, *qīs* instead of *kīs* for this small water share unit is also known (e.g., Al-Ghafiri, 2004, p. 106).
- 50 For a discussion of this term, see Nash, 2007, p. 53.