

The Agricultural Landscape of the Umayyad North and the Islamic-Byzantine Frontier

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Abstract:

The Islamic-Byzantine frontier has become the centre of scholarly attention and, as a result, redefined. Recent archaeological and textual work on the *tuğūr* or Islamic-Byzantine frontier, supports the presence of settlements, communities, and people traversing back and forth and refute the notion of a »no-man's land«. However, textual evidence, mainly from Abbasid period sources, largely dates these activities from the mid-eighth to tenth centuries¹. Evidence from archaeological surveys and excavations also supports more intensive settlement in the eighth to tenth centuries. Nevertheless, the idea of an unsettled frontier, as a default, should not necessarily include the period from the mid-seventh to mid-eighth centuries, implying an initial century of frontier fighting over a depopulated no-man's land. Focusing on the initial settlement of the frontier bears important implications for understanding the relationships between locals and between locals and the Umayyad ruling elite. This paper will utilize results from surveys and excavation combined with textual evidence from Greek, Arabic, and Syriac sources to closely examine the nature of settlement and social organization in the newly-acquired Islamic lands of the *tuğūr* in the seventh and eighth centuries. During this century, the Umayyad state and local, predominately Miaphysite Syriac-speaking Christian communities, both autonomously and in cooperation, developed key agricultural settlements alongside irrigation systems on the frontier.

Keywords: agriculture | agricultural landscape | archaeology | excavations | Islamic-Byzantine

Article:

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The Islamic-Byzantine frontier has become the centre of scholarly attention and, as a result, redefined. Recent archaeological and textual work on the *tuḡūr* or Islamic-Byzantine frontier, supports the presence of settlements, communities, and people traversing back and forth and refute the notion of a »no-man's land«. However, textual evidence, mainly from Abbasid period sources, largely dates these activities from the mid-eighth to tenth centuries¹. Evidence from archaeological surveys and excavations also supports more intensive settlement in the eighth to tenth centuries. Nevertheless, the idea of an unsettled frontier, as a default, should not necessarily include the period from the mid-seventh to mid-eighth centuries, implying an initial century of frontier fighting over a depopulated no-man's land. Focusing on the initial settlement of the frontier bears important implications for understanding the relationships between locals and between locals and the Umayyad ruling elite. This paper will utilize results from surveys and excavation combined with textual evidence from Greek, Arabic, and Syriac sources to closely examine the nature of settlement and social organization in the newly-acquired Islamic lands of the *tuḡūr* in the seventh and eighth centuries. During this century, the Umayyad state and local, predominately Miaphysite Syriac-speaking Christian communities, both autonomously and in cooperation, developed key agricultural settlements alongside irrigation systems on the frontier.

Both Islamic and Christian sources say that when the Arab armies arrived, they found the frontier a wilderness, a no-man's land whose forts were destroyed and whose inhabitants had been deliberately removed in a scorched-earth policy in the wake of the Byzantine emperor Heraclius' retreat. Balāḡūrī, the ninth-century Islamic historian recorded: »What

is known to us is that Heraclius moved the men from these forts, which he *unsettled* [*ša'ataha*]. So, when the Muslims made their raids, they found them vacant²«. From Arabic sources, upon leaving, Heraclius allegedly utters his famous farewell, from the Cilician Gates north of Ṭarsūs: »Peace unto thee, O Syria, and what an excellent country this is for the enemy [...] What a benefit you will be to your enemy, because of all the pasturage, fertile soil, and other amenities you provide³«. Indeed, Islamic sources state that when the Arab armies arrived at Ṭarsūs, they found it abandoned and in ruin. Similarly, other Cilician sites were abandoned by the Byzantines, who fled to the mountains and left these cities to fall into ruin⁴. Accounts use the word *'imāra* (rebuild), but whose root has a greater range of implications than simply restoring buildings. The word refers to cultivated land, crops, or food supplies unavailable to the Arab armies due to Heraclius' destruction of the land⁵. In a larger sense, the word connotes becoming prosperous, populous, and civilized, implying a sense of organization that reverses *ša'ataha*. These wider meanings add a level of necessity to rebuilding: the need to build from the ashes something that was better than its predecessor. This perspective, with its connotations of rebirth from ruin, is part literary topos, yet it has become thoroughly entrenched in subsequent scholarship that repeatedly projects the no-man's land of Cilicia onto the entirety of the Islamic-Byzantine frontier.

The vision of a no-man's land dominated by a line of castles is borne out by texts that describe the next three centuries, from the seventh to the tenth, as one of perpetual war between Byzantine and Islamic lands. From these frontier settlements, religious warriors would undertake summer annual raids or *ṣawā'if* (singular *ṣā'ifa*) or *ḡihād* against

* This paper is mainly taken from Chapter 7 of *The Islamic-Byzantine Frontier: Interaction and Exchange Among Muslim and Christian Communities* (London: I. B. Tauris, 2014). I would like to thank Kyle Brunner; some of the more recent ideas evolved out of our independent study and his subsequent undergraduate thesis, »Umayyad Islamization: A Perspective into the Administrative and Economic Development of the Umayyad North«. I am grateful to Claire Ebert for her help in preparing the figures.

1 Bonner, *Violence*; Sivers, *Thughūr* 79-99.

2 Balāḡūrī, *Futūḥ al-buldān* 164. Translation mostly following Hitti, *Origins* 253. The emphasis is mine. Hitti translated the verb *ša'ata* as »to shatter«, however the word implies a less aggressive act of disuniting, scattering, dissolving, or disorganizing. This suggests that Heraclius did not destroy the forts but allowed them to fall into disrepair. Interestingly, of the Syriac authors only Dionysius of Tel Mahrē includes this account of North Syrian devastation, leading some to suggest a Miaphysite polemic against Heraclius; see Hoyland, *Theophilus* 107 with n. 231.

3 The quote in two parts comes from two sources. The first: Balāḡūrī, *Futūḥ al-buldān* 137. Translation following Hitti, *Origins* 210. The second of Azdi, *Ta'riḥ futūḥ aš-Šām* 236, 17-20. Translation following Conrad, *Heraclius* 145. It is interesting to note the tradition of a letter supposedly sent by the Prophet Muḥammad to the emperor Heraclius. In the letter, written several centuries later, the Prophet invokes the sin of the *arisyān* (husbandmen or tillers of other's soil) on the Byzantines. Conrad has analyzed this to read a reference to the Parable of the Husbandmen in Matthew 21:33-41 but redirected whereby Heraclius and his Byzantine Christians should convert or else be »driven out of the vineyard«, and replaced by the Arabs who would better respect and rule in the name of God, the ultimate landowner: *Ibidem* 128-30.

4 This occurred in either 711-712/712-713 according to Ibn Šaddād, *al-'Alāq al-Ḥaḡira* 2, 127 and others, or 808-809/809-810, Balāḡūrī [after *al-Wāqidi*], *Futūḥ al-buldān* 261-263. Ibn Šaddād, *al-'Alāq al-Ḥaḡira* 153 (for Ṭarsūs), 128 (for Mar'aš), 127 (for Sis).

5 Conrad, *Heraclius* 146.

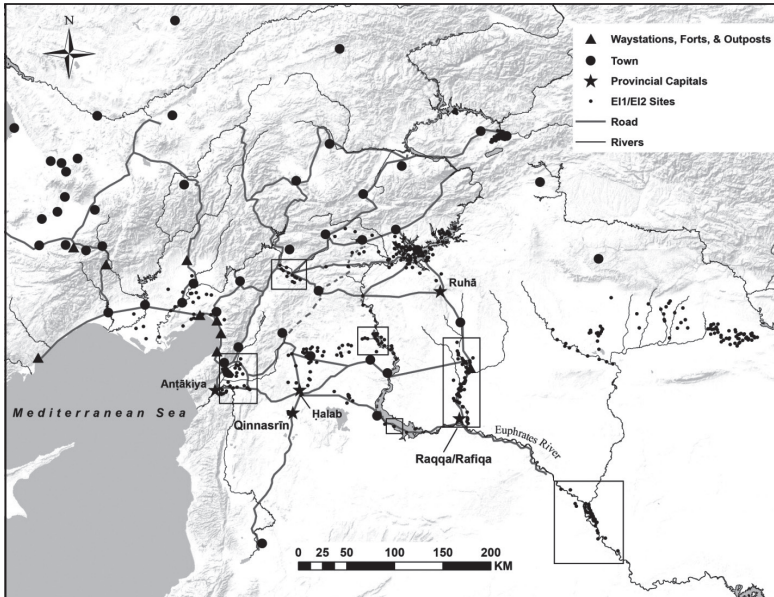


Fig. 1 The *ʿaṭ-ṭuḡūr* and *Ġazīra* regions of the Umayyad North with close-up maps indicated. – (Map prepared by C. Ebert).

non-Muslims north into Byzantine lands – a process recorded in the literature for virtually every year from around the death of Sulaymān and reign of ʿUmar II (c. 717) until the Byzantine reconquest (c. 965), in a perpetual war between Islamic lands and Byzantine lands, the *dār al-Islām* and *dār al-ḥarb*, or, as it was sometimes known, *bilād al-kufr* – »land of the infidel« – as it appears in juridical writings. The frontier in scholarship then has largely taken on the role of a backdrop to larger trans-imperial events; the role of local individuals or communities diminished to extra bodies on a stage.

The landscape of the *ʿaṭ-ṭuḡūr* was neither a backdrop, nor empty, nor passive, but an inhabited, porous and connected region (fig. 1). The frontier zone is laid out roughly southwest to northeast along the Taurus Mountains that create a natural divide between uplands and lowlands. This divide was permeable. Furthermore, it was criss-crossed with roads connecting settlements: large cities that had functioned as important urban centres in the preceding centuries; towns and forts, way stations, small villages, farms, and monasteries, inhabited by Syriac-speaking Christians; and pastoral camps of Arab tribes, often invisible in texts, who roamed the area before the arrival of Islam. Travellers, pilgrims, diplomats, merchants, and armies all moved between Islamic and Byzantine lands across this landscape, as the varied papers in this volume show. Yet, if we focus our attention on the first Islamic century, a more nuanced picture emerges – not a no-man’s land or fortified landscape, but that of a thinly settled landscape with newly founded agricultural settlements and irrigation systems, a partial validation of the concept of *ʿimāra*. This paper will present this archaeological landscape focusing on the seventh/eighth centuries and the Umayyad North comprising the *ʿaṭ-ṭuḡūr*, (later

ʿawāšim in the early Abbasid period), and *Ġazīra* regions. The model of analysis used for all the data is derived from extensive/high resolution/large-area surveys where Early Islamic sites have been identified, and seventh/eighth-century and eighth/tenth-century settlements largely differentiated. These include the two large plains of the western central frontier: the ʿAmūq Plain of Antioch (Anṭākiya) in *al-ʿawāšim* and the Kahramanmaraş Plain of Marʿaš, the forward post of Anṭākiya in *aṭ-ṭuḡūr*; the Euphrates regions around Karkamiş/Carchemish (Qennešre) and Bālis/Dibsī Faraġ (Qāšīrīn) in the eastern central frontier of *al-ʿawāšim*. The Bālīḥ and Middle Euphrates river valleys in the *Ġazīra* will also be examined for comparison. Data for the elusive Late Roman to Early Islamic period transition can be gleaned from many (around thirty-five) other recent high-resolution surveys and older low-resolution surveys from both the *ʿaṭ-ṭuḡūr* and *ʿawāšim* and also the *Ġazīra* regions (in total, the Umayyad North), reassessed to produce a clear image of settlement patterns during this time. Dating (and re-dating) of sites comes mainly from ceramic analysis of key seventh and eighth century types and establishing whether sites were already preexisting or established *de novo*⁶. Canals, notoriously difficult to date, are dated by their attendant sites on their banks.

As the first level of analysis from surveys is often the number of settlements for each period, this is a good starting point in which to view the *ʿaṭ-ṭuḡūr* landscape. Settlement favoured the Late Hellenistic/Roman/Early Byzantine pattern of dispersed small sites rather than nucleation on ancient Bronze and Iron Age tells. But, the overall number of settlements varied significantly. Throughout most of the frontier – in the ʿAmūq and Marʿaš plains and Upper Euphrates, the

6 These include Late Roman C 4, 10, and 14, Cypriot Red Slip and Egyptian Red Slip and key brittleware types. For a discussion of the methodology and results of each survey for these periods, please see Eger, *Frontier* 23-31.

overall number was roughly half that of the Early Byzantine period. In the Mar‘aš plain, the number of Early Islamic sites was half that of the ‘Amūq. It is easy and indeed tempting to assign the powerful socio-political changes taking place to three early causative factors, including the voluntary emigration – and, in some cases, depopulation – of major Late Roman period settled areas to the uplands; the proportional rise (and advent) of pastoralist groups; and the effects of war and conquest on local populations. However, these last two are fairly invisible in the archaeological record and on the ground. Not all parts of the Umayyad North were less widely settled. Archaeological evidence does support continuing occupations of some (though not all) sites that avoided the uplands almost entirely, and were sited on the open plains, often unwalled, and neither heavily defended nor strategically inaccessible. Certain patterns of settlement already established in the Late Roman period persisted, such as the choice to occupy low mounds or flat sites rather than tells, the appearance of a small number of dispersed new sites, the consolidation of pre-existing sites, the rise of minor towns as self-sufficient polities, coupled with the reduction of major urban cities. Antioch, as an example, contracted within its Late Roman walls; the abandoned spaces forming agricultural and pasturelands⁷. This immediately challenges our textual assumptions of a no-man’s land or battleground – the frontier, while not as *widely*, settled was still populated with denser larger farms, villages, or towns. As the dust settled following these political and military upheavals, two interlocking processes of settlement and interaction developed as early as c. 700 CE. Environmental change and the growth of marshlands led to new adaptations in settlement. While many pre-existing communities remained, following the same patterns of settlement as in the Late Roman period, a small number of new seventh-century rural estates were founded along canals and rivers and tied to agricultural, caliphal, and local entrepreneurship and land use. Hydraulic systems for transport, irrigation, and milling were important economic infrastructures that appeared alongside these new settlements. These processes offer other scenarios to the standard Muslim-Christian conflict narratives; they reveal gradual accommodation and adaptation among frontier groups and the involvement of the Umayyads in the largely Syriac-speaking agricultural lands of the north.

Canal and River Agricultural Estates

New sites were noticeably different, not only in number and location, but also type from Late Roman settlements. They appeared early in the seventh century and were linked to agricultural, state, and local entrepreneurship; land ownership; and local economic development. While river and canal

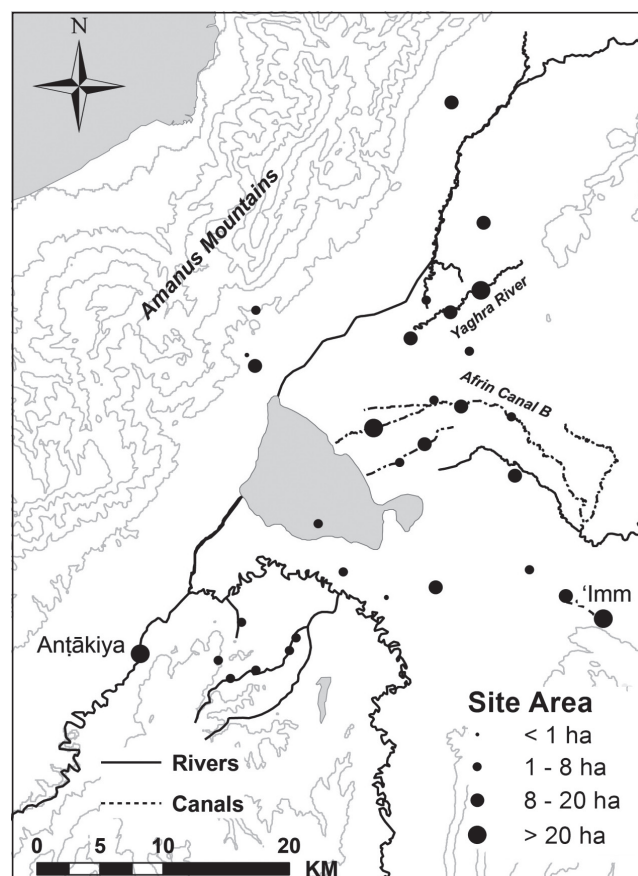


Fig. 2 The ‘Amūq Plain in the seventh/eighth century. – (Draft C. Ebert).

sites, along with canal building, had continued since the Late Roman period, new canals and their attendant communities became the first foci for seventh- and eighth-century settlement. These utilized systems of water sharing and canal management that were either cooperative or managed by one large estate.

In the ‘Amūq, Kahramanmaraş, and Balıĥ Valley Surveys, the biggest sites and those with the largest assemblage occurred as low mounds or flat scatters along canal systems, rivers, and within or on the edges of expanding lakes and wetlands. These sites also reflect the gradual expansion and permanence of the marsh. Canal and river settlements were linearly arranged, evenly spaced, and sometimes constituted double sites, set on either bank, as seen in the ‘Amūq Plain (‘Afrin Canal, ‘Imm Canal, and Yaġrā River sites). Frequently, these sites were newly established. In the ‘Amūq, four out of eight newly established sites were located on canals and were also among the largest in size and assemblage, with similar parallels in the Kahramanmaraş Plain (such as the site of Domuztepe) showing that great importance was placed on irrigating the plain and controlling water resources from the onset of the Early Islamic period (figs 2-3). Two of the remaining newly founded sites were along the Kara Su River.

7 Eger, (Re)Mapping 95-134.

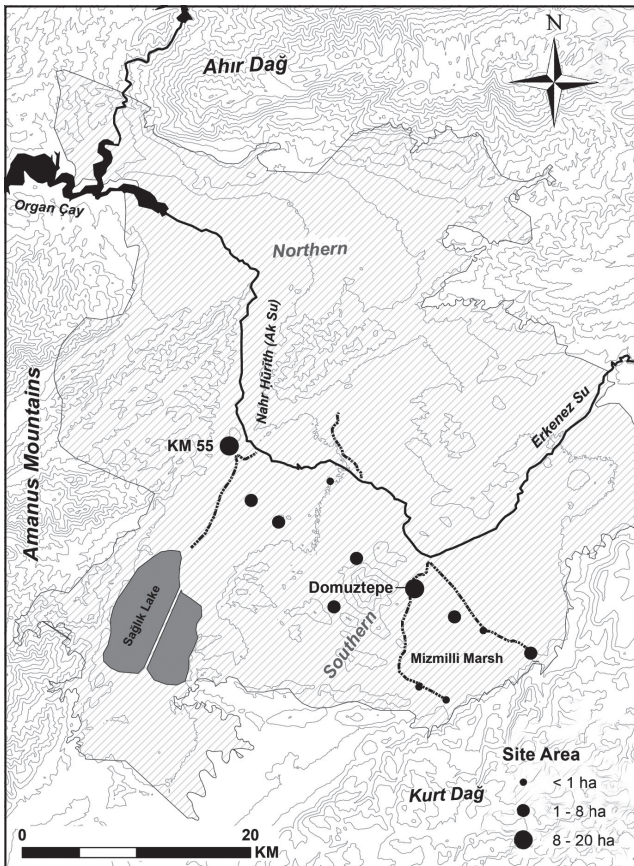


Fig. 3 The Mar'as Plain in the seventh/eighth century. – (Map prepared by C. Ebert).

The double sites would have spanned a mill dam. Some terminated in a series of watermills used for grinding grain. Some of these sites can be hypothesized as Christian sites such as Yağrā and 'Imm in the 'Amūq Plain, based on textual sources; and Domuztepe, based on excavated material remains (such as chancel screen fragments, burials, and faunal assemblages)⁸.

From the Ğabbūl Plain, Tabqa Reservoir, and Tabqa Dam Surveys more sites in the Late Roman and Early Islamic periods appeared in the dryer eastern-steppe plain towards the Euphrates, linked with evidence of *qanāt* and canal systems dated by their proximal sites. Several of these sites were rather large, measuring between 10 and 30 ha in size, with no defensive walls, such as the site of Qaşirīn (Byzantine Neocæsarea/Dıbsi Farağ). They were similar to the 'Afrīn canal sites and were interpreted as estates or regional centers, while small 1 ha sites were interspersed among them – a pattern also noted in the Tabqa Dam Survey. Canals around Ğarābulus (Jerablus)/Karkamiş (Carchemish) (near Europos, the monastery of Qenneşre), drawing from the Euphrates, were observed by the surveyors who recorded four types: earthen, dug canals; rock-cut channels; built stone channels; and *qanāts* (fig. 4). Of the five Early Islamic sites, three were evenly spaced along the

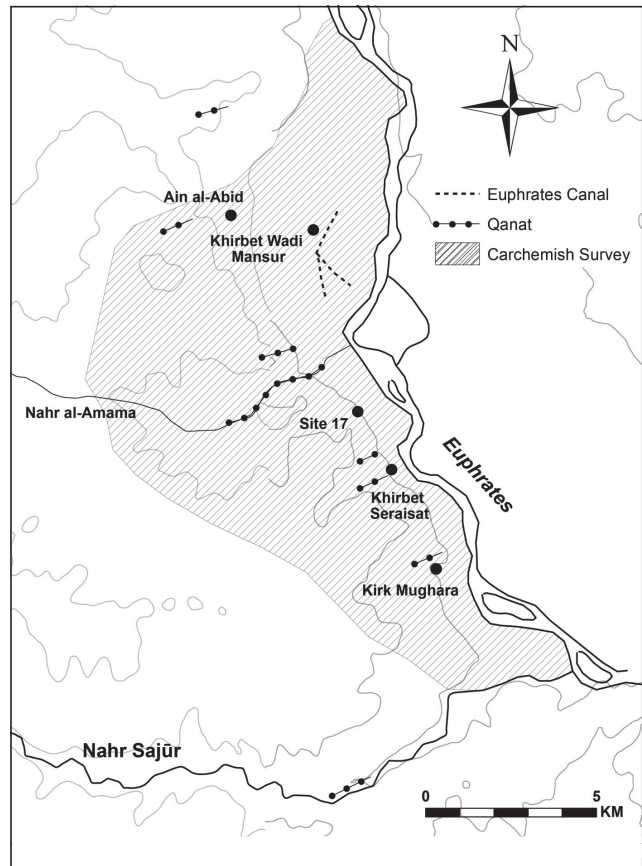
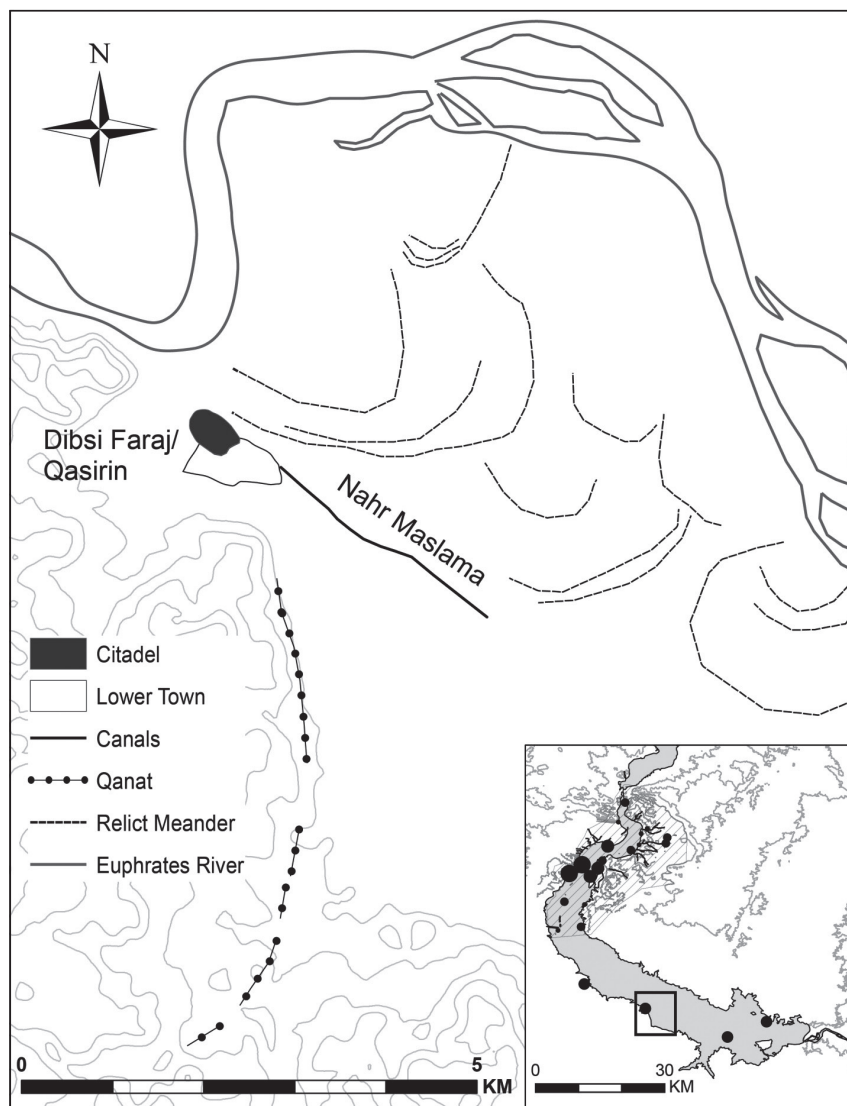


Fig. 4 The Euphrates around Karkamiş/Carchemish in the Early Islamic period. – (Map based on Wilkinson/Rayne, Landscapes fig. 7, prepared by C. Ebert).

Euphrates (Ĥirbat Seraisat/Site 1, on the lower town of the tell; Kirk Muğhara/Site 16 at the junction of the Sajur tributary; and Ĥirbat Wādī Mañşūr/Site 7 on a floodplain terrace) and two were clustered together on an upper terrace (350-400 m a.s.l.) west of the river ('Ayn al-'Abīd/Site 4, a flat site; and Site 5, a low tell). In this area, nearly all Early Islamic sites were founded on pre-existing Late Roman ones. Sites 4 and 7 were only Late Roman/Early Islamic sites. The sole single-period settlement was Site 17, a way station. Notably, this small area featured extensive canal systems – also pre-existing, and continuing to be used in the Early Islamic period. A 9-14-m-wide canal on the west bank of the Euphrates ran parallel to the river and was flanked by evenly spaced Late Roman sites, one of which continued into the Early Islamic period, indicating that the canal may have been in use similarly. Flowing into this network, a wadi system was canalized with a rock-cut channel probably in the Roman period and remained in use into the Early Islamic, evident as flowing past Sites 4 and 5, and possibly connecting to a water mill near Site 7. Artificial stone canals channelled water from the Wādī Seraisat to flow into Site 1's lower town, and possibly also into a penstock water mill. Close by was evidence for baking lime and pottery manufacture. The overall system was of a main parallel feeder

8 Eger, Frontier 50-55.

Fig. 5 The Euphrates around Dibsī Faraġ (Early Islamic Qāširīn). – (Draft based on Wilkinson/Rayne, Landscapes fig. 6, prepared by C. Ebert).



canal alongside the Euphrates with eight recorded smaller, perpendicular side channels along each tributary wadi, 20-100cm wide, 30-100cm deep, cut into bedrock or lined with ashlar blocks to augment water collected from annual rainfall⁹. Some of these may have functioned as *qanāts*.

Canals and a *qanāt* were also found to be associated with Dibsī Faraġ/Qāširīn (fig. 5). A main canal was dated by Early Islamic coins from the excavated fill. The Early Islamic canal replaced a previous canal system, which was perhaps also associated with small agricultural Late Roman and Early Islamic sites near the settlement. A 4 km-long *qanāt* brought water from the southern limestone steppe north towards the lower town of the settlement. The *qanāt* may date to the Late Roman occupation¹⁰.

In the Ġazīra, both the Balīḥ and Middle Euphrates valleys experienced an explosion of settlement in the eighth century as compared to the Late Roman or Sasanian periods. Evidence

for the seventh/eighth century is less robust. Sites were newly founded all along the Balīḥ River between Raqqā and Ḥarrān (fig. 6). Extensive canal systems, including a long parallel primary canal and several secondary and tertiary conduits, were also identified. Although the surveyors dated nearly all of these to the Abbasid period, they mentioned that this was likely due to a difficulty in identifying the coarsewares. Textual evidence corroborates the presence of seventh/eighth century settlement and irrigation activity in the region. Most of the eighty sites were farmsteads, under 1 ha. Three sites were medium-sized villages (5-10 ha) while four were large villages between 10 and 40 ha. Interestingly, twelve sites exhibited Roman to Islamic period continuity. Seven of these twelve were at the larger end of the small class (3-5 ha) of farmsteads, suggesting growth and consolidation of smaller sites¹¹. This implies that the remaining 68 sites were founded *de novo*. One of the most important sites was Ḥiṣn Maslama,

⁹ Wilkinson/Rayne, Landscapes 128; Wilkinson et al., Archaeology 239, 244.
¹⁰ Wilkinson/Rayne, Landscapes 128.

¹¹ De Jong, Resettling 519.

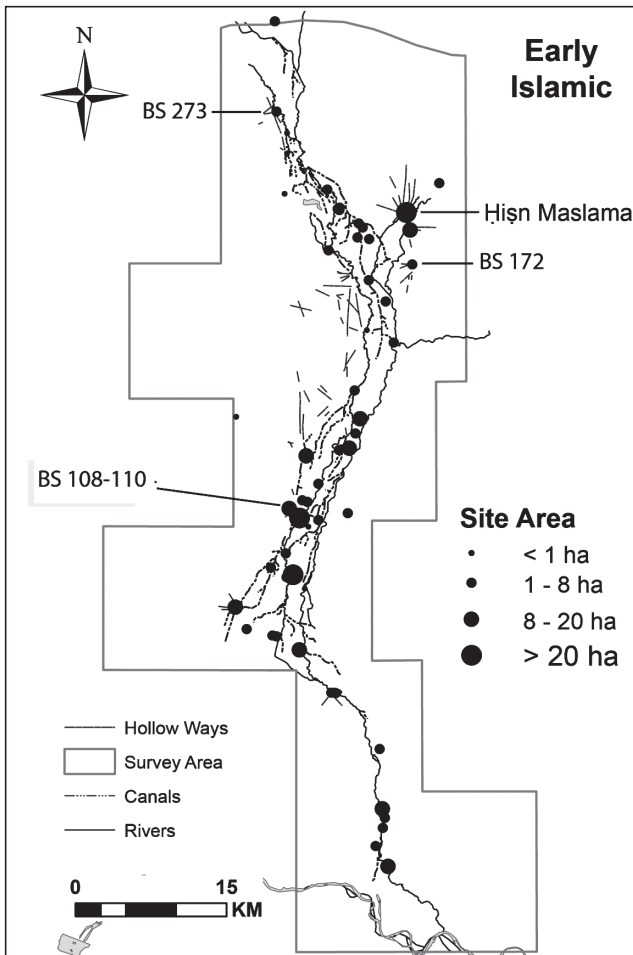


Fig. 6 The Baliḥ River in the Early Islamic period. – (Map based on Bartl, *Baliḥ* 345, 348 Map prepared by C. Ebert).

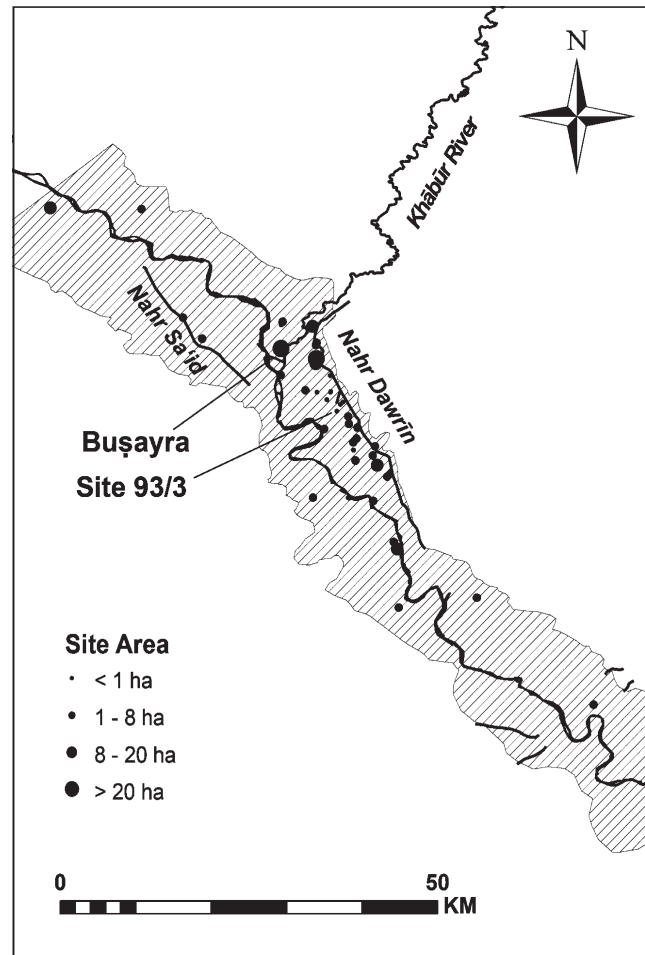


Fig. 7 The Middle Euphrates in the seventh/eighth century. – (Based on Berthier, *Peuplement*, Map D, prepared by C. Ebert).

a square enclosure measuring 330 × 330 m (over 100 ha) surrounded by canals 3 km away. The possibly identified settlement of Bāḡarwān/BS 108-110 was a double-site, similar to those in the ‘Amūq. These sites would have been watered by an irrigation system comprising a main parallel feeder canal and secondary and tertiary canals that would have branched off, as suggested by the presence of sluice stones found at intervals. Many Early Islamic period field scatters alongside canals show archaeological evidence for the manuring and cultivation of irrigated land.

The Middle Euphrates region at the confluence of the Ḥābūr and Euphrates Rivers near Raḥba and Buṣayra (Qarqisiyā) was also a locus of settlement and irrigation with many seventh/eighth-century sites increasing into the Abbasid period (fig. 7). Two long parallel canals, one on each side of the Euphrates, are corroborated by texts. The sites were irrigated by the Nahr Semiramis on the east bank. Several sites, notably tells, in the immediate vicinity of Buṣayra continued into the seventh to eighth centuries. Early Islamic settlements flourished, but were confined to a 60-km length of the river encompassing two major canal systems, one on either side of the Euphrates. As main feeder channels, both followed the parallel course seen in all Euphrates, Baliḥ, and

Ḥābūr canals attested on surveys but were unlike the ‘Afrīn in the ‘Amūq, whose channels were bifurcated and channelized, or the Ak Su in Maraṣ, where dendritic perpendicular canals began at the source. Beginning in the second half of the seventh century, settlement flourished on the east bank of the Euphrates. The sites here were mainly organized along a newly-built canal, the Nahr Dawrīn, which was visible intermittently for 50 km. Some 36 sites were situated along this canal, 26 of which were from the seventh to eighth centuries. Most continued past the eighth century and more were founded and occupied until the end of the ninth century, from which period sedimentation was noted. The canal took water from the Ḥābūr and irrigated all of the Euphrates terrace land for a stretch of about 30 km downstream. Most sites were flat and small. Excavations of Site 93/3 revealed a square enclosure, 15.5 × 15.5 m with 60 cm-wide walls. The walls enclosed six rooms and an entry chamber around an internal courtyard. The Nahr Sa’īd flowed parallel to the Euphrates on its western bank for an intermittent length of 33 km. Settlement along it was less dense than on the Nahr Dawrīn, with only 14 associated sites – several of them tell sites. The use of tell sites is an interesting pattern, as many were not terribly high (maximum 6 m) and were newly founded Islamic period sites, i. e.

not pre-Islamic. They would have been in an advantageous position to avoid erosion caused by river avulsion, seen also with the Yağrā River sites in the ‘Amūq. Soundings across the canal and the dating of proximal sites by ceramics and radiocarbon, however, uniformly attest to a later date for this canal, beginning from the ninth century. While the high point of settlement occurred in the Abbasid period and was linked to the increased population and demands of the capital of Baghdad and the city of Raqqa, settlement in these valleys began already in the Umayyad period.

Many of these locations lay within the marginal rainfall zone, which averaged 250 mm p. a. Although yields were not as robust as those in southern Iraq, these canal systems were less vulnerable to the constant effects of sedimentation and salinization experienced in the Sawād lands south of Baghdad. Yet it is remarkable to note canal-building efforts in the ‘Amūq Plain, which although having very low precipitation in the summer received enough rainfall per year, and sustained permanent wetlands, so as to make irrigation less of a necessity but more of an economic investment that offered a secure cushion during drier years.

Land Tenure

Canal systems and sites are well attested in the Early Islamic period on the Syro-Anatolian frontier. Yet, how these hydraulic estates or villages were settled, canals built, and water distribution organized are more complicated questions. So, too, are issues of land tenure and taxation in relation to these systems. Ideas of irrigation and social organization have developed significantly since K. Wittfogel’s theory of Oriental Despotism, which stated that totalitarian empire-regimes became what they were because they were able to carry out and capitalize on large-scale irrigation projects using forced labour and to control water access through a hierarchical system. It is, rather, the reverse which holds true: large-scale empires enabled the development and spread of irrigation and water management in the Near East¹². Scholars, in recognizing that local and chronological variations are paramount in any such claim, typically have argued for one of two revisionist models: either that irrigation was completely locally or tribally organized, or that canal- or *qanāt*-building projects were initiated and encouraged as a state enterprise but maintained on a local level, thus partially embracing Wittfogel’s scheme¹³. Archaeology alone cannot resolve this issue,

not least because many examples of irrigation works, such as canals or water mills, are not easily dated. Without ceramic or inscription evidence, such features are best dated via their associated sites as an overall system, a technique which has already been demonstrated.

The Umayyad state was not an absolutist empire. Rather, it represented a dominant family within a minority group of Muslims in the largely Christian Levant. In this sense, the Umayyads early on utilized the fragmented nature of Muslim and Arab groups in the Near East to their advantage by typically employing policies of indirect administration, with incentives of wealth and prestige by conquest, to cohere tribes and Christian communities gradually. These policies may have been part of sedentarization strategies employed with nomadic groups or soldiers on the frontier. They also functioned in granting larger autonomy to the Umayyad North, which was largely non-Muslim but mainly Miaphysite. Lands still occupied by non-Muslims were preserved but taxed with the *ḥarāğ* land levy. Monasteries were included within this system, as is shown in the case of a young officer by the name of Sargis (possibly a Christian) who was sent by llūṣṭrayya, the *qā’id* (leader) of Sumaysāt, to collect the *ḥarāğ* and *ğizya* taxes on the Dayr Mār Sarğiyūs al-‘Arīḍ (Monastery of Mar Sergios the Broad) located near Ḥiṣn Qalawḍiya¹⁴. Another example is shown when Iyād ibn Ğanm conquered Raqqa and its region, leaving the majority of its land with already-established farmers (*al-fallāḥīn* or *al-arīṣīyīn*)¹⁵. In other cases, Christian tenants paid their rents to Muslim landlords or agents¹⁶. From the sources, land tenure and tax as they related to the survival and relative autonomy of Christian communities are difficult issues to quantify chronologically or geographically, as are individual cases of conversion, although general remarks can be made¹⁷.

In short, agricultural lands and estates were developed both privately and by the state. State or caliphal lands (*ṣawāfi*) were legally defined as lands appropriated during the time of conquests that had been abandoned because its occupants fled or were killed, that belonged to former Byzantine or Sasanian elites, or that comprised wetlands, post-houses, or mills¹⁸. Until the time of Mu‘āwiya, these lands were for Muslim fighters but were then transferred to the state. Lands were also granted to Muslims in two main ways: as plots of land to soldiers on the frontier and as agricultural estates mainly to elites. *Qaṭī’a* (pl. *qaṭā’i*) were lands given over to private ownership, often as estates, but whose produce was shared (*fay’*) or owners paid the ‘*uṣr*,

12 Wilkinson/Rayne, *Landscapes* 126f.

13 For a recent example, see Braemer/Genequand et al., *Water* 36-57, esp. 46-50 for local development; and Braemer/Geyer, *Conquest* 110, for both local and centralized irrigation development. For al-Andalus, see Glick, *Castle*.

14 Life of Theodota of Amida (d. 698), section 85; in section 127 we learn of a monastery that becomes exempt from the *ğizya*. Abu Yusuf (d. 798), in his *Kitāb al-Ḥarāğ*, states that *ğizya* was only taken from monks living in monasteries if they were wealthy. If they were poor, it was to be paid on their behalf by wealthy monks. *Ğizya* was also paid by ascetics who lived in towers (*ahl*

al-ṣawāmi’, or stylites) only if they were wealthy; otherwise, monasteries paid for them. Abū Yūsuf, *Kitāb al-ḥarāğ* 5,70, via Tannous, *Syria* 364.

15 Balāḍurī, *Futūḥ al-buldān* 237.

16 Humphreys, *Communities* 52f.

17 For the most recent work, see the exhaustive study by Katbi, *Land Tax*, who demonstrates the shifts and complexities of this tax from region to region and over time and more recently Kennedy, *Landholding*.

18 The definitions vary slightly in sources; see *ibidem* 231f.

or tithe, rather than the steeper *ḥarāğ* land tax. The *qaṭāʿi* lands could also be small, agricultural (*mazāriʿ*) or building (*masākin* or *manāzil*) plots with housing, given to soldiers who paid little or no tax or paid directly to the ruler (*riḡḡār*), and could be passed down as inheritance. After Muʿāwiya, instances of land grants increase, for example ʿAbd al-Malik gifts lands to frontier fighters in Maṣṣiṣa, the *tuḡūr*, and the Ḡazīra¹⁹. His son al-Walīd gives soldiers from Antioch the land of Salūqiya (Seleucia ad Pieria) on the coast as a *qaṭīʿa* as long as they cultivated the land and paid a tax of one dinar and one *mudd* (about one dry litre) of wheat per *ḡarīb* (about 1592 m²)²⁰. These were incentives for soldiers to remain and settle the frontier and continued into the early Abbasid period. A similar process had been used in the Roman and Late Roman periods as an impetus for veterans to settle the uplands. The second type of land tenure involved entrepreneurs, mainly Umayyad elites, who developed abandoned or previously non-agricultural lands with irrigation systems for cultivation. They were rewarded for their revitalization efforts on otherwise »dead« lands (*mawāt*) by becoming landowners with tax exemptions on account of their prior investments. In both types of land grants, the owner's tenure was secure; he or she could sell the lands or pass them down to kin²¹. Thus, whether directly, by owning lands, or indirectly, by granting them, the ruling Umayyad family took a personal interest in the frontier.

Irrigation – State or Local Initiatives?

Irrigation, particularly in the form of canal digging, was a costly enterprise, and one that subsequently required considerable upkeep to maintain the accompanying dams and outflows; remove sediment and overgrowth; and, particularly in southern Iraq, to deal with saline (*sabḥa*) accumulations. Mention by Michael the Syrian of an unfinished canal project under Yazīd ibn Muʿāwiya attests to this fact²². Frequent references in Balāḡurī and Ṭabarī, as well as in Syriac accounts, attest to numerous canal-building activities by Umayyad and Abbasid caliphs, princes, local rulers and governors, and members of the elite (most notably, the sons of ʿAbd al-Malik)²³. They all built »estates« (*dijāʿ*) to support the intensive greening of both naturally fertile and previously uncultivated parts of the landscape.

The canal at Dibsī Farağ/Qāṣirīn can be identified as the Nahr Maslama that Maslama ibn ʿAbd al-Malik (d. 738) had built in the first quarter of the eighth century, and which flowed from Bālis to Buwaylis (»Little Bālis«, unidentified) to Qāṣirīn, ʿAbidīn, and to Ṣiffīn according to Balāḡurī and the Syriac *Chronicle of Zuqnīn*²⁴. The latter chronicler adds that he built forts and villages along the canal. As the former inhabitants of this land had fled, it was initially granted to fighters and Syrian Arabs who converted and settled. Inhabitants of five villages requested that Maslama build them a canal or Maslama himself take on the project. In any case, Maslama developed the lands and so retained them as *qaṭīʿa*²⁵. Opposite the river was a canal 15 km long, beginning near Qalʿat Namrud and ending at the confluence of the Balīḥ with the Euphrates. It can be identified as the Hanī Canal, attributed to Hišām in the *Chronicle of Zuqnīn*. Agapius (d. 941/942) and the *Chronicle of 1234* mention the destruction of the estates of Hišām along the Euphrates by Marwān II, indirectly alluding to the presence of caliphal lands.

Ṭabarī mentioned a former companion of Marwān and one of his cavalry officers named Abū l-Ward (Maḡzaʿa ibn Kawṭar ibn Zufar ibn al-Kilābī), who swore an oath of allegiance to the Abbasids. He lived with Maslama ibn ʿAbd al-Malik's descendants at Bālis and a village called Nāʿūra (»Waterwheel«), located between Ḥalab and Bālis, in 749/750²⁶. Although as yet unidentified, from the toponym we can surmise that this last site was built along a canal or tributary and involved in irrigation and perhaps milling. As-Saraḥsī (d. 899), traveling between Ḥalab and Bālis, stopped at the settlement and noted that there was a small stone fort belonging to Maslama ibn ʿAbd al-Malik. About 13 km east was the village of Muḥammad ibn al-ʿAbbās al-Kilābī, known as Qaryat aṭ-Ṭalḡ. As-Saraḥsī observed that it was well-watered with canals from the Nahr Quwayq that runs through Ḥalab²⁷.

In the Balīḥ Valley, Maslama ibn ʿAbd al-Malik built a canal (Nahr Maslama), diverting the Balīḥ River to supply water to a large cistern measuring about 5.8 m square and 22 m deep, and both canal and cistern irrigated (*yusaqī*) lands around Ḥiṣn Maslama (BS 187/Madinat al-Fār) at the local inhabitants' request²⁸. He also established the settlement of Ḥiṣn Maslama itself, for Muslims who had recently received or occupied land possessions²⁹. Heidemann argues that Ḥiṣn Maslama may have functioned as a self-sufficient estate turned local administrative center for surrounding Balīḥ estates and ag-

19 Ibidem 247.

20 Balāḡurī, *Futūḥ al-buldān* 148, and Kennedy, *Landholding* 164.

21 See Qudāma ibn Ḡaʿfar, *Kitāb al-ḥarāğ* 32; Kennedy, *Feeding* 181 f.; Bonner, *Violence* 140-145.

22 Michael the Syrian, *Chronique* 3,470; 4,446; Morony, *Michael* 143.

23 For examples in Iraq and Iran, see Lapidus, *Development* 177-208; Kennedy, *Rule* 291.

24 Balāḡurī, *Futūḥ al-buldān* 151. In Pseudo-Dionysius of Tell Maḥrē, *Chronicle of Zuqnīn* 160 f. both Hišām and Maslama dug a canal known as the Bēth Balīḥ in or around 717-718.

25 Balāḡurī, *Futūḥ al-buldān* 151; Kennedy, *Incomes* 143; Katbi, *Land Tax* 239 f., 249; Kennedy, *Landholding* 166.

26 Ṭabarī, *Taʿrīḥ ar-rusūl wa-l-mulūk*, 3,1,52 (Arabic) and Ṭabarī, *ʿAbbasid Revolution* 176 (English). This may be the same as Nauar, used by Baldwin in 1121 as a base to attack Atārib; cf. Asbridge, *Principality* 82. See Dussaud, *Topographie* 474; Ibn aṣ-Ṣiḥna, *Ad-Durr* 40.

27 Rosenthal, *Manuscripts* 138 f.

28 Yāqūt, *Muʿḡam* (1990), 2,306; Ibn Serapion, *Description* 59. Maslama also built canals in southern Iraq on *qaṭīʿa* lands that he received, thereby gaining prestige among farmers; Kennedy, *Feeding* 179.

29 Haase, *Foundation* 245-253, 247; Haase, *al-Far* 167; Heidemann, *Mudar* 501.

ricultural activities, such as those given to retainers. Yāqūt states that Maslama ibn ‘Abd al-Malik gave the land (*qaṭī’a* as *qaṭī’a*) to one of his captains, Āsīd of the Sulaym, who walled the village and built it up³⁰. It is also possible that the Nahr Maslama is the same as the Nahr al-Abbara, dated to the sixth to eighth centuries, as both flowed along the east side of the Baliḥ where all of the major Early Islamic period sites (including Bāḡaddā/probably BS 172, Mahrē/BS 142, and Bāḡarwān/probably BS 108-10) were found. A secondary canal, flowing from the main Nahr al-Abbara to the settlement of Ḥiṣn Maslama, was recorded (fig. 6)³¹. The canal may be identified with one built by Hišām as caliph in 724, based on Syriac accounts such as that by Agapius of Manbiḡ who said: »He opened up many abundant water channels and it was he who drew water from the river above Callinicum (Raḡqa)« and, similarly, the anonymous author of the *Chronicle of 819*: »and he [Hišām] diverted a river from the Euphrates to irrigate the plantations and the fields which he made near it³²«. Ra’s al-‘Ayn was irrigated by canals, as was a town of Maslama ibn ‘Abd al-Malik, given as a land grant to one of his men, Usayd as-Sulamī, and possibly identified as Bāḡaddā³³.

The Nahr Dawrīn is not attested in historical accounts. Ṭabarī mentions the donation of a piece of desolate (*ḥarāb*) land called Dawrīn, along with its villages, to the as yet not caliph Hišām, which the latter then turned into an estate from which he received revenue³⁴. Textual sources indicate that the Nahr Sa’īd was a large canal, built in Umayyad times on land that was formerly overgrown (*ḡayda*) and full of lions, that diverted waters from the Euphrates in a loop to irrigate the district capital of Raḡba, and which flowed from Qarḡisiyā to Dāliya (fig. 7). The land was given as a *qaṭī’a* by Walīd to his brother Sa’īd al-Ḥayr ibn ‘Abd al-Malik, who built the canal and other buildings. Soundings across the canal and the dating of proximal sites by ceramics and radiocarbon, however, uniformly attest to a later date for this canal, beginning from the ninth century, as such, diverging from the textual evidence³⁵. It may have been dug by the Umayyads but developed later as part of the Abbasid ascendancy in the region.

Euphrates’ canals, due to the deeply incised nature of the northern portion of the river and high banks, would have required lifting devices such as waterwheels (*na’ūra* and *sāqiya*) to bring the water to the canals. Fragments of *qadūs* jars found at Dibsī Faraḡ support the presence of such installations. In the Middle Euphrates, intact vessels of a *qadūs* or *sāqiya* type, but more spherical, were discovered at seven sites and related to water-lifting devices mainly from

the end of the tenth to the thirteenth centuries. These would have brought water to higher terraces and secondary canals, whose perpendicular traces were noted. Other waterwheels are inferred by villages named after water-lifting-device terms, such as Nā’ūra, between Ḥalab and Bālis near the ḡabbūl Lake, and ad-Dāliya (waterwheel) near ar-Raḡba and the Nahr Sa’īd on the Euphrates. Hārūn ar-Rašīd, while traveling down the Euphrates, observed *na’ūra* waterwheels at ar-Raḡba. Similarly, to the major ‘Afrīn canal sites, many of these settlements were Early Islamic period foundations or else flourished in the Early Islamic period under the Umayyads, and were largely abandoned by the tenth century.

From textual references, we see that Maslama and Hišām’s canal-building projects are entrepreneurial and represent an investment in assuring their own elite status, bringing provincial funds to the state capital, and food to major towns and cities. A poem by Ḡarīr ibn ‘Aṭīya (c. 650 - c. 728), implies that Hišām’s construction of the Hanī was a costly and enormous effort:

»You (Hišām) hewed out from the Euphrates flowing canals, blessed, and they have been constructed just as you wished

The mountains bowed to your wish; they were mute, while cut up by iron.

You arrived at the Hanī [*canal*] and there gave thanks, for the solid mountain was leveled.

Olives give a rich yield there and clusters of black grapes weigh down [*the boughs of the vine*].

The Hanī has become an earthy paradise, even the envious acknowledging that it is the everlasting [*garden*].

They bite their fingertips [*with frustration and envy*] when they see these orchards ready for harvesting [*and they see*] pairs of fruit trees and date palms bearing a ripe yield³⁶«.

Not only court poets took note, but also Syriac accounts all mention the activities of Caliph Hišām, who built canals and diverted water in the Baliḥ and »established plantations and enclosed gardens and spent much money on creating these things«. Agapius states that he was the »first of the Arabs to take on estates for himself« and received revenue from all of this. The Hanī Canal’s revenue, according to Michael the Syrian, surpassed the amount collected from taxes in the entire empire³⁷. Michael the Syrian and the author of the *Chronicle of 1234* also allude to high taxation and tribute. This latter, anonymous, author also mentioned that Hišām

30 Yāqūt, Mu’ḡam 1,382.

31 Wilkinson, Settlement 75.

32 Theophilus of Edessa, Chronicle 224.

33 For Ra’s ‘Ayn see Saraḡsī via Yāqūt, Mu’ḡam 3,15f.; Rosenthal, as-Saraḡsī 71 (English translation). For Bāḡaddā, see Saraḡsī via Yāqūt, Mu’ḡam (1955), 1,372; Rosenthal, as-Saraḡsī 73.

34 Ṭabarī, Ta’rīḡ ar-rusūl wa-l-mulūk, 2, 3,1735 (Arabic) and Ṭabarī, Waning 77f. (English). See also Agapius and the *Chronicle of 1234*, in Theophilus of Edessa, Chronicle 258f.

35 Berthier, Peuplement.

36 Ḡarīr, Diwān 1,291, lines 39-45. I am grateful to Tahera Qutbuddin for assistance with the translation. For »bite their fingertips« (line 6), cf. Qur’an 3:119; for »pairs of fruit trees and date palms« (line 7), cf. Qur’an 50:10 and 55:52. See Nadler, Umayyadenkalifen 262.

37 The location of the Zaytūna Canal, mentioned in the Chronicle of Zuqnīn as having been built by Hišām along »towns and forts and many villages« in 717-718, is not completely known but thought to be in the same region, around Raḡqa. Pseudo-Dionysius, The Chronicle of Zuqnīn 160f.; Michael the Syrian, Chronique 3,490; 4,457; Sarre/Herzfeld, Reise; see Rousset, Vallée 565, n. 79. See Robinson, Empire 87 with n. 189. Morony, Source 143.

used »free and forced labour« in the undertaking of these canals³⁸. In most cases, caliphs would have had a caretaker (*wakīl*) to manage the estate, usually worked on by *mawālī*³⁹. Apart from the standard paraphrasing that exists in the Syriac texts, these anecdotes do illustrate caliphal irrigation activity in the Ġazīra. Yet, and this cannot be overstated: caliphal or central-state initiatives as such must not be assumed to have been general practice. Even the Syriac authors allude to the fact that no other caliph before Hišām did any of these things. References to managing estates under the *diwān ad-diyāʿ* (office of estates) and *diwān al-mawāriṭ* (office of estate inheritances) in the growing administrative framework of the Abbasid state suggest that by the ninth century, other landowners were running estates, however, the intensity of caliphal initiatives for irrigation projects and agricultural estates greatly diminished after the caliphates of Maṣṣūr and Maḥdī at the end of the eighth century⁴⁰.

Were agricultural estates in the north only to finance the Umayyad's own treasury or feed its major settlements to the south? Caliphal patronage of irrigation and associated estates in the north necessitates mention of the more famous *quṣūr* or »desert castles«. Some of the *quṣūr* or »desert castles«, many which have elaborate irrigation and garden systems and mills and oil presses such as Qaṣr al-Hayr al-Ġarbī, Qaṣr al-Hayr al-Šarqī, Qaṣr al-Hallabāt, and Ruṣāfa, can also be strongly considered as agricultural estates⁴¹. Their role as part of region-specific patronage, such as Hišām and Maslama's activities in the north, has been argued before⁴². Undoubtedly, they were important for their location on major caravan and migration routes. What is also evident in all of these examples is caliphal intervention in greening the largely Syriac-speaking Miaphysite rural north: the eastern central *tuġūr* later in the early Abbasid period known as *al-ʿawāšim* and the Ġazīra. Further, many of these places such as at Dayr az-Zakkā at Raqqā, Ruṣāfa, and Qaṣr al-Hayr al-Ġarbī were continuing Christian and monastic communities⁴³. As such, these estates may have facilitated political and economic relationships between the Umayyad elites and local non-Muslim villages and monasteries⁴⁴. This could have been done by administering and collecting taxes from non-Muslim neighbours whose lands benefited from the irrigation enterprises and by using these estates as centres of local economic distribution.

Evidence also exists for local initiatives on both the level of monastery and of village/town. Again, Syriac texts provide some insight, but rarely, as most are devoted to the *Lives* of saints. The canals around the monastery at Europos on the Euphrates, can be perhaps be identified with a mention, in

the *Life* of Theodota of Amida, of irrigation ditches feeding fields of grain, fruit, and produce around Qennešre⁴⁵. As no person is associated, these may be indicative of local activity, although this is conjecture and uncertain. More tangible evidence for local initiative is found with Symeon of the Olives who built, in Našībīn (Greek Nisibis) and all around the Ṭūr ʿAbdīn, numerous monasteries equipped or associated with shops, inns, animal enclosures, olive groves, irrigation channels, and mills. He even built a »large and beautiful mosque« next to the church in Našībīn, a *madrasa*, and a *pandocheion*, or hostel. He paid for this work using gold and silver that his nephew found hidden as a hoard, a likely exception for the norm of funding monasteries by private donation and alms from wealthy urban elites or holy men who had died and willed their possessions. Proceeds from agricultural production and rent went to the monasteries themselves. Indeed monasteries, particularly large ones like Qartmīn (Mor Gabriel on the Ṭūr ʿAbdīn), could own other monasteries⁴⁶. Qudāma ibn Ġaʿfar alludes to local canal-digging in his discussion of sharing water rights, providing examples both hypothetical and anecdotal of individual and village irrigation efforts⁴⁷. Such excavation was a shared activity, but cleaning out, damming, and supervising the canals was directed by the Imām »from the moneys of the Muslims«. He also details the sharing and equalization of water rights between landowners upstream and downstream along rivers and canals, even the issue of giving more rights to the downstream farmer. The Muslims from five villages around and including Bālis asked Maslama to build them a canal (the second Nahr Maslama) and in return gave him one-third of its produce (*ġullātihim*) as a tithe for the government (*ʿuṣr as-sulṭān*)⁴⁸. Normal *ʿuṣr* – the tribute paid by Muslims, as opposed to the higher-rate, *ḥarāġ*, tax paid by non-Muslims – of lands watered by artificial means was one-twentieth, or five percent, as opposed to one-tenth or ten percent, as the name implies. This demonstrates the tax-incentive quality to irrigated lands common on the frontier. This is more apparent during the reign of the caliph ʿUmar II, when a double *ʿuṣr* (essentially a *ḥarāġ*) was levied on lands that used water from existing irrigation systems and neighbouring lands, rather than develop their own⁴⁹. In Bālis, the lands were subject both to the Muslim tithe to the state and yields to the landowner or patron⁵⁰. Furthermore, this shows that local groups required state authority to assist them in land development and reclamation, at least concerning irrigation from the Euphrates, Tigris, and other major rivers of the region. Maslama, in his role as governor of the frontier from Cilicia to Mesopotamia,

38 Hoyland, *Chronicle* 223f.

39 Kennedy, *Rule* 292.

40 Lapidus, *Development* 187f. Lapidus argues that the focus then shifted to building up Baghdad and Sāmarrāʿ.

41 Originally put forth by Sauvaget, *Chateaux* 1-49; then Kennedy, *Rule* 291-297. See most recently, Genequand, *Proche-Orient*.

42 Bacharach, *Building* 30f.

43 Genequand, *Ghassanids* 63-83; Fowden, *Plain* 71f. for agricultural activities.

44 For a discussion on the relationship between monasteries and *quṣūr* as points of interaction between Umayyads and local inhabitants and tribes, from the perspective of Ḥirbat al-Maḥḡar, see Jennings, *Khirbet al-Maḥḡar* 164-174.

45 *Life of Theodota of Amida* 175.

46 *Life of St. Simeon of the Olives* 371.

47 Qudāma ibn Ġaʿfar, *Kitāb al-ḥarāġ* 60-62.

48 Balāḡurī, *Futūḥ al-buldān* 151.

49 Abū Yūsuf, *Kitāb al-ḥarāġ* 146.

50 Kennedy, *Incomes* 142f.

helped develop land with large-scale irrigation efforts, but the maintenance, organization, and control was most likely left to the local communities. In this fashion, canal-building projects were »agents in the settlement and colonization of areas that formerly had been sparsely settled«, although, to be sure, they were not new innovations and in many cases replaced older hydraulic systems⁵¹.

Water milling was directly tied to irrigation practices, and was similarly a caliphal/state or private investment. In the Ḥābūr and Ṭūr ʿAbdīn and Tigris regions, mills had been known since at least the fourth century⁵². Caliphal mills (ʿurūb) were built at a high cost around Maʿṣil, beginning in the Marwānid period, and were a major source of revenue⁵³. Mills were similarly constructed at great expense by Hišām. They were also described at Naṣībīn and Qennešre along the Euphrates. They could also become »privatized«. What did the State gain from these irrigation and milling enterprises? Beyond a portion of the yields and a major source of revenue, these public works were incentives for frontier inhabitants, nomads and soldiers, to settle down and channel a degree of loyalty to the central state, thereby affording the latter a level of control. They also cemented ties with non-Muslim groups who were the majority population. Further research, which correlates areas of irrigation temporally and geographically with taxation records, can consider if such intensive irrigation projects were also designed to meet or mitigate the burdens of an increasingly demanding taxation system⁵⁴. What can be considered here is how settlements and irrigation systems were organized spatially and socially.

A salient observation is that these canal systems, as seen from both archaeological and textual evidence, were rather conservative and localized *in scale*. None of them resembled the 230 km-long Nahrawān Canal built in the sixth-century Sasanian Empire, which was capable of irrigating 8000 km² (800 000 ha) of land. Even the potentially largest of the *tugūr* and Ḡazīra systems, such as the Nahr Dawrin or the Ḥābūr River zone, was estimated to irrigate only 30 000 ha. Based on this size, although the central administration continued to have a political and economic hand in irrigation works, canal construction, maintenance, and organization was on the scale of a town – or the collective authority of multiple hydraulic villages. The evidence shows that great importance was placed on irrigating the plain and controlling water resources from the onset of the Early Islamic period in the Syriac-speaking, Christian-dominated north. Configuring the artefactual and textual datasets together, each with their coarse or fine built-in chronologies, these activities can be first dated to at least ca. 700.

Archaeology can offer some spatial interpretation. In the ʿAmūq, the sites on ʿAfrīn Canal B are 4.48, 6, 1, and 35 ha in size from east to west, in the direction of its flow; the largest site sits at the end of the canal. For the ʿImm Canal system, the sites are 2.25, 1, and 4.5 ha; the largest is also at the end point, where a system of water mills was found. In the eastern Marʿaš Plain, of the two canals recorded in the Mizmilli Marsh, the eastern one's sites were 1.13, 0.79, and 6 ha in area, while the western canal sites were 6, 2, and 4 ha. With all of these canals, the estimated site sizes were not equal and the middle site(s) were the smallest. In three examples, the last site on the system was the largest. Water rights would have been allocated in proportion to the amount of lands and site size. The first and last positions on the canal would have been the most important, however: the former to manage the head dam, diverting water, and the latter as this was the most likely location for milling industries (as seen at ʿImm), which were placed at the end of the system so as not to unfairly reduce water supply downstream. By contrast with an artificial system, the Yaḡra River sites were all the same size (around 12 ha each).

The use of tells in the Marʿaš canal systems may be similar to patterns in al-Andalus. In the west, defence was secondary to water supply. Forts that protected water systems and major canals, or were militarily strategic, and villages that administered water systems and canals were not mutually exclusive to any area. They were all part of the landscape, and often their roles cannot be clearly discerned. For example, tell sites with forts may be perceived as control points on higher ground. In the area around Torrent and Picanya, south of Valencia, six out of a group of ten villages had an associated tower-refuge⁵⁵. In some cases, the fort was built on a tell and located at one end of the canal. It also stands to reason that a tell site in the centre of a canal group could similarly have protected the supply. Both examples occur in the Marʿaš canals, and they underscore an association of defence with water supply – particularly necessary in areas so close to the Taurus frontier, as in the Marʿaš Plain.

The textual evidence for local-authority, state, or even caliphal-sponsored waterworks is significant and at the same time biased towards lauding the efforts of rulers in making even the most marginal areas fertile and economically viable. Community-initiated canal systems would, perforce, be invisible in the historical record, and inscriptions are scarce. With this state of evidence, we can suggest three levels, following K. Butzer's tripartite system based on scale⁵⁶. The macro scale involved state building projects on major rivers such as those for the long Euphrates, Baliḡ, and Ḥābūr Canals. It also in-

51 Wilkinson/Rayne, *Landscapes* 138.

52 Wilson, *Water-Mills* 231-236.

53 Robinson, *Empires* 85; Braemer/Genequand, *Water* 50.

54 See Wilkinson/Rayne, *Landscapes* 138, and also for a chart and discussion showing that post-Iron Age irrigation works occurred in areas where there

was more rainfall, and therefore supplemented a variety of functions including water supply to baths, latrines, nymphaea, and ablution areas in mosques.

55 Pérez Medina, *València* 603-617. See the foundational work by Bazzana/Cressier/Guichard, *d'Al-Andalus*. See, also, an example of recent work by Gilotte, *Estrémadure*.

56 Butzer et al., *Agrosystems* 490.

cluded caliphal/state lands (*ṣawāfī*) and estates, such as those of Hišām on the Euphrates. Surveys indicate that these were between 25-64 km. At the meso scale, although the central administration continued to have a political and economic hand in irrigation works, canal construction, maintenance, and organization was carried out by a collective authority of multiple villages or estates – as in the ‘Amūq Plain for the ‘Afrīn and ‘Imm Canals, and in the Mar‘aš Plain, as well as for Bālis or Dibī Farağ off the Euphrates. The influence of the caliph could offer a measure of support and protection, particularly in frontier lands. Those projects orchestrated with elite funds tended to appear in documents – as in the case of the *ṣawāfī* lands around Bālis, given as *qaṭī‘a* – while the ‘Amūq and Mar‘aš Canals may have been more in the way of community initiatives, and thus not mentioned in texts. These were about 12 km long. Lastly, the micro scale would involve a system in which only communities beyond the influence of the central state, such as those in the Syrian Ġibāl, were digging out their own irrigation systems, »invisible« to the textual record.

In all examples, however, local maintenance and organization would have been needed. Since irrigation strategies reduced water flow both in the main rivers and in subsidiary canals, settlement arrangements would have demanded cooperative and local systems of resource sharing, suggested by the relatively even distribution of sites along the channels. The exceptional work done in al-Andalus on irrigation and social organization is useful for suggesting models of community interaction and exchange on the Syro-Anatolian frontier⁵⁷. These hydraulic villages, occupying equidistant plots of land along canals and rivers, may have been organized by

tribal, clan, or religious affiliation (and exhibited differing tax status). Muslim and Christian communities may have shared the same water system, as perhaps they did at the Yağrā River sites, at ‘Imm and its satellite sites, and Domuztepe. Ethnographic first-person accounts by a villager and canal worker in southern Iraq show that community leaders and village or tribal *ṣayḥs* made decisions cooperatively in periodic meetings and determined how to divide up the responsibility of maintaining the irrigation system, including assigning families rotational guard duties⁵⁸. In many cases, knowledge of how to build and maintain canals was locally transmitted from pre-existing farmers who were managing these systems before the Islamic conquest.

The *tuğūr*, (later *‘awāšim*), and Ġazīra regions, comprising the Umayyad North in the mid-seventh to mid-eighth centuries was not a no-man’s land, but an agrarian developed landscape. Though not densely settled as in the Roman and Late Roman periods in all parts, new settlements appeared. As shown from survey, excavation, and mainly Syriac and Arabic textual accounts, the Umayyad state and local communities, both autonomously and in cooperation, developed key agricultural settlements alongside irrigation systems on the frontier, the *‘imāra* from texts. Focusing on the initial settlement of the frontier bears important implications for understanding the relationships between different local Miaphysite Christian communities, nomadic and settled groups, and between these locals and the Umayyad ruling elite and raises larger issues for future work on Umayyad patronage in the Christian north in the seventh/eighth century and the degree of Islamicization over time.

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Summary / Zusammenfassung

The Agricultural Landscape of the Umayyad North and the Islamic-Byzantine Frontier

The *tuḡūr*, (later *‘awāsim*), and Ḡazīra regions, comprising the Umayyad North in the mid-seventh to mid-eighth centuries, was not a no-man’s land, but an agrarian developed landscape. Though not densely settled as in the Roman and Late Roman periods in all parts, new settlements appeared. As shown from survey, excavation, and mainly Syriac, Greek, and Arabic textual accounts, the Umayyad state and local mainly Miaphysite Syriac-speaking Christian communities, both autonomously and in cooperation, developed key agricultural settlements alongside irrigation systems on the frontier.

Die Agrarlandschaft des umayyadischen Nordens und des islamisch-byzantinischen Grenzgebiets

Die *tuḡūr*-Region (später *‘awāsim*) und die Ḡazīra, von der Mitte des 7. bis zur Mitte des 8. Jahrhunderts den umayyadischen Norden bildeten, waren kein Niemandland, sondern eine landwirtschaftlich entwickelte Landschaft. Obwohl diese Region nicht so dicht besiedelt war wie in der römischen und spätrömischen Zeit, entstanden doch im ganzen Gebiet neue Siedlungen. Wie aus Surveys, Ausgrabungen und hauptsächlich syrischen, griechischen und arabischen Texten hervorgeht, entwickelten der umayyadische Staat und lokale, hauptsächlich miaphysitische syrischsprachige christliche Gemeinden, sowohl selbständig als auch in Kooperation, wichtige landwirtschaftliche Siedlungen entlang der Bewässerungsanlagen an der Grenze.