

BIRKA AND BARAKA: CISTERN AND BLESSING

Notes on Custom and Islamic law regarding public cisterns in Northern Yemen

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To collect rainwater during heavy rain and store it in tanks of various sizes for later use is an old traditional technology, which is highly widespread in most of Yemen. The common terms for these cisterns are *birka* (pl. *birak*)² and *mājil* (pl. *mawājil*). The water is usually collected during heavy rain by canals that lead it into an open tank dug into the ground. In rural areas these cisterns are a common and basic feature of everyday life yet they have hardly been written about.³ Because they are so fundamental for domestic water supply in the rural areas in Hajja and elsewhere in Yemen they deserve more attention, both as a partial future solution to the water problems in Yemen and as a local technology and social institution from a historical and ethnographic perspective. The cisterns are connected to local ownership and management systems that are regulated by a mixture of state law, local customary law and Islamic law. In this chapter I will first explain how the cisterns are used and operated in practical terms and then move on to elaborate on how the cisterns are connected to the wider law of *waqf* and other related notions of public property.

The late Professor Walter Dostal was a central figure in the western academic ethnographic tradition on South Arabia. Dostal's works often had a strong material focus but he also looked at local systems of management of resources through institutions, rules and local custom. The present chapter is situated in that tradition of which he was a pioneer.

THE FIELDWORK AND DATA

The data for this chapter was collected during two separate projects. The first was the MA project of the author. Fieldwork was conducted for six months during 2005-2006 in the administrative districts (*mudīriyyāt*) immediately surrounding the city of Hajja (Hajja, Mabyan and Upper and Lower Shiris). The second fieldwork was conducted for the author's PhD project in the Sanaa area and focused more on the legal aspects and especially the institution of *waqf*, although several cisterns were also visited in the field. Most of the data is qualitative and obtained through observation, conversations and the readings of local legal texts together with informants. Most of the informants will remain anonymous here.

¹ This chapter is based on parts of the author's MA thesis at the University of Bergen (Norway) from 2006. The thesis was first made available online: <https://bora.uib.no/handle/1956/2001> and in 2007 published in a thesis series called "The Lower Jordan River Basin Programme Publications" (Hovden 2007) The fieldwork for the MA was partly sponsored by BKK, Statens Lånekasse and the (now closed) Centre for the Study of the Environment and Resources (SMR). The thesis was supervised by Dr. Frode F. Jacobsen and Dr. Øystein LaBianca. Later fieldwork in the Sanaa area was undertaken as part of the author's PhD project by the support from the Faculty of Humanities, University of Bergen, in the form of a 3-year PhD fellowship and an additional travel grant from the Meltzer Foundation. The PhD thesis was supervised by Dr. Knut S. Vikør and Dr. Anne K. Bang. The support for writing this chapter on the basis of the aforementioned data is provided by the Viscom project (Austrian FWF, SFB) and the Institute for Social Anthropology (ISA), Austrian Academy of Sciences (OeAW). I am grateful for the help and cooperation from the many informants in the field, who cannot all be mentioned by name here. I also thank my colleagues here at ISA who read and commented on the draft.

² The transliteration for this chapter follows the system of the International Journal of Middle East Studies (IJMES)

³ Several historians and ethnographers mention the existence of cisterns, but few describe them in detail and usually only the spectacular ones. The first scientific descriptions are probably Rathjens and von Wissmann in the chapter "Die Vorislamischen Zisternen" (Rathjens & Wissmann 1932: 144-158; 1934, and photo no. 19). Eduard Glaser also mentioned and described certain special cisterns he observed during his travels, for example in Kawkaban and the fortress of Thula. (Dostal 1993: 96, 101, 104-5).

The geographical scope of this study is limited to data collected in parts of the governorates (*muḥāfazāt*) of Hajja and Sanaa. Since the geographical and cultural context is rather similar in several other governorates, however, these findings can also be relevant to, and with caution, even representative of other parts of highland Yemen. The legal data about *waqf* mainly comes from the Sanaa area, but the same applies there; the legal culture of Zaydi Islamic law has long been present in large parts of the highlands. Shorter trips to other parts of Yemen such as Haraz and Rayma were also undertaken and this complements the wider picture.⁴

THE PRACTICAL SIDE OF THESE CISTERNS

First, we shall have a look at how these cisterns are made and how they are used and function practically. However, before that, we must look closer at the basic geographic context to which these cisterns have been adapted and in which they are used.

The field area for this study includes two distinct geographical/ecological zones of Yemen: the western mountains and the highland plateau. The western mountain region drains westwards through deep wadis onto the coastal plain called Tihama and from there into the Red Sea. The rather flat coastal plain Tihama is distinct in many different ways and not part of the scope of this chapter. In the Western mountains, the relief in the landscape is high and most of the surfaces are steep mountainsides. In the Hajja region, which is a representative example of the Yemen's northern parts of these western mountains, the lowest part is located near the flood bed of Wadi Mawr at around 600 metres above sea level and the highest part is the mountain of Jabal Maswar at 3200 metres above sea level. In the east this zone is an escarpment line including the watershed east of which is the highland plateau zone where the water flows the long way eastward instead of westward, therefore not eroding the landscape in the same way. These highlands consist of plains between 2000 and 2500 metres above sea level with some surrounding mountains.

The western mountains receive most rains in the south around Ibb where irrigation is not necessary and where the average annual precipitation peaks at around 1000 millimetres per year. As one moves north and east

the amount of rainfall decreases. It is not only the annual rainfall that is important, but also the timing and character of the rainfall. Most of the rain falls in two seasons - in March-April and in July-August - in the form of very heavy showers or thunderstorms. This means that even in areas where the annual rainfall is fairly low, rainwater will gather on the ground for a short time and totally change the landscape with flowing water and streams forming everywhere. It is these short intense periods, lasting a couple of hours at most, that the traditional water technology is made to harness and capture. The landscape is full of small canals and structures, ready made, leading the water from non-agricultural areas such as roads, barren lands and grazing lands onto agricultural fields and into cisterns where it can be stored. These canals are part of the local ownership system where each agricultural field and each cistern also has its own canals

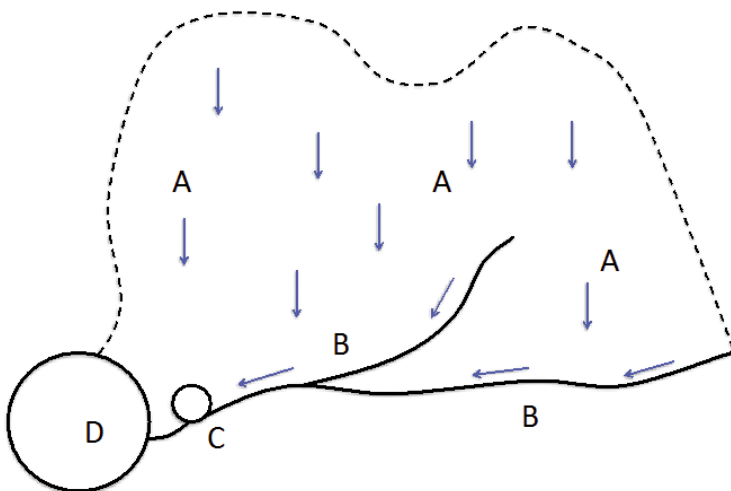


Figure 1: This figure shows the basic components of a cistern seen from above:
 A: Catchment area, collection area or runoff area: *Rahaq* (pl. *marāhiq*)
 B: Collection canal: *Misqā* (pl. *masāqī*), *Sāqiya*, (pl. *sawāqī*)
 C: Settlement basin: *Mishanna*
 D: Cistern: *Birka*, *barīk* (pl. *birak*, *buruk*, *barā'ik*), or *mājil*, *ma'jil* (pl. *mawājil*)

⁴ Relevant to this study are several trips as a tourist in Yemen. As a researcher, I was also part of the yearly Joint Royal Ontario Museum-Ryerson University Yemen Project, in al-Jabin, in January 2010. Project Director is Dr. Ingrid Hehmyer.

and its own rainwater harvesting areas (runoff area, collection area, catchment area). We shall return to this in more detail below.

In a narrow sense, a cistern is a tank for storing water. But a rainwater harvesting cistern is something more: it is a system designed also to fill the cistern during rain. Most cisterns described in this chapter are of the type that covers both functions: the collection of rainwater and storing it for later use.

The terminology is important. In local Arabic, the catchment area, the collection area or the runoff area is called *rahaq*⁵, pl. *marāhiq*. The runoff itself - that is, the water that forms on the ground during heavy rain - is called *maṣabb* or simply *mā'* or *māyy* (water). The canal along the lower limit of the runoff area is called *misqā'*⁶ (pl. *masāqī'*). This canal acts like a roof gutter where the roof is the collection area and the *misqā'* collects the water along the lower edge. In many cases this canal really defines the physical extent of the whole runoff area and not only the lower limit because often there is another runoff area below it, belonging to another field or cistern located below. The *misqā'* of the upper cistern marks the upper border of the runoff area of the lower cistern. In matters of border disputes or conflicts the *misqā'* is an important defining physical structure; otherwise, the *rahaq* (collection area) is not always entirely delimited in absolute spatial terms. If there is no *misqā'* above, the *rahaq* extends all the way up the mountain covering the natural watershed draining towards the *misqā'*, as indicated in the figure above. Another name for the collection canal is *sāqiya* (pl. *sawāqī'*), especially for a larger canal. Sometimes the water flows through a natural formation such as a gorge (*shu'b*) rather than a man-made canal. The canal itself can have several additional functional details such as a *masqaṭ* or a *mi'qad*, which is a drop in the canal secured by rocks so that the water does not erode the canal. The inclination of the canal is usually carefully planned. It must not be so steep that the water erodes too much and not so flat that the canal silts up and fills with sand. Where the canal enters the cistern, one usually finds a small basin large enough for the water to slow down so that the sand sinks down and stops there before the water flows into the cistern. In technical English this structure would be called a "settlement basin"; in local language it is called a *mishanna*, a "sift".

The function of all these components and the balance between them was widespread common knowledge in the countryside. When asked, most men would know how all this worked. Clearly, many of the men who showed me around in their villages found these structures and their function and the maintenance of them so self-evident that this knowledge does not lend itself to strict ethnographic transcription or recording into text; it was not something that was readily available as textual knowledge, rather it was tacit, and it seemed to be embodied in practices and memories, and tied to specific localities and cisterns. In the cities and among the younger generation, however, hardly anyone had any knowledge about the topic. Needless to say, cisterns are by many seen as backward and undesirable as a water source compared to modern piped systems, and indeed its usage is mainly related to the poorer segments of the population. Biological contamination is a severe challenge, but we shall not focus on that here.

AGRICULTURAL AND DOMESTIC NEEDS

Both the western mountains and the highlands have been densely populated since ancient times due to the relatively favourable conditions for agriculture. In the western mountains most of the population live on the upper slopes and ridges of mountains. In terms of water technologies, the western mountains have the most spectacular man-made structures: the agricultural terraces. Sometimes they start all the way down in the wadi, continuing in series up to the highest mountains. These terraces are of fundamental importance: they prevent erosion and secure enough soil depth to store humidity for a sufficient time between sporadic rainfalls (Rappold 2004).⁷ In some areas irrigation is added in the form of spring-fed systems (Varisco 1982, 1983) or some supplementary runoff/run-on systems where non-agricultural areas, such as mountain sides or grazing lands, are connected to the terraces with canals leading the rainwater runoff onto them (Eger 1984,

⁵ This term was used in the Sanaa area and is well known in the highlands. In local Yemeni highland dialect the letter *qāf* is pronounced as a "g" in English "golf"; "*rahag*" and "*masgā*".

⁶ Usually pronounced *masgā*

⁷ See also the cross section of such terracing in Gingrich & Heiss (198: 44).

1986; Rappold 2004; Gingrich 1994). Down in the wadis, groundwater can easily be found in shallow wells in the flood bed, but transportation up the mountain is costly, be it in form of pipe systems or by the use of water trucks. It is important to point out that in the western mountains, little or no groundwater is found on the mountain-tops and ridges, where most of the population live. It is therefore in these settlements that the use of rainwater harvesting cisterns is still most commonly found.

In the highland plains, wells have always been more common than rainwater harvesting cisterns due to the relative ease of access to groundwater through wells⁸. Cisterns were rather used in more remote areas along the roads for travellers or livestock, or in places where the groundwater was too deep down. In this region, the use of deep groundwater wells has to a large extent replaced the use of runoff-based systems and old wells. (Al-Hamdi 2000; Lichtenthäler 2003). However, in the more marginal and hilly parts of the highlands the runoff/run-on systems are still used and the *masāqī* are still an important and defining feature, serving as border-markers. Eger provides a good description of such traditional systems in the ‘Amrān and Bawn areas, explaining how such a system worked both in the plains and in the more hilly parts (Eger 1984, 1986). For the Sa’da plain, a comprehensive analysis was made by Gerhard Lichtenthäler in which he described the shift from the traditional system of land and water use with runoff/run-on systems to the modern one based on deep drilled wells (Lichtenthäler 2003). For the western Khawlan al-Sham mountains, see also Gingrich (1994) for slope runoff and terrace irrigation.

In the western mountains the high cost and challenges related to transportation from the lower parts of the landscape to the upper parts makes the old technology still very much used, especially among the many poor. So far, we have talked mostly about water supply for agriculture, but the main use of cisterns has always been the supply of water for domestic use and for the animals in the village. Most cisterns are situated around the villages at the nearest, most practical distance, even if below the village. But some are also situated far away for the use for herders watering the livestock or along roads for travellers.⁹ Before the advent of pipes and water trucks, the water would have to be carried from the cistern to the house and thus the walking distance would be part of the daily usage of the cistern. In the lower half of the landscape it is possible to make wells or use small springs; however, in the upper parts of the landscape, there is no groundwater and cisterns are often the only reliable, practical and affordable source of water. It is usually the women’s responsibility to collect water from the cisterns and carry it home in containers. It is needless to say that the water consumption is minimal. Water is needed for drinking, cooking, washing and for the animals. Livestock can be herded to the water sources, but cows for milk are often kept inside the village. The whole matter of water usage inside the village very much belongs to the local culture of the women. The knowledge and attitudes toward water quality and quantity and the perceptions of problems and priorities is a highly important topic, but one that cannot be given place here.

In the Hajja area a rainwater harvesting cistern is called a *birka*, while in the Sanaa area it is called a *mājil* (classical Arabic: *ma’jil*, pl. *mawājil*). In Hajja a *mājil* is the special type of cistern which is not made to store rainwater, but rather to accumulate water coming from a spring and therefore it has no *misqā* or collection area attached to it.¹⁰

⁸ For the functions of typical traditional wells see (Gingrich & Heiss 1986: 31-39) and (Lewcock 2013: 301-302)

⁹ Cisterns along the old traditional roads are often found together with a shelter, a so-called *saqīf* (Höhhfeld 1978). If the cistern is small, or simply a basin filled artificially by water-skins or the trickle from a spring they are rather called a *siqāya*. Typically, these would be closed structures with small openings or doors so that animals could not drink directly from them and thereby pollute the water. Such a public structure is also called a *sabīl* (pl. *asbila* or *subul*) or simply *qubba*, (“dome”) from the domed roof often found in elaborate examples near the cities. A more abstract Islamic terminology is *maḥsana*, pl. *maḥāsin* and the term *manhal*, pl. *manāhil* is also frequently used in Zaydi Islamic legal texts. Walter Dostal made a comprehensive list over the *sabīls* in the market of Sanaa. (Dostal 1979: 114)

¹⁰ Usually springs only give a tiny trickle of water and if it is led into traditional canals, the water would not reach far before it would seep into the ground. Therefore it is accumulated in a cistern (here: *mājil*) situated as near the spring as possible. When the cistern is full, say after a day, a hole near the bottom of the cistern is poked open by using a long stick and the water is led through canals to nearby fields. This system of spring water usage was the main topic of the PhD thesis of Daniel Varisco in which he described how this system worked in the valley of al-Ahjur, south of Hajja and west of Sanaa (Varisco 1982: 206-208). Today, the water in these cisterns is transported by pipes, thus making it possible to irrigate fields much farther away than in crude gravity-fed earth canals.

HOW THE CISTERNS ARE BUILT

The cisterns are usually situated in places that water can naturally reach by gravity. However, on steep mountainsides, the actual site of the cistern is often dug and hewn out of the bedrock and a supporting wall on the outer side is also common. Additional masonry is used to make the walls of the cistern as smooth as possible before plastering. Then the cistern is plastered with a thick layer of the traditional cement called *qaḍāḍ*.

Qaḍāḍ is made from *nūra* which is a powder-like substance made from limestone fired in kilns (*manwar*). In older times the *nūra* was made locally. Informants in Hajja showed me several such local kilns where the lime was burned in the past. In addition to the lime, aggregate in the form of crushed rock is added. In the Sanaa area, volcanic cinders are also used. The importance of this layer of watertight plaster cannot be overstated; without this layer, the water would seep into the ground and quickly disappear. The same is the case if cracks appear in the plastering. This could naturally occur over time with long term wear or slight settlements in the ground or the foundation of the cistern. The water itself also slowly dissolves the surface of the *qaḍāḍ*, especially in the lower part of the cistern that is in contact with water most of the time. If cracks occur, a new layer of *qaḍāḍ* is added. This is something easily visible in many old cisterns; over time they have been replastered several times. The work involved in preparing the *qaḍāḍ* and applying it is very laborious and takes a long time. Therefore this traditional material was no longer used after the introduction of modern cement after the civil war (from the early 1970s). Many informants commented that the old *qaḍāḍ* and the new type of cement did not adhere properly to each other, creating problems after a short time. However, few if any had seen the use of traditional *qaḍāḍ* in recent decades. Most older men still remembered how the *qaḍāḍ* was prepared and applied and all commented on the superior quality. Today, several restoration projects involving historical buildings elsewhere in Yemen have ensured the continued local knowledge of how to use the *qaḍāḍ* starting in the 1990s with the restoration of the Amiriyya in Radā' supervised by Selma al-Radi (Al-Radi 1997, 1994). Later, several other restoration projects have been undertaken using *qaḍāḍ*, including cisterns.¹¹ I interviewed one group who specialized in this work and saw how they used this material when making a new roof in Sanaa. According to them, cistern lining was made the same way, just with a thicker layer. It is also more demanding to work on a vertical surface than a horizontal one, since one must keep the *qaḍāḍ* just dry enough for it not to slip off the cistern wall while applying it. The work involves heavy mixing of *nūra* and aggregate for a long time and especially the application itself is very laborious since the *qaḍāḍ* is beaten with a fist-size rock for several days until it hardens. This way more *qaḍāḍ* can be applied as the first layer hardens, thus merging the two, and it also ensures that the *qaḍāḍ* adheres properly to the underlying surface. *Qaḍāḍ* used for building details on houses and mosques is often polished several times and a layer of animal

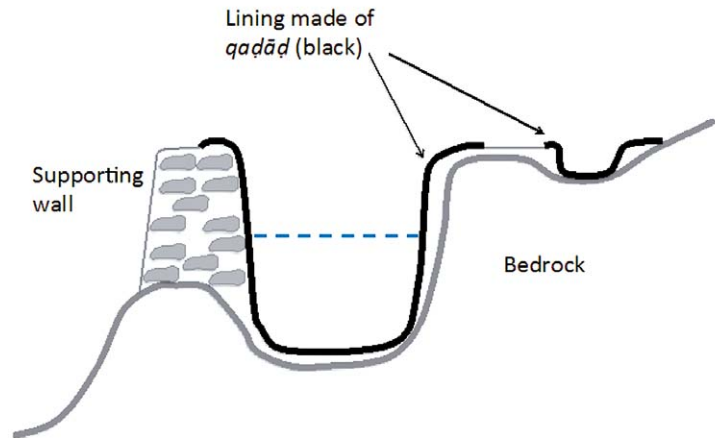


Figure 2: This figure shows the cross section of a cistern situated in steeply inclined terrain where the outer wall is supported by masonry. The watertight layer of plaster called *qaḍāḍ* is seen here in black. Under the plaster is a layer of smooth masonry made of small stones, not shown here, which the plaster adheres to.

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¹¹ For example, the large cistern belonging to the mosque at Kawkabān. The Social Fund for Development has funded several such restorations, emphasizing the use of *qaḍāḍ* and local knowledge in the restoration. One such project is the one recently undertaken at al-Jabīn, Muḥāfazat Rayma under the leadership of Dr. Ingrid Hehmeyer (The joint Royal Ontario Museum-Ryerson University, Yemen Project in al-Jabin, Project Director Dr. Ingrid Hehmeyer.)



Figure 3: This is an old cistern where one can easily see how the *qaḍāḍ* has worn away near the bottom. The cistern was leaking and in need of re-plastering. (Photo: E. Hovden)

fat is added to make it waterproof.¹² Cisterns usually did not get this final polish, but in several places one can observe a thin layer of *nūra* added at the end with decorative continuous figure-8 shaped strokes.¹³

Since the 1970s new materials and technologies were introduced and these created a new pattern where old and new technologies are combined. Car roads and water trucks can transport water in the landscape over large distances; however, at relatively high cost. Pipes and plastic hoses can convey water for shorter distances and small portable pumps can decrease the need for gravity.

Most cisterns are open and without a roof and this seems to be the rule in the western mountains. One noticeable exception to this was seen in a visit to the area of *Mudīriyyat Banī Ismāʿīl* in *Harāz*, Governorate of Sanaa, where the majority of cisterns were covered with corbelled dome structures. These cisterns also tended to be privately owned and they had small wooden doors which could be easily locked (Hovden 2006: 142-145). The same is the case in nearby *al-Maḥwīt*, a short distance to the north (Tutwiler 1987).¹⁴

A series of agricultural terraces can use the same runoff area, but this is rarer for cisterns. However, once the cistern is full, the water might flow to a second cistern or a nearby field and in some cases they may share the same runoff area.

¹² This group was working on the roof the house of Mr. Sarbi Saleem and supervised by engineer al-Hadrami.

¹³ For one such photo see (Hovden 2006: 75-86). See also page 11 in (Vision Hope International). Here one can see the same pattern for decorative purposes even in a cistern plastered with cement. For an article on the discovery and analysis of magic signs as rain invocations inscribed in a cistern wall, see (Hehmeyer 2008).

¹⁴ Both these contradictory cases seem to have been in areas of lower altitude. Perhaps the functional need for a roof is greater in low-lying areas where the temperature is higher, the relative humidity is lower and evaporation rates are thus higher. Indeed the yearly evaporation from an open body of water can be significant in such small tanks.

THE MAINTENANCE OF CISTERNS

We can distinguish between three forms of maintenance. The first is the daily care when using the cistern and making sure that the canals leading to it are not damaged. If they are, they will not lead enough water to the cistern. For some, keeping the catchment area clean and tidy is important, and making sure that some cisterns are not used for swimming in, etc. This type of care and maintenance is just part of local village behaviour and morality and there is no occasion specially assigned for these practices. If the cistern has just filled, perhaps the settlement basin (*mishanna*) may need cleaning out.

The second “degree” of maintenance is the yearly maintenance related to cleaning out the cistern. Ideally, the cisterns should be emptied out completely and the clay that settles on the bottom should be removed. This normally occurs in wintertime when most or all of the water has been used up, just before the next year’s rainy season. If the cistern is large, this work can be laborious and a communal work day (*jāyish*) is organized. How and to what extent this is done is very different from village to village. Some keep record of which family has contributed what, and allow those who are absent to pay for their missed share of the workload. If this yearly maintenance is carried out, then this is also a strong confirmation of the communal status of the cistern.

A third degree of maintenance is major repair of the structure of the cistern in the form of re-plastering or other significant repairs. This is a very expensive undertaking. It is easy not to see this when looking at a cistern in daily use, because since the cisterns are usually so sturdily built, they can easily last 100 years without needing repair or restoration. But eventually, a larger repair is necessary. If a crack develops, perhaps that crack can be repaired, but since the *qaḍāḍ* is exposed to water and slowly dissolves, eventually the whole cistern needs restoration, after which it can last for another long cycle of low maintenance use. The act of restoration is one where the ownership status of the cistern really comes to the foreground and is tested; the *waqf* documents I have seen (from the Sanaa area) relate to this stage in a cistern’s life. Sometimes the restoration is so large that it is almost a rebuilding, and often new components are added. Either the village has to raise the funds necessary and share the costs, or one or more individuals pay for the restoration by emphasizing that the cistern remains public, but that the restoration is a charitable donation. In Islamic law, such a donation is rewarded by religious merit; from a social science perspective, the cultural and social capital involved in performing this act of charity towards the local community is significant. Almost as a side effect, this restoration or upgrading of the cistern also automatically becomes *waqf*, if the cistern originally is *waqf*. (Ibn Miḥṭāḥ 2003, 8: 223-224; al-‘Ansī, 3: 306; Qāsim b. Ibrāhīm, ‘Alī b. ‘Abd Allāh al-Ānisī, and ‘Abd Allāh b. Muḥammad al-Sarḥī 1986: 150) The question of whether or not a specific cistern is *waqf* does not always have a clear cut answer, something we shall try to elaborate below.

THE LEGAL FRAMEWORK AROUND A CISTERN

Who owns a cistern, and who manages it and repairs it? If we start with the basics, we must first think of cisterns as stationary objects very much like houses or agricultural fields. In Yemen there is a long tradition of ownership law consisting of a mix of customary and Islamic law that only recently has been codified into modern state law. It is important to point out that this mix is still used and can vary from place to place and even case to case, but at the same time it is not true that these are three separate, parallel legal systems which the actors can freely choose between. Brinkley Messick has written extensively about how Islamic law was used in ownership contracts and other sorts of transactions where rights and access to property changes hands between individual in sales, leases, *waqf*, and inheritance. The basic notion of property is called *milk* (Messick 1983, 1989, 1993, 1995, 2003). Although Messick describes the city of Ibb, which is located much further south, we can still expect the basics to be the same. The field study in Hajja did not include collection and analysis of ownership documents,¹⁵ only structured conversations regarding the ownership of the cisterns. The fieldwork in Sanaa however, included the collection and analysis of *waqf* documents and cases (Hovden 2011).

The cisterns could thus have been private objects (*milk*) like the agricultural plots of land or houses. However, during the fieldwork in Hajja it became clear that most cisterns, and certainly the old, traditional

¹⁵ For a study of older ownership documents from Hajja, see: (Volle 1984).

ones were public (‘āmm, *mushtarak*, *mushā’*) to the village as a unit.¹⁶ The fact that private ownership is a well-developed concept does not mean that all non-state property is privately owned. On the contrary, large parts of the landscape are “public”, but not necessarily public as in “state owned”. Actually, there is a basic assumption that unless stated, a thing or a plot of land is not “owned” and that it is only owned if it is in active use or claimed by someone. Most objects of value such as plots of land or houses are also represented by written ownership documents.

What is important to bear in mind is that the landscape is full of “owned” objects, i.e. private in our terms, but that the “base layer” is “unowned”. This is not “public” in the sense that it is state property, but rather “*mushā’*” in the sense that it is communally owned and controlled. If someone wants to make a new cistern or agricultural field in communal grazing lands (*iḥyā’ al-mawāt*: revival of barren lands, or *taḥjīr*: “demarcation”), then this is allowed and regulated in Islamic law as long as the plot is demarcated (*taḥjīr*) and the community is given three years to protest. If no one protests within three years, the unowned land (*mushā’*) becomes (private) property (*milk*).¹⁷

The communal level is often the level of the tribe or a sub-tribe when talking about grazing lands, but since the cisterns are usually clustered around villages, they are “*mushā’*” (communal) for the village as a unit, not for the tribe or other regional forms of communities. An exception here is certain cisterns located far away from a village, but even so, there is often one village or one family who has the responsibility for it (I will come back to this family responsibility for communal property below).

A recent change, as already mentioned, is the increase in the number of fully private cisterns in the western mountains. Many of these are new or newly restored old ones. These are privately owned just as private plots of agricultural land and are often owned together with the customary runoff rights. Often, these are used for qāt irrigation.

There are different words that can be used by informants to indicate that something is “public” or “common” or “communal”. Some of them are referring to modern legal discourse, others to Islamic law, others to local custom. Many of these words are the same in all three discourses. Some words are less accurate and more general, such as the word “‘āmm” meaning “public” or “general”, in binary opposition to “*khāṣṣ*”, meaning “private” or “special”. The meaning of such words must in any case be related to the context and the specific strategies in which they are used and it is important to bear in mind that such terms are never fully neutral and objective. In one village, the inhabitants may be cautious in defining their communal cisterns as “public” because they might have had a legal conflict with the state. The same applies to the term “*waqf*”, which in general Islamic terms only implies that the cistern is unowned and for public use; the inhabitants might fear that the Ministry of *Awqāf* would claim the right to administer them. Thus the word heard in a conversation in the field from one informant alone in the morning might be disputed or disagreed upon in a group discussion with the men of the village later during the same day. By keeping the status of the cistern ambiguous, the local inhabitants avoid limiting later opportunities to sell the plot or otherwise change its status. Often, there are ongoing conflicts, where some families claim that a certain cistern is actually theirs, but that they are just letting the poor in the village use it. If there are no documents, the legal status cannot be proved.

It is important to bear in mind that although a cistern in a narrow sense is only the tank where water is stored and perhaps the immediate structures surrounding it, such as a fence or a trough for watering animals, in a wider sense, however, a cistern also includes its collection canal and its runoff area, all belonging together as a system not only in practical terms but also legally. These units can of course be split up and separated from the cistern, but if so, the cistern would be cut off from its water supply and the original purpose of the cistern would cease to exist.

This is a complicated issue: every cistern needs a sufficient runoff area (*rahaq*) in order to function as a rainwater collecting cistern. Both agricultural lands and cisterns can have runoff areas attached to them, and especially in areas of low rainfall, where the size and quality of this area would have a lot to say for the value of the cistern/plot. Much of this runoff area is defined by the canal that leads the water in the lower

¹⁶ But one noticeable exception was a visit to Banī Ismā’īl in Haraz, where most cisterns were private. (Hovden 2006, 140-43) 140-43. The same was noted by Tutwiler in al-Mahwit in lower areas. (Tutwiler 1987: 87) and an example can also be seen in Gingrich (1994: 109)

¹⁷ (Hovden 2011: 372; *Qānūn al-Madanī* [2002] 2008, article 1242-1253; Ibn Miftāḥ 2003, 7: 337-357)

end of the area into the cistern. Customary law stipulates that all the natural runoff that leads to a cistern is a “right” that belongs to it, so even if the actual runoff area to the cistern is located in communal (village or tribal) grazing lands, the right to fill the cistern with water from that area is still a legal right (usufruct, easement) belonging to the cistern, even if that grazing area is not owned by the cistern. The right is *rahaq*, the right to the runoff water from a certain area, but not to other usages of the land. This is not a problem as long as the grazing area is only used for grazing; however, if part of that area is sold to someone else for making an agricultural plot of land or building another private cistern inside it, then this would lead to less water reaching the first cistern. The owner of the first cistern, be it an individual or a community, can legally refuse this, or at least demand a compensation. Several informants claim that there are many conflicts over such issues because the ownership status of the various assets is not entirely defined, nor is the exact monetary value of these. According to the administrative leader of the appeal court of the governorate of Rayma, the disputes over runoff rights in relation to building new cisterns was one of the types of conflicts occurring most frequently in the appeal court there.¹⁸

The physical area that the cistern occupies represents much of the short-term monetary value of such a cistern and the water rights it has, especially if it is located in an area where agricultural intensification is possible, or in an area of urban growth where land value is high. If the village decides to sell the cistern to a private individual there are different models for how to share the communal value of the cistern and its water rights. It can, for example, be divided equally among the inhabitants in the village or among the households. If one village wants to sell some of its grazing lands located below the village, they might have to pay compensation to the village below since the village below probably has runoff rights to the land above their village.

HOW MANY CISTERNS ARE WAQF?

The history of the institution of *waqf* (pl. *awqāf*) is a long and rich one, both as a topic for Islamic jurisprudence and law and as a local way to manage public property. *Waqf* means that someone donates something he owns for the purpose of welfare or charity as a pious act. The control and management of that asset is then either given to public authority, or to a member of one’s family. In practice the position as trustee is inherited, or at least follows the male line. Various Zaydi imams and other governments have throughout history sought to gather *waqf* assets and included them into their administrative system, appointing local *waqf* administrators to carry out the leases of *waqf* land and to make sure the assets are managed well. Most of the infrastructure was mosques, but water supply, schools, support for the poor and several other services were also provided through the institution of *waqf*, especially in urban areas. The bulk of income came from local holdings of land being leased to local farmers in long term sharecropping agreements. The distinction between private and public *waqf* is not a clear-cut one in Yemen and *waqfs* for a public purpose could also be privately administered and held outside the governmental administration system, since this is legal according to Islamic law as long as the founders follow certain rules. In Yemen these tend to be called *waṣāyā* from the word for “testament” (in the singular form: *waṣīya*) (Hovden 2011; Mijallī 2002; Serjeant & al-‘Amrī 1983: 151-154).

As already mentioned, there is a strong reluctance among people to use the term *waqf* when asking them about local legal issues in the village. Words can have implications, especially if found as text on paper. Quite a few cisterns are *waqf* if by *waqf* we mean those assets administered by the Ministry of *Awqāf* or its related local structures of administration. Certainly, all cisterns that are attached to mosques are *waqf*. But there are other types of *waqf* in Yemen that are not directly controlled by the Ministry of *Awqāf* and our knowledge about these is unfortunately still not sufficient. Because of the legal tensions over who should control these assets, we are most probably not going to see exact figures in the near future. Thus a very common reason for not upholding the *waqf* status of a cistern is that in such a case,¹⁹ the *Ministry of Awqāf* would have rights and not only the inhabitants of the village itself.

If we look back to the more practical aspects of taking care of a cistern we remember that most cisterns do not need much maintenance for long periods at a time; however, major repairs are very costly even if they are seldom needed and rare. When some individuals donate plots of land for the upkeep of a specific cistern,

¹⁸ Personal communication, al-Jabin, Rayma, January 2010

¹⁹ For the complexities of one such case see (Hovden 2011: 422-343)

this act is *waqf* and in Yemen they are usually called *waṣāyā* just as most privately administered *waqfs*. In this case it is the land that has *waqf* status and not necessarily the cistern itself. These *waṣāyā* usually follow the line of the eldest son. That means that if he and his family take care of the cistern and occasionally repair it, he will be paid for that work from that special *waqf/waṣāyā*, or in more practical terms, he will be given the whole access to the agricultural land that was given as *waqf* to the cistern. If more land is given to a cistern than the actual expenses are over time, holding such a *waṣāyā* can be quite lucrative and it can be seen as a way to circumvent the ban on family *waqf* - a topic which has several times been raised in Zaydi Yemeni history. However, the manager of that *waṣīya* (*mutawallī*, trustee, guardian) would have to pay a quite large sum if he actually has to repair the cistern, although in reality the public control of such *waṣāyā* was often weak.²⁰ This type of *waqf* seems to have been common and this in-between status between family *waqf* and charitable *waqf* thus merges with the notion of communal ownership of the cistern and the private charity of taking care of it (Hovden 2011).

Despite new technologies and new technical solutions it is clear that rainwater harvesting will remain important in Yemen's future.²¹ Cisterns are complex structures, not only technologically, but also in that they involve local custom and local forms of Islamic law. In this chapter I have given a very generalized overview, which undoubtedly should, and hopefully will, be more specified and contextualized by others. We need basic ethnography of local resources management, such as water management, both in the practical aspects and its normative sides in addition to the development of technical solutions to the water crisis. The study of custom and Islamic law in very local contexts poses great methodological challenges, which could not be fully discussed here, but the interdisciplinary perspective in these issues cannot be overemphasized, and ethnography must necessarily have a strong role to play. There will be new management challenges and conflicts related to any new technological invention. Looking at the past and at local culture we can learn important lessons about how to adapt to a situation of marginal resources.

According to an ideal level of Islamic law, water cannot be owned by man; it is a blessing (*baraka*) from God which is public for everyone, be it water from a spring or rainwater. On a more pragmatic level though, Islamic law allows for the collection and containment of water by the use of private structures and containers in which the water becomes private, such as in a cistern (*birka*). However, by making the water available for those in need, the blessing (*baraka*) recurs.

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²⁰ This is one of the reasons why office of the "Inspector of the *waṣāyā*" was created roughly hundred years ago. (Hovden 2011: 173-74)

²¹ The Social Fund for Development (SFD) invests heavily in cisterns: <http://sfd.sfd-yemen.org/category/5>

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