To cooperate or not to cooperate...? : collective action for rehabilitation of traditional water tunnel systems (qanats) in Syria
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Chapter 6      Shallalah Saghirah Renovation

Introduction

This chapter is partly descriptive and partly analytical and concerns the process of a community-based renovation at the site of Shallalah Saghirah aimed to give insight into the socio-political and endogenous dimensions of collective action. It is an account of events that have happened during the years 2000 and 2003. The chapter is based on the principle that experience shapes perception and subsequent expectations influence behaviour of collective action. Actors in collective action perceive the world according to their own individual experiences, frames of reference and background. The characteristics and social history of the community of Shallalah Saghirah is described in the previous chapter and actors perceive behaviour of other actors according to their own frame of reference, hence act accordingly.

In his analysis of participatory intervention in Gal Oya, Uphoff (1996) investigates expectations as a major influence on behaviour and creators of self-fulfilling prophecies. Uphoff (1996) argues that Newtonian approaches lead to simplifying models of motivation and behaviour. Instead he connects the social world with the natural world by taking the view that the world is relativistic, chaotic and probabilities are not fixed. In this view, the analysis of a rational actor correctly predicts free riding, but incorrectly assumes that cooperation and altruism will therefore not exist. In his analysis of collective action in Gal Oya’s irrigation system, he uses both a structural approach as well as a cognitive approach to explain cooperation. The structural approach explains the behaviour of a modal person whilst the cognitive approach focuses on a particular person. To explore the opposition between assumed rational and irrational behaviour and explain collective action, Uphoff further develops his theory in an

Figure 22 - Uphoff’s Orientation-to-Action Grid
(Uphoff, 1996)
orientation-to-action grid. In this grid, the continuum or orientation towards self and others is visualized. People are not just selfish or altruistic; everyone has both inclinations (Uphoff, 1996). Throughout the process of collective action, actors will move from one quadrant to another. For example from a position of self-regarding cooperation (quadrant III), events, perception or experiences can make an actor move to selfish individualism (quadrant I).

Uphoff’s grid is applied in this chapter to analyse the changes in orientation-to-action taking place during the pilot renovation. Uphoff (1996) finds it important that combined perspectives are used to analyse the dynamics of collective action, emphasizing that focusing too much on altruism and cooperation can neglect the existence of individualism and self-centeredness and vice versa.

The following analysis is intended as empirical evidence of the complexity of the course of collective action in a community that is a small and seemingly homogeneous unit of analysis. It illustrates the multiplicity of actors and the dangers of taking even a small community as a unit without considering the heterogeneous aspects and daily socio-political, cultural and psychological complexities.

**Organisation of this chapter**
The first part of this chapter describes and analyses the course of the renovation that took place in the summer of 2000 in the form of a pilot qanat renovation. It uses the orientation-to-action grid of Uphoff to monitor actors’ behaviour on the continuums of selfishness to generosity and cooperative to individualistic. The second part discusses the endogenous socio-political dimensions and socio-technical impact of the renovation. The chapter concludes with a cos-benefit analysis of the renovation.
6.1 The pilot renovation of summer 2000

The following section sheds some light on the institutional framework within which the renovation of Shallalah Saghirah formed part. The subsequent section discusses in detail the preparation and process of the renovation. It also analyses the encountered challenges during the process and focuses in particular on orientation of the main actors towards collective action and cooperation.

6.1.1 The Khanasser Valley Integrated Research Site (KVIRS)

Shallalah Saghirah lies in the boundaries of the so-called Khanasser Valley, a typical marginal dry land in northwestern Syria. At the time of research, this valley had been a preferred site for long-term agricultural field research by staff of the ICARDA55 located in Aleppo. The livelihoods of the villagers in Shallalah Saghirah resemble that of a majority of rural inhabitants of the Khanasser valley. Characteristic for these livelihoods is the involvement in agricultural activities. Three main types of activities exist in the Khanasser Valley; rainfed agriculture, irrigated farming and livestock rearing and most households practise a combination of all three (Thomas et al., 2004). Barley is the main agricultural crop and off-farm income activities are most important for survival. According to Thomas (2004), about 43% of households in the Khanasser Valley have one or more member of the household working as off-farm labour, 15% in urban areas and 16% work abroad. Lack of sufficient rainfall and groundwater is identified as part of the major environmental constraints.

Conflicting information appears in the existing literature on the exact population of the Khanasser Valley. Aw-Hassan (2002) reports that the Khanasser Valley is home to about 17,800 people, in 1814 resident households in 31 villages of different sizes. The population density works out to 93 people/km². But in a later publication of Thomas et al. (2004) KVIRS contains fifty-eight villages and communities that inhabit the Khanasser Valley and the adjacent fringes of the Jebel al Hoss and the Syrian Desert. The total population of the fifty-eight villages is 37,000. A possible explanation that can be given is that the latter figures are part of a larger definition of the Khanasser Valley and include the Jebel al Hoss.

An ICARDA study published in 2005 revealed the diversity of livelihood strategies of rural people living in the Khanasser Valley (La

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55 The International Center for Agricultural Research in Dry Areas, member of the Consultative Group of International Agricultural Research (CGIAR)
Rovere and Aw-Hassan, 2005; Rovere et al, 2006). La Rovere and Aw-Hassan (2005) classify the households of the Khanasser Valley into three clusters: agriculturists, labourers and pastoralists. In Shallalah Saghirah, each extended household has individuals that fall under one of the three categories with a majority of labourers and pastoralists/sheepowners. Aw-Hassan and La Rovere conclude that while agriculturists benefit most, poor labourers with enough land can also gain from pro-poor agricultural research (La Rovere and Aw-Hassan, 2005; La Rovere et al, 2006). However, the poorest households, the landless and pastoralists, do not gain much benefit.

Since the 1980s, the Khanasser Valley served as a pilot site for agricultural research programmes on barley cultivation and salt tolerant crops. In 1997, the influx of young new staff in the form of consultants, doctoral students, PhD students and Junior Professional Officers (JPOs) from countries such as Denmark, India, Canada, Italy and the Netherlands increased the attention given to the Khanasser valley as a research fieldwork area. Most of these young researchers started doing their fieldwork in the valley from 1997 onwards.

ICARDA’s support staff’s familiarity with the people and the region were an advantage. This brought a good introduction of the group of young enthusiastic researchers to their respondents. It took a while for ICARDA’s management to agree with the young expats on staying overnight in the Khanasser Valley. This kind of approach had never been done before and concerns were raised about the security. Despite these concerns, some researchers started to stay overnight in the field. This was a big step forward, because most of the data collection would be done in the afternoon and evenings and it also helped tremendously in building up rapport with our respondents.

The long history of ICARDA staff in the Khanasser Valley and the increased attention of young expat researchers since 1997, also brought some disadvantages. The expectations of the people were high and many expected us, as representatives of ICARDA, to solve their problems “instantly”. The “magic radiance” of a four-wheel drive vehicle with researcher and his/her translator driving into the field, often distanced the researcher from his/her subjects. Taking public transport and staying overnight helped in shortening this distance.

The increased focus on the Khanasser Valley also had its influence on the strategic focus of the Natural Resources Management Programme (NRMP) at ICARDA. Towards the year 2000, it became clear that potential German funding could be unlocked to develop the site into an Integrated Research Benchmark Site where ICARDA agricultural research would be concentrated and integrated. An added convenience of the Khanasser Valley was the close proximity (70-80 km) to the ICARDA
headquarters. Logistically, personnel and materials could easily be transported in day trips. This somewhat posed the danger of what has been called in development, “a bias of proximity”. In his analysis of biases on perception poverty, Chambers (1983) warned about the “road bias” where the “poor” are found in easy to reach areas for consultants, development officials and visiting donors.

In 2000, the NRMP programme staff further developed and consolidated ideas. The Khanasser Valley was selected as an integrated research site (that is, the Khanasser Valley Integrated Research Site, or KVIRS) to address problems that are characteristic of the marginal dryland environments (Thomas, 2004).

As an integrated research site, KVIRS has dual objectives. On the one hand, the project aims to develop technologies relevant for the Khanasser area. On the other hand, KVIRS aims to develop an integrated and transferable approach to the analysis of resource degradation and the evaluation of potential resource management options, which can be applied beyond Khanasser in a spectrum of dry area environments.

Criteria used to select the site included:
- Resource degradation: rainfall is very low (about 230 mm/year) and unreliable, and resource pressure is relatively high. Different types of resource degradation are taking place, such as soil fertility depletion, overgrazing.
- Diverse and dynamic livelihoods: livelihoods are fragile, risks multiple, and the choices available to farmers are limited by declining natural resources and regulating policies. The dominant farming enterprise is the cultivation of barley combined with extensive sheep rearing. However, alternative activities are fast gaining popularity, such as sheep fattening, cultivation of cumin, olive growing and off-farm wage labour.
- Relative easy accessibility: the study area is 80 km southeast of Aleppo.

Source: Thomas et al. (2004)

In 2002 international funds had been received. By 2005, KVIRS had developed into a main benchmark site for various research activities on Integrated Natural Resource Management (INRM). The focus of research had been on the role of Integrated Natural Resource management technologies to alleviate poverty in the Khanasser Valley. Various studies looked at agricultural options and local pathways out of rural poverty. This is of importance for the site of Shallalah Saghirah where we will look at “exit-options”. Since the options for agricultural production and development pathways for labourers and pastoralists are limited, likewise
the livelihood strategies to escape poverty are focused on intensification of activities (e.g. sheep fattening), out-migration and off-farm labour, exiting agriculture altogether (cf. La Rovere and Hassan, 2005; La Rovere et al., 2006). Other innovative pathways were offered by ICARDA research such as water harvesting and olive orchards on hill foot slopes, water use efficient irrigation, improved barley, vetch and cumin production.

6.1.2 Main actors of the renovation

Within the context of the increasing international attention for the Khanasser Valley, the renovation of the Shallalah Saghirah qanat was prepared and set up to offer an innovative solution to alleviate poverty. Some main actors of collective action can be distinguished in the case of Shallalah Saghirah. We have grouped them in five main categories; the villagers, the government, the research team, ICARDA and the funders of the renovation (Figure 23).

Each of the categories can be divided into their own microcosmic division of individual main actors that have dealt with the execution of the renovation on a daily basis. The descriptions are based on the central finding in current collective action research that the world contains multiple types of individuals, some more willing than others to initiate reciprocity to achieve the benefits of collective action (Ostrom, 2000).

Let us start with the villagers. The group or community of villagers has been extensively discussed in previous sections. The individuals mentioned are in particular important due to the roles they played in the process of the renovation. The villagers are divided between conditional cooperators, rational egoists, mediators and free riders. Roughly the group of villagers is divided in the members of bayt Hatim and representatives of bayt Amir and Hamzah. In the description of the renovation process other actors will be described if they play an important role in the collective action event.

The second category of actors belongs to the field research team. This team consists of myself and my husband and three of our ICARDA research assistants of which one is female and two are male. This team is interdisciplinary and cross-cultural. I lived permanently in the village during the renovation and my husband was present during the renovation on a very regular basis whilst the research assistants would visit occasionally during the day. The interaction and communication between the field research team and the villagers was crucial to analyse the various dimensions of the renovation and the process of collective action.

The third group of actors consists of the staff members at ICARDA as an institution. This concerned ICARDA’s government liaison and other colleagues at NRMP that were working in the Khanasser Valley.
But on a more distant level it also concerned the regular visitors of boards of trustees that were received at Shallalah Saghirah and the Director General of ICARDA. Established in Syria since the seventies, ICARDA as an institution that is well known in the area and an important actor in the process of the renovation. The logistical arrangements of transport, hosting the project administration and providing other means of equipment and expertise could not have taken place without ICARDA’s institutional cooperation.

The other institutional player in the renovation is the representation of the government of Syria. The political environment of Syria at the time of the renovation did not allow for the development of non-governmental activities or organizations. This posed an initial challenge in developing community activities. It also determines the mental state of many of the main actors at community level. The fact that with this renovation they could take their fate into their own hands, was an unknown concept both politically, culturally and religiously. This prevented some of the actors inside the community from developing initiatives or take responsibility for the renovation.

Last but not least is the category of funders. Whilst ICARDA was seen as funding agency by many of the farmers of KVIRS, the actual funding came from the Dutch and German Embassies in Damascus. The representatives of these Embassies visited the village on several occasions. The effect of visiting diplomats to the village was profound and

![Figure 23 - Main actors of the renovation of Shallalah Saghirah](image-url)
influenced the process of collective action. Furthermore the funders, as any donor organization, had conditions and reporting requirements to be met before funds could be released.

The five categories of actors are chosen for examination and comparison during the execution of the renovation. Some individual actors operate outside the categories such as individuals living in the other parts of the Khanasser Valley and the landowner in ‘Azzaz, where the livestock rearing households have their summer plots.

6.1.3 The challenge of renovation

In the years 1999 and 2000, when I stayed in Shallalah Saghirah, the villagers gave me my own house which I could use to store any equipment, process my fieldnotes, draw maps and prepare food. Mostly I joined household (11) or (1) for breakfast, lunch and dinner. I was not allowed to pay any rent but expected to provide food and help in the household or in the field. By integrating with household (1) and (11), I ran the risk of being too much associated with the Hatim lineage. Although these households had been my first port of call ever since arriving in the village, I tried my best to also build up a rapport with the other buyut.

Whilst doing my anthropological fieldwork in the village of Shallalah Saghirah, some of the young men of the village expressed the need for renovating and cleaning the qanat. The tunnel had less water every year and seemed congested with sediments. The birkeh was very dirty and had not been cleaned for two years. Both household (1) and household (16), had taken care of cleaning the irrigation reservoir (birkeh) every year and knew there was a need for cleaning the tunnels. But the considerable effort to adhere the lineages prevented using their energy on communal cleaning.

Cleaning a 600-meter long water tunnel of at least 1500 years old, posed a considerable challenge to the villagers; not only is the work potentially dangerous moreover the men of the village had never undertaken major renovation works before. The haquun however did remember a lot from their frequent cleaning trips in the tunnel and the knowledge that their fathers had given them. This knowledge proved to be invaluable in the technical plan for renovation.

The irrigation right holders, the haquun, have the right to decide about cleaning, based upon consensus. One respondent said “the decision on cleaning should be made by the elders and they have heads like stones. They are too stubborn. We as younger generation without any land or water rights can not do anything”. This expresses a willingness to clean but a constraint from an inter-generational dilemma. In order to do something about cleaning the village elders were invited for a group meeting, this task seemed more difficult than first thought.
Most of the households wanted the qanat to be cleaned but were reluctant to help in organising a group meeting between the village elders. Some started blaming the other lineages of being to opportunistic, “they want money for every thing, they want to be paid to do this!”, said one of our respondents. Others told us that the energy in the village had gone because the harvest was not promising and that the elders are not like their grandfathers who planted trees. “These people just put all their effort in sheep and barley’’ said another one, and he meant the households with a large flock of sheep.

Organising focus group meetings

It was not easy getting the haquun together. After several visits to various households from all lineages, the haquun of bayt Amir agreed it would discuss a possible group meeting with bayt Hamzah in Raqqa. The qanat was common property and the disputes that existed in the village did not have anything to do with the qanat, they said. We agreed upon this and waited for the answer from Raqqa. On 01/12/99 the first group meeting between the village elders of both bayt Khaled, Amir and Hatim took place. The meeting took place in the oda; technical details were discussed and a community map was drawn of the qanat construction. However the social problems remained unresolved and with our second group meeting at the 10th of December 1999, the haquun failed to join in one meeting. The Amir lineage did not want to join. It seemed they did not want to risk bigger conflict within the village, as they expressed. There was no trust between the haquun.

The main problem the haquun of bayt Amir mentioned was with the use of rubber pipes during the day to fill tanks and irrigate home garden plots. They wanted the old problems to be solved before they would join with the elders of bayt Amir in the oda. They also insisted on a mutual and signed agreement before any cleaning started. One of them said “we are not getting our rights because both bayt Khaled and Hatim take most of the water before it reaches the birkeh”. They suggested that the saqieh should be covered or the direction changed. Another household of the Amir lineage told us that he “wants to sell his land anyway, so why would he want to help in cleaning. If there is more water, there will be more problems. There is no love between us”. He explained that government officials tried to renovate the qanat in 1987 but the villagers refused to work for 55 SYL per day. “We suggested to find labourers from outside and they never returned” said one of the Amir elders.
Apparently the discussions to set up a renovation had arrived at a deadlock; without any resolution of the conflict between the elders of bayt Amir en Hatim, the renovation could not start. A collective agreement would have to be made to regain any trust between the two lineages.

In the meantime I was collecting data on the genealogy and gained more insight in the social history of the households. We recorded that there had been a conflict in May 1999 between two households of bayt Amir and Hatim. The women and girls of bayt Amir had been harassed by members of bayt Hatim whilst they were on their way to collect drinking water from the ‘ayn. Some members of had been throwing stones at them. The girls had been trespassing on the land of bayt Hatim. Basically the girl were now forced to walk the long way around to the ‘ayn to fetch their drinking water. Frightened by the aggression, they opted to get water from a small electrical pump. Moreover this conflict concerned the only matrilocal household of Amir. The head of the household is an outsider. He is discriminated and stigmatised. Some members of bayt Hatim had called him the “thorn” (‘showkah’ in Arabic). They said that this “thorn” was a strategy of bayt Amir to sell the land out to outsiders.

The prospect for re-conciliation between the lineages looked bleak. Although young villagers were keen to move to renovate the qanat, the social challenges were great and as long as the elders did not trust each other, the enabling environment for collective action would not be favourable. After the second meeting between the elders was called off, both household (1) and household (16) discussed how to mend the lineages. They had been talking to each other and to members of both of
their respective lineages, Amir and Hatim. It appeared that their effort had begun to bear fruit when during the month of Ramadan the elders started to talk to each other independently.

**A mutual agreement**

During Ramadan 1999-2000, the elders had been visiting each other and finally a focus group meeting with the elders on 25th of January 2000 could be arranged. Mediators in the discussion were the head of household (1) and his brother who lives in Aleppo. Two of the *haquun* could not attend and they sent their oldest sons. An agreement on cleaning the *qanat* was written down. Below is a translation of the agreement.

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**“In the name of God the Merciful, the Compassionate”**

On 25/01/2000, a session was held in Shallalah Saghirah, in the presence of the household heads who have user rights of the *qanat* and are living in Shallalah Saghirah: (....)

The household heads that have user rights of the *qanat* but are living in Raqqa at the moment\(^56\), are represented by the first five names which are mentioned above.

The objectives of the meeting are to discuss the *qanat* renovation, working plan, labour availability, funding and the maintenance works in future.

After discussion, the eight representatives have agreed upon the following:

1) The pipes running towards the houses from the open canal can be used for irrigation only during the period when the household has his rightful turn on water use.

2) The use of pipes is permissible at anytime for sheep drinking water, in aim to keep the *qanat* water clean and to avoid the crowd of sheep during the drinking periods.

3) The *qanat* must be cleaned and renovated. They will support the renovation fully.

4) They will maintain periodically the *qanat* system and the reservoir with the help of all the people of the village.

5) The priorities of doing the renovation work are as follows:
   - **first**- Open *Jub al Sunduq* (the main airshaft),
   - **second**- Clean *Jub al Saghir* (the well),

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\(^{56}\) note *Bayt Hamzah*
third- Stop the water leaking by closing the cracks which exist in the qanat water course,

fourth- Clean Ras al Nebeh (the mother well),

fifth- Clean and open the closed-main sub-canals which might be leading to wells,

sixth- Reconstruct the protection wall of the external part of the airshafts, in aim to prevent soil, stones, and dirt from falling down into the water

seventh- Renovate the part of the qanat system above ground surface.

A committee of village elders is established of the first seven names that are mentioned above. This committee is responsible to administrate the renovation work and to represent the village households at the concerned authorities, organizations or individuals.

There is no possibility for the renovation work to start, unless some cash money is provided by funders. The households who live in the village cannot afford the labour expenses of the work.

The following names are the available labourers in the village and the labourers required for the work in future, will be chosen from them: (...14 names...). These labourers are available all year around, except in April and May.

The session was closed and the attendees have the contents of the agreement and signed beneath.

There are a number of consistent findings that emerged from empirical research in collective action, one of them is that when the users of a common-pool resources organize themselves to devise and enforce some of their own basic rules, they tend to manage local resources more sustainably than when rules are externally imposed on them (Ostrom, 2000; Baland & Platteau, 1999; Wade, 1998). In this case, the organisation between users had been well arranged in the beginning of the establishment of the village; water rights were divided amongst the brothers and boundaries and rules established. If a small core group of users identify with each other, they can begin a process of cooperation without having to devise a full-blown organization with all of the rules that they might eventually need to sustain cooperation over time (Ostrom, 2000). This process had started in Shallalah with the establishment of irrigation rules and some marginal ad-hoc source maintenance. Blood relations determine the membership of the users group in Shallalah Saghirah. The growth of the membership was exponential and put a strain on the users’ group. A villager illustrated this by his remark “Our five forefathers were like one hand, their system prevented children and sheep damaging the trees in the garden and they grew all kinds of vegetables and even cotton....but those after them did not keep these rules, the system
Cracks in the system began to appear with population growth, internal competition, erosion of leadership and outmigration.

The new exogenous stimulus of the presence of the research team and the prospect of a positive outcome of renovation, made the young men enthusiastic, despite the set back of not getting the elders together initially. With this agreement, the elders organised themselves. The first point that was agreed upon was the domestic use of pipes that should be parallel to the irrigation rights when used for home gardens. The elders agreed that the pipes could be used freely for drinking water of the sheep, to prevent crowding next to the ’ayn. A “village committee” was formed. The elders, also designated a renovation supervisor for the work; a young member of bayt Hatim who was married to a woman of bayt Amir. So there was an emerging leader in the form of a young mediator, which proved an important internal stimulus. A list of the workers was written down. Most of the workers were from the younger generation of men and did not have water rights. Eight workers were from bayt Hatim, four were from bayt Amir, one was representing bayt Khaled and one representing bayt Hamzah from Raqqa. The division of workers, was not relative to the water rights and land owned by bayt Amir but all parties agreed to this by signing the agreement.

All agreed that most materials should be bought locally. A detailed list of tools was compiled. It was also said that the work on the qanat should be done when the flocks of sheep are out of the village, which meant in the summer months. Furthermore the workers would not be available in April and May; the sheep shearing season. Lastly, the workers should be paid a compensation for the loss of income (off-farm summer work) during the cleaning activity. With an agreement and workplan in hand, the research team set in motion a fundraising effort. The Dutch and German Embassies eventually secured the funding for qanat renovation. Embassy representatives visited the site and saw the condition of the irrigation reservoir. This was filled with debris, as it had not been cleaned over the past years. Shocked by the sight, the representatives stated that the reservoir should be cleaned first before they would give funds for the renovation. This message was conveyed to the elders who agreed with it. In the meantime, with the help of the government liaison at ICARDA, the Directorate of Antiquities agreed to give official permission for the renovation work; a representative of the Aleppo museum would be present during the work.

After signing the agreement, all parties agreed that they would do their best to comply with the rules. However not all households followed the rule on using the pipes on the designated irrigation days and the distrust was not taken away by the village agreement. However to consolidate the resolution, on 16 February 2000, a brother of the
renovation supervisor, invited all households to his wedding to his FBD\textsuperscript{57} from Raqqa. After the wedding, several young men who were on the list of workers left for construction work in Beirut, Lebanon and others went sheep shearing in Syria. They would be back when the starting date of the renovation would be known.

6.1.4 Preparations for collective action

The practical planning of the renovation started with the post-Ramadan meeting. The priorities of the elders for the renovation and cleaning were written down in the mutual agreement and a community map of the tunnel was drawn. In general it was agreed that the cleaning should start at the source. The main airshaft, \textit{jub al sunduq} was the first priority to clean, from this point, the further damage and filling could be observed. So cleaning the water production section of the \textit{qanat} was most necessary. A second priority was to remove and clean all mud deposits from the open tunnels and remove any debris coming from bats. Then to look for cracks in the main tunnel and close them. It was suggested to construct protective walls around the airshafts after the cleaning. On top of the protective walls, a fence would close off the airshaft to prevent children from throwing stones in the \textit{qanat}. The bats continued to be a problem and several options were raised on preventing them from coming back after the cleaning. One suggestion was to use gas, others wanted to close-off the tunnel shafts in during the night so the bats could not return.

The challenges had started before implementation; in order to receive international funding to cover the costs, conditions were put in place. The funders were the source of high levels of investment and were conditional cooperators; they set conditions for the investment and expected an investment from the villagers. Several points were made; the funders believed in order for the project to succeed, the villagers themselves should invest in the renovation either financially or in terms of time/effort. Since financial contribution without conditions was not feasible, the funders had decided that the villagers should clean the irrigation reservoir (\textit{birkeh}). Furthermore the funders agreed that it was good if a tractor was rented or bought for the village as well as daily water compensation whilst cleaning work in the qanat was on-going. Both suggestions seemed reasonable although the tractor proved later to be a major challenge for the villagers.

\textit{Cleaning of the birkeh}

One evening in February, before the consolidation wedding, the renovation supervisor sat at his cousins’ house with all the young sons of

\textsuperscript{57} Father’s Brother’s Daughter
the Amir lineage. He asked them if they could help cleaning the birkeh but they declined, they requested a fee for doing it. There were several objections, the amount of heavy stones in the reservoir and where to leave all the garbage. After disappointing attempts to convince his peers to help him clean the birkeh, the supervisor had left to Damascus to apply for an entry visa for Saudi Arabia and search for work abroad. Now he was waiting for news so he could go as soon as possible.

A month later, the atmosphere in the village was dampened by an event in Aleppo. One of the renovation supervisor’s brothers had been shot in the chest by his cousin and former brother-in-law from bayt Hatim. He fled to the village after discharge from hospital. In the meantime there had also been an outbreak of mumps (abu ka’ab) in the village. Mumps mean that children who are infected will develop immunity to further infection. But if adult men get the disease, the symptoms are worse and could lead to infertility. Obviously, most young men were apprehensive. Both events created some anxiety in the village. The shooting accident had created solidarity between the young men in the village, as they sympathized with the victim. The renovation supervisor had not received his entry visa and was tied to the village. It was time to start planting the tomatoes; he had been given two blocks in his father’s part of the irrigated garden.

On the afternoon of April 4th, it was the turn of the supervisors’ father to irrigate. He complained that his son did not like to cultivate the land. Instead, he was sitting next to the birkeh smoking a cigarette after his prayers. Two hours after sunset, his cousin from bayt Amir shouted to the renovation supervisor “we need to clean this reservoir, we can do it together, the two of us, you and me !”. The supervisor replied that the young men had to do it together otherwise it would cost too much time. The following day, the cousin from bayt Amir arrived at the end of the irrigation turn to close the birkeh. The next turn was his father’s. He also started to clean part of the birkeh before he walked home. He challenged the renovation supervisor and made a gesture of pride towards him. After some time he laid down his cleaning tools. The next day, on 6th April, during the afternoon, people gathered in the irrigated garden (bustan) to prepare their fields. At the end of the irrigation turn, the renovation supervisor and his cousin from bayt Amir were cleaning the birkeh. Other’s joined in and this was the start of the collective action to clean the birkeh. It lasted four days and attracted the attention of all the other households.
Purchasing tools for cleaning and repair works

April proved to be the month that momentum was gathering to commence the qanat renovation work. On the 16th of April a preparatory meeting was organised which was attended by all the haqun. In great detail the materials to be used in the cleaning were discussed. The tools to be used should be purchased from the local markets, such as a winch with rope and tripod to place above the airshafts. The renovation supervisor together with his brother and two cousins from Amir went to Aleppo and strolled around the urban markets of Aleppo to buy the necessary pick-axes, spades, helmets, ropes and other tools for digging. The day ended with a visit to the Hariri branch of the family that lived in the district of Karm al Jismati in Aleppo.

The visit to the Hariri household, demonstrated the socio-economic gap that existed between the various descendants of the first inhabitant. It took place at the household of the richest member of bayt Hatim. His residence is a large urban villa richly decorated with beautiful furniture and the latest electronics such as a DVD player, satellite dish and a television. It was a different world from the poor environment of Shallalah Saghirah. We were received generously by his extended family and sat down in the reception room where tea and biscuits were served. The host was proud to be a new Haji, he just returned from his pilgrimage to Mecca. He also owned an import and export company together with his
brother. In the discussion about a winch and tripod, the host said he would call with his contacts of the Hariri shaykhs in the Hawran to ask if they could arrange for something. On our way back to the village, the young men made jokes about the host and his display of wealth and arrogance.

There were still some unresolved issues. One of the issues during the preparatory discussions was the purchase of a communal tractor for the cleaning work. The funders wanted to give it as donation and thought it would help considerably in speeding up the renovation. Household 23 and 20 owned already tractors in the village, but since their conflict last year, the supervisor advised not to use them as it would create tension. Head of household 23 was not particularly happy with the donation of a tractor from the funders because he had offered his tractor for rent to the supervisor. Most of the bayt Amir were convinced that getting a communal tractor was not a good idea. It would mean that people would compete about its ownership. A problem was the decision on whose name the tractor would be issued. The villagers needed time to discuss this issue separately with their lineage members.

The issue of the tractor was left for a while and most young men traveled to work. They left the village for about 20 days. Seven men left for sheep shearing to Homs, Raqqa and near the border with Iraq. Another seven left for Lebanon to work in construction business in the Bekaa valley. Upon their return in at the beginning of June, the tractor issue was back on the table again. By then, the funders needed to have receipts for all purchased capital equipment. Having bought the hand tools, the winch and tripod had to be custom-made and purchased locally in the town of Khanasser. On 2nd of June the research team went with two haquun, one of bayt Amir and one of bayt Hatim to Khanasser to retrieve the receipt of the winch from Khanasser. The haquun made jokes with each other. But these jokes soon turned to be part of the apparent “joking” relationship they had. Kloos (1991) describes the joking relationship in the context of family relationship; exaggerated jovial behaviour between brothers-in-law or cousins as a means to avoid conflict. In their visit to Khanasser, a dispute about the ownership of the future tractor had broken out between them.

The brothers of bayt Amir agreed that putting a tractor in one name would pour oil on the fire. According to one haquun it was only possible if the tractor was put in the names of five representatives of both Hatim and Amir. Then there would be no problem. Thus encouraged, the


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research team initiated a group meeting with the *haquun* on Friday 9\textsuperscript{th} June to discuss the final purchases of material.

**A new simmering conflict**

Before the meeting, the renovation supervisor and a young man of *bayt* Amir discussed the tractor issue. The supervisor’s mother joined the discussion. She was clearly upset by the whole tractor business and wanted to make sure, that the tractor was bought and used for the village, specifically for the Hatim’s. She said that the tractor could be used for their garden after the work. Later a man of *bayt* Amir joined the informal meeting. He said that the tractor was indeed an issue but that they also needed to discuss the use of the rubber pipes again, because people were not following the rules. In this case he referred to the home gardens of households of *bayt* Hatim, which apparently were irrigated outside of designated irrigation hours. The situation became tense and the members of *bayt* Amir left the house.

The formal meeting between the *haquun* started in the afternoon just before lunch. Only men attended this meeting, the women of the village were not expected except for myself as member of the research team. The discussion started with the issue of the rubber pipes. It was stated that the rules of the agreement should be followed. Then the tractor issue was discussed; it was suggested to put the tractor officially on five names to avoid dispute over the ownership. With the tractor, they could cultivate their lands in turn and even rent it out to neighbouring villages and divide the revenue. Some extra income could be placed in a so-called village *sunduq* (communal fund) to pay for *qur’an* teaching in the summer or electricity supply. The five people would also be responsible for the maintenance of the tractor. Another option was to buy the tractor for the cleaning work, sell it after six months and the profit would be put into a *sunduq* for clearing stones of the barley rainfed fields. It was written down in the following agreement;

> On Friday 9/6/2000 the gentlemen mentioned below have met with Mrs. Joshka Wessels of ICARDA to discuss the issue of purchasing an agricultural tractor donated by the German Embassy in Damascus. The endowment is 270,000 Syrian Pounds. They discussed the future of the tractor after finishing the cleaning of the qanat. They agreed on the following:

- To assign ‘the renovation supervisor’ (*bayt* Hatim) and “…” (*bayt* Amir) to start looking for a suitable tractor to buy tomorrow.
- To use the purchased tractor for cleaning the qanat.
- The tractor can be sold when the work is done with the agreement of all people concerned.
To use the money of the sale of the tractor for land reformation in the village.

The session is over and will be set for a later date.

The formal meeting was closed with this agreement and the haquun each left for lunch in their house. Usually after these meetings, the men would have lunch together provided by the host. Eating together is a consolidation of the agreement. However, it did not happen this time, and indeed the agreement had not been supported by full consensus. The brother of the supervisor did not agree with the decision. He accused bayt Amir of trying to steer the agreement in their advantage, “like always”, he added. Later in the afternoon, the research team visited a house of bayt Amir. Most of the Amir members were gathered there. They discussed the issue of the tractor, some young men expressed that it was better if the tractor was not bought at all. They expected problems. Others suggested putting the tractor on a different name, a third party, or maybe even ICARDA’s name as an institution. The discussion went on until suddenly there was a knock on the door and the supervisor’s brother came in. He mentioned that he did not agree with the agreement, he wanted to have it changed. This sparked an argument between him and some members of bayt Amir. The supervisor mediated in the row and led his brother away from the plot. It seemed the tractor issue was still quite a challenge. The research team was in a deadlock to carry out the community project as long as the issue of the tractor remained unresolved.

The tractor purchase proved too difficult to agree upon between the haquun. This was complicated by the customary rule of consensus. A “democratic” process in which the majority vote and the minority agree does not exist at community level in Shallalah Saghira. Both the research team and the funders decided that the donation of a tractor should be withdrawn if it created these social tensions. Sounding this with the renovation supervisor, he agreed that it was probably best not to donate a tractor to the village. We approached him because both his brothers and the members of the Amir lineage respected him and told us he was the trustworthy man of the village.

Unintentionally, the news that a tractor would not be bought for the village, created the start of new round of gossip and distrust between bayt Hatim and bayt Amir. Several individuals had expressed that, members of bayt Amir had influenced the research team and convinced them not to buy the tractor. Some thought it was a cover up and that their cousins had taken the money. Corruption at local level is quite common in Syria and even among extended families it is not unusual to conceal money gained from corrupt activities.
So the trust between the two buyut disappeared again. The upkeep or daily cleaning of the birkeh stopped. In the words of the head of household (17): “There is no unity in this village. Nobody thinks about another and everybody thinks for himself. I live since 4 years in the village coming from Raqqa and I suddenly noticed this. The first generation was not like this because they had a strong leader. It did not go very well with the second generation when everybody left and Shakir sold his land. It has been going wrong ever since that day....there are too many people. There are little disputes over women, over land, over water. Not about the qanat immediately but it is not good for the unity. But it is safer here than in the city, there is no shame here, there is a lot of shame in the city. It makes life better here in the village”. Living in the village ensures that someone’s “sharaf” (honour) is protected but since the social cohesion deteriorated, the daily disputes and mistrust have not made life easier. The tractor issue resulted in a new round of gossip. Despite the weak trust, most of the villagers wanted the collective action to work and decided to continue with the cleaning of the qanat.

On 12th June, all the young men of the village were present. They came back from their migration work after the death of Syria’s president, Hafez al-Assad, on 10th of June 2000. They came together and had a discussion with about preparing the cleaning work. It was decided that the designated supervisor, would prepare the men to start the work next week.

6.1.5 Orientation-to-action; multiplicity of actors

Following the meeting on the 12th of June, the renovation supervisor prepared the work with his cousins from bayt Amir. During the preparation there were the usual tensions between the supervisor and his father about what was the best way to construct the winch above the sunduq. However the general atmosphere during the preparation was relaxed with a good working spirit between the supervisor and his cousins. The cousins cooperated without conditions and dispute. Their input can be regarded as other-regarding cooperation according to quadrant IV in Uphoff’s value orientation grid. Most likely, it was the mediating role of the supervisor in the village that defined the trust between him and his Amir cousins.

The other haquun representatives had already left with their sheep to the northern areas of ‘Azzaz. Therefore, all sheep were now out of the village. The supervisors’ brother, had decided not to work in the qanat cleaning and instead to go to Lebanon for work. Since the 1991 “Treaty of brotherhood and cooperation” between Lebanon and Syria, travel restrictions between the two countries had effectively been removed. An estimated 1.4 million Syrian workers were present in Lebanon in 2000.
(Gambill, 2001). Often they worked in low paid and unskilled jobs\(^{59}\). But work in Lebanon paid more than the compensation for the qanat cleaning work.

The first official day of the cleaning was the 17\(^{th}\) June 2000. Not many young men were around so the first workers consisted of the supervisor and his father with their cousins from bayt Amir. To get a good team together, he had to persuade his friend from household (16) not to go to his work at the defence factory. Since it was unclear who was able to work from the original list of cleaners; the supervisor decided that those men who were present in the village would be able to work in the cleaning. This was against the signed agreement where the list of workers was defined amongst the young men. But there were simply not enough men present. The decision, created a tri-partition; workers could work 1) on the basis of presence, 2) on the basis of the list in the agreement or 3) on the basis of lineage. Immediately, the supervisor was torn in between various workers who claimed a right to work based on either of these arguments. Some had left for better paid temporary jobs in Lebanon and one man had come from Raqqa to work in the qanat cleaning, attracted by the compensation fee and claiming to represent the Hamzah lineage.

\(^{59}\) According to Lebanese economic experts, the Syrian labour force was roughly distributed as follows: construction (39%), seasonal agriculture (33%), municipal and sanitation jobs (20%), services, including street vendors and taxi drivers (8%) and industry (2%) (Gambill, 2001). The presence of Syrian workers in Lebanon has dramatically diminished after the assassination of Rafiq al-Hariri in February 2005, many of the migrant workers were attacked and fled the country.
The appointed museum representative of the Directorate of Antiquities, monitored the excavation work. He was at the site every working day and played a crucial role in the progress of the renovation. However, some villagers were suspicious about government representatives from outside. The political climate in Syria causes a popular mistrust in officials who can potentially report back to the secret police. Having this representative in the village made some villagers feel uncomfortable at first but after a while his presence was tolerated.

Now I will introduce the use of the value orientation grid of Uphoff (1996). The first continuum on the X-axis refers to goals of action (selfish to generous) whilst the second continuum on the Y-axis refers to the means of action (Uphoff, 1996). The four quadrants refer to types of behaviour; (I) selfish individualism, (II) individual generosity (III) self-regarding cooperation and (IV) other-regarding cooperation. Plotted on the grid ten identified main individual actors with distinct influence during the daily renovation progress at village level are described and analysed. The analysis focuses on the individual and household level. The individuals mainly consist of members of the Hatim lineage and the heads of household (16) and of household (17) from the Amir lineage. During the preparation, the renovation supervisor, whom I call the “initiator”, and heads of households (16) and (17) cooperated together. Their collaboration was observed as generous and cooperative. The government employees from bayt Amir, cooperated freely in setting up the tools
before the cleaning work started. This team of “initiators” in quadrant (IV) served as a basis for the collective action.

The migration workers were mainly from bayt Hatim, the initiator’s father and his eldest brother cooperated on the basis of conditions. Most of these conditions were laid down in the agreement and were focused on self-interest. They cooperated whilst regarding themselves and are plotted in quadrant (III). The initiators’ other brother and his mother did not cooperate fully, acted individualistically and displayed a selfish individualism such as in quadrant (I). Lastly the museum representative is plotted on the remaining category of non-cooperative but with individual generosity in quadrant (II). He is individualistic but not selfish in his influence and orientation to the collective action. He is not actively involved in the renovation but found himself drawn toward working in a generous mode much like the irrigation officials in Gal Oya (cf Uphoff, 1996, pp.350). This type of behaviour plotted on the grid is a starting point of the renovation. In the following sections we shall see shifts of the orientation-to-action of actors between quadrants.

6.1.6 The first few weeks, villagers claiming their right to work

On the first day of work, the initiator decided to choose the workers daily, on the basis of presence in the village; he rejected the idea of representing lineages and half of the workers on the list in the agreement were not present. This meant that the employees could also work in the qanat cleaning, but they were not listed in the original agreement. All employees in the village were from the Amir lineage. By joining them on the list of workers, the initiator angered his brothers and parents who perceived these men as “free riders”. First of all, his brothers thought it would be unfair to let the employees work as they would receive compensation on top of their regular salary whilst migration workers would loose out. Secondly, the employees were members of bayt Amir and the brothers did not want extra additions from that side. Thirdly, they were employees and some did not trust them, as they could be informers. The decision to make the work available for the employees turned out to be a major bottleneck in the collective action.

The first days of the cleaning were promising but the physical work was demanding; the airshaft contained a column of basalt boulders and desert sand of at least 15 meters deep, which had to be cleaned manually. The work took place from 7:00 until 15:00. The group of six men worked in shifts of pairs. One man worked below for clearing debris, one turned the pulley and emptied the hauled buckets of debris whilst the
others were resting or doing other construction work. In general the workers who were below, worked 2-3 hours depending on the workload. With an outside temperature of around 46 degrees Celsius, the initiator and his friend from household (16) set up a tent from the Amir lineage close to the worksite. This tent became a place for discussion and negotiation during the work. It also provided a place where the museum representative was seated. He checked if there would be finds of antiquities and made sure that any visitor from outside knew that this work was officially approved.

After the first week, the employees requested the initiator if they could work regularly. Others from the Hatim lineage also wanted to be put on the workers list. Some migration workers suggested that the number of workers per day should be higher to give everyone a chance. The initiator was adamant that the workers would be chosen on the basis of daily availability and no more than six men per day could work. His mother was alarmed and visited the worksite to tell her son that it was better that his father and brothers did most of the work as they were the best workers.

Figure 27 - Shifts in orientation to action (June 2000)
This remark angered the initiator and it ended in a heated dispute with his mother. Clearly the orientations to action were shifting and the employees wanted to change the work programme in their self-interest. The tension increased between government workers and the initiator’s family. So much so that one member of the bayt Amir took away the donated tent from the site in protest. This action can be seen as a sanction following the expectation of the selfish behaviour of other actors. A member of the Khaled lineage consequently set up a new tent with the help of the initiator’s father.

As a solution for the increasing tensions and conflicting claims for work, the initiator decided to use straws each morning to choose the workers. In this way, fate rather than himself, determined the workers schedule. The strategy worked and the tension was eased for some time. In the meantime, the work continued and the bottom of the first airshaft (sunduq) was reached by the seventh day of work.

### 6.1.7 Supervision during the work and conflicts of interest

![Figure 28 - Shifts in orientation to action (July 2000)](image)
Reaching the bottom of the sunduq started a new chapter in the cleaning work; the phase of exploration. New areas of the qanat tunnel were found that even the initiator’s father, as the eldest of the workers, did not know the existence of. The discovery of water and new connections between the tunnels provided a boost in confidence and positive energy between the workers. The cooperation had brought result and this brought about a positive outcome. After the working hours, the men and their families gathered in the communal garden to socialize and chat. The other-regarding cooperation between the initiator and his friend from household (16) was very strong and together they stimulated other workers and there was a tendency to shift occasionally from quadrant (III) to (IV) in behaviour. It became a status to say that workers worked for the common good, without self-interest (“biduun fayedeh’). Uphoff (1996) describes this phenomenon as social magnetic fields where in analogy individuals within groups can create “social energy”. The enthusiasm of the workers was great and one evening they brought their wives to show them the work they had been doing.

In the meantime, the head of household (17) had left with the initiator’s brother (2) to work in Lebanon. The initiator’s brother (1) from Aleppo definitely settled back in the village with his family. The fact that there might be work in the cleaning, attracted him. He also wanted to have his share; after all, his name was listed on the agreement. After several days working, the initiator told him that he could not work because the straws had chosen some employees. He felt spurned by his own brother and when the employees worked for three consecutive days in a row, the brother started to accuse the initiator of favouring bayt Amir. His mother claimed that this was happening because the initiator was married to one of the Amir daughters and his best friend, head (16), was an Amir. It resulted in an inter-generational conflict at household level between the initiator and his brothers, who were supported by their parents. The process is interesting from the point of view that the extended household in fact presents a microcosm and in its basic features embodies and sustains the larger social system. Looking closely at this microcosm is useful and will tell us more about power relations in Syrian society. The values that govern the family- authority, hierarchy, dependency and repression – are those that govern social relations in general: the conflict and antagonism, the sociability and incoherence, which characterize relations among the members of the family, also characterize those among the members of society (Sharabi, 1977).

On day 13 of the renovation, brother (1) and his cousin went on strike out of protest against the policy of the initiator. They claimed he was not a good supervisor. Only four workers turned up to work that day. The research team was disappointed at this setback. Together with the
initiator it was decided to work with four workers that day, the available compensation fee would thus be divided among those four. They were the initiator, two of bayt Amir and a worker from bayt Hamzah. The museum representative supported the decision.

The increased presence of the government employees was a challenge for supervision. By mid-day, both brother (1) and his father complained that the employees were not supposed to work except for the head of household (16). A meeting was called between the workers that were present, and the employees. A discussion followed, mediated by the museum representative and the research team. A dispute broke out between the initiator and his father. Brother (1) told the initiator he should not be causing problems like this. They accused him of favouring the employees. The employees and their cousins defended the initiator and told them everyone present in the village had the right to work. To prevent further escalation, the research team suggested pinning a weekly programme on the door of the oda so everybody would know in advance when they were going to work. The research team, the museum representative and the initiator would make sure everybody had the same amount of days in the end. The members of the Amir lineage suggested this programme should be pinned on the initiator’s house since not many of them did come on the plot of his father where the oda was situated.

After agreeing, a new list of workers based on presence in the village was compiled. When the employees were placed on the list, brother (1) objected. He said this was unfair as he did not have a regular income. He mentioned that employees could work on Fridays, their free day. The initiator did not agree, he suggested that the free day would be Friday and when the employees had work, they would take a day off. At this point the father became furious, “this was not how it was agreed in the beginning!” he shouted and left the meeting. Disappointed by this reaction, the research team left the discussion over to the remaining workers. My own anger was caused by the selfish-individualism and non-cooperative attitude of others. For me, at that moment it was incomprehensible why the father became so non-cooperative, in fact he shifted from quadrant (III) to (I) based on his perception of the unfairness of the situation. This perception was in its turn based on past experiences he had had with bayt Amir. However, my emotions prevented me to mediate between the workers. To ease the tensions, the museum representative remained silent. Brother (1) remained defiant over the case of the employees. The initiator left the tent. The group split and the case

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60 This discussion took place on 01 July 2000 from 13:20 until 14:00 and has been audio-taped.
remained unresolved. The result was a shift of some of the main actors from quadrant (III) to (I).

The next morning, on day 14, none of the employees worked, only workers of bayt Hatim and Khaled and a migrant worker from Amir. The initiator discussed an idea to divide the working week in two parts; one part for bayt Hatim and Khaled and one part for bayt Amir and Hamzah. But his brother (1) did not agree, he and his younger brother questioned the authority of the initiator as the supervisor of the group. He said he was not a good leader. The trust he had in his own brother had deteriorated. It started a fraternal rivalry. The research team and the museum representative discussed the problems during lunch. It was decided that a private meeting would be organised on the next day between the initiator, his brothers and parents to resolve the matter.

The meeting between the initiator and his family took place in the oda on 3rd July 2000, a day-off from the work. Our research assistant, very knowledgeable on conflict management at household level, mediated the discussion. The rest of the research team and the museum representative were not present. The discussion did not go well. Brother (1) remained adamant that the employees should not work, only on Fridays. He asked the initiator how he had paid the four workers on the day that he and his cousin went on strike. The initiator replied triumphantly that they had received a higher fee because they had divided the daily money for six workers among four. This remark triggered an outbreak of violence in which brother (1) attacked his own brother, the initiator. His mother shouted that he was not her son anymore and his father said he was an Amir now. The emotions ran very high. After a while, the initiator went back home with his wife and children. Our research assistant then continued to resolve the issue. The parents apologised for their excessive behaviour and brother (1) reluctantly made peace with his brother. In later conversations the initiator said his mother had always resented the fact that he married a bride from the Amir lineage.

The above incident falls outside the orientation-to-action grid. On the continuum of orientations towards self and the other, Uphoff (1996) describes the extremes of (a) aggressive behaviour (destructive to others) and (d) sacrificial behaviour (self-destructive). In this case, those actors that attacked the initiator found themselves at (a) the aggressive extreme of the continuum, beyond selfishness. This is a negative-sum situation although the actor perceives this as beneficial.

6.1.8 Shifting responsibilities

The precarious situation between the initiator and his family did not provide him with enough authority to continue supervising the work. He did not want to risk damaging the relationship further. He asked the
museum representative to take over the programming, to prevent escalation of the conflict. The representative assumed this task but always discussed the programme with the initiator and the research team. We made sure that every worker would get approximately the same amount of working days. However on a day-to-day basis, I had to explain to each of them that this was spread out in time to avoid jealous reactions. The initiator was still there everyday but provided more technical guidance than taking care of the issue of the workers. He was relieved from this task. But the relationship with his parents was still fragile. His mother said she still did not consider him as her son anymore. She kept this opinion throughout the cleaning work.

The tensions between the workers eased and the work went back to normal but the built up cooperation, social energy and cohesion that was observed in the first weeks was gone. The supervisory role that was assumed by the museum representative, an outsider and third party, helped in preventing clashes. Technically, the cleaning was at high speed. Two airshafts closed by stones and debris were opened. More tunnel sections were discovered that contained water and the signs were promising. The bats, which were present in the tunnels, were gradually moving to another

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**Figure 29 - Shifts in orientation to action (August 2000)**

The tensions between the workers eased and the work went back to normal but the built up cooperation, social energy and cohesion that was observed in the first weeks was gone. The supervisory role that was assumed by the museum representative, an outsider and third party, helped in preventing clashes. Technically, the cleaning was at high speed. Two airshafts closed by stones and debris were opened. More tunnel sections were discovered that contained water and the signs were promising. The bats, which were present in the tunnels, were gradually moving to another
habitat due to the activities in the tunnels. During the cleaning a small water pump was bought that the workers used for pumping the water through the tunnels while cleaning the various sections from the mud and clay. They also used the pump to clean the sides of the tunnel. After the hard work of cleaning out all the airshafts, the main water sources were cleaned. A karstic source in the ras al Nebe' (the head of the source) turned out to be the main supply of water to the tunnel. This eight meter long gash into the limestone rock was filled with sediment and mud. The men did their best to clean it out but there was a slight risk of collapsing. A competition between the workers was observed in who would find the most water. Some of them became reckless in the dangerous work of the cleaning. The initiator was instrumental in halting further recklessness and explained that the work in the tunnels should be done in a controlled way in order to prevent any accidents.

Although the responsibility of programming the workers was not any longer with the initiator, he remained the technical supervisor of the work. His father continued to be dissatisfied with the fact that the employees were allowed to work. But the museum representative kept him at bay. Qanat work, especially in the water production section and the sources, requires workers with relatively small bodies and since some of the employees were physically very suitable for this type of work, technically it was useful to have them on the workers team.

By the beginning of August, the work of constructing the protective walls around the airshafts began and the strategy of the workers changed. The shift of responsibility to the government official, proved to be a stimulus to move the main actors up along the continuum of cooperative and individualistic behaviour. In the tunnel, the initiator supervised the technical cleaning, working with some workers from Amir or Khaled. At groundlevel, the museum representative supervised the construction work. The construction of the walls had to comply with certain regulations set by the antiquities department to preserve the cultural heritage value of the qanat. The strategy seemed to work and the atmosphere among the workers was getting better every day. The head of household (17) returned from Lebanon, and he started working on the casing of the Jub al Saghir. The building of this casing was one of the hardest jobs in the renovation and since he had a very good reputation as a house-builder in Lebanon, the work was given to him. He strengthened the cooperative team of the initiator and head (16) in their orientation to action.

By then, some of the employees were drafted for cleaning work, so there were more than six workers per day. It was necessary to finish the cleaning before the winter rains started as this would make the work too dangerous. Moreover, the funders had set a deadline for the project and it
seemed that more workers per day would be necessary to be able to finish the work before then. Brother (1) started to raise questions to the research team about the presence of the employees. He wondered where the money for these extra workers came from. The research team replied it was foreseen in the budget given by the funders. But he became suspicious again and together with his mother asked the initiator to pay the family 1000 Syrian Pounds (50 SYP = 1 USD) from the extra funds. The initiator refused.

The main entrance of the qanat, the sunduq, needed a protective wall above it and a small entrance house with an iron door. The research team and the museum representative decided to give a set amount of days for this work to brother (1) and his father. First of all, both of them were skilled builders and the father was known for his masonry. Secondly, it would keep further jealousy at bay. The museum representative supervised the building work of the sunduq but soon ran into problems with brother (1), who wanted more time and workers to help him and his father. Moreover, the decision to give the work on the sunduq, caused a jealous reaction from the migrant workers of the Amir lineage. The research team explained that this job was specifically for the sunduq and for a set amount of days only. But head (16) started to request more working days for the employees whom he felt were discriminated. The research team and the museum representative were torn and decided to develop a new work schedule up to the last day of cleaning work (planned to the end of August). In this it was planned that all workers, including the employees, would be given an equal amount of days.

6.1.9 Migration workers returning from Lebanon, tensions and conflict

By mid-August, the cleaning work was progressing well and it looked as if it would be finished before the deadline. On day 48, the initiator’s brother (2) returned from his work in Lebanon. He did not want to work in the qanat cleaning and instead he spent his time hunting and chatting with his mother and sisters in the oda. His mother told him about the developments of the past months and how badly the Amir’s had behaved in her eyes. In Lebanon, he himself had had a conflict with head (17) about his cousin from bayt Amir who was married to a man from Rasm al-Nafal, the outsider. He condemned the fact that a house of Shallalah Saghirah was given to this ‘outsider’ or in his own words to a “showkah (thorn)”.

Despite the official legality of giving a house to anyone, traditional custom does not allow giving away property outside the family. The initiator’s mother described it as a disgraceful practice, and brother
(2) was of the same opinion. In the heated discussion about the trespassing conflict, head (17) told brother (2) that they had put this “outsider” in the village to protect the Amir plots against bayt Hatim. They had clashed in Lebanon about this matter but were held apart by their Lebanese employer. Impacts of conflicts that take place inside the community are often not contained within the borders of the village. Especially if many of the young men migrate abroad, where they share work and living space which usually does not consist of anything more than one room with a few iron beds and a sink for washing. Syrian workers live in these squalid conditions, so as to save the bulk of their income and send it to their families in Syria (Gambill, 2001). Many Syrian workers in Lebanon live for months on end in these circumstances. In this situation, simmering unresolved conflicts brought from home, can easily cause tensions between cousins.

The research team was not present in the village when events developed rapidly, so it cannot be described fully what happened exactly on day 49. Conflicting stories emerged when I talked to both sides involved. According to a migrant worker from Raqqa, representing the Hamzah lineage, the following events unfolded after the arrival of brother (2) from Lebanon. Having visited his mother’s, he went to the village of Fijdan to fetch sugar. He heard rumours about his parents and brothers attacking the initiator. Brother (2) returned back to the village in anger. He had an argument with his brother, the initiator, in which he accused the Amir lineage of using the initiator against his own family. Brother (2) pointed a shotgun to the other side of the wadi and threatened his cousins from bayt Amir who were sitting in front of their houses. He did not fire a shot. Head (16) ran away towards Rasm al Nafl to get some help. Brother (2) took the motor of the initiator, with his brother (1) to follow head (16). Later a shot was fired in the air somewhere in the field. It resulted in the imprisonment of six of the village residents at the local police station in Khanasser; brother (2) and five of his cousins from the Amir lineage. On day 50, the cleaning activity was stopped and we waited for this conflict to be resolved. Obviously the truth of what happened lies somewhere in the middle.

6.1.10 Workers group dispersed and resolution process of the “case of the thorn”

After the conflict on day 49, the ICARDA research team decided to wait with any cleaning activities until resolution of the conflict, at the advice of ICARDA’s government liaison. Two workers were transferred to a civil court in Aleppo to start a process of justice relating to the weapons used (the pistol and hunting gun). The workers from the Amir
lineage immediately took their wives and children to the northern areas to join their other family members.

Parallel to the civil court case, a traditional resolution process was started by a Hamzah lineage representative. He approached the religious leaders guided by the landowner of the rented land where the rest of the villagers had their summer tents. The landowner had more than 20 years of experience with the family’s conflicts. In his reciprocal relationship with the households of the village, the landowner visited the village from time to time during winter periods. He noticed the same social tensions in the village as those on his property during summer when the households were settled in their tents on his land. Since he acted as a conflict mediator during summer, the households also asked him for conflict resolution during non-seasonal labour times, if necessary.

The landowner approached the richest brother of the Hatim lineage, who lived in Aleppo. Together with him and his sons, they went to the village on a Friday to discuss “the case of the thorn”. The group of mediators consisted of three shaykhs from the north and the richest brother with his sons. During the meeting the main thrust was pointed at the “shame” that had come over the Hatim lineage now that there was a “bad image”. The richest brother stressed that this was their own fault. But the initiator’s father did not agree and demanded compensation for the shotgun and the motorcycle that were all confiscated by the police. One of the shaykhs explained that the aim of this resolution was peace not compensation, he also mentioned the continuation of the qanat cleaning work as another reason for peace.

After the visit to the village, the three shaykhs traveled back for a meeting with bayt Amir, accompanied by the initiator as the only representative of bayt Hatim. The opinions were mixed. Most wanted peace but mentioned that these problems existed since 30 years in the village. If they were to make peace than it should go further than just “the case of the thorn”, they said. They were willing to pay for the motorcycle of the initiator if need be. They did not have any grudge against him.

The final verdict of the three shaykhs was made known after five days. The two lineages were to make peace. The pistols and shotgun would not be compensated except for the motorcycle that would be paid by the Amir’s and some funds from the landowner. The initiator’s father did not agree and requested the opinion of a Bedouin judge ('aaruf) whilst the Amir’s requested the opinion of a higher religious authority, the mufti of Aleppo. This stalemate went on for a couple of days. In the meantime the two remaining villagers were released from the Aleppo court with just

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*Observed on 18/08/00*
a warning. But the conflict was not resolved and the process went on in search of a mediator that would be agreed by both parties.

Brother 2 came back to the village, waiting for the verdict of the ‘aaruf, the only authority he acknowledged for proper resolution. In his testimony of what had happened on day 49, he largely followed the same story as his brother. He does not trust the Amir’s, he said. “*They do not trust us and we do not trust them*”, he explained. This mutual mistrust is what makes the conflict resolution a lengthy process. It was explained that a long resolution process is good because the conflict is then less likely to return. Brother 2 was adamant in his opinion about his Amir cousins; “…ever since my grandfather, these problems existed. He was friendly with the Bedouins, with the great shaykh Mujhim of the Feda’an and this always gave him more power than Amir. That is why they did not like him. They have always been against us”.

There was a striking difference in livelihood strategies of bayt Hatim and bayt Amir. Most of the Amir cousins received a steady salary from government employment in the local factory. Brother 2 looked down on this way of life. For his livelihood strategy, he wanted to follow the same path as his grandfather. He was a young unmarried man who needed money for his wedding, an increasingly difficult challenge for Syrian young men in the countryside. He befriended a son of a powerful local

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![Diagram](image)

*Figure 30 - Shifts in orientation-to-action (September 2000)*

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Bedouin shaykh from Raqqa, to travel with him to Russia to poach birds of prey to be sold to the Gulf countries for the falconry. He exploited this relationship in order to make money fast, in the tradition of a free “Bedouin spirit”. In this, brother 2 was living what he called “the proper Arab way of life”.

Finally the conflict was resolved after the involvement of several mediators and authorities, both religious as well as tribal. On September 8th, the peace was celebrated by a meal offered by family members in Aleppo. The rich household of the Hatim lineage had offered to reconcile. Members of both lineages were present. The qanat cleaning continued with the workers from outside and those of the residents that wanted to work.

6.1.11 The last weeks, finishing the task

After the peace ceremony, workers from bayt Amir refused to go back to work with their cousins. The peace was “on paper but not in the hearts”, they said it was “hakkih fadhil” (“empty talk”). Head (16) who always behaved as an other-regarding cooperator, decided not to cooperate to avoid any further conflict. Instead he contemplated moving to the campus of the factory where he worked. He could not suddenly work together with his Hatim cousins, after the attack on his wife by her brothers and the threats. He also mentioned that there would be really peace from within if the initiator’s mother wanted peace. In fact, she stated after the peace ceremony that she did not agree with it because it should have been held in the oda and not in Aleppo.

At this point the ICARDA research team did not have time left to wait beyond the project-deadline of the external funders. Furthermore the museum representative was pushing for the work to finish. Lastly, the first rains were approaching, before which the cleaning should be finished. To finish in time, the renovation was continued with the museum representative, the initiator, his brother and eight construction workers from Aleppo. Towards the end, the work was speeded up considerably and a total of 15 daily workers worked during the last days; eight outside workers, and five workers from bayt Hatim and the remaining two from bayt Hamzah and Khaled. Bayt Amir had opted out.

During these final days, delegations from the funders, came to see the progress of the work (see Figure 32). Having been informed about the conflict, they were impressed by the technical progress of the work. The research team took all visitors, if possible, on an underground tour through the tunnel to show the output of the work. Board members of ICARDA visited the site during these days, often in groups with arranged bus transport. They were shown around the village and the tunnel, whilst
the research team members explained the technical work. The visits of high-level delegations eased the tension between the workers.

Figure 31 - Final airshaft renovated after the last day of the renovation

Figure 32 - Member of a donor delegation prepares to descent
6.2 Endogenous factors of collective action at community level

This section provides an analysis of the endogenous dimensions of collective action during the renovation. It will attempt to link the social history and the power dimensions within the community with the observed processes during the renovation. During the renovation the orientation of individual action changed over time within the range of individualistic, cooperative, selfish and generous behaviour. Local power configurations have changed since then. This social reshuffling can be a dangerous force that jeopardizes the fragile equilibrium present in traditional village society based on close personal relationships (Abraham & Plateau, 2001).

The challenge of this section is to contribute to a better understanding of the pitfalls that may undermine community based natural resource management (Abraham & Plateau, 2001). The scale of the study of Shallalah Saghirah is one of the smallest units of catchments; a mini-watershed which outlet is an ancient qanat. From a community perspective, hydrological units to make collection of physical data structured and organised do not make sense (Vincent, 1995). The community and social dimensions entail more than just factors within the physical boundaries of the watershed. It concerns dimensions in space, such as relationships between urban and rural members of the community, and time, such as the impact of the social history of the community. The case of Shallalah Saghirah shows the variety of qanat users and individuals constantly changing their orientation to action. These changes in orientation are based on individual experience and the role that the individual has played either as initiator, mediator, conditional cooperator, egoist or free rider. Some main endogenous factors of collective action can be identified during the renovation of Shallalah Saghirah.

The main endogenous social dimensions concern the history of leadership, social relations and power relations in Shallalah Saghirah. An imbalance of power was created after Hatim introduced the brides from the Hawran to the family. In his pursuit to gain more social capital and power by marrying his sons to an influential shaykhly family, he had created an imbalance of power in the village. After the reign of Hatim, there was virtually no endogenous leadership in the village to mediate between conflicts. The weak leadership caused a continuous power struggle, competition over land and water and further decline of social cohesion within the community. This had a negative influence on any collective action that took place to maintain the qanat.

Secondly, demographic growth, poor financial resources and lack of profitable land available for agricultural production caused further competition between households on community level. The pressure on
land resources strained social relationships and cohesion. This was even the case between members of the same descent group. It also created conflict between members of extended families. Young men are waiting for their father to give them some land but do not receive it in time for setting up a family. In their wait, they compete with their brothers in the favour of the parents to gain more land.

Thirdly, the migration of households as a way-out (exit option) from the above challenge causes a schism in Shallalah Saghirah. Vincent (1995) mentions that migration often brings additional advantages to a household or as essential to survival. In Shallalah Saghirah we see two types of migration; seasonal and longer-term (cf. Vincent, 1995). The seasonal brings indeed economic advantages and coexists with the rural lifestyle. The longer-term migration tends to create a social gap between those who migrate and those who stay behind. Conflict, lack of leadership and decline in social cohesion posed a social cost-benefit analysis to some qanat users; either stay and resolve the situation which takes a lot of energy or they move out and establish new livelihoods without having to go through a reconciliation process. The gravity of the conflict in Shallalah Saghirah makes the balance tip towards migration to urban areas rather than solving the conflict. The improved national infrastructure, economy and markets assist in making this decision sooner rather than later. This resulted in an educational and financial gap between “urban” and “rural” members of the descent group. The different worldviews between the groups often causes communication barriers. On the other hand, those who have migrated have also gained a certain level of mediating power at village level.

6.2.1 Public scrutiny, mistrust and conflicting loyalties

Different causes and aspects of the disputes and conflict during the cleaning work can be analysed. First, it was an outbreak of the long-term feud between the two lineages of Hatim and Amir. The mistrust that had been built up over decades, started with the sale of land in the 1970 and the power relationships that were formed over time. The social history determined the relationships and the expectation/perception of behaviour between the workers during the renovation, which ultimately resulted in a conflict. To gain insight into the events I had in-depth interviews with family members of both the Hatim and Amir lineage days after the conflict. Many different dimensions of conflict and actors’ expectations can be identified in these two separate accounts of the events that happened on day 49.

Firstly, there are the pressures of public scrutiny. In Shallalah Saghirah, like in many other Arab rural settings, the clustering of houses, the shared water resources and the communal garden, mean that relatives
have intensely daily contact. Living in such close physical proximity, poses social pressure on the households and the behaviour of neighbours and relatives is *entirely a matter of open argument and explicit social pressure* (Eickelman, 1989; Geertz, 1979). Abraham & Platteau (2000) explain that when people live so close to each other, they have a spontaneous tendency to compare their own situation with close neighbours and relatives. Public scrutiny and keeping the household’s honour high are unavoidable aspects of daily life in Shallalah Saghirah.

This is how the mother of the initiator raised her sons. Moreover, she made it a pillar of bringing up all her children in the tradition of a noble family, since she is the daughter of a Hariri shaykh. Most importantly is that the “*sharaf*” (honour) of the family is preserved. It is significant that in the middle-class Arab family, the child is conditioned to feel shame rather than guilt, in practice, shame (“*‘ayb*”) is “what people say” (“*shu bi’ulu an-nas*”). The implication is clear: what people do not see or hear is all right. It involves an attitude of concealment (Sharabi, 1977). If the concealment is broken and the alleged shame is exposed, it will create conflict. Obviously, it angered brother 2 when he heard “people telling bad stories about our house” in Fijdan. He suspected the outsider from Rasm al Nafl of spreading the rumours because in Lebanon he was told that the Amir’s put him there to keep an eye on the Hatim’s. Brother 2 wanted to triangulate the stories with his brother the initiator, which ended up in a loud and unconcealed dispute, heard throughout the village. This raised the attention of others, which triggered brother 2 to get a shotgun and threaten the Amir’s.

Public scrutiny means that judgements about the behaviour of other relatives are easily made. In the eyes of bayt Hatim, the Amir’s have always been working with conspiracy, they “never greet properly and do not have good morals”. The main reason for this perception dates back to the unfair sale of land in the seventies. In times of conflict, these previous events determine how relatives interpret and react on each other’s behaviour. Brother 1 who had been taking the position of self-regarding cooperation moving to selfish individualism, holds the ideal of other-regarding cooperation as proper behaviour. He accused the employees of selfish-individualism, which, in his opinion is not right but he and his brothers tolerated it. In fact one of the few truly other-regarding cooperators, the initiator, took the position of mediator and therefore this made him an “Amir” in the eyes of his own family. He did not follow the rules that determined his brothers’ behaviour.

In her attempt to find a revised theory of collective action, Ostrom (2000) compares the process to evolutionary theories to model the emergence and survival of multiple types of players and actors. She discusses so-called deontic relationships—what is forbidden, obligated, or
permitted – as contrasted to reasoning what is true or false (Ostrom, 2000). This “deontic effect” in human reasoning does not share any relationships with “rationality”, it determines actions that people take to stall or initiate collective action. One, very human, mechanism in society that relates to the “deontic effect” and determines the terms for collective action and participation is the phenomenon of public scrutiny and gossip.

Gossip is a form of communication between people used to test, check and evaluate other players in the collective action, it looks at what other players do or say and whether that is within the agreed borders of local morale, culture, beliefs or house rules. If the player’s behaviour is outside the borders, the discussed actor risks being labeled a cheater or traitor and subsequently the loss of his or her honour. Face-saving mechanisms play an important role in traditional village societies, especially in the tightly-knit based on lineage (Abraham & Platteau, 2001). In the days of the run up towards the conflict, an increase in gossip in the village was observed. This gossiping functioned as an accelerator to the conflict, the added fuel came from the gossip that brother 2, heard when he arrived in Fi’jdan to fetch the sugar.

If resentment and frustrations are not adequately suppressed and mediated by village leadership, interpersonal tensions can erupt in aggressive and violent acts (Abraham & Platteau, 2001). Therefore, to save their face, the two brothers attacked the Amir lineage members. Anything will be done from actors’ sides to prevent or dispute deontism, therefore the two brothers attempted to restore the honour of their family by retrieving their sister out of the hands of her husband, who is an Amir. Both the processes of gossip and the pressure of public scrutiny are influential endogenous factors in the collective action in Shallalah Saghirah.

Secondly, there is the political mistrust amongst family members and towards the state entity that mediated the conflict. Concealment to avoid public scrutiny is even stronger towards government representatives in the current Syrian political climate. The political climate forces people to be vigilant amongst themselves in avoiding much contact with the (secret) police, at risk of being branded an opponent to the state. It means, anything that can be done to avoid involvement of police or secret services will be exhausted before someone turns to the official authorities. The fact that someone went to the police to report the conflict was regarded as something “not done”. Obviously, the Amir’s felt threatened and therefore called on the police because there is a lack of local leadership or traditional authority to mediate the conflict. In general, people in the Syrian country side prefer to solve problems without any official judicial involvement. The preferred method is to solve it with trusted mediators of the community, following customary law.
A member of bayt Hatim reflecting on the conflict a year later:

“If there is a small group of two people like me and some of my cousins, then we solve it between each other and if there is a big problem we solve it with a mediator. The big problem of last year there was some resentment that someone went to get the police. That did not really solve the problem, the problems stayed afterwards. It began with a person from Rasm al Nafl who came to live here and he talked bad about my family and that was the cause of the problem last year. My brother came and became angry about it. But it was not solved really, the person never greeted my father and uncle anymore”.

The police are usually not regarded as a proper mediator. On the other hand, the police and local political relationships are used as a power base and social capital. Good connections with “wasta’s” or even Ba’ath party membership can give some individuals the “sense of power” over others.

Thirdly, the factor of conflicting loyalties complicated the conflict further. The initiator is split between the traditionally expected loyalties towards his family, his personal friendships, and his principles of peace and resolution of the long-term feud between bayt Amir and bayt Hatim. He takes his role as a mediator very seriously and at the moment that his brothers take his motorcycle to chase their cousins, he attempts to stop them. Likewise, when his brothers take their sister to the oda to “remind her of her origin”, his house provides a safe haven for her. But despite these events he cannot really and he prefers to leave it in the middle. That is why he asked the museum representative to take over the supervision. His friend, head, is in a similar position as himself. He also wants peace but he takes a stand and chooses definitely for his own lineage, bayt Amir. He makes that choice at the moment when he confronts brother 2 outside the village. His role as mediator is not valid anymore. Moreover, his friendship with the initiator is damaged and as long as there is no resolution they cannot openly express their friendship anymore. If they did, it would mean that the initiator had chosen for the Amir lineage and he does not want to do that.

6.2.2 Communication between the actors

Communication is a not less important, endogenous dimension of collective action. Communication is a crucial process in collective action and there is a need to analyse the various factors of communication to understand collective action. The main schism in water right users is between the Amir’s who have most irrigation rights and the Hatims who

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have a monopoly of access to domestic and drinking water. The communication between those two groups is not based on a mutual trust. With exception of those mediators who have tried to glue the feud with their strategic choice of marriage, communication processes between the two lineages were difficult and could only take place with mediation. The communication process is determined by notions of shame, honour and fuelled by daily gossip and prejudged perceptions about each other.

Two main communication processes can be distinguished; the internal communication between the users themselves, such as the one that took place during Ramadan when the *haquun* first decided to come together, and the external communication that took place between the various groups of actors of the renovation. In the externally mediated focus group meetings, the communication process was guided by certain participatory principles such as user involvement, equality, recognizing the expertise of the users, open and honest communication, the use of visual tools such as community mapping. Although contradicting the local hierarchical and political system, the democratic principle of giving everyone a voice in the discussion was adhered to as much as possible. It led to a community agreement on paper and the promise of the users to work together with each other in the renovation. This type of communication brought a certain ceremonial value to the focus group meeting. Likewise the visits of officials and funder delegations were a form of externally mediated communication.

The internal communication processes were more influential than the external communication on the progress of the renovation. Mediators used internal communication to bring the *haquun* together during Ramadan. This led to the external communication resulting in a community agreement for the renovation. Disagreements with the official agreement, were however not expressed in public, with the risk of “losing face”. They would always be voiced outside of the external communication process in separate meetings with either the researchers or the trusted family members. During the endogenous communication processes, mechanisms like gossip, one-to-one meetings to discuss strategies and voicing of suspicion were influential factors on the success and fall of community collective action.

Public face, shame and honour were determining elements that triggered human emotions in the coding and decoding of messages that the users send to each other during the collective action. A member of the Amir lineage not greeting a cousin from the Hatim lineage could be interpreted as a lack of trust and trigger a suspicious reaction from the other. The mistrust and suspicion was not taken away with externally mediated communication processes based on participatory principles. The human emotional state of minds of users at certain moments caused a
communication between them that was leading to conflict. Collective memories from past events dating as far back as 30 years ago, determined the arguments used in these conflicts.

In this environment, conflict can lead to the halt of communication between the users and the choice between solving the conflict or not communicating and sometime leaving the site physically, is made at individual level by both men and women. The following conversation between myself and a female user of the qanat, illustrates the effect that impending conflict caused by gossip of users living in close proximity of the outlet can have on the contemplation to migrate when the qanat dries up. It would be a preferred option above investing in collective action to renovate the physically sustainable qanat system.

J: How is life here now?
H: Not bad....
J: And what do you think about the future?
H: We want to sell everything and buy something else
J: Why?
H: I am afraid for my children
J: Where do you want to go?
H: Somewhere up there, we will buy something
J: Better?
H: Better, but there is no money to buy something new”
(....)
J: How is the water from the qanat now?
H: It is ok, but we are feeding our sheep water from the electric pump we have in our house, we do not go to the outlet of the qanat any more....
J: Why?
H: Just because, there we hear all this gossip and talk from others...
J: If there is no more water from the qanat, what will you do?
H: We will go away, from where will we drink otherwise?
(....)
H: This is the problem.....when there is rain and the weather is good, it goes better but when there are days like this, we stay tired and poor.
J: Will you stay poor.....always?
(....)
H: That is what I am telling you, isn’t it better if we could all just go and leave this place and cultivate the land wherever we want to?

From the above conversation, it is clear that a certain fatalism determines the choice users make. Beliefsystems, culture and education are factors that mould the degree of fatalism users have. This female user is from the Amir lineage, she did not receive an education and has a blind
faith in the predestination of her life. She accepts rural poverty and the complete dependency on rainfall as her faith. An attitude of laisser-faire is preferred above an effort to manage the conflict with the Hatim lineage and work together to renovate the qanat for a better future. The mobility of rural life is a better option and she would prefer to go to other areas with her husband to move away from the conflict. Moreover, the mobility choice is a more sensible option because it follows the seasonality of the dryland agricultural practice of sheep husbandry.

Additionally, a third communication process can be analysed; between the research team and the users. Due to the fact that I built up personal rapport and lived in the village, my close communication with female members of the users community was different from both the internal and external communication processes. It was not fully internal, since I was not a member of the community but it was also not fully external since it was more intimate and less formal. It also reflected on the process of the renovation. In many ways, my personal communication with the initiator motivated both him and myself in investing effort in the renovation. From the early introduction, I had been building rapport with his extended family from the Hatim lineage. However, my communication with others had side effects. Some members of bayt Hatim did not always understand the fact that I, and other members of the research team, following the participatory principles, communicated with “both sides”. Jealous reactions were triggered by the mere fact that I was communicating with members of the Amir lineage.

6.2.3 Power, equity, water rights and legal pluralism

The minimal effort for collective action for sustainable qanat maintenance, is to get a group of people together who put effort in cleaning and renovating the damaged or degraded parts of the qanat tunnels. This maintenance work should ideally be done every 4/5 years to ensure a continuous flow of the tunnel as long as drought, climate change or nearby pumping activities will not influence the physical level of the groundwater. The hydrological impact of the renovation will be discussed in later sections.

The existence of an extensive body of Islamic law for all aspects of society, including the use of water, have misled many donors into thinking that there will be a cooperative spirit in water projects in Islamic communities (Vincent, 1995). We saw in Shallalah Saghirah this is not the reality; daily politics between actors make cooperation challenging and complex. According to Rutgerd Boelens (2002), an irrigation system is a complex system to control water, combining and inter-relating the physical elements with social, normative, organizational and agro-productive elements. The social structure of the participation to collective
action is not bipolar but a configuration of actors. This configuration consists of lower and higher level actors (Uphoff, 1998). Higher-level third party actors such as ICARDA, the funders, the Syrian government, but also the shaykhs that mediated and the households that live in Aleppo are part of the collective action. Lower level actors are those who worked in the qanat cleaning on a daily basis. Between all these actors there are equal and unequal power relations. The configuration of power relations between actors in a social network constitutes the main framework of collective action. Participatory intervention will challenge these local power structures and shifts in power between community members engaged in participatory development processes need to be examined carefully (Nelson & Wright, 1995).

In Shallalah Saghirah we observe an imbalance of water rights for multiple uses in the qanat system. Many imbalances of rights in irrigation systems are often caused by landreform (Vincent, 1995). This is not true for Shallalah Saghirah where the structure of rights and rules was not affected by the Syrian landreform in 1958. Instead the imbalance is caused by historical developments within the community. Key is understanding the difference in interpretation on rights to water that is stored and measured and the daily physical access to a water source (Vincent, 1991; Varisco, 1983). Islamic law rules that water can only become private property when it is conveyed, stored and measured (ibid., 1991; Caponera, 1973). In Shallalah Saghirah, rights to use and own irrigation water from the storage (birkeh) are inherited, whilst rights to use domestic water from the saqieh are free for those who reside in the village, the drinking water from the outlet is free for everyone. Whilst the Amir lineage owns most of the ascribed irrigation rights (cf. Vincent, 1995), it is the proximity of bayt Hatim’s dwellings to the first access points for drinking and domestic water that gives their members most of the daily power. They argue with the bayt Amir that according to Islamic law, any water before entering the birkeh is free for use even if this means irrigating a plot next to the house. Bayt Amir disagrees and argues that any water before the birkeh can be used for domestic purposes only, not irrigation. The unequal access causes dispute and an unbalanced social cohesion. Lack of governance only makes matters worse. When there is a monopoly of access to the water source, which excludes others from reaching the source, this will be used in times of conflict by those who have the power.

Power is often the unspoken problem of the studies of collective action, whilst it is probably the most influential factor in the occurrence of collective action. As seen in the case of Shallalah Saghirah, there is a power struggle leading to sabotage of collective action; the radical action

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to threaten the Amirs with a hunting gun was combined with a remark that the work will be stopped. The situation was based on an expectation of power. The Hatims expected a menace to their power base in the tactics of the Amirs, knowing that they own most of the irrigation rights. The aim of the Hatims is to socially exclude the Amirs. They see the renovation intervention as an opportunity to increase their power (cf. Vincent, 1990). An analysis of the participation and bases for claims to work shows that their strategy has started to work.

Although interrelated, the bases for power can be broken down into economic, political or social power. Economic power is acquired by virtue of earning, inheriting or any other form of obtaining money legally or illegally. In the community of Shallalah Saghirah there is a shift in ways in which members acquire economic power and status, whilst it used to be the ideal of ownership of sheep and the ability to trade and sell agricultural produce, the younger generation acquires economic power by migration work, international trade and regular employment. Political power is acquired through relationships and networks. Investments in social capital such as Hatim marrying his sons to brides from the Hauran, pay off in the long term. It established a closer link of his descendant to the Hariri seat in the South and ultimately for some it meant a gain in economic power. Furthermore, the higher level influence of the Hariri clan in the Syrian parliament gave a re-assurance of political power for those who had changed their surname to Hariri. However, the Amirs had chosen a different route in gaining political power. Through their employment with the government controlled weapons depot, they had a direct link into the local political power. So whilst the Hatims gained their political power on a higher level through their marriage alliances, which ultimately brought them economic power, the Amirs gained lower level political power through their strategy to acquire economic stability.

Social power is also acquired through human relationships but is less related to a political calculation. Due to their ability to relate to others and gain trust and reciprocity from most members of the community, mediators such as the initiator can motivate actors. These people are similar to what Malcom Gladwell (2000) calls “connectors”. They are crucial for the “tipping point” when ideas set action in motion. Their network of friends enables them to initiate collective action for the common good. Social power also relates to family descent. In a traditionally segmentary society such as rural Syria, which lineage you are born or married in is an important factor in the claim on property. Water rights can be defined as authorized demands to use (part of) a flow of water, including certain privileges, restrictions, obligations and sanctions accompanying this authorization, among which a key element is the power
to take part in collective decision making about system management and direction (Boelens, 2002)."

Rae (2002) describes the concept of legal pluralism as key to understanding property rights and power in Syria. The role of law has been largely neglected in the study of development and development practice (Boelens et al., 2002). Contra dictionary to the neglect is the strong base of legal justification necessary for development interventions. Legal pluralism implies the acceptance of existence of multiple legal frameworks, whether official or unofficial, in the same socio-political context. The concept of law then no longer constitutes state law, in fact, as in the case of Shallalah Saghirah, the informal or customary law is an equal element in collective action. The main characteristic of customary or tribal law is that it is unwritten and not codified in internationally agreed legal systems. But the influence of tribal customary law co-existing with a formal legal system is crucial.

The existence of a plurality of customary rules, regulations and interpretation of local values and norms influenced the process of collective action in Shallalah Saghirah both positively and negatively. Physically, the qanat tunnel and open channel is communal property of the community of Shallalah Saghirah; the water resource in the tunnel is owned collectively and internally agreed rules, rights and obligations regulate the use and distribution of the water. It gives a framework for the use and maintenance of the qanat and its resource. Claims to participate in the renovation were made by actors on a variety of grounds. These grounds can be traced back to both customary irrigation rules, government laws and newly agreed rules during the renovation. Customary law is in fact a dynamic and fluent set of rules and regulations in society. The concept of legal pluralism assists in the hybrid interpretation of “law”. Individual interpretation of customary law provides a basis for arguments, claims on rights and more over a framework to assess other actors’ behaviour to praise or condemn. In the event of conflict in a rural Syrian community, customary law and the intermediary roles of shaykhs remain the key mechanism for mediation. Rae (2002) also finds that although Syria formally abolished the role of customary law and structures in 1958, the customary institutions continue to exert authority over rangeland management and access.

Mediation and clientelism, as political concepts are essential in maintaining power relations in daily social and political life in Syria (Rabo, 1986). The concept “wasta” is central in any attempt to develop initiative and get ‘access’ to power within the higher echelons of state or tribe. For a small fee or favour, a “wasta” or “wasit” (lit. mediator) can steer you quickly through the maze of bureaucracy and government regulations. Their power is embedded in relations with powerholders,
family and personal networks. Rabo (1986) distinguishes between petty mediation, generally concerned with time saving arrangements of official documents and paper and grand mediation ("wasta qawiyye") or patronage related to issues of great economic and political importance (Rabo, 1986). Wasta relations are crucial in analysing who has the real decision making power in a community. Wasta relations depend on a personal network formed through “friends” and relatives in the Ba’ath Party, connections with important (rural) Shaykhs (either tribal or religious) and the local government representatives. For many it is important to enlarge the network of wasta’s to rely on to gain access to administrative, political and local/regional influence in the state implemented policies. Most importantly, it is crucial that the details of wasta’s are not disclosed but to your closest relatives to maintain a power base. Although petty mediation is present in all societies, the extend of both petty and grand mediation is widespread and accepted in Middle Eastern societies. Often regarded as something that will “fade away” in the face of democracy and the welfare state, clientelism and patronage are extremely flexible and persistent (Rabo, 1986) and probably part of very human traits.

Legal pluralism, clientelism and mediation partly explain the relatively strong power base of the Hatims over the Amirs. In conflicts, the villagers turn mostly to Bedouin judges (‘aaruf) to mediate the case. In a Syrian rural desert setting, the customary legal powers are still stronger than the state judicial influence. The strong social capital the Hatims built up with shaykhly families who exert customary judicial power still provides them with political power on community level despite the fact that the Amirs have most of the irrigation rights. In addition, the link between the Hatims and the Hariri seats in the Hauran provides them with power on a higher national level. The Hatims simply had more connections with wasta’s to execute grand mediation, if necessary. Lastly, it has been discussed that the close proximity of their dwellings and direct access to the water source before it “becomes” irrigation water gives the Hatims power of potential sabotage over the others. Complementing this political and geographical power base is the relative economic power that the Hatims enjoy through their relatives in Aleppo and the Hauran.

If we consider the participation in the renovation on the basis of claims to the right to work in the qanat cleaning we see how the Hatim lineage attempted to broaden their power base. The first claim for the right to work was made on the basis of the list that was established during the agreement meeting before the renovation. It was an agreed list of 14 men, all were experienced in construction work and all were migrant workers. There were eight members of the Hatim lineage, four of the Amir lineage and one representative of respectively the Khaled and Hamzah lineage.
The basis for this list was partly occupation; those with migrant jobs were experienced builders and partly lineage; all lineages with traditional water rights should be represented in the group. The factory employees were not included in the list. When the start of the renovation was nearing, not all the men on the original list were present, so the elected village supervisor chose to make the work available for those who were present in the village at that moment. This included the employees.

Clearly the day of the conflict, day 49, is visible and the strategy that the Hatim lineage undertook to gain power over the renovation. If we look at the participation according to lineage, we see that the lineages are relatively well represented. The majority of workers were from the Hatim lineage (between 40-60%). However the first conflicts between workers started to arise at the moment there was a minority of Hatim worker at day 11-12. After three days of participation of employees, or Amir workers, there was a strike from Hatim workers. At all days where the majority were Amir workers, the next day there would be a conflict. After the outbreak of violence after day 49, the Amir workers and those men involved in the conflict from Hatim did not return to the renovation work. The only workers left were from Hatim, Khaled and Hamzah. Hence, the Hatim’s had been successful in their attempt to drive the Amir workers out.

The participation according to occupation gives a slightly different picture. In this course of events, the sheepshearers and migrant workers were triumphant. After all the days where employees would work, tension would follow on the day after. The conflict after day 49 is likewise clearly visible. The employees did not return to the renovation and the migrant workers and sheep shearers have succeeded in their power over the renovation. It seems that the choice of including the employees in the workforce backfired during the overall progress of the renovation. It was a decision made by the democratically elected village supervisor, with consent of the museum representative and the research team. Together with the complex social dimensions, the decision, although it seemed an equitable decision, caused a continuum of irritation from the side of the Hatim lineage. It stirred the competition between the lineages and led to old conflicts being revitalised.

In the body of thought about common property resource thinking, it is argued that without secure rights to the resource, users will be less motivated to make the long-term investments that are a pre-condition for higher productivity and efficiency (Boeren, 2002). Rights of access are important for the willingness to cooperate in the collective action (Ostrom, 1990, 1998, 2002; Meinzen-Dick, 2002). The main cooperators in the renovation in Shallalah Saghirah did not have many irrigation water rights but had *de facto* control of access to drinking and domestic water.
They were motivated and active in the renovation and one of them supervised the cleaning work during the first part, with consent from all the irrigation right-holders. It shows in the investment towards collective action, the expectation of being able to gain more power, access and control through liaison with third parties can be an argument to participate in the collective action. The following reflection of the supervisor illustrates this:

“The qanat belongs to the family of the village and to each of the elders living in the village. There were five brothers, they have already died but their children and the children of their children are here now. But the largest amount of people present in the village do not have any ownership of the qanat. They have no land and no water to their name except for a few elders…. However, the qanat is in fact owned by the state because it is an antiquity. The antiquity directorate says that the water belongs to those who are living in the village. I mean, we need to define the ownership from the ones who are present in the village and whom have become tired while cleaning the qanat lately.

For example, what if I could get a part of the water, a day in the week, because I worked hard in the cleaning? The government needs to determine who gets a part of the water rights, like the agricultural reform and redision of the farmlands. I put a lot of energy into cleaning this qanat, of course my father owns his right to the qanat water, but my father has just one part of around 40 parts and what do I get? Nothing and most of the owners are not here. They sell their part or rent it out to their relatives and they do not do anything. And those who have become tired cleaning, do not have more than maybe 15 minutes, just to get drinking water for the family and I think that the rights should go to those who are present in the village.

We put energy into this dangerous job. This should be our right; those who put energy into the cleaning should have the right to irrigate from this qanat! Maybe in a couple of years it will fall dry if we do not clean it and are yet we not entitled to have the water? Those who have the rights (note: Amirs do not do anything except open and close the birkeh, they did not clean, or have any part in the work and this makes me angry… and I live with one of those people! (note: his wife is of the Amir lineage)

Of course my father does not give me any share in his part of the water. He is maybe more angry then me about the water; about those who are not here and live in Raqqa or Dayr Ezzor or Aleppo and have a part and rent it out for money, why? The water should belong to those who have put energy into it, like the agricultural law of the land, those who worked on it should have the ownership. It should not be that someone lives in Raqqa or Aleppo and only comes here for the money. When we
worked we received money from the funders in Damascus and we are thankful for that. That is why I say thousand times thank you and the only thing left is the problem of the bats...."

In fact, the initiator changed his position and orientation to action throughout the renovation influenced by the behaviour of the other actors. In the beginning he had a tendency to be generous, mediating between the lineages but over time, everybody else acted increasingly selfishly, and although he resisted letting his value orientation shift from generous cooperation to selfish-cooperation, eventually “bad experience” made him shift towards selfishness (cf Uphoff, 1996, pp.338)

6.2.4 Empowering and participation in the rural Middle East; a critical view

Irrigation rights are regarded as a primary indication of existing social relations of the communities (Boelens, 2002; Meinzen-Dick et al., 2002; Ostrom, 2002; Vincent, 2003). The focus on irrigation rights has a risk of diverting attention from the multiple use of the resource and the deeper and more complex social, psychological and political dimensions of an irrigators’ community. New institutionalism looks at irrigation design principles that are mainly based on recovery, accountability and financial autonomy (Ostrom, 1990, 2000, 2002; Boelens, 2002). It disregards the “irrational” socio-political and cultural complexity of power relationships with regard to water rights when distinctions are made between drinking water, domestic water and irrigation water use.

We argue that a strong focus on irrigation rights as a major indicator of power can be deceptive. The case of Shallalah Saghirah proves that those with the most irrigation rights cannot always easily exclude those without rights when there is a discrepancy between the access to the water source and the customary laws on irrigation rights. The proximity of the household dwellings of bayt Hatim are more important in Shallalah Saghirah in terms of control and social power than the customary irrigation laws. Combined with the other power bases, social networks and the connection to grand mediation as described, the social landscape with regard to control and access to the resource is quite different than when only analysed according to the irrigation rights. Using participatory approaches, the renovation was anticipated to result in a better and more equitable balance of power. Unwittingly, the renovation gave grounds for the Hatims to violently attempt to gain more power over the Amirs and thus endangering the fragile cohesion.

In thinking about water and rights, the body of thought on empowerment is concerned with fostering more participatory ways of
development out of concern for equity, democracy and social justice (Boelens, 2002; Nelson and Wright, 1995). If people decide for themselves rather than the state or development agencies, the outcome of a fair solution is higher and enhancement of equity, democracy and sustainability can be expected (Boelens, 2002; Abraham & Platteau, 2004; Chambers, 1998). At this point, it is essential to take a critical view of the advantages ascribed to communities as units and participatory approaches in sustainable development (Abraham & Platteau, 2004). The democratic principles concerned with participatory approaches of development seemed to backfire in a segmentary traditional community where there was a lack of leadership and democracy and equity in a western sense were alien concepts (cf Abraham & Platteau, 2004). This is an unavoidable problem, which arises when exogenous values and objectives, the fulfilment of which is a condition for the success of the new participatory approach, come into conflict with local culture (Abraham & Platteau, 2004).

For example, the formal community agreement that was written on paper in a democratic focus group meeting with the right-holders was only a ceremonial artefact instead of a tool for social justice. A transparent communication during focus group meetings is not an obvious way of interacting in an environment where the political climate and history is essentially segmentary. As Eickelman (1989) explains, the principle of segmentation and associated notions of person, responsibility, and honour serve as “native” model of social order in many tribal societies throughout the Middle East. Segmentation provides a framework of minimal conditions needed for individuals to cooperate in an orderly fashion (Eickelman, 1989). “Western” democracy clashes with the Middle Eastern “segmentary” framework in its disregard for the strong hierarchy and violence permitted to maintain order in segmentary society. During the renovation, the attempt to develop an equitable cleaning work schedule for those who were present, created conflicts between actors. The conflict during the renovation was a result of the segmentary principle to defend the collective honour (“sharaf”) of a lineage group. Not only the confrontation of democracy with segmentation influenced the collective action but also the dynamical nature of segmentation in Middle Eastern society.

Some members of a group involved in a feud will not adhere to the appeal to join and define the point of friction in the same way (Hopkins, 1997; Eickelman, 1989; Kloos, 1991). In the case of Shallalah Saghirah, the initiator was such a member. In the eyes of his parents, he did not adhere to the rules of conduct and responsibility of the Hatim lineage, first

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64 pp. 133
by his choice of marriage, secondly by his allocation of work to members of the Amir lineage who were not accepted. This made him automatically a member of the opposite group, something he did intend. His aim was to make peace between the groups. However, this placed him in a conflict of loyalties. At first, as a mediator, he was well placed to supervise the renovation but when the conflict with his parents arose, he became unmotivated as mediator and supervisor for collective action. He gave the leadership to an exogenous party, the museum representative. All actors agreed. The villagers decided for themselves that a third party, in this case the state representative should lead the collective action because it would mean a fairer solution and prevent further conflict. The lack of formal leadership in the village contributed to this decision.

After the renovation, the community of Shallalah Saghirah has been revisited briefly in 2001, 2002 and 2003. In 2001, the case of the thorn, or outsider, had been resolved by the relocation of the household of plot (13). The outsider was in fact driven from the village with the assistance of the local police. The initiator was on slightly better terms with his parents. Head 16 and his wife had moved to the site of his work at the factory. It was clear that other members of the Amir lineage had decided to gradually leave the village for long periods of time. Although the irrigation rights remained the same, the power of excludability of the Hatims had begun to take shape. Brother 2 had left for construction work in Libya and to earn money for his wedding.

A year later, the father of head (16) died of a heart attack in February 2002. As the eldest son, he had decided to return to the village and take care of his inherited rights of land and irrigation water. He did not have any social interaction with his friend the initiator in the village, they only saw each other only outside the village. There was a silent truce between the Hatims and the Amirs. The initiator possessed the keys made to close the building above the sunduq and he regularly checked the qanat to keep it free from debris. A feedback session for watching the digital video compilation was organized on 12th August 2002. There were mixed reactions from the young men attending, they wanted to forget about the conflict and look ahead because what was in the past was over and done with.

A last visit to the village took place during Ramadan 2003, the atmosphere in the village was positive. There had been a good rainfall that

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65 After the feedback session a final version of the video documents was edited. The resulting film is called Little Waterfall 52 minutes long, subtitled in English and without voice over. A second film was edited that is called “Reviving Qanats” 28 minutes long and deals with the other qanat sites that we researched in Syria.
year. Another reason why the villagers were excited was the prospect of the connection to the national electricity grid. Government representatives had visited the village and painted large red numbers on the mud brick houses to indicate which households would be connected. Brother 2 had returned briefly to marry his fiancée from an outside village, Jibrin, and was adamant that he must return to Libya for work. Other young men had returned to the village for lamb fattening projects. The initiator had also invested in 200 lambs for fattening but did not think it was very profitable and contemplated going to Libya with his brother for a while. The youngest right-holder, head (16), had had a conflict with his uncle. There was now a temporary schism within the Amir lineage.

6.2.5 Hydrogeological impact of the renovation

Vincent (2003) describes the shifts in paradigm of hydrological data collection; whereas 45 years ago the core tasks of hydrologists were mainly focused on technical planning and design, they now realize that social and economic data are just as important. The method of hydrological data collection has a great effect on how allocation and changes in water management take place (Vincent, 2003). The shift in paradigm is particularly relevant to research on qanats. Qanats as human ecosystems and examples of ancient technologies cannot be researched solely from a technical point of view, because survival and existence of this sustainable technology depends mainly on the collective action of the user’s community. Focus on people in qanat research is thus of primary concern.

Technical impact analysis is equally important as social analysis because it gives an indication on the feasibility, physical sustainability and likelihood of practical success of the collective action. Groundwater use around the qanat of Shallalah Saghirah consists mainly of diesel operated irrigation pumps. In the Khanasser Valley there is an over-exploitation of water resources due to irrigated agriculture. In dry periods, this gap in the aquifer is replaced by a salt-water intrusion from the nearby saltlake (Hoogeveen & Zobisch, 1999). In the previous chapter, it was described that the groundwater flow to the qanat of Shallalah Saghirah is not negatively influenced by either the nearby groundwater abstraction activities or salt-water intrusion. Based on the available hydrogeological data, the impact of the renovation on the discharge of the qanat can be considered. Figure 33 gives a detailed overview of the discharge of the qanat after renovation.
Before and after the renovation, data were collected from the flow level meter installed in the open channel and a rainfall gauge at household (1) that was monitored daily by one of the women in the village and checked by the research team. Figure 34 shows the annual discharge of the qanat measured by the flow level meter. The discharges shown are those at midnight when there is no other use from the open channel and at noon when users take water from the channel. The discharge at night is considered more reliable because there was no use and no children.
“playing” with the flow level recorder. We can see that the flow at midnight increased in the months after the cleaning. Other data are based on geological survey of both the Shallalah Saghirah watershed and underground tunnel. The technical cleaning work had opened the tunnels from the Jub al Saghir to the Arba’a mafaraq. The removal of debris, mud and stones has partly increased the water flow. The other cleaning was in the Ras al Nabe’h; the main karstic source of the qanat. Silted mud and stones have been removed from this section as well as a thorough cleaning of the 8 meter long karstic natural tunnel. Together with the removal of debris and stones from the main qanat tunnel section, these works are to increase the flow. Additionally, a hole in the water transportation section has been cemented to prevent loss through filtration. Work that did not have an effect on the water flow but was aimed at reinforcing the construction, providing safety and protecting the tunnel concerned the casing of airshafts and placing grids over the openings to prevent surface water flow destroying the airshaft structure and stones falling into the tunnel. It was also suggested that these measures would remove the bat population residing inside the tunnel.

The discharge average of the qanat flow in Shallalah Saghirah before the cleaning was 0.29 l/s. The amount of water flowing from the qanat did not significantly change directly after the cleaning of the qanat.
The first rain shower occurred on November 29th, a total of 43 mm. A peak in discharge flow is observed in the recordings. After the peak, the flow fell back to its original average. The second peak occurred on 14th December. It had rained on 6th December with a total rainfall of 50 mm. It had an immediate effect on the flow and after the peak the flow did not fall back to its old level. It stayed at an average of 0.35 l/s. The villagers observed that before the renovation, a peak would never last this long. The flow level recorder remained in the village until May 2001.

It should be noted that the water peak is not only the result of qanat flow. Surface water flowing overland from the village and the slopes into the open channel (saqieh) increases the total discharge. This means that at that point the capacity of the saqieh was exceeded. Providing the calibration of the water level recorder is correct, this is the maximum flow for the saqieh. This means that a total amount of 73.44 cubic meter has flowed in the birkeh that is then filled for three-quarters. Villagers told us that during the peak on the 14th of December the birkeh overflowed. This means more water than 98 m³ and an error in the calibration for the high flow values of the saqieh. Over the three years after the renovation, the qanat flow has benefited from several rainfall periods. In 2002/2003, rainfall of the Khanasser Valley was above average, 298 mm (Schweers, W. et al., 2004).

Birks (1984) shows that qanats in Oman usually are maintained in the dry period or summer months so they will give more water during the winter rains. Especially opening the Jub al Saghir will have had a major effect on the increased flow. In the years 2002-2003 after the renovation, two transects through the water tunnel have been carried out. In both exercises, the status of the qanat construction was observed as good without major damage, debris or silting of the tunnel. The fences had remained firmly in place as well had the locked house above the entrance of the Jub al Sunduq. The initiator regularly checked the qanat tunnel on blockages and undertakes minor cleaning of debris. On several occasions a poisonous snake was observed as well as blind cave fish. The unique ecosystem and wildlife inside the tunnel is an interesting topic for further biological research.

The water quality was also checked before and after cleaning. Chemically the water did not change only after the peak flow in winter the salinity increased. One of the goals of the cleaning project was to remove the bats from the tunnels and airshafts. The bats did change their habitat and moved towards the outlet of the qanat. Although the airshafts are closed with transparent iron grids from above, bats and sheep are still polluting the water at the beginning of the outlet. Biologically the water does not meet WHO drinking water standards.
6.2.6 Cost-benefit analysis of the pilot renovation

This last section looks at the sustainability prospects of the qanat renovation in Shallallah Saghirah. Although the existence and use of the tunnels for more than 1500 years proves the long-term sustainability of the technology of qanats, it remains to be seen whether they can survive modern times. We will look at an economical cost-effectiveness analysis, to have some insight into the reasons why qanat renovation would be beneficial financially. Before embarking upon the cost-effectiveness analysis, I would like to point out a weakness in the analysis. Cost-benefit exercises tend to discount the fact that we are dealing with incommensurable values not susceptible to economic calculus such as cultural heritage, environmental services, wellbeing and image building for main actors (Chambers, 2005). The negligence of these long-term values could overvalue the short-term economic gains of a qanat renovation. The output is therefore an estimate divided into minimum, or pure, short-term benefits or multiplier, indirect longer-term benefits. For most qanat users, it is the prospect of short-term benefits that could form part of a main drive for collective action.

For the economic cost-benefit analysis, we first look at the investment that is done by each of the main actors. In this analysis, we also look at the so-called “opportunity costs” for each actor. Opportunity costs are considered costs of something in terms of an opportunity forgone (and the benefits that could be received from that opportunity). These costs cannot be traced back in financial reports but are of vital importance to consider because they help in assessing the true cost of an action. Not monetising opportunity costs may result in the illusion that the benefits came free of charge.

We have distinguished five main actor groups in the renovation; funders, government, research team, ICARDA and the villagers. Starting with the funders a combined investment sum of $16,119.15 is calculated. This amount consists of funds donated by the German and Dutch Embassy as well as private contributions from our friends and relatives, it also includes the salary that the Netherlands Development Assistance paid to myself as Associate Expert seconded to ICARDA. This amount was used for workers’ fees, equipment and construction materials. The government invested in the placement of a Museum representative and his salary. Including any overheads an investment at a total of $500,- was calculated. The research team members donated a total sum of $275,- of their private funds into the renovation works. This was included in the overall budget used for equipment and construction materials. ICARDA as executing agency and host to the research team did not directly fund the renovation work with an official budget. However looking at opportunity costs we can calculate the salary of the research assistants, use of computers and
office and the rent of a four wheel drive car. This amounts to a minimum investment of approximately $3000,-. The villagers were paid a workers’ fee for their efforts and therefore did not directly invest funds in the renovation work. Their input was done in the preparatory work and the cleaning of the birkeh. In total these opportunity costs are estimated at a minimum of $100,-. For the purchase of materials they received an advance from the Embassy funds. Adding the individual investments of each group of actors a total minimum investment of $19.994,15 is calculated.

The output and minimum benefit of the renovation is more complex. Various multiplier effects and indirect benefits, are difficult to monetise but can have a profound impact. For example, multiplier benefits of creating public awareness and promotion for ICARDA projects in the Khanasser Valley. The on-going work and the physical result of the renovation has attracted large amounts of visitors to ICARDA. During each organized visit with Board members or donor delegations, Shallalah Saghirah was a preferred stopover to show the work of ICARDA in the field. This promotion triggered much international attention and enhanced the image of the Center. It has most likely led to a number of new project proposals and development. Other multiplier benefits are the added cultural heritage value, public environmental awareness and environmental services. Lastly, the qanat renovation has attracted the attention of a Lebanese eco-tourism company leading to opportunities in tourism for the community.

In terms of pure benefit, drinking water and agricultural use can be regarded. We can develop financial estimates by looking at the drinking and irrigation water gained through the renovation. The hydrological output of the renovation led to an increased and secured discharge from 0.29 l/s to 0.35 l/s. Without the maintenance, the qanat would have been on the verge of stopping the water supply to the village, which would have meant buying water from local tanks. Drinking water prices in the Khanasser Valley, including the tank that provides the supply, ranged from 500-700 SYP (50 SYP = 1 USD) per 10 m³ in 1999/2000 (Hoogeveen & Zobisch, 1999). With these figures a best case, a worst case and a realistic scenario for the minimum pure benefit can be derived from the increase of free drinking water.
Assuming that the qanat will provide at least 10 years of non-interrupted water supply at the rate of 0.35 l/s, it will have given a volume of 110376 m³. Ignoring monetary fluctuation and seasonal fluctuation of discharge, this is a total value of 6.622.560,- SYP, an equivalent of $127.528,60. This is the best case scenario. The worst case scenario is a rapid decline in discharge which results in 0.06 l/s continuous flow over the course of 10 years which will amount to 1.135.296,- SYP; an equivalent of $21.862,- USD 66. A more realistic approach would be at least 5 years of continuous flow of 0.35 l/s, roughly the equivalent of 10

\[\text{Table 15 - Cost benefit analysis renovation Shallalah Saghirah}\]

<table>
<thead>
<tr>
<th>INPUT</th>
<th>Funders $16,119.15</th>
<th>Government $500.00</th>
<th>Research Team $275.00</th>
<th>ICARDA $3,000.00</th>
<th>Villagers $100.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total minimum investment $19,994.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>Best-case</th>
<th>Worst-case</th>
<th>Realistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure benefit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free water</td>
<td>$127,528.60</td>
<td>$21,862.00</td>
<td>$63,764.30</td>
</tr>
<tr>
<td>Agriculture</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Multiplier benefit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Promotion Khanasser Valley</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Public Environmental Awareness</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Environmental services</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Total minimum benefit $63,764.30</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Assumed that the qanat will provide at least 10 years of non-interrupted water supply at the rate of 0.35 l/s, it will have given a volume of 110376 m³. Ignoring monetary fluctuation and seasonal fluctuation of discharge, this is a total value of 6.622.560,- SYP, an equivalent of $127.528,60. This is the best case scenario. The worst case scenario is a rapid decline in discharge which results in 0.06 l/s continuous flow l/s over the course of 10 years which will amount to 1.135.296,- SYP; an equivalent of $21.862,- USD 66. A more realistic approach would be at least 5 years of continuous flow of 0.35 l/s, roughly the equivalent of 10

\[\text{66 Over the course of the years 2000-2005 the qanat has not stopped flowing therefore the complete drying up of the qanat has not been taken as a worst case scenario.}\]
years of flow with seasonal fluctuations. This would mean a volume of 55188 m³, a total value of 3.311.280,- SYP, an equivalent of $63.764,30.

Above figures show that even in the worst case scenario, the investment in the renovation was financially cost-effective. But despite the obvious economic benefits in terms of providing free drinking water, confirmed by some villagers, the community does not seem to develop collective action without involvement of third parties like donor agencies and/or the government. It is thus dangerous to conclude that based on economics, the continuous maintenance will be sustainable. Likewise, based on the technical and hydrogeological success, sustainability cannot be assumed. Social analysis shows that non-economic factors and endogenous dimensions like leadership, power relations, family ties, public scrutiny (‘ayb and sharaf) are more important in Shallalah Saghirah for the sustainable development of collective action. Without a process of resolution between the feuding parties, the social costs for some villagers to stay and develop regular maintenance will be too high and the qanat is likely to be abandoned by most. Adhikari & Lovett (2006) show in their study that there is a relationship between exit options such as outside earning opportunities and the degree of collective action. Lower off-farm income levels seem to correspond with higher degrees of collective action. If this is true, Shallalah Saghirah is a good example; the alternatives for off-farm work and other exit options are widespread and easier than staying and dealing with the disputing family.

6.3 Conclusions

Main actors of the renovation have been identified and various stages of orientation-to-action have been analysed using Uphoff’s (1996) action grid. The renovation began with positive energy from an “initiator” who motivated the group of main actors. The configuration of social relationships largely stayed the same as before the intervention, such as the schism between the Hatim and Amir lineage, unequal access to the drinking and domestic water and the power distribution. The first few weeks of the renovation were promising. But the intervention also started rounds of gossip and mistrust between the villagers. This process polarised the existing power dimensions and resulted in a new conflict between feuding parties. The outbreak of violence complicated the renovation and took away the “social energy” that was observed in the beginning. But the renovation was successfully done after all. During the last visit in 2003, the qanat film “Tunnel Vision” was shown to all villagers. All reactions were positive and villagers were proud on their achievements. Most villagers concluded that the work had been good and more water came out of the source afterwards. They all wanted to forget
about the conflict that happened during the renovation. In hindsight, the villagers regarded the intervention as something good.

Irrigated agriculture from the qanat will not provide enough economic benefits for the villagers to be self-sufficient. The qanat provides drinking water and domestic water, the irrigation water is used for fig trees, home garden allotments and additional barley for lambs. Income is mainly derived from migration work or government employment. Further social transformations in relationship to technology intervention that took place in the years after the renovation has to be sought in the enabling environment. The entrance of electricity in 2004 undoubtedly will have a major impact on the community. The renovation has shown the intimate power dimensions, multiplicity and heterogeneity of a seemingly coherent and close-knit community.

Hydrologically, the renovation was successful. Economic cost-benefit analysis also shows the renovation as an effective investment. However, both the positive economic analysis and the successful technical and hydrological outcome do not outweigh the negative social analysis. Lack of social cohesion and leadership are main constraints to the sustainability of qanat maintenance in Shallalah Saghirah. Context and local socio-political history play a major role in the emergence of collective action for maintenance of qanats. Both the renovation and the socio-geographical analysis in Chapter 5 identified various endogenous social dimensions within a small rural community like Shallalah Saghirah. A seemingly homogenous, small-scale and close-knit community appeared to be in fact very heterogeneous and socially complex. Simple recipes and design principles for devolution programmes are therefore at risk of assuming social cohesion of communities and denying the non-economical and endogenous dimensions of collective action at the micro-scale levels. Technical and economical successes alone do not mean the participation is socially sustainable.