

WATER DIVISION AND TRADITIONAL IRRIGATION IN PERSIAN FOLKLORE

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ABSTRACT

Farmers did water division basically when it was aridity and drought. However in dry and desert lands water division has always been done. Aridity or shortage of water which results water division caused a sort of solidarity, cooperation and unity in order to share water justly for agricultural uses. Water division is a traditional method which was institutionalized in all parts of Iran and everybody obey this method. If this method was not established or obeyed, the result of dispute would be nothing but the waste of main part of the crops. Aridity and the need of farms to more and more water some times caused conflicts and disputes among farmers. Such difficulties usually start from the mid-summer. But generally speaking all farmers respects the conventional, traditional and local method of water division and does according to that.

Water resources either for agricultural uses or for domestic uses provides from different sources. Some of these channels established through difficult processes. But nowadays tap water resolved domestic needs of water. But agricultural needs of water still supplies through local resources. Although nowadays by adaptation of some policies like making dams we try to store water, but in some parts of Iran especially central region, people still use duct and well water and naturally traditional formulas of water and irrigation is run there. At the following, we take a glance over methods of traditional water division and irrigation in different parts of the country.

INTRODUCTION

Iran has an old history of water and irrigation. The first written notice about irrigative arable history corresponds to the time of preliminary myths of Iran. According to most genuine Iranian histories, in the first Islamic centuries (Tabari History, Tha'alabi History, Shahnameh Ferdowsi, Zeinol Akhbar Gordizi, etc.) Hoshang learnt a method of irrigation, aquaculture, wheat cultivation and harvest of wheat for bread to people. In this way the first written and documentary notice of the history of Iranian irrigation goes to Iran's ancient history which is about five thousand years ago.¹ Although gradually a lot of conventional-traditional-local laws have been emerged, developed and

1-Safinejad, Javad, The History of water and irrigation in Iran, collection of articles in Water and irrigation congress of Iran, Shiraz, 1998, page 1.

established in dry and arid areas, but usually there were a lot of strifes on this issue which result local and regional bloody tussles. For example at the beginning of third hegira century, the state of Khorasan - which the most west and south part of it was dry deserts - come into this conclusion to establish laws on this issue. Historical resources related hereupon:

"In 224 hegira, people of Nayshabour and Khorasan asked Abdollah Ebn Taher¹ about disputes over aqueducts, but there were nothing about aqueducts and its commandments in holy religious books and anecdotes of the Profit (God bless him and his posterities). Therefore Abdolla gathered all sernior relious people of Khorasan and some others in Iraq to make a book about aqueducts under the name of 'Ketab-e-Ghana' (Book of Ducts) in order to be the reference for laws and act. That book remained up to now (first half of 5th century) and laws of ducts are still extracted out of it."² Thus we are aware of the about time of documented history of water, irrigation and aqueduct in Iran. But some technologies like methods of digging and its techniques were published, generalized, reached beyond frontiers, developed and astonished the people and some other techniques buried in a way that after centuries, there is no precise knowledge about them.

METHODS OF WATER DIVISION AND TRADITIONAL IRRIGATION IN DIFFERENT PARTS OF IRAN

In past at the villages of Abadeh Fars, because clock system was not popularized, people used an instrument which was called 'tašte'. It was a small copper bowl which at the bottom there was a very small hole and people used to put it on the big pan-like vessel, full of water. Water little by little filled the bowl at it sank when it was completely filled. They did it for nine times and it was equal to one hour water. Of course the size of 'tašte' was different and sometime it took twelve times to make one hour water. Every nine or twelve times was called 'habbe'. Water division was administrated by people who was named as 'mirâb'. 'mirâb' was a person who necessarily owned water and land or his job was farming. 'mirâb' did his job in this way: before sun rise, 'mirâb' stood in a high place and observe the full sun, he started water division. Local people called this moment 'âb bandân'. From this moment on, those people whose name was on the list of the day received water and 'mirâb' controlled the process on a way that all people on the list receive their water share. During the irrigation time, 'mirâb' controlled the 'tašte' process and the owner of the farm took care of the irrigation of his farm. 'mirâb' put 'tašte' over a pan full of water. Exactly when 'tašte' is filled by water, he made it empty and put it on the water once again and by doing this, they threw a stone on a big bowl at his side and in this way they took care of the number of 'tašte's. In order to prevent any possibility of dam in the hole of 'tašte', they cleaned and varnished it by a thin stick and this work was called 'kolang zadan'. If a person had an ante, then they didn't use 'tašte' process and instead they gave water to

2-As cited explicitly by resources, he paid a lot of attention to agriculture, digging aqueduct, refinement of irrigation and water division.

3-Gardizi, Abdollhay, Zein ol Akhbar History, Abdolhay Habibi revision, Tehran: Iran Cultural Foundation, 1968, page 137.

him from one 'âb bandan' to another. Water provided through ducts for farming. 'kadkan' was the name of people who did dredge the ducts.¹



Farmers in Eghlid Fars did use the 'tašte' system as well. But the interesting notion about their water division was borrowing. In another word, they asked 'mirâb' to borrow water to them for example for two more hours and on the next time when their turn rotates, they returned whatever they borrowed. Although they soldered around the hole of 'tašte' in order to prevent any sort of cheating.²

In Ardehal (in Kashan province) people used an instrument under the name of 'aftâb nešân' for timing in water division. It was a stone which set beneath the mosque of the community. Before noon, they pace the distance between the shadow of the wall and the stone by two soles and called it Pay. Each Pay was about 10 minutes. When the sun stood exactly over 'aftâb nešân', it was considered as half an hour. But afternoon timing has different process. The receiver of the water back to the sun, took his hat and stood barefoot. He did point the shadow of his head and pace the distance by sole again, but this time each 'pay' considered about 30 minutes. Later, a copper vessel with a hole in it popularized which was called 'sarje'. There were 5 scales from the bottom of the 'sarje' to the lip of it. Each scale was equal to 2 minutes and in this way the whole time dedicated to each 'sarje' was equal to 20 minutes. The hole of 'sarje' has contrived in a way that it filled in 10 minutes. People used to put it on a container of very clean water which its capacity was about 4 or 5 litters. They also put some gravel beside it. For example if a farmer asked about 10 'sarje', they put 'sarje' over the water and exactly when it had been filled by water, they made it empty and put it over the water again and by putting a gravel from one side to another, they took care about the number of 'sarje'. Each 24 hours irrigation was called 'tâq' and water division was done by 'sar tâq'. Each 'tâq' had been divided to six 'dang'. 'sar tâq' who got more water was named as 'qolom âb' and the one who got less water was named as 'khord âb' and the one whose name was in the end of the list was entitled as 'bon âb'. Formerly, water division was done in the house of 'sar tâq' and he took his division of water by 'sarje' and then he let others to take their shares³. This method was used in Joshghan, Azaran, Rahaq, Marq and Aran in

1- Jokar, Mohammad Sadegh, Fars, Abadeh, 1983.

2- Saber, Ali Jan, quoting from Mohammad Hosein Sabet eghlidi, eghlid, 1997.

3- Majedi, Seyyed Khodabakhsh, Isfahan, Kashan, 1971.

the province of Kashan. In Shahr Reza, the responsibility of this job was on a person who was called “Datšban”. He sat on a place under the name of 'qerešgâh'. 'qerešgâh' is a small room in the middle of desert which “Datšban” used to sit their and take care of the timing of water division. 'sar tâq' was a person who Landlords and crofters knew and did not doubt his honesty¹. In Natanz people used to use Pang and bowl and the person who was responsible to do the job was called 'pang andaz'.

At the village of Chalgar Givi in the province of Ardebil, people in the second month of spring which is irrigation season, dredged the watercourses and then they gathered in a sage man of the village and shared water to the end of farming year by drawing or 'pušk \tm\q'. In this method each farmer assigned himself a 'pušk'. 'pušk' was something like matchstick, gravel, pea etc. which farmers put in a hat. A man will take out the first 'pušk' and the owner of that 'pušk' would be the first person on the list of water receivers. Each 'dang' had two round-the-clock times and in each 'dang' of farming land shared between 3 persons. And these 3 persons shared the time (two days and two nights) in this way: From the night to the next day noon is for the first person, and from another night to another next day noon the second person. The third person used two remained afternoons. After each two days of irrigation, they changed their turns with each other. They did exactly according to this method and there had not been any problem among them. A first person who irrigated was called 'sar ow'. They measured water in watercourse by 'bil' (shovel). And one 'bil' of water was a quantity of water which could turn the millstone of a water mill. In past, when there had been no clock, people used to use sunshine for timing. In front of mosque there was a place called 'qojânešin'. When sunshine rays had reached there, it meant that it is noon. In each turn of irrigation, two or three persons did irrigate their farms.²

Farmers of Marand in Azarbayjan Gharbi, as far as they can afford, partook in one of the ducts or motor pumps or bought others share of water in order to provide their need of water. This system was called 'su nobati' which means the turn of water. Water turn was assigned every 10 or usually 15 days. For irrigation, farmer may accept its responsibility himself or take it to the 'su či' who was a professional irrigator. 'su ci' knew all major and minor water canals of neighborhoods and gardens and also he knew how to bring water to gardens and farms professionally and completely. In order to be fair, farmers receive water once daytime and next turn nighttime, because usually irrigation is somehow difficult at night and farmers preferred to receive water during the day. The furniture of 'su či' contained: shovel, Wellington boot and lamp (for nighttime irrigation). He would discuss about his pay before irrigation and usually the owner of the farm borrowed him Wellington boot and lamp, but shovel is a most important tool of him and he must had it himself. The farmer must take care about his meal, but his tea must be prepared by himself. (The contract between irrigator and farm owner is so considerable). If the place of irrigation was garden, it was called as 'baq su vârmâ' and its water was called 'bâq suee'.

In order to facilitate irrigation, farmers usually divided land into rectangle terraces or 'Kardi' with different and desirable width and length and make canals between 'kardis'. The irrigation was also called 'zemi su vârmâ'. The irrigation of farm is so similar to the irrigation of garden. The only difference is that at first divide fram (zemi) to two or

2- Tabibian, Seyyed Abdol Rasoul, Isfahan, Shahr-e Reza, 1972.

3- Razzaghi Chalgar, Motalleb, Ardebil, Chalgar, 1990.

three parts and separate each part with 50 cm walls which is called 'mârâ'. Because of the slant of the land they make a canal from the beginning to the ending. At the beginning of the irrigation, 'su ĉi' gathers water in the canal and then just like the irrigation of the garden, he irrigate farm once from beginning to ending and then from ending to beginning.¹

At the village of 'Momen Abad' in Birjand each farmer took a specific gravel in his hand and each person knew his gravel and that gravel showed finally when would be the day of irrigation. Some one drew 13 lines at ground. Then one of the farmers had quarreled with the others and left them. When that one left the group, they rest of them would show gravels to each other and ask one of them to disarrange gravels and then they asked the one who left them to come back and in order to reconcile they let him to arrange gravels on 13 lines. That guy accept the suggestion smilingly. Then he would put all gravels on lines and the one whose gravel was on the first line, assigned as the first person to use water and the next one was the one whose gravel was on the second line and so on. This process was called 'Ran Kardan'. 'Ran' is the flowing of water. After assigning all turns, each person knew the person before his turn 'Pi[Ran' and the person after him 'Pas Ran'. Each 'Ran' is equal to 13 days of irrigation. Some time different length of days and nights make troubles and also in some cases quarrels happens about 'Tâqehâ' (12 hours water) and 'Nimruzehâ' (6 hours water). Farmers took water to the next one at evening or near nightfall. 'Nimruzehâ' which had the right to use water for half a day, find their turns using cube. The vessel of cube which used for 'Tâs Davâni' had a tight hole at the bottom and around that was solidified by cast iron in order to prevent any sort of cheating.²

At the villages near to Mashad, duct water uses for farms. Each share of this duct in this area is called cup (in Persian it is called Fenjan). The circuit of water is 12 there. 'fenjan' (cup in English) which local people call it 'fenju' is a small vessel with a small hole at the bottom of it. They put it on a big vessel full of water which is called 'tas' and it begins to be filled by water. 'fenju' would be filled in 3.5 minutes and each and every 'fenju' full of water is one share. Of course nowadays nobody uses 'fenju' and instead of it, clock is popularized. Every 18 'fenju' is about one hour. In this way when someone has 18 'fenju', he has the right to have one hour water form 12 hours water. Because some villages of Ferdows is located at the border of desert, each share of a 'fenju' deals about 500 Tomans. Therewith, the share of water sometimes is mentioned in women's 'mehriye' (high-priced gift that men must give to women at the time of marriage) and whoever has more shares of water could marry better woman! Formerly there were a few water mill in the watercourses of ducts which are dissolved today. The water of ducts passes different villages and a person who is called 'juyvo' take care of aqueducts in order to prevent any sort of damage and wasting of water. The division of water is something like this: these 12 nights are assigned to 12 farmers who have more right that other. For example one of these nights belongs to renowned Malek Khan who was apparently the king of Ferdows and Tabas. He took a night of the 12 nights and assigned it to himself. Because he had no children, he endowed it to charities. The rest of each "Tâqe" or 24 hours is called 'ĉekana'. At the time of water division, everybody knows that each partner has how many shares and each person took water as much as he has cup (fenjan) or he uses clock. When his time is over, he would shout and inform other

1-Fazlzadeh, Bijan, Azarbayjan Sharghi, Marand, 1978.

2-Saeidi, Ali, Khorasan, Mo'men Abad Birjand, 1971.

partners and his copartner will start irrigation of his own land. They shout 'hoy hoy hoy' in order to inform each other. This is the way which is conventional among the farmers of this region. Each 12 hours water is named one 'Tâqe'.¹ In Farrokh Shahr which is located in Chahar Mahal Va Bakhtiyari province, in order to prevent any trouble in getting water, they divide their farms into seven 'dang' (antes), which each 'dang' is called as a 'nim fard' (half man). In this way each 'dang' is consist of 32 half man. Each 7 'dang' is equal to 28 'nim jub' which is calculated by 14. In other word, every 14 days is equal to 28 days. Once the 14 days, the turn of water shifts between day and night for this 28 'nim jub'. Thereof some crops need water every week, those 'nim jub' which are opposes to each other borrow their turn to each other. All agricultural tasks are done by 8 people, because every 'nim jub' is equal to 8 'nim fard'. Each person is responsible for each 'nim fard' which take water, cultivate and harvest with each other and finally they share the production among each and every person of these 8 people. Each 'nim jub' has its head. The heads of all 'nim jub' choose a president for themselves as the 'dang'. In this way, all these 7 'dang's have 7 presidents who counsel and arbitrate about cultivating matters like dredging ducts, etc. The method to share water is in this way: from nightfall to dawn is the night turn and from the dawn to the next nightfall is the day turn.²

Provincially speaking, in Farnagh which is located at Khomein, farming land divides into 100 pairs of 'gâvbandi'. Nowadays it is called 800 shares. These 100 shares of 'gâvbandi' or 800 shares divide between farmers equally and in different pieces. Provincial term of the people of this region about land division are; 'dâng', 'joft', 'lang', 'pa' and 'fard'. The sources of water in Farnagh are: river, duct and aqueduct, fountain and well. There uses terminologies like 'dan' and 'tâq' as well. Water division - as it was done in past and it is done today- is accomplished by calculation of shadow to 'lang', shadow to 'regâl' and shadow to 'badreie'. 'sang' is another term which is used by the people of this region. 'sang' (stone) is an amount of water which can turn a millstone. Half of this amount is called 'kart' and half of 'kart' refers at 'kiz'. These measurements have been used in Farnagh. Water division in the culture of different khan's of Farnagh is in this way:

The culture of Ghasemabadi khan, so called as 36 pairs or 60 pairs 'gâvbandi': rotation of water division turn was every 8 days in past, but nowadays it is every 10 days. The culture of other khans of Farnagh in Khomein; each is consist of 16 or 18 pairs of 'gâvbandi' and the rotation of water division turn is 9 days which local people call it as 'garde[9'. The water provides through the river and this is the culture of up village and down village. There are some bars on the river in order to prevent any damages of torrents in the farms. The rotation of water in the other cultures of khans in Farnagh, is every 9 days (24 hours) and it is done by appointing a determined time.³

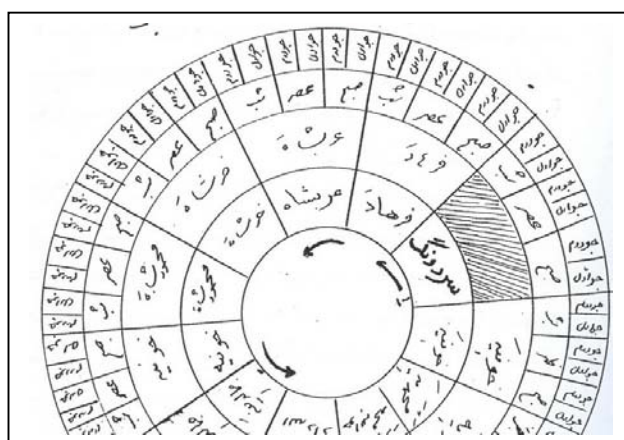
In Alvir which is located at Saveh, the base of water division is on the condition of each farm. For example, water division in Ghasbeh farm was done in past in this way: the irrigation was through a string of ducts and it was divided to 126 'šir'. Each day was covered through every 6 'šir's; 4 'šir's in day and 2 'šir's in night. Obviously if we divide 126 'šir's into 6, we will find out that the rotation of water turn of the farm would be

1-Mirbron, Amir, Khorasan, Mashhad, Ferdows, 1971.

2-Hatefi, Syyed Hasan, Chaharmahal va Bakhtiyari, Farokh Shahr.

3-Ghasemi, Rajab, Hamedan, Malayer, Azna, 1953.

every 21 days. As it is shown in the following table, after the winter, the beginning of irrigation is started by 'sar dâng' and the second turn belongs to Farhad and In regional turn of speech 'šir' means 'ju' and in this table each 'dâng' (24 hours) divide into 3 parts: morning, evening and night. Each of these parts is divided into two parts themselves: First 'šir' and second 'šir'. (we write them 'ju aval' and 'ju dovom' as local people call it) As it is shown, the latest circle (which 'ju aval' and 'ju dovom' are mentioned in it) concerns the first encircled circle which 'sar dang' is in it and totally there are 66 'šir's. If we add 60 'šir's of second circle which the place of 'sar dang' is edged to this then 126 'šir's will be completed. If this divides to 6 'šir's the rotaion of turn in every 21 days will be clarified. Once again you can find all 21 'dâng's in order here:



1.Sar dang – 2.Farhad – 3.Arab Shah – 4.Khoram Shah – 5.Mahmood Shah – 6.Khooniye – 7.Jamaleddineh(Jamaleddin) – 8.Allah Dad - 9.Khaje Mohammad – 10.Mohammadiyeh – 11.Khooniye – 12.Farhad – 13.Arab Shah – 14.Mahmood Shah – 15.Mahmood Shah – 16.Khooniye – 17.Jamaleddineh – 18.Allah Dad – 19.Khajeh Mohammad – 20.Mohammadiyeh – 21.Khoniye.

It must be mentioned that it is probable that in the first Mahmood Shah, there might be only one 'šir' and after 21 days his turn arrive. As Moamerin Alvir narrates: apparently the owner of the village at the beginning was a man with 8 sons: Farhad, Arab Shah, Khorram Shah, Jamaleddin, Allah Dad, Khajeh Mohammad and Mohammad. He shared his land between his sons and assigned each irrigation day to one of his sons. Increasing of the number of population forced them to add more 8 'dâng's (shares) to this number but they kept the last names. Some of the owners were the owner of first 8 'dâng's (shares) and the other owned the second 8 'dâng's. Then something unpleasant happened and caused a lot of disputes and tribal conflicts and the people of village decided to pay a man from another place to handle the issue. That man add 4 more 'dâng's instead of his pay and named them as 'khoniye'. In this way by adding the 'sar dâng' we would have 21 'dâng's (shares). It must be mentioned that 'šir' was not the smalls unit for water division. There had been 'nim ju' or half of 'šir' and a quarter of 'šir'. By the beginning of irrigation in order to determine who must receive water at morning, afternoon and night, the representatives of each 'dang' used to draw lot (pešk). Then those representatives draw another lot with their own water share holders in order to figure out who must

receive first 'šir' (first ju) and who must receive the second 'šir'. When a person receives water at morning, the next time he would receive water at afternoon and the third time at night. It is a custom to prevent any inequality in the water division might causes between morning, afternoon and night.

People of Azna in Malayer, usually at the middle of the second month of spring which they called it at 'nime sabz bahareh', went to the mad of watercourse in their neighborhood and in a special ceremony opened it. In past people believed that that mad was blessed and if someone swims at it at that day, he would not get any disease during the rest of the year. The water of this river comes from two springs from 'koh sarde' mountains; 'âb morvâri' spring and 'pilasangina' spring. The water of 'âb morvâri' spring was considered digestive and the water the other one was believed difficult to digest. At the top of the river there is a mad which stores the water and is in the form of pool and farmers swim in that. But in the season of farming, they open it for irrigation. Some of the farmers in the day of opening come to watch the incident and count their beads. At the time of opening, farmers sacrifice 4 sheep and divide it among poor people and believed that doing this would increase the level of water. By opening the dam, water will flow in ditches towards farm lands.¹

Water supply through duct in the city of Hosein Abad in Malyaer. When the level of water decreases, farmers believe that water has quarreled and broke with them, so they come together and collect money to buy a white female sheep. Then they adorn it. A red '[adde² is tied around its neck and a small mirror place on his forehead. They take it to the duct while playing music and keep it there for a while and rejoice there. And then they turn it around the duct 3 times and at least they sacrifice it and divide his meat among poor people. They believe that by doing this they will reconcile with the water and the level of water will be increased.³

At the village of Zabol, the water of farming provides through Hirmand river and by small and big watercourses joining to each other it reaches to the farm lands. Each village or region has a person who is responsible for water division and they call it 'mirâv'. He informs the farmers time of dredging. Farmers according to their shares send a man for help. 'mirâv' does not participate in dredging himself (as a farmer) and he only supervises the others. During dredging, a person cry out a religious sentence and ask people to cry out 'yâ ali' (ask help from Ali, the first Imam of Shiite) and he do it by a few changes for 3 times. After a while some one else will ask people to say some religious sentences like the previous one. There is a proverb among the people of this village which means: if you want to increase your crop, you must start irrigation at this time. By making dam, they store water and then by drawing lots or sharing which they call it 'meruzbandi' divide water between themselves. The method of water division is in this way: each person who has a share of land (4 acres of land) get a 'mah' which is 12 hours water at day or night.⁴ At Khanchareh in Talegan each farming land divides into 4 parts and each part is called 'zivâr'. The water of this region supplies through river or spring. At the beginning of the second month of spring, from each farm a person participate in dredging. After dredging, 8 representatives of 'zivâr's draw lots 'pešk' to

1-Ghasemi, Rajab, Hamedan, Malayer, Azna, 1974.

2-Sadde: festoon of flower or leaf

3-Abdoli, Morad, Hamedan, Malayer, Hosein Abad Nazem, 1972

4-Mokhtari, Mohammad Reza, Sistan va Balouchestan, Zabol, 1972.

find out who is the first one for irrigation. Each 'zivâr' send a man early at morning to watch out about water and take care about water turn as well as waste of water. Other farmers take care of the irrigation of the farm of that man who is caring about the mentioned issue. Sometimes 'zivâr' lands are link to each other like chain and by irrigation of this land, about 20 other lands would receive water. The all water of a land is called 'vargah'.¹

At the village of Ardakan in Yazd, the standard in water division was in two forms: 1. By means of 'sabu tašte' 2. by means of sign and the line of the pool. Sign was a thin stick beside the pool. It was at the sizes of 'hasht yek' (equal to 1 hour water), 'shanzdah yek' (is equal to 3.5 hours water) and 'se shanzdah yek'. In the division form of 'sabu tašte', 'tašte' (bowl) sank every 12 minutes into the water. Each 5 'tašte' took 1 hour. In this way, water division is based on the times that 'tašte' sank. In 'meybod' people used 2 'tašt' for water division. The big vessel contained 20 liters of water and the small vessel contained 2 liters of water. At the bottom of the small 'tašte' (which was divided to 6 equal parts and each part was called 'dung') there was small whole. When it filled they put a chip in order to keep the numbers. Sometimes some people cheated in this way: he force the 'tašte' to sink in the water. In order to prevent it, some of the farmers sat beside 'mirâb' and 'daštân' during water division. The place of water division was called 'keštân'.²

At the beginning of Farvardin (First month of spring) at the village of Lorneshin which is located at Gachsaran, different communities hold a session and discuss about the method of water division and dredging. For example, at the village of 'kete' which has 104 shares of water, each farmer participates in the dredging according to number of his shares. They use a dried reed with the length of 3 to 4 meters as the measuring unit. In the process of measuring the size of land, the length of all lands are the same, and for each share of water they separate about 4 reeds (16 meters) from the width of lands and ask the owner to collect stones, prickle, sticks, etc. The distance between wellspring and farm lands is about 2 km. Dredging of ditches in this collaborative way takes about 10 days. Then the owners of neighbor lands make a 'bonak' which consist of 15 shares of water. In this way at last 7 'bonak' will shake form from all rice paddies. After this, they divide the watercourse to 7 branches and each branch enters a 'bonak'. A representative will be chosen for each 'bonak' to take care about irrigation and promise him to give the man 7.25 for each share of water. Because of the shortage of water sources, some times water thievery happens. Some farmers when 'âbyâr' is at home, go to the farm lands and increase the amount of their own 'bonak'. The next morning, when '\by\r' and other farmers go to the land, and find out about it, sometimes struggles happen, but at last by the intercede of patriarch, the thief will be charged and everything would end.³

At Shahrâd which is located at Kerman province and rather big, there has been an interesting method for water division. It is because of smallholders who are a half of population of the region. The water source is a spring comes from mountains near Kerman. The water unit in Shahrâd is called 'borq', a traditional name which uses nowadays. If all the water of river divides to 210 in a day, then each part would be a 'borq'. Sometimes one 'borq' divides into half 'borq' and a quarter of 'borq'. They usually

1- Ne'mati, Daniyal, Tehran, Taleghan, 1971.

2- Mosavi, Saeid, Yazd, Ardakan, 1968.

3- Azargon, Qazanfar, Kohkiloye va Boyr Ahmad, 1983.

rent a 'borq' for a year. A 'demn' is equal to 13 days. As the length of night and day are different in the different months of year, in order to prevent any inequality, when a person get his share of water during the day, he will receive his share of water at night and vice versa. For 3 first day of each 'demn' they choose 3 specific names: first day is called 'nexest, second 'bet' and third 'set'. For the other days there is no specific days and call it five, six, seven and so on. Each day or night in irrigation is called 'tâq' and each 'demn' consist of 26 'tâq's.¹

At the village of Galo which is located at the periphery of Ramiyan Gonbad, in order to share water in the cotton farms, farmers gather in a place like mosque and draw lots among themselves for each duct. For example when a person has two acres of land would have only one drawing cart and a person who got 20 acres of land he would have 10 cards in lottery. Lottery card is a card at the size of 25 cm. Each person writes his name on a card. If the lottery is about 100 acres land, there must be 50 cards (the number of owners is not important and the size of land is the matter of concern). Each piece of paper which a name of man is written on it would be folded and all folded papers will be put in vessel. Then they ask an immature child to take folded papers one by one to a man. That man will unfold the papers and write down the name of people in order. For each lot, there are two days, for example if a person has two lots, would irrigate his lands for four days. Usually irrigation takes from morning to evening. Those who have plenty time of irrigation (for example 10 days and he need only 8 days) would give their extra time to another person as borrowing. It is also possible to change the turn of irrigation by the bilateral consent and no one could interfere in their turn of times.

For the irrigation of rice fields, at the villages of Tonekabon, at first a person is nominated as 'mirâb'. He is chosen for 3 years. In past his paid by people, but nowadays Irrigation Office is responsible for his charges. 'mirâb' has a blank check for his decisions about water division. He has a representative in each 5 or 6 villages which is called 'âbsuvâr'. 'âbsuvâr' must be a good native farmer which others could trust him. At the top of rivers which provides water of villages, there are a lot of big watercourses which 'âbsuvâr' must take care of them and lead their water towards farmlands. He is responsible for all farms and must provide water for all of them. He receives his wages from people or 'mirâb'. 'mirâb' and 'âbsuvâr' receive his wages 6 months a year, spring and summer which are the seasons of rice farming. In summer which the quantity of water reduces in the rivers, 'mirâb' asks 'âbsuvâr' to chose a person in every place which is named as 'âbdâr'. When 'âbsuvâr' takes water from the top of river to the village, 'âbdâr' must lead it to the farms and irrigates it. 'âbdâr' is responsible for small watercourses. In this way, the owner of land could not interfere or two farmers takes others water division. Farmers obey the orders of 'âbsuvâr' in order to prevent lawlessness. The wages of 'âbdâr' is paid by farmers itself which is usually rice or cash money in this way: for each acre of land he receives 3 bowls of grains (each bowl is about 2.5 kilo) or he receives cash money equal to this amount of grains. If they want to pay money, they pay it in cash, but if they want pay it by grains, then 'âbdâr' must wait to fall which is the harvest season. Some of the farmers take the responsibility of irrigation of their lands to 'âbdâr' and rusticate. To the middle of summer (15 Mordad) lands need regular irrigation, but after that because of bunches, there is no need to

1- Khoda Zadeh, mohammad dad, Kerman, Shahdad, 1971.

water. (Grains must become firm in order to be prepared for wind and rain). After 10 to 15 days, they start to irrigate fields again for a few days and in the first days of the last month of summer (Shahrivar) the bunches of rice turn to yellow and ripen.¹

At Khoy, in Azarbayjan Gharbi, farmers of a region after the 10th of Farvardin (first month of spring) gather at the house of a farmer and choose a trustful man to be the supervisor of the irrigation process. He is called 'juvân'. 'Juvân' in each region enlist the names of farmers in his note book and assigns each day of irrigation to two farmers. When everybody in list received his share of water, he starts again from the top of the list and this system goes on to the end of irrigation. Each farmer gives money to 'juvân'. At khoy, no one irrigates land at night. If the behavior of 'juvân' of a region be considered nice, people will choose him once again for the next year; otherwise, they will choose another person. Each year all watercourses would be dredged. There are three methods of irrigation at Khoy: 1. local irrigation, 2. terrace (kardi) irrigation, 3. leaky irrigation. Local irrigation is uses for tree, especially trees without fruit. In this method all around the tree will be dug 10 to 15 cm and 1 meter diameter and lead the stream of watercourse to that. This method of irrigation is also called 'taštaki'. This method is also uses for new planted trees. Terrace (kardi or karti) irrigation mostly uses for vegetable, beet and other summer planting. Leaky irrigation is suitable for trees. In this method level of water is different from the wide arms 25 to 35 cm. In other words, ditches are deep and when water enters, it takes time to fill it and when it fills, extra water will go to the other ditch through main watercourse.²

In Garmsar which is located in Semnan province, the turn of sharing water was based on 'bone'. Each 'bone' was consist of 5 people which were partners at farming and one 'sar bone' (head of 'bone') supervised them. Each 'bone' divided their lands to three part: one part for cotton, the other part for wheat and the third part was dedicated to crop rotation. Each 'bone' have 24 hours water share and sometimes this time divided to smaller parts which was called 'tâq'. 'tâq' like other parts of the country was 12 hours and people used sun for timing; from rise of the sun to nightfall considered one 'tâq' and the other part took as the other 'tâq'. 'nim tâq' (half 'tâq') was called quarter (the time between sun rise to noon and from the noon to night fall, etc). In order to prevent any sort of inequality, they place a piece of wood in the watercourse, if the level of water exceed a specific sign at the wood or fell from determined sign, farmers would figure it out and this method was called 'd\q zadan' and that piece of wood was named as 'čub dâq'. Water sharing was on and on all the time of year, but the day of 'ashora'(the day of execution of grandson of prophet Mohammad and his followers at Karbala desert)which water was named 'qorabâ' and in this day every could use water out of order. They believe that at the day of 'ashora' every thing a person does is unlawfulness, even the result of farming with such water was unlawful.³

At Ahrom in Tangestan Boshehr, people used 'kil'(bowl)to share water. They used a big pot and a bowl. The bowl was just like our ordinary bowl and the only difference was a small hole at the bottom of it. At the beginning they filled the pot with water at the land they went to irrigate, and then some trusted people sat around the pot, and after that one

1-Nikdoust, Mohammad Ali, Mazandaran, Tonekabon, 1969, As far as I know (author) this method of irrigation is still popular at the villages of Tonekabon.

2-Kazem Zadeh, Jafar, Azarbayjan Gharbi, Khoy, 1970.

3- Anonymous, Semnan, Garmsar, Bitâ

of them put the bowl on the pot. Little by little the bowl filled with the water and when it filled completely, it sank and hit the bottom of the pot and made a sound which was the standard for counting. A person, emptied the bowl and put it once again on the water of the pot and this process went on. The man tied a rope whenever the bowl hit the bottom of the pot, in order to remember the numbers. It took 30 minutes each 3 times that the bowl hit the bottom of the pot. The number of bowls was assigned considering the size of land or the number of date trees.¹

TRADITIONAL IRRIGATION TERMS AND SOME DISTINCTIVE SAMPLES

1. Senfi: 'moqanni', 'mirâb', 'âbyâr', 'moqanni baši', 'kayâl', 'bâ bân', 'âb savâr', 'âb šenâs', 'daštân' and so on.

'mirâb'= supervisor and overseer in water division. A person who is responsible for water division for customers and he takes water to homes, gardens, farms etc.²

How many times you notice windlass, take a look at the 'mirâb'(mulavi Romi)

Whether or not, the 'mirâb' of this ocean would cut my chest like a shell and give me a drop of water (Kalim Kashani)

2. Traditional irrigation: like aqueduct, duct, dredging, mill water etc.

Kâriz (aqueduct): kâriz or kahriz, etymologically is a Pahlavi word which in Manavi period it was called 'qyriz' meant 'duct' or 'âb ru'. In Kurdish it is called 'gâriz' and in Arak (Soltan Abad) it is called 'kâriz'.³

3. Water constructions like: bars, bridges, cisterns, ducts, watermills, 'âb dang's etc.

Watermill: a mill uses water as the source of energy. It also calls 'âb âsiâ' or 'âs âb'. 'Tâhun' or 'tâhune' which is Arabic word uses in some cities and villages of Khorasan, Kerman and Isfahan. The pillar of every mill is a wooden wheel which turns by the power of water. Watermill (čarxâb) which is also called 'por' is connected to the upper stone of mill and turns it. It has a cylinder axis which from one ending there is metallic point from another one, there is a metal bar indented through it and some spokes encircled it. This watermill is place vertically and horizontally against watercourse. Horizontal watermill has horizontal axis spokes are placed and fixed horizontally in the sluts of it. This is set under the stones of the mill. From one end it sets in the whole of the bottom of water and from another one it comes cross from the under stone⁴ of the mill and fix to the upper stone. Vertical watermill which has vertical axis usually sets beside mills stones. From one end it fixes to the whole of the wall and from the other end it connects to horizontal axis beneath the stones of mill by a wooden gearwheel. From the past up to now there have been 3 different kinds of watermills in Iran; 'tanorei' or 'pari' mills, 'nâvi' or 'nâvdâne' mills and 'čarxi' or 'šibi' mills.⁵

1- Dehdari, Behzad, Boushehr, Ahrom Tangestan, 1973.

2- Moein Dictionary, forth volume, page 4489.

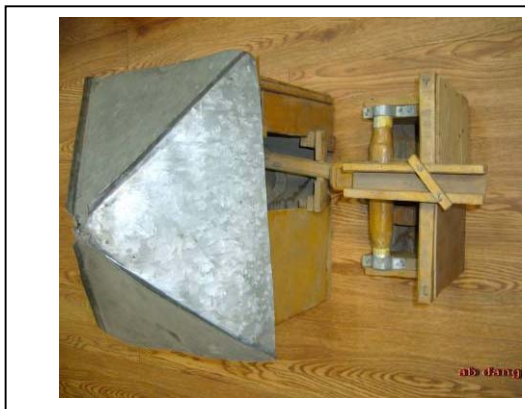
3- The same, page 282.

4- This proverb is perhaps comes from the under stone of mill which tolerate massive pressure: 'man must be under stone of mill when he faces difficulties of life'.

5- A group of writers, Islamic Encyclopedia, First volume, page 373.

ÂB DANG

'âb dang'¹ is another traditional tool which somehow related to water and uses mostly by the people of north. They use it to beat 'šaltuk' and turn it to rice.



4. Tools and equipments of traditional irrigation: like shovel, 'pang', water clock, bowl, sprinkler, 'dalv', 'kaval', etc.

'kaval': ceramic ring which is placed in watercourse of duct in order to prevent duct leaking.² 'nây' and 'nâysâr' is a big wide ceramic pipe which people uses in Kerman province.³ In duct terminology, 'kaval' is a kind of elliptical conduit which its wide and height is big enough for a crouched man. In past they had been make from ceramic (baked clay) but nowadays they made from cement and sandy and there is no need to furnace. Such 'kaval's are made and used mostly near the duct itself. Before 'kaval' people had used bricks to made ducts and recently (might be less than a century) 'kaval' replaced it. At first it made from ceramic material and then people used cement and sandy instead. Using 'kaval' is more economic that bricks, and because of it nowadays neither for building nor for repairing no one uses bricks. The size of templates of 'kaval' are mostly as big as the opening of duct. They put it in places they think might collapse. It covers ceiling, walls and the bottom of duct and the duct man could do whatever he wants (dredging) in it. In order to fix 'kaval's firmly in there places, duct men usually put broken 'kaval's in the empty spaces of 'kaval's. 'kaval' or bricks prevent ducts to collapse, especially during water flows. There have been a lot of cases in which the walls of well had been collapsed and became useless. But because of 'kaval's in ducts, water flow would not be stopped and at any case ducts would be active.⁴

1- This tool used to use in Tonekabon villages. (Author)

2- Moein Dictionary, third volume, page 313.

3- Dehkhoda Dictionary, at the bottom of the reference 'kaval'.

4-Kardavani, Parviz, 'Sources and matters of water in Iran', first volume, Tehran: 1984, page 18-316

OTHER TRADITIONAL IRRIGATIVE TERMS IN PERSIAN FOLKLORE

'habbe': Every 32.5 acre land is called 'habbe' and the owner of the land is 'sarhabbe'.

'dâng': Every 12 'habbe' is called 'dang'.

'âb mâl': This is the name of man who care about bars and edgings and unstopping watercourses. (Esfarjan, Isfahan)

'tâq': a period of 24 hours.

'gholom âb': is a person who get water more that others during 24 hours.

'âb çâq':full water'

'vâl': bar(“band or sad”)

'ziqâv': a little water flows from beneath 'vâl'

'lang kamar': a person who bars water without reason and open it.

'maste âb': water which flow slowly

'donb âv': the rest of water which is barred (Ardehal, Kashan)

'vâr': a piece of land which opened for water entrance

'arx': watercourse

'komoš': duct man

'vargah': where two watercourses meets each other (Joshaghan, Kashan)

'xorâz': the end of water supply to a place

'âbaxš': where there is a dock with several entrances for water division (Bazak, Kashan)

'berja': a big stone, shaved from 4 dimensions. It is set against the water in order to divide it.

'tâq': every 12 hours water is called 'tâq' (Ravan, Kashan)

'rašn': water division

'rašnnume': a piece of paper which the name of people who share water are written in it. (Dastgerd, Golpaygan)

'dombili': the first part of water uses in farming

'ziqâve': little water leaks from places near rivers or watercourses

'owyâr': irrigator

'pâtâq': a person who supply water for his farm in 12 hours

'mazqal': a hole in the corner of dam in order to release water

'pang': a tool for timing of irrigation

'pangandâz': a person who cares about the timing of farm irrigation

'owsâli': 'âbsâli'

'hogsâli': drought

'hanjidan': irrigation

'hilijen': a channel for water under the wall (Natanz, Isfahan)

'abvâbjame': the owner of 'nim tâgh', a person who have a piece of paper and in it there is the right of 17.5 'habbe' water for the other owners and name of them are written in that piece of paper. (Zefreh, mountainside of Isfahan)

'aj' or a⊙: minor strand of duct which meets the major strand of it

'bonkom' the last well of the duct of village. It is also called 'mâdar câh'

'harim': a region around a duct that others can not dig another duct there

'kharsang': a big piece of stone in the way of duct that must be turn it or break it

'dul' or 'dalv': a leather or plastic vessel uses for carrying water, soil or sand with

'dul gir': a labor who receive 'dalv' full of mud form the bottom of well, empty it and send it back to the bottom of well

'sâvord': a liming surface which usually covers the entrance of ducst

'šulât': unstable or sandy courses of water in ducts which its ceilings or walls collapse and stop the duct

'tuqe': the inside wall of well which covers with brick or sand

'komeš': a person whose job is well digging or dredging, duct man

'komiši': an amount of money which shares between shareholders of duct for dredging and other necessary thing

'gamane': an exploratory well which is dug in order to make sure about the existence of water in a place

'hamâbe': cleaning, sweeping and dredging of duct and the main course of water by a work group of farmers

'boniče': 15 minutes water (Ardestan, Isfahan)

'suči': irrigator

'suquyusi': well of water

'čaylâx': river

'kank'n': well digger

'bâhâlx suye': 'âb gardâni'

'suvârmâx': irrigation (Azarbayjan Sharghi)

'juvân': a supervisor who is chosen for water division (Joyban)

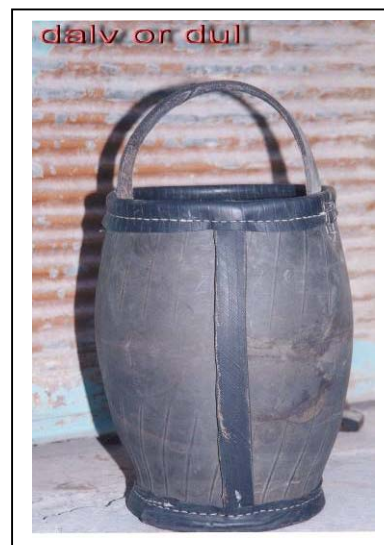
'pandâm': a bar which stop water flow (Khoy, Azarbayjan Gharbi)

'âvsuvâr': 'âb savâr' or 'a person who is responsible to share water

'xalvečîn': a person who sweep dirt for the opening of watercourse

'bageh: place where water enters farm

'jub sâlâr': a person who is responsible for the water of each watercourse (Gilan)



- 'âbdâr': a person who is responsible for the water of several farms (Tonekabon, Mazandarn)
- 'maqsem': a place where water shares
- 'terong': where water falls from top to bottom
- 'katkonj': where water enters garden
- 'kehkin': duct man
- 'âster': a bar usually makes from leafage. It is placed against water which reduce the speed of water
- 'kiš': a very deep watercourse, between duct and ordinary watercourse
- 'petâr': dust and brushwood which accumulate at the entrance of watercourse
- 'juq': watercourse (Kerman)
- 'owdun': 'abdân', basin, wetland
- 'qeram qeram': continuous sound of water
- 'owdâr': 'âb dâr', a person who takes care of a land by shovel
- 'bil dâri': irrigation
- 'lise': a little water which flows at the bottom of ditch
- 'owxorân': a measurement gardeners uses during the water timing
- 'owkluq': the first irrigation of the farm
- 'peykluq': second irrigation of the farm (Kazeron, Fars)
- 'bârgâ': a place that water of one watercourse bars to another watercourse
- 'qombu': the holes of the watercourse which fills with mud
- 'katkan': duct man (Abadeh, Fars)
- 'afta xor': a part of duct that human and animals could use easily
- 'rovanj': a part of duct that in open but human and animals could not use
- 'pošte': digging between to wells under the ground, considering the level of water (Ghazvin)
- 'pâkâr': 'dasht ban'
- 'jurubi': dredging (Malayer, Hamedan)
- 'sang' (stone): enough water which could turn a stone of mill
- 'dang', 'tâq', 'sang', 'kart' and 'giz': units uses in Farnagh (Khomein) to share water
- 'shah joy': general share of water for each farm
- 'varjuy': minor watercourses which are the branches of the major watercourse
- 'piluvon': a bar which is made to reduce the speed of water
- 'valgu': where water stops or flows to farming lands
- 'sarow': water comes from first and before main water
- 'tahow': water comes from after the stopping of main water. 'donbale ab'

'xâkow': first irrigation of wheat and cotton

'šakarow': second irrigation of wheat

'zarow': third irrigation of wheat (Garmsar, Semnan)

'dingel': the last 'dâng' in irrigation

'sâlâr': first 'dang'

'dâng': 24 hours irrigation (Zanjan)

'pengü': a vessel which measure the timing of irrigation (Pang)

'pengükaš': a person who uses 'pengu' to measure timing of irrigation

'gilun': the drift of water to farm

'turoña': a hole in the way of watercourse

'naqm': passage way from a well to another

'moalef': 'mirâb'

'juvu': guardian of water (Khorasan)

The first irrigation in the farming of wheat and grain is called 'khak ab', the second one 'šokr âb' and the last one 'marg âb' (Shahriyar, Tehran)

'dalm': bucket, well (pail)

'owyâr': irrigator

'kumi': two people who cooperate in the digging of a duct (Borojerd, Lorestan)

'bolgi': place where the water of rivers shares between villages

'čâšt': share of each farmer from water. Each 'cast' has 3 hours irrigation (Meshkin Shahr, Ardebil)

'raqm': a square block which specific signs are on the walls of it. It is placed in the water of spring in order to measure the quantity of water

'qafiz': a unit for water measurement which is equal to 0.1 of 'sang âb'

'madar čah': the first well of each duct. The depth of it does not exceed 20 or 30 meters

'pošte': the upper passageway of duct

'serx': a pool made to store water in the time of water over flow

'pâtâq': holes made for foot during the lifting and climbing in the wells

'mošref': a person who is responsible for water sharing (Sadogh and Bafgh, Yazd)

'kil o piyâle': a tool to measure the timing of irrigation

'banogah': water storage, where water is stored

'čahâv': water well

'nâydun': gutter (Boushehr)

CONCLUSION

A cultivator at the edge of the desert, shoveling the farmland, appreciates the value of water so much, inasmuch as he jeopardizes his life for it. In Iranian culture and folkloric materials like proverbs, tales and stories this respectful point of view to water can be easily traced. The existence of a precise method of traditional irrigation which intermingled with the culture and life of people is itself a reason for the importance of water and its rule in people's life. As this material and the method of irrigation and water division made rules and laws which are indivisible form the culture and life system of those who are engaged with it. The farmer who labors in a rental land, the landlord who in addition to his garden and farm benefits from the share of his water, the craftsman who need to buy water for his cistern, the woman who take water from her family cistern for daily life, all need to obey some specific rules. And because of the antiquity and inveteracy are intermingled with the culture and tradition of the people. Through the evolution and transformation of human life, sometimes we lost our connection with values and in some cases we lost them completely, and all these have its ill-impact on the methods of traditional irrigation and it made sometimes disputes, but all those who are involved in farming are still dealt with these methods directly. Because all these rules and bylaws of water division are not developed causeless, so going over these different methods of irrigation in different regions of Iran make us familiar to the life and culture of the people from different parts of the country and tell us the vital value of water in the life of Iranians.