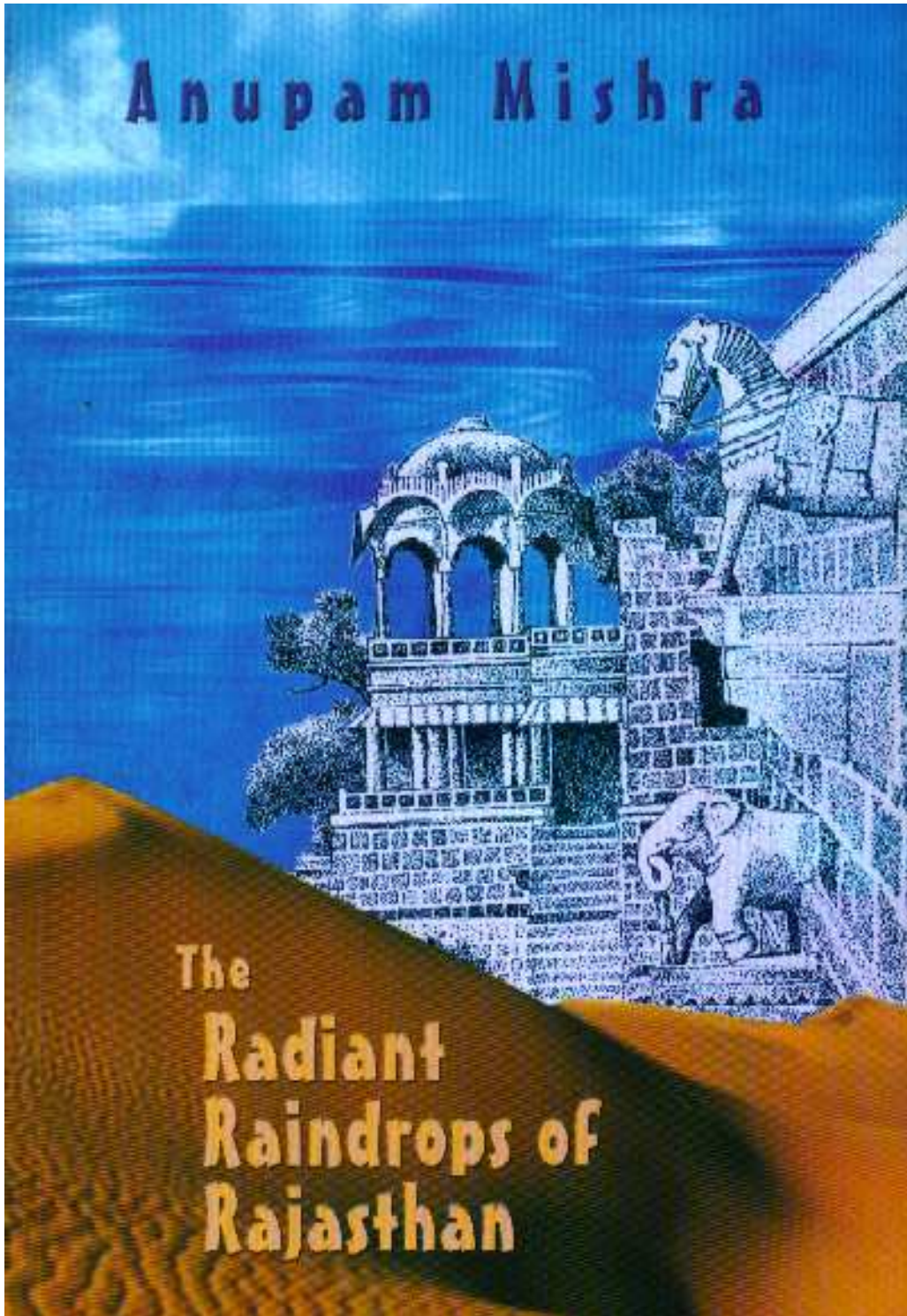


Anupam Mishra

The
Radiant
Raindrops of
Rajasthan



FOREWORD

The Radiant Raindrops of Rajasthan

Over the past three decades, Anupam Mishra has created a silent but permanent revolution. He has changed the dominant paradigm of water and shown that water security and insecurity is a product of nature plus culture, not just a given of nature. There can be water scarcity in high rainfall region and adequate water in low rainfall regions like the Rajasthan desert.

Anupam's work on the indigenous water systems of Rajasthan is a work of poetry as well as a work of science. It is this work that has inspired the water conservation movement of Tarun Bharat Sangh, which received the Magasaysay award in 2001.

Anupam has had a commitment to using Hindi both for his writing and speaking. The English speaking world has therefore been deprived of his inspiring contributions.

We are grateful to Maya Jani, Director of Research Foundation for Science, Technology and Ecology for translating Anupam's book *Rajasthan Ki Rajat Boonden* (published by Gandhi Peace Foundation) into English, under the title *The Radiant Raindrops of Rajasthan* so that readers in India and abroad can share his vision and insights. Maya has also translated the preface of the French edition by Annie Montaut because it highlights the global relevance of Anupam's work.

The Research Foundation for Science, Technology and Ecology is honoured that Anupam Mishra gave us permission to bring out this translation of his landmark book on water systems of Rajasthan.

Vandana Shiva

PREFACE

Anupam Mishra's Rajasthan: Desert or Water Culture?

Rajasthan is an Indian state, to the north-west of the country, sharing a border with Pakistan and very often referred to as a desert: the Indian desert, the Rajasthan desert or the Thar Desert. For McGinnies (1979) the whole of the Thar Desert (stretching from the Aravalis in India to the Indus in Pakistan) is part of the Afro-Asian desert belt, stretching from Sahara to the Gobi desert. Almost 58% of western Rajasthan, the Thar, is made up of sand dunes, low infertile hills and land high in mineral content.

It is enclosed, on the west, by the Pakistan border, and on the east, by the Aravalis from where the Luni, the 'salted one', flows down to the South.

However, despite the grim descriptions given in the Gazetteers or by Tod during the colonial period, no one visiting this region gets the feeling of being in a desert. Even in Jaisalmer, the least populated district, (4 inhabitants to the square kilometre, according to Sharma 1972) one can see villages and fields everywhere, at least during the monsoons. This creates a very different picture from the Sahara or Australian desert, a picture which is in total contrast to the stereotype of the desert as being arid, sparsely populated and on the fringe of civilisation.

It is true that we cannot define aridity according to only one parameter such as the annual rainfall; this would mean land receiving an annual rainfall of less than 100 mm would be desert, those receiving 100 mm to 400 mm would be arid: in that case the Thar "desert" in its totality would belong to the second category, since even its least rain fed district, Jaisalmer, receives 160 mm of rain. One must, however, also keep in mind two factors: firstly, the distribution of rain throughout the year — ninety per cent of the rainfall occurs during the monsoons, from July to mid-September, — and secondly the torrential nature of the rainfall which does not allow an optimal usage. In fact this can lead to floods, as was the case in July 1979, in the Luni basin. Moreover winds, which are a powerful agent of erosion and evaporation, contribute to the further desertification of an already arid region. If we also add the temperature factor (in May the minimum temperature is around 27° C and the maximum around 43° C in Jaisalmer, and barely lower in Jodhpur and Bikaner), we can accept the term desert for Rajasthan, as Indian Geography and Anupam Mishra do. Of course, strictly in terms of rainfall, this term would not apply. It is in this sense that I will henceforth be using the term desert.

When you talk of a desert, it automatically conjures up the image of scarcity of water, the first parameter to consider for any settlement.

If Rajasthan has always offered a very different picture from the classical one of a desert the explanation lies in the way it manages the water it receives so parsimoniously, one can say, drop by drop. Anupam Mishra's book tells us how, down the centuries, the ingenuity and patience of people made it possible for life to be maintained in the desert, by applying their technical knowledge to collect each and every drop. The drops become all the more precious given their scarcity, as suggested by the very title *Rajasthan Ki Rajat Boonden, The Radiant Raindrops of Rajasthan*. *Rajat* in Hindi means silver but it also means ivory; it therefore has the connotation of luminous whiteness, radiance and value. It is to each precious drop that the local society dedicated its effort, its love, its intelligence, in fact all possible human means, so as to obtain the optimal advantages. The local society does not however, view itself as the sole agent in this endeavour of the desert's humanisation. More specifically at the very start, it acknowledges a partnership; human intervention is always associated to supernatural forces with all the concomitant ethics deriving from such an interaction. In fact the founding myth of the practice of water harvesting in Rajasthan grounds human action in that regard on a divine gift as is illustrated by the story of Rishi Uttung in Chapter one.

But as Anupam Mishra explains with so much sensitivity and discernment, the people of Rajasthan did not wait for manna to drop from heaven. Instead, they evolved a whole *riti* or *voj* around their *shram* in the field of water conservation. A *riti* established on a deep partnership between nature (the environment), human action and its ethical as well as religious framework. The same spirit permeates Anupam Mishra's work as well as that of the Gandhi Peace Foundation, the publisher of the original Hindi *Rajasthan Ki Rajat Boonden*.

The Book Structure

Anupam Mishra's book on the traditional water harvesting and storing systems is an invitation to understand what these systems have to offer even at the dawn of the 21st century. After the introduction (Chapter I) and the geological, climatic and cultural presentation of the region, each chapter of the book addresses a coherent set of structures related to water harvesting, storage and drawing as well as irrigation systems.

In fact, chapter III gives the title of the book, *Rajasthan Ki Rajat Boonden* and describes *kuins*, deep and narrow wells which access the capillary water trapped between the brackish water table and the surface. The fourth chapter deals with ponds and water tanks, *kunds* and *tankas*. It presents to us a whole range of water devices: from the modest *tanka* which each family has on its roof, or the small *kundi* which looks like a lid, to the enormous *tanka* of Jaigarh which contains several hundred million litres of water and the huge *kunds* which look like flying saucers. The fifth chapter deals with ponds and retention pools from the smallest *nadi* to the biggest of *talab* like the Garsisar or Jaseri ones, to *talais* and *johads*. The sixth chapter, which is a brief one, describes the retention of seasonal rivers, the beds of which are transformed into oases called *khadeens* after the monsoon. When the bed is dry, it is blocked on three sides by mounds of earth, like in the case of a *talab*, so as to make the water stagnant instead of letting it run off. This offers the possibility of having two harvests (*kharif and rabi*), the second one relying on the moisture retained by the soil. The seventh chapter talks of coating, boring and drawing mechanisms, of water skins with an inclined plane and the yoke of the drawing cattle used for the traction.

The last chapter, which is the concluding one, makes a brief comparison with other sub desert zones in the world, essentially of developing countries (such as African ones) with a view to suggest that though the 'Indian model' is in no way to be universalised, it does offer a hope by giving a modern example of the efficiency of self-managed traditional techniques both at the economic and social levels.

The titles of the various chapters are not eponymous with the techniques they describe; they are literary or proverbial expressions, representing the function of the particular technique in the social and ethical fabric of local communities; this is because such traditions - which have to be conceived as material cultures in the strong sense of the term - cannot be separated from the philosophical and religious culture of the people who have forged them; in fact this culture offers both a way of managing natural and social resources and a way of integrating the human being with its natural environment.

Without being explicit, the titles affirm this holistic vision. The title of the book itself refers on one hand (as already mentioned) to the vision of the importance of each single drop, not only of litres or hectolitres, and on the other hand to the technological feats involved in the patient harvesting of each drop of capillary water, in wells which are 30 meters deep and hardly larger than the well digger's body. 'Still Water, Pure Water', (*Thara Pani, Nirmala*), the title of the chapter devoted to reservoirs (*tankas* and *kunds*), is intentionally adapted from the usual Hindi saying *Beha Pani Nirmala*. It suggests far more than the perfection of conservation; the adjective *nirmala* means pure and limpid but also candid, exempt of any stain, any sin, in contrast to all the normal connotations that go with still water. 'An Ocean within a Drop', (*Bindu Mein Sindhu Ke Saman*), is the title of the following chapter. A title as lyrical as the title of the chapter dealing with lakes and ponds, which is a quotation from the medieval saintly poets every Indian will recognise, tells us immediately that the daily management of lakes, while satisfying domestic, agricultural and pastoral needs, is intimately linked to a cultural and spiritual tradition. It is interesting to note that in Sanskrit *bindu* means not only drop but also the focal point upon which the believer concentrates himself during meditation and into which he merges himself with the cosmos. *Bindu* forms alliteration with *Sindhu* which refers to the big, Vedic river, the Indus, as well as one of the classical appellations of the Ocean. Moreover, this dictum which has become proverbial instantly refers to the big trends of mystical devotion, the *bhakti* movement; it invokes sharing and fusion in ecstasy with the Absolute Reality and the Totality of the Universe.

Jal Aur Ann Ke Amarpato the eternal script of water and cereals is the title of the brief chapter on irrigation in the oasis. Apart from the fact of its metaphorical value, the words of the title are not the ordinary words used for water and cereal. The Sanskrit word *jal* signifies sacred water, in its ritualist usages and precious water, culturally and religiously marked, with the Ganges (*Ganga jal*) being its emblem. *Jal* is thus distinct from *pani*, the quotidian water. As for *anna*, which is also a Sanskrit word, it refers to the fundamental nourishment, to the nurturing principle, Annapoorna, which is also one of Parvati's names, is the fecund provider of nourishment. This crossing of /tf/ and *anna* is doubly relevant, since during the harvesting time, one sees real oases bursting in the desert and then, as Anupam Mishra says, the swell of wheat surges where once the swell of waves surged. This imagery, of course is a direct reminder of the legendary primal ocean which covered the region and which is mentioned right at the beginning of the book. As for the immemorial crisscross which links water to wheat, it is always based on the discerning look which knows where to locate the obliterated bed, where the flow will be most usable and most generous. This look (*drishti*) which is also point of view (*drishtikon*) and philosophy (*darshan*), is very well illustrated in the very beginning of the chapter by the little apology on the highest order of asceticism which is the asceticism of the eyes.

The titles chosen by Anupam Mishra thus effectively condense these ethical and aesthetic horizons. The title of the seventh chapter, 'The twelve months of the pulley', *Bhun Thara Bara Mas*, literally means "the pulley stopped for twelve months" in Rajasthani. It is talked about at length as being complementary to Indra, the vedic God, who is the Lord of waters and of the pulley (*bhun*), thus of celestial water (*palar*) and underground water (*patal*) the *Hades*; the pulley helps to draw the water from underground, the lower space and brings it up, to the higher space, throughout the year, completing through its slow tenacity the thundering rapidity of Indra and of the brief monsoon. This metaphor thus becomes the key to reading and interpreting technical descriptions of an uncanny precision. Chapters two and eight, which respectively introduce and conclude the section devoted to the description of techniques, are particularly exemplary. *Matt Jal Aur Tap Ki Tapasya*, which has been translated in French as 'Earth, Water, Heat: An Ascetic Cooking' are all words which have a very high degree of religious and cultural connotation; the word used for earth, *Mati* (instead of *bhu*, the crust of the earth, the globe or *bhumi* or *zamin*, the soil, the ground) does not only refer to the soil but also to the matter from which we can express a cultural object as for example potters do; in the same vein, *tap* is not only torrid heat but the ardour, in fact literally the internal combustion which the asceticism of the yogi produces. *Tap* with a brief vowel is actually the synonym of *tapasya*, 'ascetic practice', of which Shiva is the prime Lord. Similarly, *Apna Tan, Man Aur Dhan Ke Sadhan*, translated in French as 'The Secret of Success: The Involvement of Body and Soul', which literally means the means and ends of our own body, mind and material wealth, are words which all of us can read both on the concrete and spiritual plane. *Sadhan*, in particular, refers to *sadhana*, the paths and goals of spiritual realisation.

Technique and ecosystem: a way of life

And so, essentially, through the technical devices which the very specific society of the desert has invented and maintained during centuries, the objective of the author is to tell the culture of this society: a link, as all over India, but perhaps more pronounced due to the hardships of natural conditions, between man and the milieu which keeps him alive, and which in turn he keeps alive, by transforming it, respecting it and cultivating it without exploiting it. The same idea also permeates the most factual remarks; for example Cherapunji in Bangladesh is one of the highest rainfall region in the world, with a minimum annual rainfall of 5 mts; yet it is listed as a district where there are severe water problems; on the other hand, with just 160 mm of water, Jaisalmer has always had drinking water. In one case, the environment is conducive to a symbiosis and patient dialogue with the realities of nature, in the other it is not.

The insistence of Anupam Mishra on the specifically Rajasthani attitude (*tevar*) the virtues of frugality and modesty, in no way reflects a moralising nostalgia for the past; on the contrary it underlines, as the title of the book itself reflects, the awareness Rajasthani society has of the value of each drop of water. The drop is a fragment of the usable capital of water (*pant*); in fact water is offered to the honoured guest whereas others are offered milk; moreover this capital of water, which is religiously maintained, is the fruit of a dialogue nurtured through the centuries by a whole culture and a mythopoiesis between men, earth, heat and water.

When we say a dialogue nurtured through the centuries, we must know that archaeological traces of sophisticated water structures have been found in the Harappan site of Dholavira in Kutch, dating from the beginning of the third millennium; there are also indications that there would have been a technology transfer in Baluchistan with its *gabarband* system reminiscent of the Iranian *qanat* (Agarwal and Narain in 1997). In an article on treatises of classical hydraulic water architecture in Western India, Snehal Shah (1989) shows that since the VIII or IX century itself the *Agni Purana* mentions tanks, lakes, reservoirs and step wells, describing the various rituals to be performed before the consecration. Another more detailed treatise, the *Aparajitapriccha*, gives a complete typology of hydraulic works and serves as a basis to all subsequent treatises.

From the beginning itself, we see that water techniques are also a ritual and a religious tradition and it is this tie that has enabled them to make the desert humane and fit for life.

In order to tame this difficult environment, described in the second chapter of the book, excessive heat and all too rare water are not the only 'problems' which man has had to face. In an extensive part of Rajasthan, the water table is salty; in fact in the Jodhpur museum one can see salt sculptures from Sambhar and marine fossils which confer historicity to the legend of *Hakdo*, the ocean which is supposed to have existed in the region, before it turned into a desert. It is therefore a series of difficult conditions that society at large (*samaj*), which also means the communities, has transmuted into a *raison d'être* and social cement through its work.

The name of this work is *shramdan* the Gandhian concept which means 'gift of labour' or *seva*, service offered in a religious and respectful spirit. The gift of labour, in the interest of all, is the underlying spirit behind the water harvesting and conservation work, from the smallest of *kundis* to the narrowest of wells and the vast step wells, from the family *tanka* to the big reservoirs of Jaigarh; and that gift of love rests on a social cohesion which is itself linked to economic and mental structures. The notion of a good deed in the service of all and of environment is considered as *punya*, that is sacred and virtuous because the relationship between society and nature which nurtures it, is *punya*; on the other hand, paid work which is governed by individual profit does not belong to this type of structure but to the structure which Independence has ultimately imposed on the basis of an economic and technical modernisation principle of democracy and secularism. In other words, the spirit of participation, this 'empowerment' which is so talked about nowadays and which is being sought to be recreated through a top-down approach, in fact sometimes even from outside, does not spring from a social void but from a global and holistic system.

The situation existing till the nineteenth century reflected this: private property or collective property in the communist sense of the term was not prevalent. But the commons, the communal fields (*goehar*), the communal woods, the wastelands accounted for 80% to 90% of the people's resources (firewood, water and fodder for the herds); rivers,

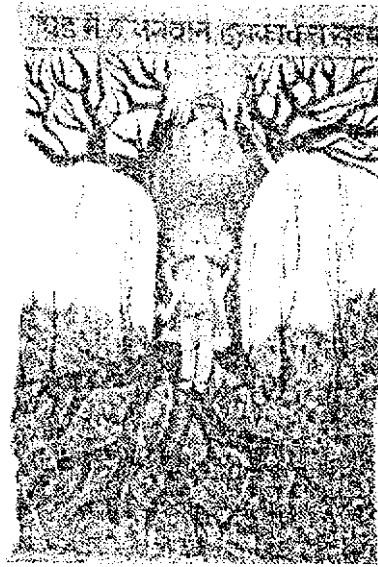
springs and their beds, which could be used once they were transformed into irrigated land, the *khadeens*, catchment areas of lakes and reservoirs, the lakes and wells themselves as well as fallows were all common, and in many cases so were personal habitats. Their collective usage and development, under the control of village assemblies, were efficient because in practice they concerned everybody, customary right being the legal mode of managing the few conflicts. Artisan knowledge was also at the service of common good: specialised communities such as the *Odhis*, who worked stones and the earth, the *Agariyas*, who were blacksmiths, the *Gajdhars*, who were architects of well making, the *Shilavat* who were stone sculptors and the *Ghumantu Samaj* of *Banjaras* who were nomads trading in grain and salt were all recognised as *gunijanakhana* (literally that segment of people who have expertise), in other words skilled workers and specialised engineers of their time. Today they are all so many segments of society who, since they do not belong to the educated class and no longer answer the new needs of modern techniques, are reduced to nothing, economically devalued and despoiled of their feeling of belonging to the general community.

What has brought about this metamorphosis within a century?

Amongst the various causes responsible for this degradation, apart from population growth, one can list the changes in the management of natural resources. Towards the middle of the nineteenth century, colonisation brought about privatisation on one hand and state control on the other. In 1863, the Public Works Department (PWD) was created, thus withdrawing local control (of the village community) from *johars* and *talabs*. Similarly in 1865, the Reserved Forests, Protected Forests, and Revenue lands, arable land and non-cultivated land take over the commons; the wealth and income earned from them are subjected to tax and are taken from the people to be handed over to the Crown. This mainly marks the end of the commons which translates into a considerable decrease in community resources. It also marks the end of the community's interest for their upkeep and their attitude of religious reverence for them, an aspect which their folklore still bears traces of. This heralds the beginning of the degradation process of natural resources as well as the major harm done to the soil due to erosion, as a result of the degradation of the forests and their cover. The same process is witnessed, in a more vigorous way, during Independence which valued both privatisation and state control as the sole access to modernisation and progress, thereby further weakening the involvement of people with their natural milieu. From the nineteenth century onwards and even more so since Independence, the Government has staked everything on the development of big basins. It thus encouraged projects linked to big dams and the large scale development of river valleys, through a centralised control, to facilitate irrigation. One such example is the Indira Gandhi Canal, started in 1958 in Rajasthan and yet to be fully operational.

All this has led to an increasing bureaucratisation which involves bureaucrats who are alien to the culture of the region and ideologically removed from the uneducated masses. This in turn has perversely led to the usurpation, the privileges, the creation of local mafias and ultimately the plunder of natural resources, as several Indian novels portray.

The next generation seems to have totally come under an increasing feeling of powerlessness not to say defeatism. The great importance of the State which on one hand encourages privatisation of agriculture while on the other wishes to play the role of the Provider State through centralised control of water and forests, has led to the total disinvestment of society which has been bereft both of its control over resources and faith in its value. The abolition of pastures for the benefit of private agriculture in the framework of changed access to property, with a subsequent change of the commons regime and its customary rights to a part private part state regime, has totally destructured a system on which was based the collective's participation to works of common interest. This explains the failure of the welfare politics. Too often the new impetus given to the Panchayati Raj, which partly entrusts the management of local problems to the village councils, remains artificial. The reactivation of the Panchayati Raj, which in a way reflects an acceptance of the failure of centralised policies, introduces an artificial corporative system. This brutally brings about a resegmentation by cutting/splitting the structured networks of ancient communities and adopting a top down approach while pretending to work for the welfare of the people. We are thus witnessing a scenario of failure and guilt from the Central Government's side; since its own acknowledgement of the situation, it is moving from one social plan to another - there have never been so many social forestry's - with the hope of getting back the people's trust and stimulating its participation. However, these plans have a very low success rate since real self-management, the prime motor of participation, is lacking. What is also lacking is the psyche emanating from the notion of *dharma*.



This notion, which is much larger than that of religion, a term by which it is often translated, is central to the rapport man has with his environment; this is all the more so in regions where the environment is fragile, be it in the Himalayan states of the North or the arid zones like Rajasthan. It is true that environment problems are very often tackled from the angle of physical degradation, if not economical; however, this cannot be divorced from its sociological dimension in which the religious grounding, which underpins local popular culture, plays an important role. The idea that agrarian cults (fertility rites, worship of divinities associated with particular trees etc.) are at the core of an agrarian moral, to use a concept created by Gehlen (1969), Agrarmoral in German, rests on a conception of man's rapport with the universe, which is not anthropocentric and in which man is not in a position of control vis a vis the universe. On the contrary, according to Toynbee (1979:33), the worship of men, by substituting itself to the worship of natural forces or of one or several gods, leads to a will of might, control and exploitation of nature (which will sooner or later be devastating) and this can be traced down to the error (Toynbee in fact said moral sin) of overestimating a part of the universe as if it were the whole.

In the light of this perspective, we cannot understand the life of traditional agrarian societies if we disassociate natural, social and spiritual resources from each other. The individual is linked to his environment in the same way as he is to his social group, clan or village and this interdependence is to be seen in the framework of devotion to the local, protecting divinities which impose on the whole community the sacred 'service' of environment in exchange for their protection. So much so that, as Seeland notes in a study on the environment problems in the Himalayas and Rajasthan (1993:24-5), any degradation of the villager's perception in any of these three spheres (physical, social, supernatural) has an impact on the others. Thus, we must look at spiritual resources, whether they spring from imaginative originality, cultural and intellectual capital or religious practices amidst human resources and with natural resources if we want to soundly address environment problems in a traditional milieu.

The loss of vitality of popular belief and the degradation of the local, cultural ethos, these past twenty-five years, cannot be disassociated from the growing difficulty in facing Rajasthan's environmental problems: drought, overgrazing, wind erosion. It is for the middle term that the risks of resources degradation cause concern. The weakening of the traditional mutual aid system, the dissolution of the social fabric under the influence of privatisation and the market laws have contributed significantly to the degradation of the common resources as well as to the reduction of biodiversity (traditionally the diversity of crops and cattle was a resistance strategy to the climatic vagaries), and the reduction of agricultural activities (one out of nineteen has survived in the last decades according to Jodha, 1988:32).

It may be difficult to identify, in a precise way, the causes of the degradation of the spiritual environment; but one can bring out the historical traits which made it a spent force and which in fact contribute to define the specificity of the region (Lodrick 1994). Rajput culture and the romantic chivalry of its ideology, as well as its legendary pride, crystallised

in Rajasthan where the Rajput clans of Mewar and Marwar and the Bhatias of Jaisalmer successfully resisted the Moghuls who, on the other hand, subjugated those of Gujrat, Bundelkand, Malwa and the vicinity of Delhi. The age long coherence of this political entity (Stern 1977), the ballads that perpetuate its memory (Maheshwari 1980) have, in all likelihood, played a crucial role in creating the ethos Anupam describes as *tevar* and it goes without saying that the contribution of the tribal people to the local culture as well as their beliefs have impacted this *tevar*.

Today, the folklore linked to the traditional belief system that is the specific expression of the spiritual resources, has been discredited to a very large extent (precisely for being folkloric and thus retrograde and obscurantist) during the decades of enlightened progressivism, it is thus difficult to rehabilitate its validity in the technological cultural integration regime which is prevalent nowadays. This is all the more so since, in matters concerning water, the Centre is increasingly encouraging big and centralised water systems, supposedly beneficial to entire states; the Rajasthan Canal was followed by the Narmada Dam which entailed the displacement of numerous tribal communities and by the Tehri dam (the result of Indo-Soviet collaboration) in spite of virulent critiques from ecologists, scientists and several social and riverine organisations.

As we are beginning to realise only too well, the success of development plans depends on the 'empowerment' of the beneficiaries. This must include a participatory approach as far as decision making is concerned, a sense of ownership by the end user fully vested with the rights and duties regarding the restoration and the development of resources and transparency as far as management and benefits are concerned. We are also increasingly realising that an outside NGO cannot play this role and that often the only way it can effectively intervene is in opposing the introduction of new and modern water systems.

Since more than a decade, Indian scholars (Appadurai 1984, Sen 1982) have shown, through a 'man-sided' approach, in their analysis of famines that follow droughts that the main problem, i.e. the unequal access to resources, can only be managed by what Sen (1982:45) terms a 'moral economy'; this is defined as a set of mutual expectations regarding the usage and the access to resources and is based on the notion of each person's entitlement to manage food resources and therefore water resources.

It is certainly not nostalgia to recall the holistic system of a society which has been able to build water systems which are still functional in order to bring back this empowerment. It is in fact in direct line with the modern slogan of 'think globally, act locally'.

In his writing Anupam Mishra has certainly illustrated this concept. In his book technical terms are always explained with the help of discreet but recurring metaphors and references to classical culture as well as local legends. This is done so as to express without being explicit or resorting to arguments, that the local technology of the region is an integral part of the local ethics, the social fabric and the very foundation of Rajasthani culture.

Rajasthan Ki Rajat Boonden is an ode to local knowledge based on a deep knowledge of the ecology of a place.
An abridged version of Annie Montaut's French preface.

1. Welcome to My Land

Once upon a time, there was an ocean here. Its waves would come pursuing each other. One does not know why and how the waves of Time dried up the incommensurable ocean. Now there is an ocean of sands. Even today, waves continue to pursue each other, except now they are waves of sand instead of water.

To change from one monumental form to another, i.e., from ocean to desert, it must have taken Nature several thousands of years, and even from the time this new form came into being until today, thousands of years must have gone by. In spite of the passage of Time, the people of Rajasthan have not forgotten the primeval form; they have kept it alive in the depths of their memory through the word *Hakdo* - the sea. In the thousand year old Dingal language as well as in contemporary Rajasthani, the word *Hakdo* has lingered on, passed down the generations to those whose ancestors too would not have seen the sea.

Apart from the *Hakdo* which existed thousands of years ago, in the west of contemporary Marwar, the Rajasthanis have several other names for the sea; there are, of course, Sanskrit words such as *sindhu*, *saritapati*, *sugar*, *varadhip* but also others such as *aach*, *uah*, *dedhan*, *vadnir*, *varhar*, *safrabhadar*. There is also the word *hel* which combines the meaning of sea, immensity and generosity.

The fact that, while living in such a vast desert, the people of Rajasthan have so many appellations for the sea speaks of the generosity of their spirit. In fact this worldview itself seems to be nothing less than a miracle. Thousands of years have gone by since this happening of creation which in turn must have also occurred over thousands of years. If we were to start evaluating this phenomenon, we would just be lost in its eternal unfolding.

Astronomers measure thousands and millions of miles in term of light years. However the spirit of Rajasthan has measured the division of *yugas* in term of a twinkling; it remembers this big event as *palak dariyav*, 'ocean in a twinkling'; this expression conveys both the idea of the ocean drying up in a twinkling and similarly that of the desert becoming an ocean in the same time.

This vision which could perceive in the unending March of Time the minutest division of instants, as also its gigantic expanses has lost sight of *Hakdo*. However it can still recognise the water of *Hakdo* in myriads of droplets as well as each of their particles. The people of Rajasthan have in a way fashioned themselves according to a tradition (*riti*) which has divided the whole expanse of the sea into multiples which have spread to various corners of the state.

From the fourth standard's Hindi text book to planning drafts, all documents project Rajasthan, more specifically the desert, as a dry, desolate and backward state. In fact the description of the Thar Desert is such that it scorches your heart. Rajasthan is the second largest state of India after Madhya Pradesh and the ninth most populated but in matters of rainfall, all the Geography books place it last.

Whether rainfall is measured in inches, as in the past, or in centimetres as per today's norms, it is the lowest in Rajasthan.

The annual average rainfall does not go beyond 60 cm whereas the national average is 110 cm. Rajasthan's average thus amounts to only half of what the country receives. However the figures showing the average cannot give a true picture of the state's rainfall for it can be up to 100 cm at some places and less than 25 cm at others.

Geography books represent Nature, in this case rainfall, as an 'extremely miserly' moneylender and the western region of the state is its worst victim. Jaisalmer, Bikaner, Churu, Jodhpur and Sriganganagar belong to this part. In fact here there is miserliness within miserliness. The distribution of rainfall is extremely unequal; as it travels from the east to the west, the rainfall goes on decreasing and just as the sun sets in the west the rainfall also decreases westwards, being reduced to a mere 16 cm here. Compare this figure with that of Delhi where the rainfall is more than 150 cm or with that of Goa and Cherrapunji where the rainfall can reach from 500 to 1000 cm.

In the desert, the rays of the sun pour down like rain pours in Goa or Cherrapunji. When water is scarce and heat strong, it is believed that life can be very difficult. In the other deserts of the world too the same amount of rain falls and it is practically as hot. That is why they are not heavily populated. However if we compare the desert region of Rajasthan to the deserts of the world, we notice that not only is it more populated but the very scent of life pervades it. In fact this region is considered as the most alive desert of the world.

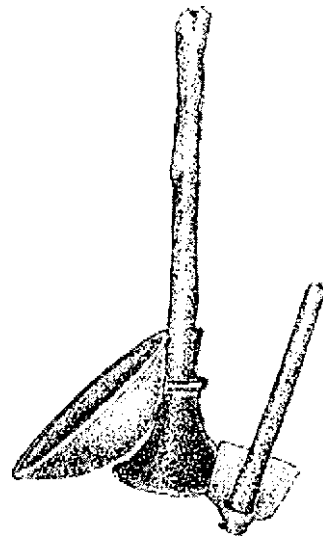
It is thanks to the local society and indigenous culture that lack of rain was not translated into scarcity. The people of Rajasthan did not mourn the lack of rain Nature bestowed upon them. Instead they took it up as a challenge and decided to face it in such a way that from top to toe the people internalised the nature of water in its simplicity and its fluidity.

Without understanding the '*savai*' nature of this princely people we will utterly fail to understand how in the last millennium big towns like Jaisalmer, Jodhpur, Bikaner and even Jaipur were established according to all the rules of town planning. The towns were moreover highly populated and yet, inspite of the scarcity of water, they were in no way less equipped than the other cities of the country. In fact each of these towns, at different periods of time and for long durations, were important centres of power, trade and art. Even when modern metropolises like Bombay, Calcutta and Madras were yet in their infancy, Jaisalmer was already an important trading centre having links with what corresponds

to today's Iran, Afghanistan and the region going up to Russia.

The people of Rajasthan scaled the peaks of trade, culture, art and standard of living because of the depth of their philosophy of life. This philosophy gave a special space to water. It is true that the new developmental strategies have somewhat altered this exceptional water tradition; however they have not been able to completely destroy it. And we can only count ourselves as blessed that this was so.

Both luck and duty underpins the water tradition of Rajasthan. It was luck that after the Mahabharata war, as Sri Krishna was returning with Arjuna from Kurukshetra to Dwarka, his chariot passed through the deserts of Rajasthan. At the place where modern Jaisalmer stands, on mount Trikut, he met the Rishi Uttung who was practising austerities there. Sri Krishna bowed to him and pleased with his devotion told him to ask for a boon. The rishi was indeed a sage of high thinking and never asked anything for himself. Instead he said to the Lord: 'If I have any merit, my Lord, may this region never suffer from scarcity of water'. "Let it be so", granted the Lord.



The blessed people of Rajasthan, however, did not sit pretty on receiving this boon. Instead they consolidated themselves in various ways in matters of water. They elaborated a *riti*, a tradition of preserving the rain water in each nook and cranny of every village.

There is an ancient word for *riti* in the vocabulary of this place, *voj*. *Voj* means composition, system and solution but it also means competence, discernment and politeness mixed with humility. Thus it is that the people of Rajasthan did not measure their rainfall in inches or centimetres, not even in fingers and hands but in drops. They cherished these millions of golden drops which they gathered with vigilance according to the principle of *voj* in order to fulfil their needs in water: so doing they set up a tradition so marvellous that its course which starts in history flows towards the present turning the present itself into history, through the competence of *voj*.

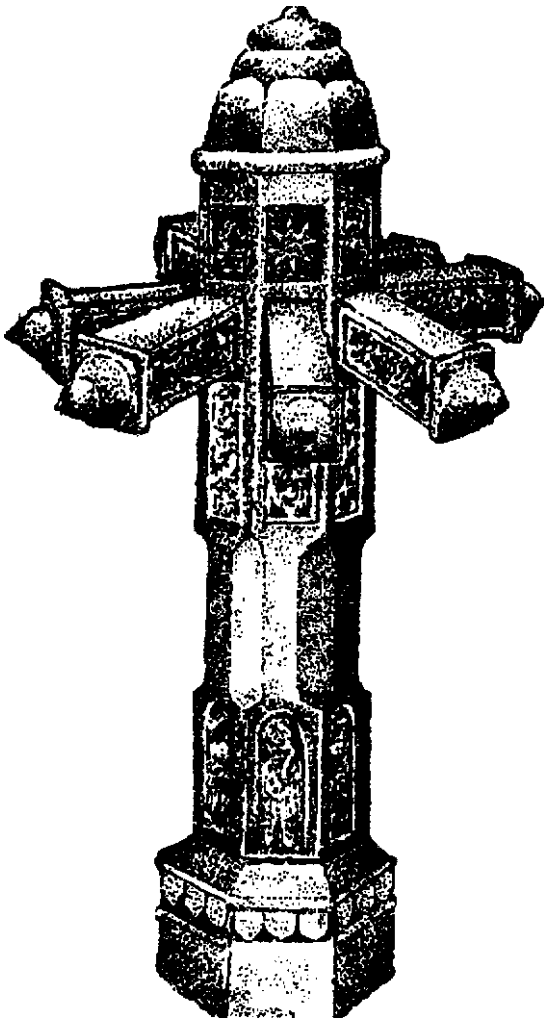
Nowhere in the ancient history of Rajasthan can one find a description of its desert or even its other regions as a dry, desolate or cursed land. In fact we cannot even find the prevalent term *Thar* for the desert.

There have been periods of famine and at places even scarcity of water. However from householders to ascetics, poets to *Manganyars* and *Langas*, Hindus to Muslims, all have had no other words for the land but *Dharati Dhoranri*, the land of sand dunes. One of the ancient names for the desert is *sthal*, place, which refers perhaps to the space that emerged after *Hakdo* dried up. From *sthal*, the words *thai* and *mahathal* evolved; we even have in the common parlance the words *thali* and *dharudhal*. *Thali* gives a very rudimentary idea. For finer perceptions, different regions have coined different specific words. *Mar*, *marwar*, *mewar*, *merwad*, *dhundhar*, *godwar*, *hadauti* are used for large-scale divisions and *dasrek* or *dhanvadesh* for smaller ones. And whatever may have been the number of smaller or big kings who ruled this vast desert, there is but one sovereign heir: Sri Krishna. He is very affectionately called *Marunayak*, Sovereign Prince of the Desert.

The boon granted by *Marunayak* coupled with the *Voj* of the local chiefs combined into a unique know-how. From this emerged *vojto-ojto*, that is a beautiful and simple *riti* (tradition), which everybody could adopt. Once upon a time, on this earth, *Hakdo* which spread itself to the horizon took the form of clouds to fly up to the sky. The clouds could not have been numerous; yet the people did not measure the water they contained in terms of inches. They saw instead an infinite number of drops which they gathered in their tanks, small and big *kunds*, *kundis*, *beris* and *johars* (reservoirs), *nadis* (canals), lakes, *bavris* (step-wells), *kuins* and *kuans* (wells) and *pars*, thereby bringing down the floating clouds and the indivisible *Hakdo* through its myriad drops and droplets.

Jasdhol means praising (literally *dhol* means drum and *jas* glory); Rajasthan, however, never blew its bugle about the unique tradition it evolved for collecting the rain water. Today nearly all the small and big towns of the country, the various villages, the state-capitals, in fact even the country's capital, are extremely indigent in matters of collecting water, inspite of abundant rains. And before the country becomes hard of hearing, we must sing the praise of the marvellous tradition of water storage, which bloomed in the 'desert state' of Rajasthan. So, on that note, let me say - Welcome to my land!

2. The Ascetic Ardour of Earth, Water and Heat



In the desert, the moment the slightest line of clouds appears, we can see a group of children going about with an unfolded sheet: four pairs of small hands hold the four corners of the sheet and the group goes from door to door singing:

The frogs are croaking, Rain is falling

At midnight the ponds keep overflowing...

Each house puts a fistful of wheat into the sheet. Some even put millet flours. By the time the round is over, the sheet becomes so heavy that four pairs of hands are not enough to hold it. The sheet is then folded up and the group assembles somewhere; the grains are then boiled and *gugries* made. One grain adding to the other, the collection is plenty enough to satisfy the children. Now it is the turn of the elders to collect each drop of water so that there is enough for the year to come. However, before we try and understand Rajasthan's tradition of water collection it would not be a bad idea to get acquainted with the region. At least, as far as matters of water are concerned, it can be said that the horoscope of Rajasthan has been *mangal* (auspicious). It must not have been easy to maintain this auspicious nature through diligence for apart from the vast difficulty of the task, the region itself is no less vast.

Rajasthan is the second largest state of the country, occupying about 11% of the area that is 34, 22, 95 sq. km. This state of ours is thus bigger than a lot of countries; as a matter of fact it is twice the size of England.

Where earlier there were twenty-one *riyasats* (princely states) today there are thirty one districts, of which thirteen are located on the west of the Aravali Mountains and the rest on the east and south. On the West we have the districts of Jaisalmer, Badmer, Bikaner, Jodhpur, Jalore, Pali, Nagaur, Churu, Sriganganagar, Sikar, Hanumangarh, Sirohi and Jhunjhunu. On the east and on the south there are Banswara, Dungurpur, Udaipur, Kankroli, Chittorgarh, Bhiwada, Jhalawar, Kota, Baran, Bundi, Tonk, Sawai Madhopur, Dhaulpur, Dawsa, Jaipur, Ajmer, Bharatpur and Alwar. Jaisalmer is the biggest district of the state, Dhaulpur, which is one tenth of Jaisalmer, being the smallest.

This whole region is divided into four parts according to present geography. *Marubhumi* (the desert) is known as the western sandy plain or also as the arid zone (*shushk kshetra*).

The belt which adjoins it is known as the semi arid zone. Earlier it was known as Bagad. Then we have the Aravali mountain range and the part known as the South Eastern *Pathar* (plateau), which adjoins Madhya Pradesh and other states. The largest of the four regions is the western sandy plain, in other words the desert. Its eastern corner is near Udaipur, the northern corner touches Punjab and the southern, Gujarat whereas the whole western side runs along the Pakistan border.

The desert though not totally desert, is largely so. It includes Jaisalmer, Badmer, Bikaner, Nagaur, Churu and Sriganganagar. Here we can find huge sand dunes, called *Dhora*. The strong prevalent storms of summer give wings to these dunes which fly about, covering up the rail tracks, small and big roads as well as the national highway. Moreover, this is the region which receives the least amount of rain, and where the water table is very deep, normally between hundred to three hundred metres; and to top it all the water is mostly salty.

What is known as the semi arid zone lies between the vast desert and the Aravali range, stretching lengthwise from the north-east to the south-west. In this region, the rainfall is slightly higher though still ranging only between 25 to 40 cm, hardly half of the country's average rainfall. Here the soil can sometimes be what is called *domat* (mixed, literally two soils) but mostly it is the same old sand. Making fun, so to say, of the measures taken by national or regional plans to arrest desertification, the storms lift up the sand from the crevices of the Aravalis to throw them towards the west. These small crevices can be found near Beawar, Ajmer and Sikar.

This region consists of Beawar, Ajmer, Sikar, Jhunjhunu districts on one side and on the other, Nagaur, Jodhpur, Pali, Jalore and part of Churu. Here too the water table is at a depth of 100-300 metres and the water, salty.

Some parts of this region have a peculiar trait; here, not only is the water salty but the soil too is saline. In the lower reaches of these parts, there are salty lakes. And in fact the lakes of Sambhar, Degana, Dilvana, Pachpadra, Loonkaransar, Baap, Pokhran and Kuchaman have salterns. For miles and miles around these lakes, salt springs out from the soil.

Running along the whole state in an oblique line are the Aravali Mountains, one of the oldest ranges of the world. Even though this range is not as high as the Himalayas it is certainly as old. Sirohi, Dungurpur, Udaipur, Abu, Ajmer and Alwar nestle on its slopes. On the north-east it touches Delhi and on the south-west, Gujarat Its total length is seven hundred kilometres, of which five hundred and fifty cut across Rajasthan. In terms of rainfall, it is the most privileged in the State.

Coming down the Aravalis, in the northern direction, there lies a region which extends from the north-east to the south-east. The districts of Udaipur, parts of Dungurpur, Banswara, Bhilwara, Bundi, Taunk, Chittorgarh, Jaipur and Bharatpur are located here.

Bharatpur is next to Braj, the birthplace of Sri Krishna, the Lord of the Desert. The south-easterly *patbar* (plateau) is also locked within this region. Kota, Bundi, Sawai-Madhopur and Dhaulpur form part of it. From Dhaulpur, the wilds of Madhya Pradesh start. In this region, just as the earth, down below, keeps changing its character, so too the sky above changes its character.

In our country, the rains come riding the monsoon winds. The heat scorches the whole country during May and June. The atmospheric pressure keeps going down with the increasing temperature. On the other hand the heavier winds, bearing the humidity of the sea, blow towards these regions of low atmospheric pressure. This is what is known as the monsoon.

Rajasthan receives the monsoon winds from two directions, one from the closer by Arabian Sea and the other from the far away Bay of Bengal. In spite of the clouds coming from these two directions, certain parts of Rajasthan still do not receive as much rain as these clouds distribute on the way.

The monsoon winds, which arise from the Bay of Bengal, lose all their humidity while crossing the huge Gangetic plain. By the time they reach Rajasthan, nothing much of their bounty is left to enable them to give enough rain to this state. By the time the monsoon winds coming from the Arabian Sea cross this scorching region, the heat has depleted

them of half of their humidity. The Aravalis which obliquely cross the state also have their role to play in this phenomenon.

The Aravalis stretch from the south-west to the northeast and the monsoon winds flow in the same direction. Thus, instead of crossing the Aravalis to enter the western side of the desert, the monsoon winds blow parallel to the mountain range, shedding considerable rain. This is how Sirohi and Abu receive as much as 150 cm of rain, which is thrice the average of the state's rainfall. Since these are the higher reaches of the Aravalis, the monsoon winds hit against them and pour out whatever is left of their bounty. This is how today geography is too, (like nature), eludes the desert, going across the other side of the Aravalis.

In the language of the desert people the terms *mati* soil, *varsha*, rain and *taap*, temperature have a totally different meaning from the new technical definitions of soil, rain and temperature. In their culture, the asceticism of the soil, rain and heat is reflected and in this asceticism we can find both the radiance of life and its coolness.

During the month of *Phagun* (Feb-March), on *Holi*, a harvest festival of joyous expression, together with the *abir* and *gulal*, two colored powders which people sprinkle on each other, Sri Krishna, the Lord of the Desert, starts throwing yellow sand in the air. When *Chait* (March-April) comes, earth starts heating up. The sun, the heat of which seems so redoubtable to new geographers, is known in this region as *pith*. Amongst the various meanings *pith* has, one is water. And after all is not the sun the lord of the cycle of water on earth, in other words, of rains?



When *Asadh* (June-July) starts a sort of halo surrounds the sun: this halo is called *jalkundo* or water reservoir. This *jalkundo* is an indicator of the rains. During this period, if in the rising sun one can see *machlo*, that is a special ray of sun in the form of a fish, then, it is believed that, there is a great likelihood that it will rain. The moon too has not lagged behind in giving information about rainfall to the people. If during *Asadh*, the lunar disc seems upright like a plough and during *Shravan* (July-August), it seems as if it is lying in a restful pose then it augurs well for the rains. *Ubho bhalo Asadh, Suto bhalo Shravan* (All is well if the Moon is up in *Asadh* and if it is sleeping in *Shravan*). Water reservoir, fish and moon, these are the recurring metaphors of the *Bhadli Purana*, which the master-astrologer Dank composed. *Bhadli* was the name of his wife and it is after her that the *Purana* was named. At places both of them are equally remembered and then the *Purana* is called *Dank Bhadli Purana*,

It is not surprising that in this region where there are the least clouds one finds the most names for them. Any number of words have been created from the word *badal*, where the phonetic variant of by and the gender opposition come into play: *vadal, vadli, badh, badli* - a plethora of words have also poured in Sanskrit: *jalhar, jimut, jaldhar, jalwah, jaldharan, jalad, ghata, viksar, sarang, vyom, vyomchar, megh, meghadambar, meghmala, mudir, mahimandal* However, in the dialect, the names of clouds literally seem to overcast the sky: *bharabad, pathod, dharmandal*,

dadar, dambar, dalvadal, dhan, ghanmand, jaljai, kalikanthal, kalahan, karayan, kand habra, mainmat, mehajal meghan, mahghan, ratnyo, seher. The nomenclature for clouds is so vast that clouds might fall short of them. Moreover any cowherd can add a name or two to this meticulously prepared list.

The empirical and linguistic richness of this rain specialist society does not stop at these forty-plus nomenclatures. The clouds are also classified according to their form, style, behaviour, character. Thus *sikhar* is the name for big clouds, *chitri* that of smaller wavy ones. Even the small cloud, which has been dispersed from the flock of clouds, is not left unaccounted. It has its own name: *chunkho*. Rain bearing clouds coming from far at the same time as cool breeze are called *kolayan*. The white banner like cloud, which comes before the mass of black clouds, is called *koran* or *kagolar*. And the mass of black clouds, which has no white banner, is called *kanthal* or *kalayan*.

Given the diversity of clouds in the sky, the four cardinal points seem insufficient for them. That is why we have eight as well as sixteen cardinal points. These directions themselves are categorised. And thus the clouds of the higher zones, those of the middle zones and those of the lower zones have different names. The higher and lighter clouds are known as *kas* or *kaswad*. The clouds which flow rapidly at a fairly lower zone, from the south-west to the north-east are known as *umb*. Clouds which overcast the sky the whole day, bursting into a small rainfall from time to time, are called *sahad*. Clouds which roll down rapidly from the west are called *loran* and the continuous rain which pours from them is known as *loranjhar*. In fact there is a song about *loranjhar*.

Clouds that have already given rain, that is those which have done their duty and then have gone to rest a while on a mountain top, are known as *rinchi*. How could the people who have such perfect knowledge of clouds, who are aware of each of their activities, including their rest, a people who have so much love for them, not count their rain drops as auspicious?

Right now, the sun is pouring. During the month of *Jeth* (May-June), on the eleventh day, the *nautapa* starts. This day is fixed but in the Roman calendar, it can fall either in the second or the third week of May. *Nautapa* or *navtapa* means the nine days during which the earth will be thoroughly baked. If this does not happen then it means that the rains will not be good. It is this ascetic ardour which gives rise to the coolness of the rains.

Om-gom is the eternal relationship between the sky and the earth, between Brahma and creation. *Gham* is a word for the strong sun; apart from Rajasthan, this word is also used in parts of Bihar, Uttar Pradesh and Madhya Pradesh. However, it is only in Rajasthan that one finds the term *Oghanio*, which is used for the blazing heat which comes before the rains. This is the period when in the desert, *balti*, scorching sand storms also known as *loo*, blow. In the news one can hear then how, due to these, life has been disrupted, how railways and roads have been closed. But even today, for the local people these ‘terrible’ storms form part of *Om Gom*.

Thus no one in the desert curses the month of *Jeth*. During these days people only walk about totally covered except for the face. The strong southerly winds fling the sand on people’s faces. However, the cattle herds and cowherds sing songs to welcome the month of *Jeth* and in true Kabirian style they praise the Lord for having *sent Jeth*: “The month of *Jeth* has come, the wind is blowing from the south, the pebbles are rattling in our ears, may the Lord be praised.”

It is said: there are some gatherings at which the twelve months of the year assemble and talk amongst each other, each claiming to be the most suitable son of Nature. At such tournaments the month of *Jeth* always has the last word. He is always recognised *asjethu*, the eldest brother. If *Jeth* does not burn as it should, if the sandstorms are not swept up, then *famano*, the rainy season, will not come up to expectations, *jamano* means the rainy season but it also means the right cycle of rain, cultivation and fodder-pasture. It is during this period that *pith*, the sun, changes its meaning to become water. The first signs of rain start with *augal*. The children of the locality then come out spreading their sheet to the sound of *dedoriyo* as the elders come out to clean ‘sheets’.

The courtyards, roofs and catchment ponds of all the places where rainwater has to be collected are cleaned. The days of *Jeth* have gone by and *Asad* is about to come, the rains are, however, far away. From the clear eleven days of *Asad* onwards *Varsali* or *Chaumasa* (the four months) will start. Rains may be scarce here, they may fall but for a few days; and yet the people of Rajasthan have blocked four months to prepare for their auspicious beginning.

If the soul of a society can remember through so many names the rare clouds that come, then in how many forms will it perceive the priceless drops and how many names will it have for them? Here too one comes across a downpour of names.

The very first name for a drop is *hari* (an appellation of the Lord). Then there is *meghapuhup*, (cloud flower). There is also *vrishti* (rain), and words derived from it in dialects, that are *birkha* and *vrakha*. For *ghan*, there is also *badal ka sar* and *ghansar*. *Meveliyo* is yet another name for it. In fact there is a whole garland of names for drops. *Bula* and *sikhar* mean particle of water. The words *phuar* (jet) and *chhinta* (dust of rain) are prevalent everywhere. From it have been derived *chhanto*, *chhanta-chharko*, *chhachhaho*. From *tapakna*, to fall drop by drop, we have *tapka*, *tapko* and *tipo*. There is also *jharmar*, *bunda-bandi*. *Punang* and *jikha* mean the same. The slightly heavier rainfall is known as *rith* and *bhot*. And if this downpour continues for long then it is known as *jharmandan*.

Rain falls during four months and for each month it has different names. *Halur* is a rainfall all right but that which falls in the months of *Sawan-Bhado* (mid July to mid September). *Rohar* is the light rain particles which fall during the cold season. *Varkhaval* is also a rainfall and is a word coming from a dialectical improvement of *varsavali*. The term *mahajhar* indicates drops that fall rapidly and densely. *Jhapto* indicates only a rapid but not dense fall: all the rain falls in one quick shower.

The terms *trat*, *tramjhand*, *tratkano*, and *dharharano* indicate a very heavy downpour. The word *chhol* combines to this meaning an element of joy. This *chhol* and this *joy* are not that of silence; the sounds of the rainfall also have their names, *sok* or *sokad*. Sometimes the rainfall is so heavy, its music so mischievous and lilting that in an instant it covers the great distance from the sky to the ground. Then the *dharavali*, the course which joins the sky to the earth, is known as *dharolo*.

Here the playfulness of the rain is as unending as that of the words used for it. If a *dharolo* rainfall enters the house then it is called *baacbbar*; this in turn gives the term *bacharvayo* to describe the tender softness of the clothes that the *baacbbar* rainwater has wet. The sound that accompanies *dharolo* is known as *dhamak*. *Dbamak* is a heavy sound, which is masculine. The strong wind, which blows vehemently with it, is called *vabal*.

Gradually the *vabal* calms down; the *dhamak* quietens as the *dharolo* which was touching the earth just a while ago returns to the clouds. The rain stops falling; the clouds have not yet dispersed. The setting sun is peeping from behind them. The long ray of the peeping sun is called *mogh* and is also considered as an indicator of rains to come. If *mogh* has been seen then it will again rain in the night. The night on which the rain falls heavily is no ordinary *raina* (night), it is *Maharaina*, the great night.

The verb *tuthno* means to rain and *ubrelo* describes the winding process of the rain. This is how *cbaumasa* comes to an end. From the moment the rain starts falling to the moment it stops, every village, every town spreads its 'sheet' on the roof tops, in the courtyard, in the fields, at the crossroads even at uninhabited places to collect each precious drop.

The ways of collecting the drops of *palar* i.e., of rainfall, are as unending as the names of clouds and drops. The pot, like the ocean, is filled up drop by drop. These beautiful lessons are not to be found in any textbook but are actually couched in the memory of our society. It is from this memory that the *shrutis* of our oral traditions have come. What the people of Rajasthan consigned to their memory, they also shared and consolidated and no one knows exactly when this water work became a monumental organised structure binding the whole society. Its form is so immense that it has become infinite and formless as it spreads to the 30,000 villages and 300 towns of the state.

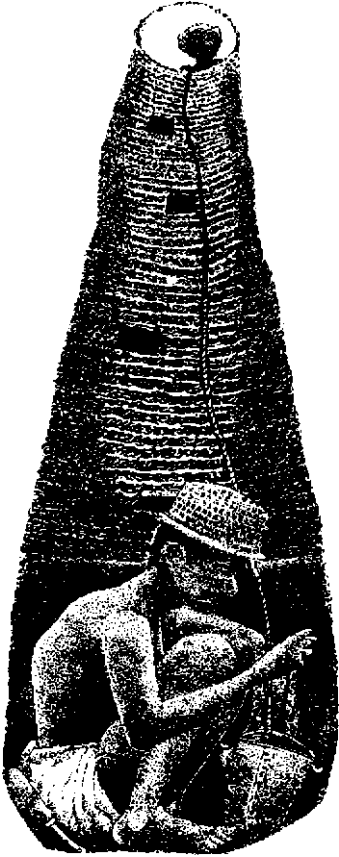
The people of Rajasthan did not entrust the organisation of such boundless work to either the central or federal government, not even to what in modern parlance is termed as the private sphere.

They entrusted it to the private hands, what the ancient language calls *niji*, (a sort of customary right).

It is the people themselves who in each house, in each village, gave fruition to this structure, maintained it and further developed it.

Pindwari is to help others through one's effort, one's labour, and one's hard work. The drops of sweat streaming down the brow of the people of Rajasthan continue to flow so as to collect the drops of rain.

3. The Radiant Raindrops of Rajasthan



Covered with sweat, the *chelvanji* is at work inside the *kuin* (well). Already about a depth of thirty to thirty five hands (cubits) have been dug. Now onwards the heat inside will go on increasing. The width of the *kuin* and its circumference are extremely narrow. Just the distance of a hand separates the back and the chest of the squatting *chelvanji* from the earth. In such a narrow space one cannot dig with a *kulhari* (axe) or a *phawara* (shovel); it is with the help of a *basauli* that the digging is done. The *basauli* is a tool which looks like a small *phawara* with a small handle; the pointed blade is in iron and the handle in wood.

The already hard work being carried out inside the well gets affected by the ambient heat. To lessen the heat, those who are on top, on the earth's surface, vigorously throw fistfuls of sand from time to time into the pit. Thanks to this, the fresh air of the top is thrust down and the hot, stifling air accumulated down is forced up. The sand grains being thrown from such a height could well hit the head of the *chelvanji* at work; therefore, to protect his head, the latter wears a headgear made of brass or some other metal as a helmet. Inside, after a little digging, malba collects around the feet of the *chelvanji*. A little tub (*dol*) or bucket (*balti*) is lowered to him with the help of the rope.

The mud is collected into it. When this is brought up, in spite of all the precautions taken, there is still the possibility of some pebbles falling out. The helmet will then protect the *chelvanji* from these also.

Chelvanjis or *chejaros* are people who are expert at digging wells and also at doing a very special *chinai* (covering) of their inner walls. This work is called *cheja*. The *kuin* at which the *chejaro* is working is no ordinary construction. A *kuin* is in fact a very small *kuan* (well), *kuin* is feminine and *kuan*, masculine. The *kuin* is actually small only in width, as far as its depth goes, it is quite deep. In Rajasthan, the depth of *kuins* can vary for specific reasons from place to place.

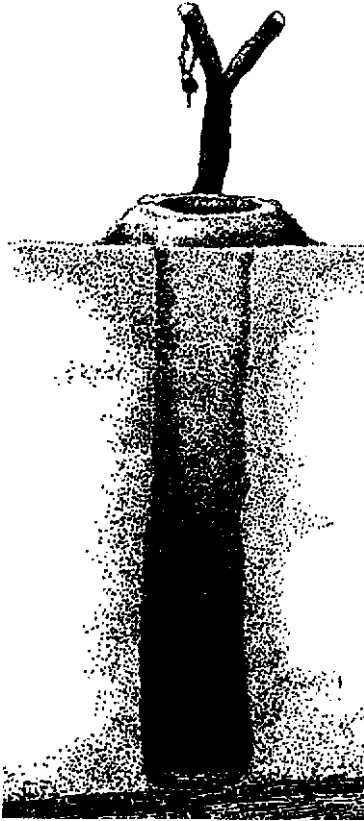
The *kuin* differs from the *kuan* in yet another way. The *kuan* is dug to tap the water table but the *kuin* does not access the water table in the same way as the *kuan* does. The *kuin* collects rain water in a very special way that too even when there is no rainfall. In other words the water of the *kuin* comes neither from the surface water which trickles down nor from the water table. It is a complicated affair which can best be described as the *upanishadic neti...neti* (not this, not this).

In the desert the extent and the depth of sand are infinite. Here even if there has been heavy rainfall, it does not take long for the water to be absorbed in the ground. But from place to place, beneath the surface of the sand, at a depth ranging from 10 to 15 to 50 to 60 hands, there can be a layer of gypsum. Wherever it is present, this layer is quite long and large; however, since it is covered by sand it is not visible from the top.

In such places it is through the changes detected in the soil that one can discover the layer of gypsum while digging for a *kuan*. In the case of *kuans*, water can always be reached at a depth of 150-200 hands but then this water is very often salty. Therefore, it is unfit for drinking. This is why, in such regions, *kuins* are built. To detect the layer, the experience of generations also comes in handy. Should even a little rain water stagnate in such places, then it is the indication that a layer of gypsum is present there.

This layer stops the water from percolating till the salty water table. In such cases, the rainwater which falls gets trapped between the sandy surface and the gypsum layer beneath it; it then spreads as a humid patch. During periods of intense heat, it is possible for this humidity to evaporate. But in such regions, Nature offers yet another unique

kindness. The particles of sand are very fine; they do not stick to each other like the particles of earth do. Where there is attachment (*lagav*) there is also detachment (*algav*). The particles of earth that stick to each other can also be dislodged: that is why some places are bereft. In regions where there is a predominance of black or mixed *domat* earth such as in Gujarat, Madhya Pradesh, Maharashtra, Bihar and others, as soon as rain stops and the sun shines, the earth particles stick to each other and thus there are cracks in the soil, the fields and the yards. Then, the humidity collected in the soil escapes from these cracks as vapour to go back to the atmosphere, the moment the heat starts.



Yet here, union comes from disintegration. Normally in the desert, the sand particles remain dispersed. Since there is no mutual attraction, therefore there is no separation. When rain falls, the particles become a little heavy but still they do not get dislodged. That is why there are no cracks on the surface of the desert. The rainwater that gets collected inside remains there. On one side it is protected by the layer of gypsum, which runs underneath, and on the other side, the innumerable particles of sand stand on rigorous watch on the surface.

Every single drop which falls in this region penetrates the sand and is transformed into humidity. Thus when a *kuin* is made, its belly, its empty cavity transforms the humidity present in the sand surrounding it into drops once more. Each drop seeps in to fill up the *kuin* with water - water as sweet as ambrosia in an ocean of salty water.

To access this ambrosia the people of the desert like the Gods during the *samudra manthan* have not spared any effort. They elaborated a whole science to translate their experience into practicality. This science classifies the available water into three forms. The first form is *palar pant*, which is water that is directly obtained from the rains. This water falls on the surface of the earth and is contained in rivers, lakes *adi* (etc). The word *adi* itself is pregnant with meanings, which will be revealed later on.

The second form is called *patal pani*, or one can say 'hadean water', (i.e., actually subterranean water). This refers to the water table, which is accessible from wells.

Between the *palar* and *patal* forms we have the third form of water which is *rejani pani*. This water percolates through the earth surface but does not reach the water table.

To measure the rainfall the terms inches or centimetres are not used; instead it is the word *reja* which is used. And *reja* does not measure the precipitation which falls on the surface; it measures the amount of water stored within the earth's surface. If there has been a rainfall in the desert, which allows five fingers of water to infiltrate into the earth, then it is said that five fingers *reja* rain has fallen.

Thanks to the gypsum layer, the *rejani* water does not mix with the *patali* water. In the absence of such a layer, the *rejani* water slowly percolates to the water table and thus loses its specific properties. For if at places the water table is salty then on reaching it, the *rejani* water too will become salty.

It is indeed a special art to construct a *kuin* which will be able to collect this special *rejani* water. The *chejaro* who takes down a *kuin* having a circumference of 4 to 5 hands to a depth of 30 to 60-65 hands amply measures the skill and caution required.

Chejo, which is the art of covering with (*chinai*), is die very life of the *kuin*. The smallest error while doing this work can cost the life of the *chejaro*. Every day, a little bit of digging is done, the debris are removed with the help of a *dol* (tub), then any further digging is stopped and the covering of the surface of the work done so far is done so that there is no caving in.

As the *cejaro* goes deeper at a depth of 20-25 hands, it starts getting hotter and hotter and the air starts getting rarer and rarer. Then fistfuls of sand are thrown from the top. The gust of air which displaces the huge sand dunes of the desert then wafts from the small fistful of sand to reach the sweating *chelvanji* down below and give him some respite. At places this already difficult work of making a *kuin* gets further complicated. At such places it is not possible to stop the earth from sliding by lining it with stones; in such cases the *kuin* has to be 'tied' with ropes.

The first day, at the same time as the *kuin* is dug, a huge pile of grass named *khimp* is collected. "While the *cejaro* starts the digging, the rest of the people start weaving a rope which is three fingers thick with the *khimp*. At the end of the first day's work, the *kuin* reaches a depth of about ten hands. The first circle of rope is then installed by setting the rope against the wall; on top of the first circle, comes the second one and on top of the second, the third circle, then the fourth and so on and so forth. The thick and coarse *khimp* rope presses with all its weight at each round and each round of rope gets interlocked with the other as they are rolled on top of each other. The extremity of the rope reaches the ground level.



The next day more digging (the length of a few hands) takes place; a few more hands of earth is dug out and the *kundali* (coils) of rope which was fixed the previous day is then shifted to the newly dug area. The upper part of the free wall is then covered with new rope. To maintain the coils of rope on the wall, in between they are covered with *chinai* (masonry work).

For a 5 hands large *kuin*, 15 hands of rope is required to make just one coil of the *kundali*. For a depth of one hand, 8-10 coils of rope are required and this itself measures up to 150 hands. Therefore, if a 30 hands deep *kuin* has to be lined then one requires a rope of around 4,000 hands. People who are watching and are not familiar with the process will wonder what is going on: the digging of the *kuin* or the making of rope?

At some places neither too much gypsum nor too much *khimp* is found. Yet if *rejani* water is present *kuins* are definitely dug. At such places the wall of the *kuins* are lined with long slabs of wood, made from the branches of *ami*, *ban*, *bawal*, or *kimbat*. The *ami* is best suited for this work. However, even if the best or second best wood is not available, one can always use *ak*.

The slabs are made to stand, bottom to top, interlocked with each other. They are then tied together with the *khimp* rope. At places even the *chag* rope is used. This tying up too has the shape of a *kundali* and is therefore sometimes called *sampni* the serpentine.

The *chelvanji*, who is busy digging and lining the *kuin*, knows the properties of the soil very well. The moment he touches the layer of gypsum, the work is stopped. At that moment the water starts oozing, and the *chejaro* comes up.

The successful completion of the *kuin*, i.e., when water is reached, becomes the occasion of a celebration. In any case, normally from the very first day good care is taken of the workers, as per the traditions of this place; but on the completion of the work there is a celebration and a special feast is organised. At the moment of departure, the *chelvanji* receives several types of gifts. It is not as if from that day the relationship between the *chejaro* and the village is over. According to tradition, throughout the year, during auspicious occasions and festivities, during weddings, he receives the gifts customarily given to members of the family and close friends. During harvest, in the *khadiyan*, a special pile of cereal is kept for him. Nowadays the tradition of just giving a salary for the work done has been adopted.

There are many places where instead of the *chejaro*, ordinary householders themselves become masters of the art. In several villages of Jaisalmer, the *kuins* made by Paliwal Brahmins and *meghwalas* (counted as a scheduled caste today) two hundred years ago are still tirelessly providing water.

There are three major reasons for keeping the mouth of the *kuin* narrow. The drops of water coming from the humidity trapped in the sand seep in very slowly. Throughout the day the amount of water that gets collected in the *kuin* is barely enough to fill two to three pots. The amount of water lying at the bottom of the *kuin* is so little that were the opening to be large, the small amount of water would spread and then it would be impossible to bring it up. In the narrow *kuin*, the water, which slowly oozes in, attains a height of 2-4 hands. At some places, for this very reason, instead of using a small bucket for pulling the water up, a small *charas* (water skin) is used. A metal bucket does not get immersed. But the water skin made of coarse cloth or leather has a heavy iron ring around its neck. When the *charas* hits the water, the heavy top part falls on the lower part and thus, the *charas* gets properly immersed even in the small amount of water. Once it gets filled, when it is brought up, the *charas* takes its full shape.

Of late, roads have been built around some villages and trucks go by them. In such villages we find that small *charsis* have been fashioned out of torn tyre tubes.

Another reason determining the circumference of the *kuin* is the scorching heat that prevails in these regions. If the circumference is big then the water within the *kuin* will spread and the big circumference will not be able to stop the water from evaporating.

To keep the *kuin* and its water clean it is necessary to cover it and it is easier to cover a narrow opening. Generally all the *kuins* are covered with a wooden cover; however, at places one may also find covers made of small twigs or grass like vetiver. Where new roads have been built, leading to the increased coming and going of unfamiliar and new people, there the water, which is as sweet as ambrosia, needs to be protected. At such places, often, small locks have been put on the cover of the *kuins*. Locks are also put on the pulley (*ghirni*) or the wheel (*chakri*) fixed to the *kuin* for pulling water.

If the *kuin* is deep then a *ghirni* or a *chakri* is fixed to it to facilitate the pulling out of water. This device is also known as *gaderi.*, *charkhi*, or *pharedi*. The *pharedi* could also be fixed on two iron arms. However, generally, it is fixed on a rounded, strong trunk, after a hole has been bored through it. This is called *audak*. Without the *audak* and *charkhi* it would become very difficult to draw water from such a deep and narrow well. The *audak* and the *charkhi* enable the *charsi* to come up without hitting against the wall of the well and without spilling water. It is also helpful to pull the heavy weight.

A gypsum layer usually runs for a long distance and that is why all along this length *kuins* are constructed. In fact, at places, one can find 30-40 *kuins* in a big and clean field. To each house its *kuin* and if the family is large then there is more than one.

The sacrosanct line, which divides private property from common property, gets strangely erased when it comes to *kuins*. To each their own *kuin*; everyone has the right to construct a *kuin* and use its water. However, the *kuin* is constructed on land which is the collective property of the village. The rain which falls there remains throughout the year in the form of humidity and it is this humidity which feeds the *kuins* throughout the year. The amount of humidity present is determined by the amount of rainfall. Constructing a *kuin* in that area means sharing the humidity present there and that is why, though the *kuin* is a private property, since it is constructed on collective property, it falls under the control of the village society. It is only in case of dire necessity that permission is granted to build a new *kuin*.

Each day the *kuin* reinforces the meaning of the well-known proverb about the goose with the golden egg: throughout the day only 2 to 3 pots of sweet water can be drawn from the *kuin*. That is why, every day, at dusk, when the cows come back home raising dust, the village assembles around the *kuins* and it looks as if a *mela* (fair) is on. In the plain adjoining the village, the sound of the pulleys of the 30 to 40 *kuins*, turning at the same time mingles with that of the bells of the cattle returning from the grazing grounds. After 2 to 3 pots are filled up the bucket and ropes are kept back, the *kuins* are covered again. Throughout the night and throughout the next day the *kuins* will rest.

It is not as if gypsum layers are present under the sand throughout Rajasthan; that is why *kuins* are not to be found everywhere. However a gypsum layer does run through Churu, Bikaner, Jaisalmer and Badmer: that is why, in these districts, *kuins* are to be found in each village. In fact, in the district of Jaisalmer, in the village named *Khadedo Ki Dhani* there were 120 *kuins*. People used to call this village *cha-bisi* (six times twenty). At places the *kuins* are called *par* and several villages of Jaisalmer and Badmer owe their existence to these *pars* which explains why several villages have the suffix *par* attached to their name: *Janare Alo Par*, *Sirgu Ah Par*.

The name of the gypsum layer can change from place to place. Somewhere it is called *charoli* and somewhere else *dhandbro* or *dhardharo*. Somewhere it is *bittoo ro balliyo* and elsewhere it is just *khadi*.

And it is on the strength of this *khadi* that in the midst of a salty water region, the *kuin* gives sweet water.

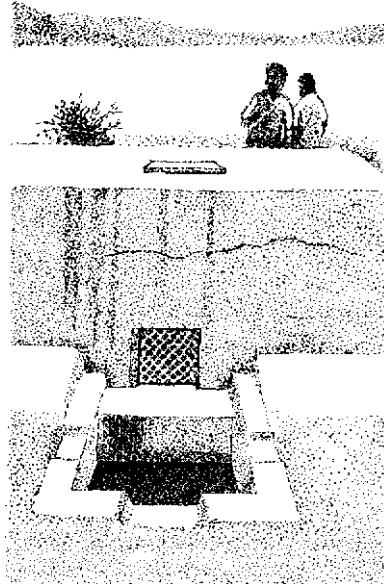


4. Still Water, Pure Water

‘Running water, pure water’. In Rajasthan, this proverb stands on very shaky grounds, for here in the *kuins*, water, though still, remains pure throughout the year and sometimes even more.

The principle behind this is simple: to hold the drops of rain or *palar* water in a very clean space and stock it. Be it *kund*, *kundi*, *tanka* (pond, small pond, reservoir), the names and form may change, but the function is the same: to preserve for tomorrow the drops that have fallen today. Ponds are to be found everywhere. Inside the forts constructed atop mountains, in temples, at the foothills of mountains, in the courtyard of houses, on rooftops, in villages, outside the villages, in uninhabited places, in fields; everywhere, at any time, these can be made. There are *kundis* which are two hundred or three hundred years old and others which have just been made yesterday. And the best of all, they can also be seen under the antennae of ‘Star T.V the symbol of cable channels.

Wherever any space is available, people whitewash it and make a sloping *angan* (courtyard) there. The slope can be from one side to the other but if the courtyard is big enough, it can run from the four sides and converge towards the middle portion. In this portion, a *kund* is made according to the shape of the *angan* and according to the amount of rain which falls. The inside of the *kund* is lined in such a way that not a single drop from the water collected within is lost through seepage, and throughout the year the water remains clean and protected.



The *angan* from where rainwater is collected for the *kundi* is called *agor*. The name *agor* comes from the verb *agorna* meaning collecting. Throughout the year the *agor* is kept spotlessly clean. In fact before the rains, it is meticulously cleaned. One cannot enter the *agor* (impluvium) wearing any kind of footwear.

The water slopes down the *agor* to the circumference (*mandal*) of the *kundi* through *oyoros* (small tunnel like device). These orifices are sometimes called *indu*. Even after the *agor* is thoroughly cleaned, to stop the sand particles and leaves that could be carried by the water coming in, sieves are fitted to the *ayoros*. For bigger ponds, a device called *gokh* or *gavaksh*, which is a kind of *jharokha* (latticed screen) is made to let air and light penetrate. Whether a *kund* is small or big it is never left open. An open *kund* is considered unsuitable, inauspicious, lustreless (*ashobhniya*) and in matters of water work suitability, auspiciousness, lustre (*shobba*) are essential. *Shobha* and *sucbita*, purity, cleanliness and cleansing, all these concepts are present together here.

Normally the apertures of *kundis* are round which is why to cover them a dome is constructed. Erected to the image of temples and mosques, the dome vests the *kundis* with magnificence. Wherever long strips of stones are found, the *kunds* are covered with a strip instead of a dome. Whether the *kund* is covered with a dome or a strip of stone, at one end an iron cover is fixed so that by opening it water can be drawn.

Some *kunds* are so deep, as much of 30 to 40 hands, that water is drawn from them as from a deep well. In such cases a coping is built as also five to six steps to climb on it; moreover on top of the cover a *gargari* and a *cbakri* are fixed. In several parts of Churu, the *kunds* are very big and deep. Because of the depth, strong *chakris* are fixed to them; since to draw water from such a depth a heavy bucket is needed to enable the *chakri* to bear its weight, the *chakri* is fixed to two minarets. At places one can find a four-minaret, *charminar kund*.

If there is a scarcity of space, then a very small *kundi* can be constructed. In such cases the *agor* is elevated. The very fact that there is a scarcity of space means that the adjoining space is being used for other purposes by the family or society. That is why to maintain the purity of the collected water the *agor* is elevated just like an altar.

Given the large area of agricultural land in the desert, the distance between villages and fields are quite large. Since to work on the field's water is required, small and big *kundis* are made at small intervals.

Kundis are actually made in sandy regions where the water table is deeper than 100 to 200 hands and is normally salty. Even big *kundis* are made at a depth of 20 to 30 hands and normally in sandy regions. However were the drops of such *kundis* to seep out one by one it would not take long for the *kundi* to be totally empty. For this reason its inner walls are coated in the best possible way. Whether the structure is small or big, the coating must be the best. For the coating, stone or stone slabs are used. The gap left between stones is filled with a thin layer of lime. Thus even if the greatest of architects may not be able to promise that there should be, in the desert, thirty hands of water with not even a few drops seeping away, the *chelvanji* can.

In spite of the *agor* being cleaned and the greatest precaution taken, one cannot prevent some sand particles entering the *kundi* with the water. That is why sometimes at the beginning of the year, during the month of *Chait*, someone descends into the *kundi* to clean it. To enable the person to get down, during the lining process, a little slab of stone is left jutting out at every 30 centimetres distance in the circumference of the wall.

Measures are also taken to enable the easy removal of the sand that has accumulated at the bottom of the *kundi*. The bottom is made like a big embroidery (*karav*) which is called *khamadiyo* or *kundaliyo*. However, such precautions are taken at the *agor* that it is only necessary to remove sand from the *khamariyo* every 10 to 20 years. Such is the care with which one generation looks after its *kundi* that only the next generation needs descend inside to clean it. Of late the government has made some arrangements for supplying water; in such places the strong tradition of looking after *kundis* has indeed weakened.

Kundis can be both private and collective. Private *Kundis* are made in front of houses, in the front courtyards (*angan*), in the enclosures facing the house (*abates*) and in backyards (*pichwadass*). The collective *kundis* are made on common *panchayati* grounds or usually between two villages. A door leads inside the four walls of big *kundis* and normally in front of it there are two open water tanks of which one is small and one is big. Even in height one is more and one less. They are normally called *khel*, *thala*, *hawado*, *awado* or *ubara*. The water they contain are meant for the goats and sheep, camels and cows that go by.

The collective *kundis* too are made by individuals, for providing water is considered to be an act of *punya* (both sacred and virtuous). If a happy event has occurred, the head of a household undertakes to build a collective *kundi* and to this end other households will contribute their labour. Some well to do families make collective *kundis* and entrust its care to a particular family. In the large precinct of the *kund*, outside the *agor*, a dwelling is made for that family. This arrangement comes down the generations from both sides. The head of the family who has made the *kundi* keeps a specific percentage of his revenues for the maintenance of the *kundi*. The succeeding generations too will take care of this and perpetuate the tradition. You will even find that several families who have built such *kunds* have relocated to Assam, Bengal or Bombay because of their work or business whilst the families in charge of the care of the *kundis* have stayed put by them. Such *kundis* collect rainwater and offer more water than any municipality throughout the year.

Several *kundis* have been damaged and sometimes the water too has gone bad; however all this is linked to the deterioration of society. It has nothing to do with the system itself. In fact this system is generous enough to cover up for the mistakes of new, expensive and unsuitable systems. All the water systems and hand pumps which have been installed lately in these regions, to 'resolve' the water problem have yielded salty water. Only *kunds* and *kundis* could yield sweet drinkable water that is why at places, when realisation dawned, hand pumps were installed over the *kunds*. The much publicised Indira Gandhi Canal has supplied water to only some regions, either in newly made government reservoirs or in the old, traditional *kunds*. These have seen old times and new times and thus have passed the test of Time and become *samaysidh*.

They have another characteristic, which make them *swayamsidh* - for their construction no material from outside was required. The magnificent *sangatban* (collective) which has undertaken water work in the desert has a very great quality that of being able to put up a strong structure from material available locally. Some material is available at one place but not at another, yet in both places *kundis* will be made.

Wherever strips of stone are available, the larger part of the *kundis* will be made of stone. At places stone is not available but then the tree named *phog* comes to the rescue. By weaving the branches of this tree and interlocking them, a dome like structure is made to be installed over the *kundi*. A thick coating of sand, soil and lime is then applied

over it. To allow for climbing the dome, a part of the branches used is made to jut out. In the middle, an aperture to enable the drawing out of water is also provided. In such *kunds* too rainwater enters the *kundi* through *oyoros*. Whereas there are more than one *oyoro* in the case of stone ponds, those made of *phog* have but one. The aperture of the *kundi* is normally 7 to 8 hands, its height is around four hands and the hole through which the water goes is one *bitta*. Once the rainwater has been collected, the rest of the time, the hole is protected with a covering made of cloth. Instead of being constructed on different *agors* the *phog kundis* are made on one big *agor*, like *kuins*. The beautiful and neatly whitewashed house next to the *ago* d similarly whitewashed *kundis*, spread all around the four corners of the immense desert, seem to play hide and seek.

In Rajasthan there exists a strong attraction for colour. The skirt like *lehengas*, scarf like *odhnis* and brightly coloured turbans keep changing their hues through the joys and sorrows of life. Yet *kundis* are found only in one colour, white. If in this region of strong sunshine and heat, the *kundis* were to be painted in a dark colour, they would absorb the outside heat and thus affect the water collected inside. That is why such a colourful society coloured its *kundis* in white only for it reflects the strong rays of the sun. Even the domes made of *phog* do not remain hot under the scorching sun. They do not get cracked and the water stored inside remains cool.

Some time back, a certain department launched a new project according to which it was decided to innovate upon the *kundis* by replacing *phog* with cement. Those who were experimenting must have thought that this modern *kundi* would be stronger. However it did not turn out to be so. The cement domes of these ideal *kundis* could not withstand such strong heat and caved in. Even the inner walls of those *kundis* instead of being coated as usual with sand and lime were coated with cement. Numerous cracks appeared on them too. To rectify them tar was used to fill up the cracks; however under the blaze of the desert, the tar melted away. All the water collected during the rainy season evaporated. Then the people went back to the time tested *kundis* made of *phog*, sand and lime in order to put an end to the water problem caused by the modern material.

Sometimes the gypsum layer present in the desert is not very deep and lies only at a depth of 4 to 5 hands. In such cases it is not possible to build *kuins* which are dependent on *rejani* water and when the layer of gypsum is not very deep, then the amount of *rejani* water that gets accumulated during rainfall is not enough to fill the pots throughout the year. That is why in such places *kundis* using this very gypsum are made. Huge slabs of gypsum are extracted and baked. At a particular temperature this huge slab breaks into smaller pieces. These are then powdered. When the proper site for the *agor* is chosen, the *kundi* is dug. The coating inside and the dome covering outside are both made of this powdered gypsum. The dome of a circumference of 5 to 6 hands is 1 *bitta* thick; so even if two ladies stand on it to draw water, it will not break.

At several places in the desert there are huge slabs of stone. Strips can be extracted from them. Huge *kunds* can be constructed with the help of strips, which are normally two hands wide and fourteen hands long. The dimension of the *kund* covered by these strips is proportionate to that of the *agor* and the amount of water to be collected.

Whether a house is small or big, a permanent structure or not, the *kundi* will always be of a permanent structure. In the desert villages are far flung and moreover not highly populated. It is therefore not at all possible to have a centralised arrangement to distribute water to such widely dispersed villages. That is why society kept the water work totally decentralised, distributing the responsibility in this matter, drop by drop, between themselves. Thus instead of being reduced to being a dry technique and a mechanical device, this practice was transformed into an ethos. To know how beautiful these *kundis* can be, one can go to the villages of Jaisalmer.

Each village counts but 15 to 20 houses. The rainfall too is very low. In this region the rainfall is lower than the average of the town of Jaisalmer. Here, in front of the house, one can find a big altar (*chabutra*). On the walls and on the altar, there are beautiful traditional drawings, called *alpanas*, made of yellow clay and ochre, just like colourful rugs spread around. All the activities of the house are carried out here. Grains are put to dry, children play; in the evening the elders' *chaupal* (a wooden cot which is woven with jute and also used for sitting out in Indian villages) is put up here, and if a guest arrives, at night his bed is made on this *chabutra*.

These beautiful altars are however not just altars. They are *kunds* into which the rainwater which falls from the roof or from the courtyard and the plains get collected. If on a particular year the rainfall has been low and not enough to fill the *kund*, then water from a nearby or faraway well is brought in camel carts to be filled into it.

Tankas (reservoirs) are pretty much like *kunds* and *kundis*. The water collected in them come from the roofs of houses instead of the courtyard. The *tanka* of a house is proportionate to its roof and its size is also dependent on the size of the family and on their requirement in water. In all the villages and towns of the desert, the houses are made in such a way as to allow the rain water falling on their roofs to fall into the *tankas*. Each roof has got a slope. At the mouth of the slope, a clean drainpipe is made. A device is also conceived to take care of the dirt that can come in the water; this is kept at the opening of the pipe and thus the water is strained before it reaches the *tanka*. For a family of 10 to 12 members, a *tanka* which is 15 to 20 hands deep and that much in length and breadth is made.

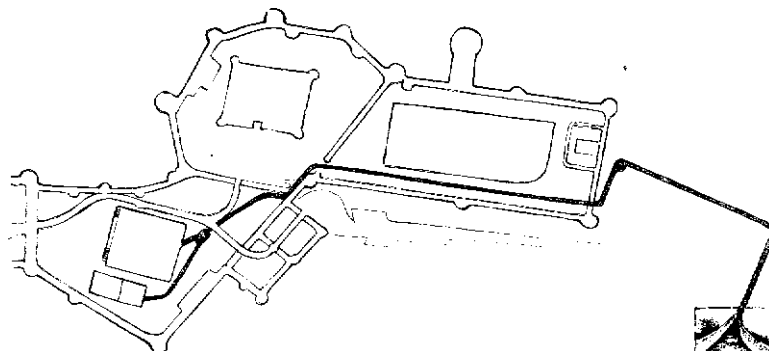
The *tanka* is usually located in a room, a hall or a courtyard and it is also properly covered. On one corner, the aperture is covered with a clean lid, which can be removed to fill water in a bucket. Throughout the year the water of the *tanka* is used for drinking and for kitchen work. To ensure its purity, no one goes on the rooftop wearing any footwear. No doubt during summer months, the family members sleep on the roof top but the very young children are made to sleep in that part of the roof which is not linked to the *tanka* for, very young children could wet their bed and this would spoil the purity of the roof which acts as an *agor*:

The very first precaution which is taken is to ensure the thorough cleanliness of the roof, the pipes and the *tanka* which is linked to them. In spite of this, from time to time, after some years, during the summer months, in fact just before the rainy season, when the water level is lower, through the usage of the year, the *tanka* is cleaned and washed from inside. To enable someone to get down inside, small steps are made and at the bottom the *khamariyo* is made so that the sand is removed easily. Sometimes the *tankas* are not only joined to the roofs but also to the courtyards. Their capacity to store water is thus doubled. Even though such a huge *tanka* belongs to a house, the whole locality assembles to use its water.

Tankas are even made in uninhabited places, far from localities, villages, and hamlets. Those who undertake the construction of such *tankas* do not do it for themselves but for society. There could hardly be a better example of *svamitva bisarjan*. These *tankas* are meant for herdsmen and cowherds. In the morning, the cowherds and herdsmen set out carrying a flat earthen water pot, the *kupri*, but by midday itself, the *kupri* becomes empty. However, they can always find a *tanka* nearby. At each *tanka* one can find a bucket or at least an old tin box with a string attached to it.

In sandy regions, wherever a rocky terrain or a gravel soil is found, a *tanka* is built. Here importance is not given to the amount of water but to its collection. Even water trapped in *churros* are accessed to fill these. *Churros* are interstices between sand dunes where not much water can flow. However, even the feeble flow of water is contained to feed the *tankas*. Around such *tankas*, sometimes a little slope is made so that the amount of water to be collected is increased.

If one were to use modern norms to measure these water bodies then even the smallest *kundi* or *tanka* contains ten thousand litres of water and medium sized *kunds* could contain 50,000 litres of water. As for big *kunds* and *tankas* they would be real *lakhpatis* with 100,000 to 200,000 litres of water.



However, the biggest *tanka* is to be considered a millionaire for it can contain 200,000 gallons i.e., around 3 crores (3,000,000) litres of water. It was built some 350 years ago at the Jaigarh fort which is near Jaipur. This immense *tanka* is about 150 hands large and 40 hands deep. Its vast roof is supported by pillars submerged in water. On all four sides *gokbs*, i.e *gawaks*, are made to ensure its ventilation and aeration. Throughout the year the water it contains remains pure. At two ends of the *tanka* two doors give access to the inner part of it. The two doors are linked by a long corridor and on both sides there are stairs leading to the water. From here one can go down and bring water up with the help of *bahangiyos* (poles). If one of the small windows (*gokhs*) is reflected amongst the pillars in the water, one comes to realise how blue the water is.

The blue water is brought by a big canal, which is in turn fed by several smaller ones built on the mountains surrounding the fort. This canal, which is as wide as a road, goes along the wall of the fort, keeping its protection into account, and descends inside the fort.

Before the rainy season the canals are naturally cleaned and yet the water from the first shower does not go into the main *tanka*. Adjoining the main *tanka* there are two other *tankas*, a closed one and an open one. Near these *tankas*, at the mouth of the canal feeding them, there are two gates. In the beginning, the gate of the canal leading to the main *tanka* is kept closed whereas the gate of the open *tanka* is opened. Thus the water from the initial showers reaches the open *tanka* first and then the covered one adjoining it, washing the canals on the way. The water collected in these two *tankas* are used for animals. Jaigarh was a fort where an army must have stayed; there must have been elephants, horses and camels too for the army. Moreover the water of those *tankas* was also used to clean the huge fort itself.

When the whole route followed by the water as well as the network of canals was thoroughly washed, the first gate was closed and the second one opened. At that time, the main *tanka* geared itself up to receive three crore litres of water. A *tanka* of such an immense capacity was built not only to fulfil the need in water of the whole fort but also to protect it. If ever the fort were to be surrounded by enemies, then there would be no water shortage. The king has gone and with him his army too. Now tourists visiting Jaipur come to the fort. When they reach the fort, after an arduous climb, their thirst is quenched by the cool water of this very *tanka*.

Even the stream of sayings, flowing around the country, in praise of them, cannot express how pure the still waters of *tankas* and *kunds* are



5. An Ocean. Within A Drop

It is from the poet-saints that the expression *bindu me sindhu ke samaan* - like an ocean in a drop - emanated. It is the householders, steeped in the daily management of their household, who first spiritually assimilated the saying and then brought it to fruition upon the earth in such a way that 'people remain astounded at its sight', *heranhar hiran*, as the Rajasthani expression goes.

To receive the *palar* rain water, as the *prasad* (blessings) of God Varuna and then to ensure that not a particle of it gets dissipated is indeed an act of faith; the spirit of devotion displayed in collecting it is steeped both in spirituality and the physicality of life (*samsara*). Without this spirit how could life have ever been possible in the desert?

The word *pur* (village, inhabited settlement), can be found everywhere but the word *kapur* is strictly local. Any village devoid of basic facilities would be a *Kapur*. The word exists in the language yet no efforts were spared to ensure that no village be called *Kapur*.

Bandh-bandha, taal-talai, johar-johari, nadi, talab, sarvar, sar, jheel, deibandh-jagah, dahari, khadeen and *bhe*: all these water bodies have been filled drop by drop to become like an ocean. In the region which today's society considers impossible as far as water is concerned, ancient society tried to see what was possible; it is with this spirit that they set to work. Instead of saying: "Lord give us this much", they lived up to the saying: "May our family be happy with what you give us".

The forms and names of the lakes of this place vary according to the different topographies of the earth. For example, if all around there are massive mountains and rainfall is abundant then *jheels* and *talabs* (lakes), big enough to contain water not only for a year but also for years have been conceived. It is not as if only royal families undertook the construction of such water bodies; several *jheels* and big lakes have been made by tribes like Bhils and Banjaras as well as shepherds through several years of effort.

Many historians, who were richly paid, have tried to link these types of substantial work to the custom of forced labour or bonded labour. However, an exception never proves the rule. Of course, sometimes these works were undertaken during periods of famine, to support the people and bring cereals whilst also trying to gather the means of facing future scarcities; but they were also undertaken during prosperous times, to ensure a prosperous future.

Even places where there is not enough water and the space to contain the water is small, are not neglected. There the most humble member of the big *talab* family is built, the *nadi*. The *nadi* pays full respect to the water which flows in a small amount from the small *agor* of *magra* or *thali*, small sand hills. The methods and the material, earth, can be rudimentary, *kacchha* however; this does not mean that the character of the *nadi* will be so. You can find *nadis* that are two or three centuries old.

In the *nadis* water can remain for a month or a month and a half as also seven to eight months. In the smallest of villages, one can find more than one *nadi*. In fact in all the villages of the desert about ten to twelve *nadis* are present. In Jaisalmer, in the historical cluster of 84 villages of the Palivals, one can find more than seven hundred *nadis* or their traces.

In *talais* or *johar-joharis*, water can be stored for longer and in larger quantities than in *nadis*. On their *pal* (dike) one can find a stone structure; it could be a small *ghat*, consisting of five to six steps leading to the water, or even small castle like monuments.

Talais can be found even where nothing else can exist. The large areas surrounding the salt lakes consist totally of saline soil, so the moment the drops of rain fall on the ground they become salty. Subterranean *patal* water is salty, the *palar* rainwater is salty and even the *rejani* water trapped in between is salty. Water devices and hand pumps were set up and even they yielded salty water. However, in such regions, the four to five centuries old *talais* are made in such a way that the raindrops are captured at a height of two to four hands from the salty lake in an *agor* where they get collected and remain sweet throughout the year.

Most of these *talais* are about four centuries old. It was the period when all the salt business was in the hands of Banjaras who used to travel from one corner of the country to the other, carrying salt in caravans of thousands of oxen.

En route they used to halt on the outskirts of the villages they came across. They needed water even for their animals. The Banjaras knew only too well how salt has the property of melting in water. They were equally familiar with the salt absorbing trait of water. However, displaying tremendous cleverness, they succeeded in keeping apart these two elements despite their properties to fuse with each other. The lakes of Sambhar, which are made slightly above a vast salty *agor*; testify to this ingenuity.

Various governments of the 20th century, including the government staking a claim to take the country into the 21st century, have not been able to provide sweet water to the villages of these saline areas. However, the Banjaras had eaten the salt of these regions and so, to honour that, they were the ones who gave these villages sweet water.

Some years ago new and old governments tried to make a similar new *talai* near the *talais* of the Banjaras: however they were not successful in segregating the 'fusing' properties of salt and water.

If a bigger space is found where rainwater can be received and held, then, instead of a *talai*, a *talab* is made. These can retain the rainwater till the following rainy season. It is true that in today's hustle bustle some ancient *talabs* have been damaged; however, even today, there is no dearth of *talabs* that can retain water for a whole year. And this fact foxes the officials in charge of the census; they quite incredulously wonder from where these lakes have sprung up. Governments hesitate to indicate this fact in their reports. All these arrangements had been made by society on its own; and their strength is such that even after so many years, they are still holding firm in one form or another, and upholding the strength of society.

The description which the Gazetteer gives of Jaisalmer is indeed very sombre: "There is not a single river with water throughout the year in this region. The water table is as deep as 125 to 250 ft and sometimes goes down to 400 ft. Rainfall is incredibly low, as low as 16.40 cm.



According to a study done over 70 years, out of 365 days there is no rainfall during 355 days. In other words, the rainy season which lasts normally 120 days is reduced to 10 days in this region".

The truth is that this is the accounting of people alien to the culture. As for the people of the desert, in the 10 days of rainfall, they have seen millions of priceless drops and they have undertaken to collect them in each house, each village, even in each town. The result of this *tapasya* (ascetic dedication) is manifest.

Today in Jaisalmer there are 515 villages, of which 53 have been devastated for one reason or another. Thus 462 are inhabited.

Out of these, except for one village, the rest have drinking water facilities. Even in the deserted villages, one can still find water facilities. According to the official statistics, 99.78% of the villages of Jaisalmer have lakes, wells and 'various' other water sources. Of these very few are in the form of taps or tube wells. Of the 515 villages of this frontier district, only 1.75% has electricity. Even if for the sake of convenience this figure is raised to 2%, it means that only 11 villages have electricity. These figures come from the last census report. If we suppose that since then, there has been progress we can say that instead of 11 villages now 20 to 30 villages more have electricity. It would still mean that only a negligible number of villages out of the 515 have electricity. This in turn would mean that in several villages the tube wells must be running not on electricity but on diesel, which must be coming from a faraway place and if the diesel tankers do not come, it means the pumps cannot work and therefore there will be no water. Even if everything works as scheduled, the water level of the tube wells will still fluctuate since no method of stabilizing it has been found. Actually, it is said that the water table of Jaisalmer is quite abundant but for how long will one be able to draw out water from this water bank without putting anything in return?

Let us reiterate that in what is reputed to be the most thankless region of the desert, 99.78% of the villages have got water facility, a facility which they have put up on their own strength. Let us now compare this to the facilities for which modern society's new institutions and principally the government are responsible. Asphalted roads have only linked 19% of the villages; postal facilities are available to 30% of them, health care is available to 9%. Comparatively education facilities are better than the others, being available in 40% of the villages. We must bear in mind that these facilities - postal, medical, educational and electrical - only need a fixed sum of money which can be levied from the central budget. If need be, it can be increased through other means or donations. And yet we find that these services are available only in a symbolic way.

On the other hand, regarding water, the situation is very different. Society cannot increase the amount of water that Nature bestows upon this region. That 'budget' is fixed, so the whole work has to be done within that amount. Despite this, society succeeded in this sphere. In the 515 villages, even without counting the *nadis* and *talais*, there are 294 lakes.

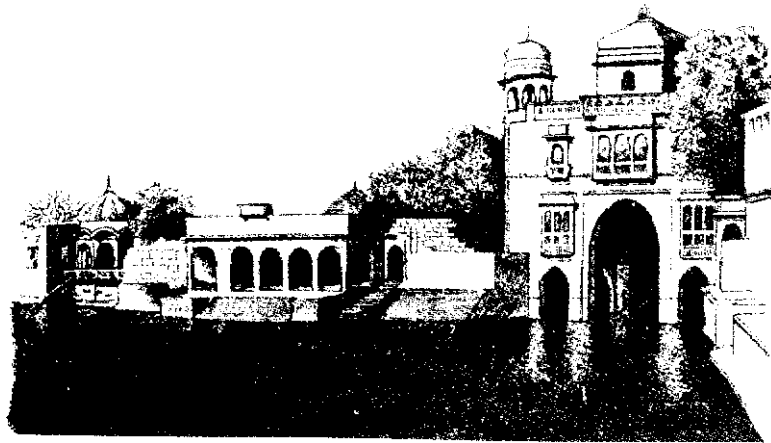
In the very region which modern society considers as a hopeless territory, at the frontier, just before Pakistan starts, there is *Asutal*, the lake of hope. Where temperature reaches up to 40°C, we can find *Sitlai*, a cool *talai* and where the clouds are the most Disappointing', we have *Badrasar*, a sea of clouds.

To the *Gazetteer*, which did not understand the true nature of the water culture based on meticulous storage of water and its frugal utilization, and to the state and society which it represents, as well as to their new social institutions, this region seems 'desolate, frightful, inert, lifeless'. However when the very person who wrote all this in the *Gazetteer* reaches Gharsisar he "forgets that he is on a trip to the desert".

On-documents and on tourist maps, Gharsisar is almost as vast as the town of Jaisalmer. On paper, as in the desert, these two are closely linked: without Gharsisar there would have been no Jaisalmer. For seven hundred years, each day of this eight hundred years old town has been linked to each drop of Gharsisar.

You see a formidable sand dune in front of you. Even on coming close you will not realise that this is not a sand dune, but the wide and tall *pal* of Gharsisar. If you come still closer, you will see two bastions and a gateway of three doors, one big, two small, and five *jharokhas*, with magnificent stone sculptures, raising their heads. Facing the big and small *pols* (doors) the blue sky shines through. As you come nearer, new elements come and join the view perceived from the entry doorway. It is when you finally reach there that you realise that the patch of sky you could see through the doorway is actually an expanse of blue water. And then on either side you can see splendid steps, temples, vast halls and meeting places, verandas supported on many pillars, rooms and what not. When, as you reach the lake, there is an end to the constantly changing picture, then the eyes, which are viewing this lovely sight, cannot focus on one particular point. It is as if the constantly roving pupils want to measure this phenomenal vision.

The eyes cannot, however, measure it. The *agor* of this lake, which has an *agar* (retention pool) 3 miles long and about 1,120 square miles. The Maharaja of Jaisalmer, Maharawal Gharsi constructed it in the Vikram Year 1391 which corresponds to 1335 of the present calendar. Other kings had lakes constructed but Maharaja Gharsi constructed this one himself. Everyday the Maharaja would come down from his fort and lend a personal hand in the digging, filling and other activities.



This period was actually a very tumultuous one for the kingdom of Jaisalmer. The Bhatti dynasty was going through a period of conflict, conspiracy and internecine quarrels regarding the succession to the throne. On one side the uncle assaulted the nephew and the real brother was exiled from his land, on the other, poison was being put into someone's tea cup. On one hand fratricidal war was going on between the royals, on the other, the kingdom and the city of Jaisalmer were locked in combat with neighbours and foreigners; from time to time, men fought valiantly till death as the women immolated themselves in the blaze of the *johar*; a mass funeral pyre. Even through this turbulent time, with the help of the *Rathor* clan Gharsi conquered Jaisalmer. To describe Gharsi's period, history books are replete with words such as victory, defeat, grandeur, subjugation, assassination and continuous stream of battles.

Even through such a time, this lake was being constructed. To bring to fruition the work planned across several years, Gharsi displayed an immense patience and an immeasurable single-minded dedication. He ultimately even paid the highest price he could for it. The *pal* was being made and while standing on it, the Maharawal was supervising the work some royal conspirators attacked him fatally. Those days according to tradition his consort should have immolated herself on his funeral pyre; yet Queen Vimla did not do so; instead she decided to fulfil the dream of the king.

This dream of sand has two colours; blue for water and yellow for the steps built in a semicircle on the banks of the lake, extending over 3 to 4 miles and for the temples, the towers, the meeting places, the verandas. But, twice a day, this dream takes on just one colour when the rising and the setting sun pours molten gold into Gharsisar to satiety. And that too not a satiety which is controlled but one which measures up to the sun.

Even the people have, according to their capacity, poured gold into Gharsisar. The lake was perhaps the king's lake but his subjects never ceased to embellish and decorate it. The temples, steps and *jalmahals* (castles built in the midst of water) built in the initial period were constantly being extended. At any given time, whoever conceived of something he liked, offered it at the altar of Gharsisar. Gharsisar effectively became the site of a *jugalbandi* (playfully competitive musical duo) in which the king and his subjects participated. At one time even schools were opened on *the ghats*. Students from the town and adjoining villages used to come there to stay to acquire knowledge from their gurus. On one side of the *pal* there were rooms and kitchens. Those whose work at the palace or at the tribunals got blocked resided there. Temples to Neelkanth and Girdhari were built as well as halls to conduct ritual sacrifices, *yagnas*. A *chauki* (raised platform) dedicated to the Sufi saint Pir Jamal Shah was also built. All this on one *ghat*.

Families who had left the desert to go to some other parts of the country for the sake of business continued to be attached to Gharsisar. The ancestors of Seth Govindas who left to settle in Jabalpur in Madhya Pradesh came back to construct a magnificent temple on the *pathsaal*. In this regard let us remember that the people who were closely linked to the tradition of lake building always had lakes built wherever they went. The descendants of Seth Govindas had a beautiful one constructed right in front of their big *bakhar*; residence, in Jabalpur. One can feel the inspiration of Gharsisar behind this lake called Hanumantal.

Water for the whole town was supplied from there. Throughout the day water was drawn from Hanumantal but in the morning and in the evening, the gathering of the hundreds of ladies who went there to fetch water seemed like a

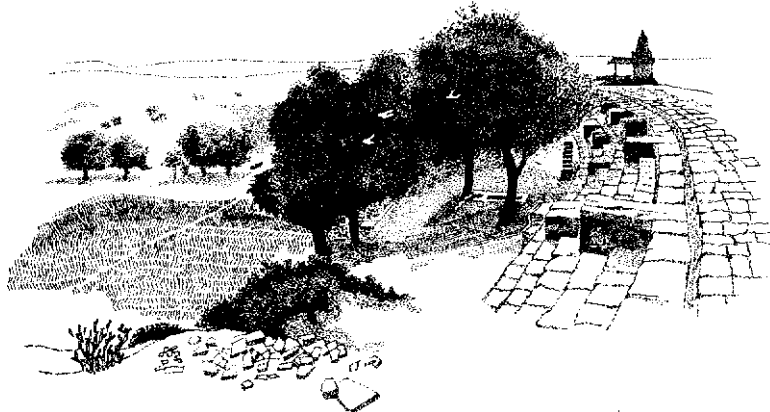
mela (fair). This scene could be witnessed in the town till taps came. *Bhadon Ki Kajli*, a beautiful *ghazal* (lyrical poem) composed by Umajid Singhji Mehta in 1919, gives a graphic description of the scene prevailing at Gharsisar. On the festival of *Teej* the whole town would come to Gharsisar wearing their best dresses.

At that time, it was as if all the colours of Nature had splashed on to the lake which normally bears just two colours: blue and yellow.

The love people had for Gharsisar was not just one sided. If people came to Gharsisar, Gharsisar too went to them, to their hearts. This is what must have happened to the courtesan Tilon, who stayed in faraway Sindh, and inspired her decision.

The banks of the lake were adorned by temples, *ghats*, schools, in fact everything conceivable. It lacked nothing in splendour. Yet Tilon felt that such a magnificent lake required an equally magnificent doorway. She therefore decided to have one constructed on the western banks of the lake. The grand doorway, adorned with finely sculpted stone *jharokhas*, was about to be finished when a whisper reached the king's ears: "Would you enter Gharsisar through a door constructed by a courtesan?". The seed of discord was thus planted. Work was going on at Gharsisar when the king decided to bring down the doorway. Tilon got wind of this and overnight she had a temple constructed on top of the doorway. The Maharawal had to change his decision. Since then the whole town enters the lake through this door and till today Tilon's name is associated with it.

Just opposite Tilon's Gateway, on the other side of the lake, there is a round rampart like *burj* (bastion). Normally around lakes, there are mango orchards and gardens but in this *burj*, there is a small garden within the lake where people come for leisure and pleasure. Adjoining it, in the eastern direction, there is another round rampart like structure where the battalion deputed to protect the lake used to stay. Since the lake was surrounded by local and foreign enemies, measures were taken for its full protection as it supplied water to the whole town.



However little rain would fall in the desert, the *agor* of Gharsisar was big enough to store every drop and fill up the lake to the brim. Whether you climb on to the fort, on the mountain facing Gharsisar, to observe it or whether you walk around the *agor*; even after repeated explanations, it is difficult to understand by what means water is fed to the lake. "Water comes to it from the faraway horizon. To bring water to this immense space and direct it towards the lake, a dike of about 8 kilometres, which is like a *medbandi*, has been built. The force with which this huge quantity of water would arrive was also calculated and to break its impact a stone curtain, very much like a long, solid wall, was erected. On hitting the wall, the force of the water breaks and it enters Gharsisar very smoothly. If it had not been for this wall, the *agar* of Gharsisar, its beautiful *ghat* and everything else could have been torn away.

The care of Gharsisar, once it is filled to the brim, is done by the *neshta*, which is that part of the lake from where the excess water exits without damaging the *pal*. The *neshta* (spillway) drains out the excess water which would break such a magnificent lake. However, even this 'draining out' is no ordinary one. A society which knows how to fill Gharsisar drop by drop, does not consider its excess water just as plain water but rather as blessed water (*jal rashi*). The water exiting from the *neshta* is then stored in another lake further down. Then if the *neshta* still does not stop, the one of the second lake is opened and another lake is likewise filled; and so on and so forth; unbelievable but true, this process can carry on to fill up to nine lakes: Nautal, Govindsar, Joshisar, Gulabsar, Bahijasar, Sudasar, Mohtasar,

Ratansar, and Kisanghat. And after Kisanghat, if water is still left over, then it is fed to *beris*, which are small *kunds*, resembling wells. Each drop finds its full meaning, as words and sentences, over the 5 to 6 km distance from Gharsisar to Kisanghat.

However, those who govern Jaisalmer today have forgotten the very meaning of Gharsisar so how can they ever remember the *neshta* linked to those lakes? In the *agor* of Gharsisar an air pad has been made for the Air Force, which is why the water of that part of the *agor* no longer goes to the lake but flows elsewhere. Around the *neshta* and the nine lakes which fall on its course, have sprung widely growing housing colonies, new housing societies and to top it all the office and the housing colony of the employees of the modern water department, the Indira Nahar Pradhikaran. Slowly, the *ghat* schools, kitchens, *baradari* and temples have fallen apart just like the upkeep of this place. Today, the town does not even play the game of *lhas*, which king and subjects would play together while cleaning Gharsisar and removing the *silt*. Even the *jalstambh* (water tower), erected by the lake, is leaning on one side, having been slightly dislodged. The stones of the *burj* meant for the battalion protecting the lake have also fallen down.

At places, the *baradari* of the *ghat* has been forcefully occupied. In the schools, where at one time traditional knowledge was dispensed, now a pile of dirt has amassed. Since the past few years Jaisalmer features on the world tourist map. During the winter months, from November to February, tourists from all over the world come here and for them, this beautiful lake is an attraction, which is why, about two years ago, the government brought its attention to it. It even tried to rectify the lessened flow of water into the *agor* by bringing water from the Indira Gandhi Nahar to it. This project was even inaugurated properly. However after filling it once only, the pipe which was coming from far broke down at places. It could not then be rectified.

So today also, as in the past, Gharsisar is filled up with rainwater.

The 668 years old Gharsisar has still not died. Those who had built it made it strong enough to withstand the blows of Time. Those who created the fine tradition of maintaining their lakes through sand storms did not probably realise that one day these would have to face storms of neglect. However, Gharsisar and those who care for it are bearing up to this storm too with a lot of resilience. The battalion which guarded the lake is no longer present yet the people continue to guard it in their spirit. With the first rays of the sun, the bells of the temples start ringing. Throughout the day people keep coming to *the ghats*. Some people sit for hours silently contemplating Gharsisar while others sing, play the *ravantatha*, a sarangi - like string instrument, and meet each other. The camel drivers going towards the sand dunes, faraway from Gharsisar, stop by to have its sweet water and they can be heard for miles singing its praise.

Even today the woman of the house goes to the *ghat* to fetch water. Water is also carried in camel carts and during the day, one can see tankers which have installed diesel pumps to take water from Gharsisar.

Today, also, Gharsisar is providing water, that is why even today while rising and setting, the sun pours into it molten gold to satiety.

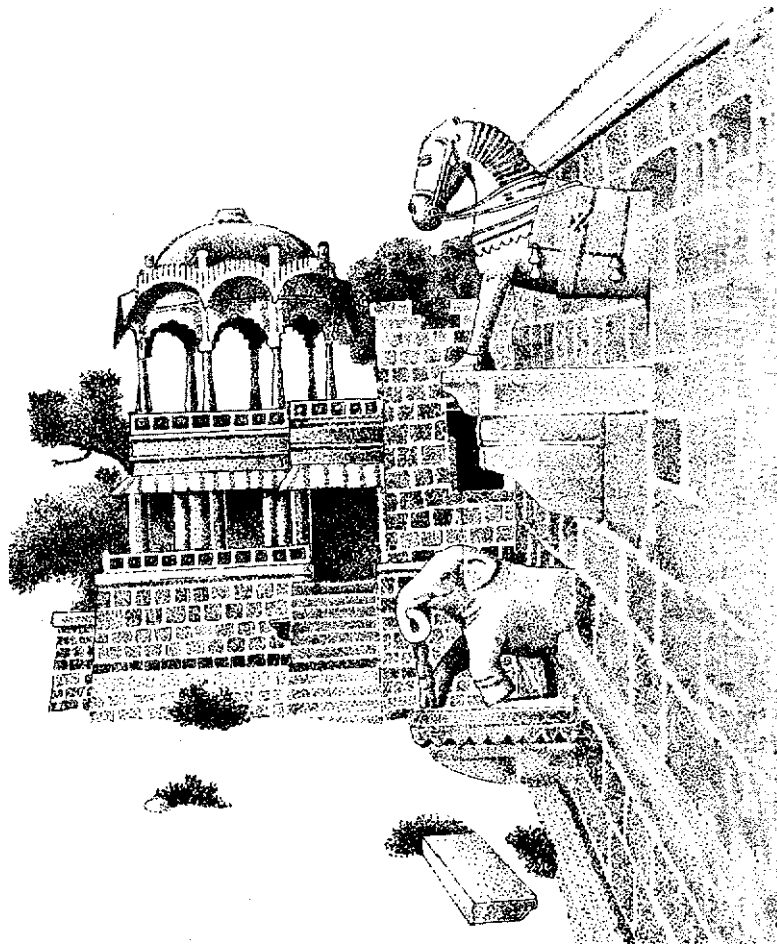
Gharsisar has already become a reference. It must have been very difficult to make a lake after Gharsisar. But every 50 to 100 years, lakes have been built in Jaisalmer, one better than the other, like pearls strung to Gharsisar.

About 175 years after Gharsisar, Jaitsar was built. This too was like a balancing lake; however, because of its big garden, it came to be remembered as Bada Bagh, The Big Garden.

This stone dam (*bandh*) holds all the water coming down the mountains which rise to the north of Jaisalmer. On one side, there is Jaitsar and on the other the Bada Bagh irrigated by its waters. The two are divided by the wall of the dam. This wall looks however more like a nice, large road which crosses the valley to reach the mountains. The irrigation pipe which is built below the wall is called Ram Nal. Towards the *bandb*, Ram Nal takes the shape of steps. Whether the level of water in Jaitsar is high or low, the terraced structure of the pipe carries the water down to Bada Bagh. On reaching it, Ram Nal is subdivided into thousands of particles like the thousand names of Ram. At the first stretch of the pipe there is a *kuan*. If the water dries up and the pipe stops flowing then the well into which the soil water seeps can be used. *Charas* and sometimes *rahats* (wheels) are used in the well. There are innumerable small wells in the garden.

The Bada Bagh lives up to its name and is indeed very big and green. It has vast mango groves and a diversity of plants. In the parts where the rainfall is high, one can often find the *Arjun* trees which grow on riverbanks. In the thickness of the Bada Bagh, the rays of the sun remain caught in the foliage of trees, tumbling to the ground at times, when a breeze shakes the leaves. On the other side of the dam, on top of the mountains are the royal cremation grounds. Here, numerous *chhatries* (commemorative canopies) have been erected in memory of departed souls.

Amarsagar was built 325 years after Gharsisar. The main objective must have been to hold the water falling in another direction. But it could also be that the society which built Amarsagar wanted perhaps to express the hope that their own desire to build a beautiful and useful lake should remain eternal. How to make a whole, unjointed (*bejor*) lake by joining pieces of stone is amply demonstrated by Amarsagar. A *pal* as wide as the lake was constructed like a high, uninterrupted wall. Beautiful stairs attached to the wall descend to the lake, passing from the *jharokas* and the *burj*. On the flat surface, a lion, an elephant and a horse have been made in stone. These beautiful statues indicate the water level of the lake. The whole town knows what amount of water has been collected and how long it will last.



The *agor* of Amarsagar is not big enough to store water for a whole year's consumption. By the time summer sets in, the lake dries up which means that the people of Jaisalmer could forget such a beautiful lake during this season, when the need for water is highest. But the architects of Jaisalmer executed some work which went down the annals of the history of architecture. Seven beautiful *bens* have been built in the bed of the lake. A *beri* is like a *bavri*, a step well, it is also known as *pagbav*. Even when the lake dries up, through seepage the water level of the soil comes up. Then the *beris* are filled with this clean, filtered water. Moreover they are made in such a way that inspite of losing its water Amarsagar does not loose its beauty. They are all decorated with lovely stone altars, pillars, canopies and artfully made steps that go down. The crowds of a *mela* gather there both during *Baisakh* (April-May) and during the rainy season at *Bhado* (July-August). When the lake is dry, these *beris* look like parts of a palace and when it is full they look like big canopied ships floating on the lake.

Jaisalmer was a kingdom of great renown in the world of trade. There was a time when hundreds of camel caravans used to pass through it everyday. Goods from present day Sindh, Pakistan, Afghanistan, Iran, Iraq, Africa and the distant erstwhile Russian State of Kazhakistan and Uzbekistan would be received here.

Today, at Manak Chouk (Gems Square) vegetables are sold but there was a time when precious stones were traded here. The caravaneers looking after camel caravans used to load and unload goods worth millions. Till the early 1800s, Jaisalmer had in no way lost its splendour. At that time it had a population of 34,000. Today it has decreased by half.

Even later, after its decline, the work of building lakes did not stop in Jaisalmer and its neighbourhood. One after the other the lakes succeeded themselves: Gajroop Sagar, Mulsagar, Gangasagar, Dedsar, Gulab Talab and Issarlalji ka Talab. So many lakes were built in this town that it would be difficult to count them. Whenever you think you have the final list, unmistakably someone will laughingly add two or three more names to it.

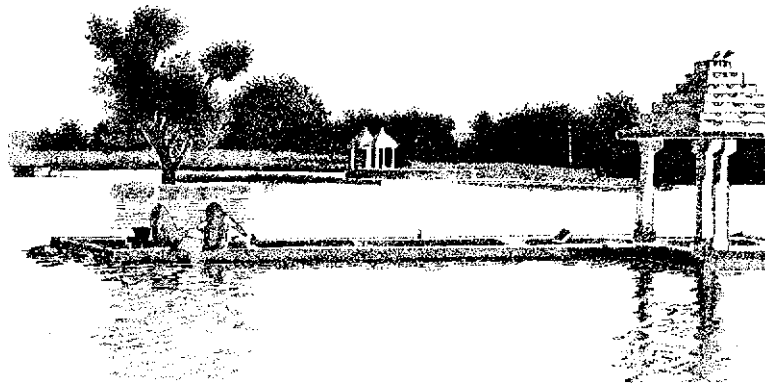
This beautiful chain of lakes was still intact till the British came. It was not as if the upkeep of lakes was only left to Rajas, Rawals and Maharawals. That section of society which in today's economic vocabulary is classified as the weaker section also contributed to maintain the strength of this chain, as the 500 years old story which follows testifies.

Megha used to take his cattle to graze; he would start very early in the morning. Around him, for miles together, there was stark, scorching desert land. Megha used to carry his drinking water for the day in a flat, earthen pot called *kupdi*. By evening he used to come back. One day, a small amount of water was left in his *kupdi*. God knows what went through Megha's mind but he dug a small hole and poured the water into it; he, then, proceeded to cover that hole properly with *ak* leaves.

A herdsman's work never takes him to the same place; if he is here today, tomorrow he can be some place else. Thus it was that for two days Megha could not return to the same spot. He only reached there on the third day. With eager hands, he removed the leaves; the water was no longer there, but he got a whiff of cool breeze. Immediately the word '*bhap*' (vapour) sprung from Megha's lips. He gathered that if in such blazing heat a little of the water's humidity was preserved, and then a lake could be made here.

Megha started on his venture all by himself. Everyday he started bringing a shovel and a pail. Throughout the day he would dig the earth and put it on the *pal*, all by himself. His cows would graze in the vicinity. Megha was perhaps not as strong as Bhima but for two years he carried on like that, all alone. By then, in the starkness of the desert, from far one could see the vast circumference of the *pal*. The neighbouring villagers heard about it. They too, children and all, started giving a helping hand to Megha from morning onwards. Everyone worked together. Twelve years had gone by and the work still carried on, but unfortunately Megha's life came to an end. His wife did not immolate herself to become a *sati*. Instead, from then on, she continued the work Megha had been doing.

In six months time the lake was ready. Since it had all started because of *baph* or *bhap*, this lake was named *Baph*, which later deteriorated to *Bap*. Society sanctified the herdsman Megha who became Meghoji and in his memory a beautiful cenotaph was built at the *pal* of the lake. Similarly a *devli* was constructed to honour his wife.



Bap is a small hamlet which falls on the Bikaner-Jaisalmer route. The *pal* which is thrice the height of a bus stands near the bus-stop. During summer, when on this side the hot winds of the *loo* start, ripples are created on the lake of Meghoji. During the rainy season it is as if an island has formed on the lake. The water spreads for a distance of 4 miles. Megha, cloud and Megharaja, the king of clouds, may be scarce in the desert but people like Meghoji are not.

Our paen to the lakes of Rajasthan could never be complete without the mention of the extraordinary lake Jaseri. Built near Derha, a village 40 km from Jaisalmer, this lake is the ultimum in matters of holding water. It is surrounded by the searing desert yet neither its water nor its glory dry up. On its *pal*, covered by local *babul* and *jaal* trees, there is a beautiful *ghat*; on one of its corners there is a beautiful stone canopy: nothing much besides, to talk about. But whatever be the month of the year, if you go by it, you will always see its clean, blue water creased into numerous ripples; you will always find a flock of birds flying. The water of Jaseri never dries up. Even during the severest of droughts, the glory of Jaseri does not dry up.

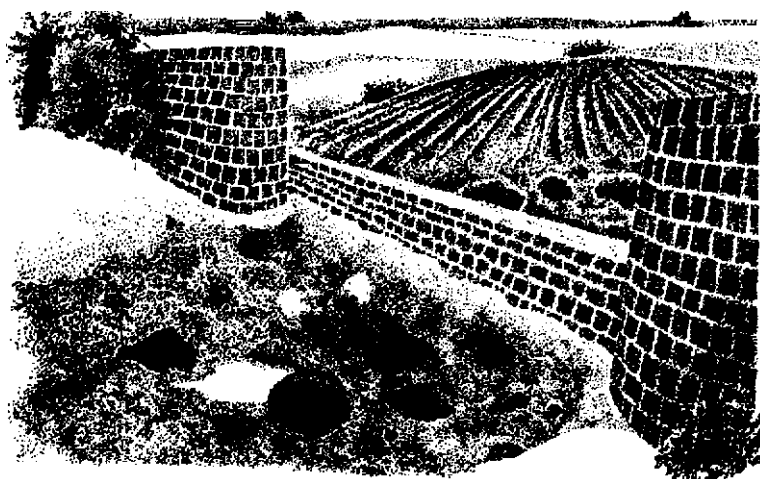
Jaseri is both a lake and a huge *kuin*. Under its *agor*, just as in the case of *kuins*, there is a *bittu ro ballyo*, in other words, a layer of stone. While this lake was being dug, a lot of precaution was taken not to spoil it or let it break from any side. Thus here the water is a mixture of *palar* and *rejani* waters; the water from the previous rainfall does not dry up when the water from fresh rainfall gets mixed with it. Jaseri is thus the *sangam* (confluence) of the drops of each year's rainfall.

It is said that there is a *pagbav* (step well) in the middle of the lake. On its coping, the Palival Brahmin family in charge of building the lake had a copper plate fixed. However, no one has been able to read it since the lake is never empty, thus it has never been possible to see, let alone read this copper plate. Perhaps the builders of Jaseri must have thought of putting the copper plate purposely in the middle of the lake; instead of the copper plate the people see a lake shining like silver and thus its renown spreads.

Not one or two but seven adjoining villages take water from this lake. The livestock of many villages is totally dependent upon the prosperity of Jaseri. People describe it as *ajalapoorna*, the one who fulfils the needs of water in the same image as *Annapoorna*, the one who fulfils the food needs. There is one more element, the greatest one, attached to its glory; the unfathomable waters of Jaseri are full of tender, loving care since, till date, not a soul has drowned in it. There has been some amount of silting in the lake, yet the level of its water is still such that a camel and its rider could disappear in them: and still no one has ever drowned. That is why Jaseri is also known as the innocent, harmless lake.

The society which organised such a harmless water system and which has indeed seen an ocean in a drop cannot but amaze the spectator.

6. The Eternal Script of Water and Cereals



The sage asked: “What is the greatest form of asceticism?” The simple cowherd replied: “The asceticism of the eyes”.

The asceticism of the eyes is indeed the greatest. The experience of looking upon our surrounding world in a proper way and the collective point of view which emanates from that experience down the generations, such asceticism facilitates the passage of life from this world to the other. In the desert, the asceticism of the eyes is behind the unusual *sadhana* (devotion) of collecting food grains together with water. This *sadhana* gave rise to *khadeen*.

Except for a few rivers, like the Luni, there are no rivers in the desert which flow for twelve months. They spring up to birth somewhere, flow and disappear in the desert. Yet the ascetic eyes were able to perceive with fineness their course and thus at many chosen places it was possible to hold their waters.

Khadeens were made at such places. A *khadeen* is a sort of temporary lake. On two sides, a *pal* is raised and on the third side a strong stone sheet is fixed. The *pal* of the *khadeen* is called *dhora*. The length of the *dhora* is calculated according to the influx of water. Many *khadeens* are about 5 to 7 kilometres long.

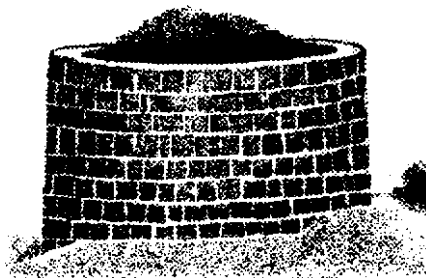
The rivers which flow during the rainy season are held in the *khadeen*. Resting there, the river slowly dries up but doing so it humidifies the soil of the *khadeen*. The humidity of the soil allows for wheat and other crops to grow. If one goes by the rainfall of the desert, then it would seem impossible for wheat to grow there. But at so many places, especially in Jaisalmer, several centuries ago, numerous *khadeens* were made, so much so that one region of this district is called Khadeen.

The merit of constructing *khadeens* goes to the Paliwal brahmins. At one time, the Paliwals, who came from Pali, filled up the kingdom of Jaisalmer with food grains. In this region, 84 Paliwal villages existed. Each village was more beautiful than the other and well equipped.

The checkered criss-cross of large roads, a settlement of vast and beautiful, well aligned houses in stone, and away from that settlement, 5 to 10 *nadis*, 2 to 4 big lakes and, dissolving into the far horizon, the swaying crops in the *khadeens*; these villages were so obviously self sufficient that even famine was buried under their mounds of grains.

Their autonomy, far from making these villages arrogant, gave them so much self-pride that following a difference of opinion with one of the King's ministers, the 84 villages held a big assembly and came to the decision of leaving the kingdom.

They decided to leave the fruits of years of labour: houses, lakes, *khadeens*, *nadis* were all abandoned and the 84 villages evacuated in a moment.



The *khadeens* made at that time are still producing wheat today. If the rainfall is good, i.e. if Jaisalmer gets what little rain it gets, then for every one man (50kg) of wheat sown, the *khadeen* yields 15 to 20 *mans*. Outside every *khadeen*, big *ramkothas* (silos) are made. These are called *karais*. A *karai* has a circumference of about fifteen hands and a height of ten hands. After the threshing, the grains are stored in *khalyans* (granaries) and the straw in *karais*. A *karai* can contain upto 100 *mans* of straw. Just like lakes, *khadeens* too have names and just like each part of the lake has a specific name so too various parts of the *khadeen* have a name. *Dhora* is the *pal*. The strong *bandh* which joins the *pal* to the stone sheet which breaks the force of water is semi-circular and is called *pankha*. Two *dhoras*, two *pankhas*, one stone sheet and a *neshta* to evacuate the excess water; all these were made with a lot of precaution. Even if a river is not *barahmasi* (flowing for 12 months) but only *chaumasi*, (flowing for four months), its force can be strong enough to wash away the *khadeen*.

If people built several *khadeens*, Mother Nature too built some. In the desert, there exist some places which are naturally elevated on three sides and thus when water flows into this space from the fourth side, it is naturally retained. These are called *devibandhs*, the goddess's dam and this appellation then becomes *daibandh* in spoken language, and is sometimes even used as *daibandh jagab*.

Khadeens and *daibandh jagabs* are filled up by rivers, which flow for four months. The river also meanders during its flow. The strong current of the water erodes the soil where the river twists and turns and then a sort of small depression is caused. Afterwards, even when the river dries up, for some time water is retained in these depressions

which are called *bhe*. Later *bhes* are used to access *rejani* water.

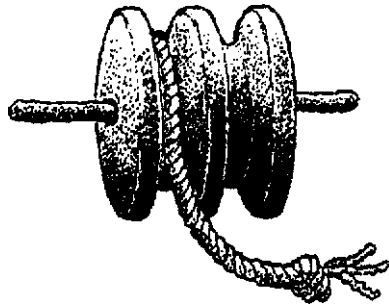
Even in the fields, in the lower parts, water gets accumulated at various places in depressions; these are called *dahari*, *dahar* or *derr*. There can be hundreds of *daharis*. At all these places *palar* water is collected; later it has the opportunity to become *rejani* water. No one gives the smallest thought as to whether the amount collected is large or small. Whether a precious commodity is a *tola* (13gr) or a *ratti* (weight of a small seed, used by jewellers), it is always worth its weight. Whether the precious drops of water are to be stored in a four hands *dahari* or in a four leagues *khadeen*, stored they will be. *Kuins*, *pars*, *kunds*, *tankas*, *nadis*, *talais*, *talabs*, *sarvars*, *beres*, *khadeens*, *daibandh jagah*, *daharis* and *bhes* are filled with these precious drops; they can dry up for some time but they never die.

And this is the eternal script of water and grains, which the asceticism of the eyes has written.

7. The Twelve Months of the Pulley

Bhun, the pulley fixed on the coping of a deep well, rotates twelve months to draw the water from the underground. In the desert the *bhun* has the opportunity to work twelve months. And what about Indra, the God of Rains, who is also the Lord of Gods? Indra got this opportunity for just one hour: *Bhun thara barabmas*, *Indra thara ek ghari*, Twelve months for the pulley, One hour for Indra.

It is not very clear whether this saying is in honour of Indra or the *bhun*. One meaning could be that in one hour, itself, Indra can shower as much water as the poor *bhun* can pull in twelve months; yet another meaning could be that in the desert, only one hour is given to the Lord of Gods, Indra who is also the God of Rains, whereas twelve months are dedicated to the *bhun*.



Instead of trying to show down one of them, one can put the accent on both Indra and the *bhun*, i.e., to the eternal relationship between *palar* and *patal* waters. The *palar* water obtained from one hour's rain seeps slowly into the earth to become *patal* water. Both forms are full of life and flow. The *palar* water, which falls on the surface, is visible whereas *patal* water is not.

To be able to perceive this unperceivable water, to be able to perceive the ground water table, one needs an exceptional vision indeed. One of the names of the water which flow deep down in the *patal* is *sir*; and the one who can perceive it is called *sirvi*. It would not suffice to have the vision capable of seeing underground, *patal* water; the whole society, too, had to have a special point of view, a point of view which combines the capacity of seeing, searching, drawing and obtaining underground water with that of being able to guard oneself from the frightful mistake of losing it forever, once it has been found.

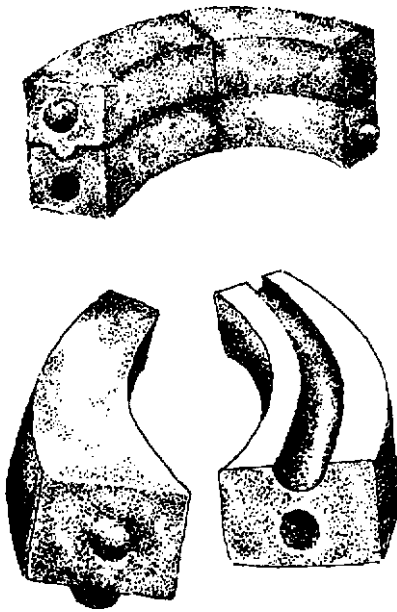
Wells have been made throughout the country, yet in several parts of Rajasthan, especially in the desert, wells really mean a descent into the nether regions. Wherever in Rajasthan the rainfall is substantial, the water table is not very deep but wherever rainfall is scarce, proportionately the water table goes deeper and deeper.

In the desert the depth of the water table can go down from 100 to 130 metres or from 300 to 400 feet. Here society measures this depth with a very personal touch, its hand; the scale, which is used to measure, is called *purush* or *purus*. While standing, a man, *punish*, opens his arms wide, in parallel with the earth; the distance from one palm to the other constitutes a *purush*, which is approximately 4 feet. Deep wells can go down upto 60 *purush*; however, instead of saying a well of 60 *purush*, the term *sathi* (from *sath* meaning 60) is affectionately used.

In no other part of the country a well as deep as this is dug, firstly because it is not necessary and then, even if one would wish to do so, it would not be possible by the usual methods. It is very difficult to hold the soil while digging very deep wells. It is not as if in Rajasthan those who do water work have made this technique easy; but they have found an easy way to tackle this difficult problem.

The action of digging is known as *kinna* and those who dig are called *kiniyas*; *kiniyas* are people who know each particle of soil. The *sirvis* with empowered vision (*siddha drishti*) first 'see' the underground water and then the sure handed (*siddhahasta*) *kiniyas* start the digging. *Kiniyas* do not belong to a specific caste; any person skilled in this art can be a *kinniya*. But Meghwal, Od and Bhil families have proved to take easily to this task.

The circumference of the well is decided according to the amount of water flowing inside. If it is expected that the water will be available in a substantial amount then the circumference is large; in fact in such cases, not just one but two to four *cha-ras* are fixed, to draw the water; the beauty is that while coming up they will not collide against each other.



In Rajasthan wherever the water table is not too deep, once the water source is found and the digging is over, the *chinai* starts from the bottom. This is done with ordinary stone and bricks. This type of *chinai* is called *sidh* or *sidhi*. However, wherever, the water table is very deep, should digging be continuously carried on, then there would be the risk of the earth caving in. In such cases, the *chinai* is done from top to bottom: after digging a little the *chinai* of that portion is done and then digging is carried on and so on and so forth. This sort of *chinai* is called *oundh* i.e upside down. However, in cases where the water is still deeper, then an ordinary stone and brick *chinai*, be it *sidh* or *oundh*, is not enough to consolidate the earth. In such places, each stone is literally cut and each piece is carefully fitted into the other and interlocked with it with the help of pegs and mortises. This system of joining allows for joining from right to left and up to down. This *chinai* is called *sukhi chinai*. Slowly from circle to circle, the lining is done in this way with specially cut stones, before proceeding to dig further.

At places, apart from the depth, the property of the soil is such that it does not allow for either *sidh*, *oundh* or *sukhi chinai*. In such cases, digging and lining is done in succession in a circular fashion, little by little; but, at a particular depth this type of digging is totally stopped and *phank-khudai*, digging in segments, is started. First, a quarter segment of the circumference is dug; then that part is lined to strengthen it. Then the opposite quarter is dug. Thus if four arms length have to be dug, then the digging and lining is done in four quarters. This is how the digging and lining is carried out till the water level is reached. If, in the midst of this procedure, one comes across slabs of rock, the rock is not removed with the help of dynamite as the shock of the detonation can weaken the lining of the upper part. It is removed slowly and patiently by hand. The endeavour is of course to join the top soil of the surface of the earth to the underground, yet doing so all sorts of precaution must be taken so that the top soil does not collapse into the underground; that is why so many different types of *chinai* (lining) are resorted to. In the case of wet *chinai*, one cannot use ordinary *gere chuna* (lime); to it is added brick ash, the fruit of *bad gur* (molasses), finely powdered *san* (*cannabis*), sometimes *garat*, which is a coarse lime which has been powdered in a stone millstone activated by an ox and is again ground in a hand activated millstone so that it gets the strength to support such a deep and weighty work.

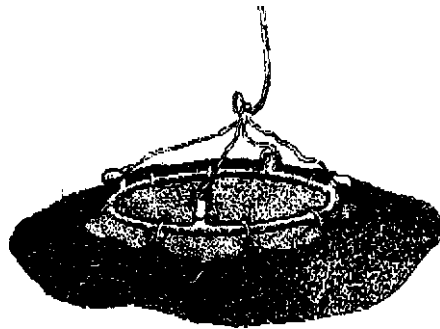
The moment the supporting work inside the well is over, the work to be done on the surface starts. It is not enough to make the coping of the well. In the desert, many works are done on the coping of the well, over it and around it and there is a reason behind this. To start with water has to be drawn from a considerable depth; if it were to be drawn with a small bucket, what would one get, after the effort of pulling for 300 hands? That is why water is drawn with a big *dol* or with a *charas* so that in one go about 8 to 10 buckets of water are obtained. To pull such a heavy *dol* one must fix

a very strong *ghirra* or *bhun*. The pillars on which they will be fixed must also be able to withstand their weight. Then since water is drawn in a substantial amount, a *kund* is required so that the water can be poured into it properly; yet another one is required to collect the surplus water which can overflow, so that it is easy to take water from there; then if from all these activities of lifting and putting down, some water spills on the surface, there is an arrangement to retrieve it for the usage of cattle. From one device to another, by the time all the works associated with the well are over, they start resembling small edifices, universities and sometimes even palaces.

To bring water up from *patal* the help of several elements is required. The smallest component of this prodigious structure has its importance for without it the larger components will not work; each part is useful and therefore has a name.

First of all, let us examine the name of the ground water *patal* water is but one of its various names, there are also *geuo*, *sejo*, *sota*, *vakal pant*, *valiyo*, *bhuinjal*, add to these *talsil* and *sir*. Besides ground water, *sir* has two other meanings, one of them being sweet and the other source of regular income. In a way these two meanings are very apt to describe the water of the well. The well, too, is a regular source of water; however without a proper ethic of management, in other words without frugality and sobriety, this income does not fructify.

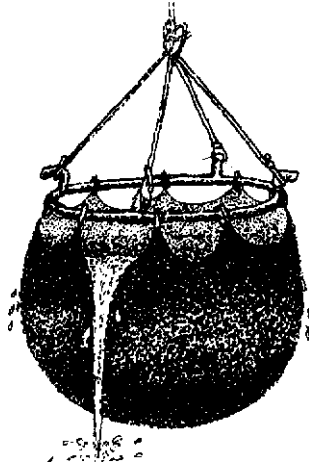
Moreover in this *bhav-kup* (well of emotions), this well which is the image of life, there are so many categories. *Drah*, *dahar* and *doir* are the names for *kaccha* (mud) wells, with no *bandh*. The distinction between the sound 'b' and 'v' gives *bera*, *vera* *beri*, *veri*. There are also *kundo*, *kup* and *pahoor*. It is said that once upon a time a Pahoor clan had so many wells made that in the region, for a very long time, wells were known as *pahoor*. *Kosito* or *koito* is a shallow well whereas *kohar* is a very deep well. In many areas, the water table is very deep and that is why there is a profusion of words to describe deep wells: *pakhatal*, *bhanwar*, *kuan*, *bhamaliyo*, *patal kuan*, and *khari kuan*. A large well is known as *vairagar* whereas *chautina* is the name of a well which has four *charas*, fixed in all four directions, and which work simultaneously. The *chautina* is also known as *chaukrano*. Then we have *bavris*, *pagbavs* or *jhaltras* which are step wells which allow one to easily descend to the water level. And then wells made specifically for animals to drink water are named *pichko* or *pejko*.



Dols or *charas* are used at deep wells. An ordinary *ghara* (pot) normally contains about 20 litres of water and a *dol* draws the equivalent of 2 to 3 *gharas*. A *charas kos* or *mot* contains the equivalent of 7 *gharas*. It is also called *pur* or *ganjar*. All these recipients contain a large amount of water, that is why to do this weighty work of pulling them over 200 to 300 hands and then emptying them out, many devices are required and an equal amount of precaution too.

A pair of oxen or camels is required to pull up the *charas*. So that these animals are not taxed too much, at such wells a *saran* is made; this is a sloping road on which the oxen walk while pulling the *charas*. Thanks to the slope of the *saran* their difficult task is alleviated. One of the meanings of *saran* is to fulfil or execute one's duty and truly the *saran* amply fulfils its duty of drawing water from a deep well.

If the length of the *saran* were to be equal to the depth of the well, a lot of space would be required. Moreover a pair of oxen starting from one end of the slope would take a very long time to climb back after reaching the other side; thus the second draught of water would get delayed. That is why the total length of the *saran* is half that of the depth of the well, and instead of using only one team of animals, two teams are used.



For a 300 arms length deep well, the moment the *charas* is filled up, the first pair of oxen covers 150 hands on the sloping *saran*, bringing the *charas* halfway. The string is then skilfully tied to the second pair in the twinkling of an eye, after it is removed from the first pair, which is guided up while the other pair continues to draw the *charas* for the remaining distance. The gurgling *charas* is emptied; thus the underground water starts flowing to the surface of the earth.

The first round of the whole process is called *ban* (turn) or *waro* and those who do it are called *baryo*. To empty such a heavy *charas* on top of the well requires both strength and discernment. When the filled up *charas* reaches the top it cannot be stabilised by hand for the *baryo* who is doing it, runs the risk of being dragged into the well. That is why first the *charas* is pushed to the opposite side; because of its weight it then bounds back at double the speed and it reaches the coping where it is emptied in one go.

At one time the difficult work of the *baryo* was greatly respected. When a marriage procession would enter the village, the first to be served with a lot of respect would be the *baryo*. The *baryo* would also be called *charasiyo*, the one who empties the *charas*. The team mate of the *baryo* is the *khambhi*, or *khambbido*. He guides the oxen on the *saran* and once half the distance has been covered he is the one who unties the rope of the *charas* from the first pair of oxen to attach it to the second pair with the help of a special nail, *kil*. That is why he is also called *kiltyo*.

The long and strong rope which ties the pair of oxen to the *charas* is called *lav*. It is not made of grass or fibres but of leather since a rope made of grass or fibres would not be strong enough to bear the load of a two man heavy *charas* throughout the day. Moreover it might rot from going in and out of water. Thus the rope of the *charas* is made by braiding long strips of leather. After being used, it is kept at a place where rats cannot nibble it. A well maintained *lav* can last 15 to 20 years.

Lav is also called *barat*. *Barat* is made with buffalo's hide. Normally in the desert, cows, oxen and camels are more prevalent. It was not a region of buffaloes. However for this purpose, buffalo's hide used to come from Punjab and there would be special markets in Jodhpur, Phalodi, Bikaner and other places for selling it. At places instead of a *charas*, a *kos* made of the hide of oxen or camels was used.

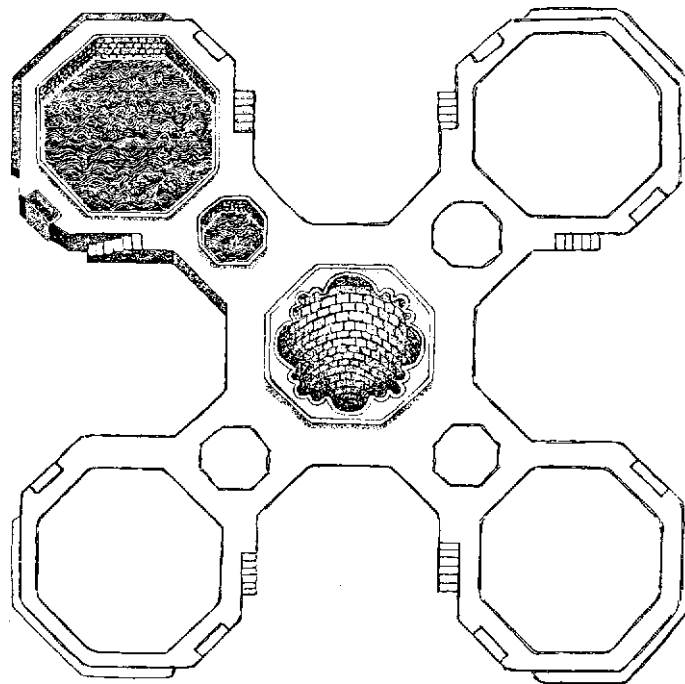
In shallow wells which were well endowed with water instead of a *charas* or *kos*, a *sundiya* was used. A *sundiya* is like a *charas*, which empties itself out on its own once it reaches up. The form of the *sundiya* is like that of a *charas* from top, but below it has a pipe which resembles the trunk of an elephant which is what gives it its name. It is fitted with two ropes; on the top, to pull the main weight, a leather rope, a *barat*, is fixed and below, the mouth of the trunk is tied up with a lighter rope. This rope remains tied till the *sundiya* comes up but the moment it touches the ground, the rope opens up and in an instant all the water empties out.

On wells where *sundiya*s are used instead of one, two *charkhis* are fitted. The upper *charkhi* is the *bhun*; then four hands below the *bhun*, there is a *ghirri* which is used to open the rope of the trunk; it is called *gidgidi*. The *bhun* has to bear a very heavy load that is why it is in the form of a wheel; the *gidgidi*, however, has to do a much lighter task; it is therefore made in the form of a rolling pin.

The list of the names and tasks does not end just here. The iron wire or acacia wood circle which is fitted to the main round opening of the *sundiya* is called *panjar*. *Panjar* and leather are tied with the help of the *kasan*. The wooden frame used to keep the mouth open is called *kaltaru*. Another string, named *tokad*, is used to tie the *kaltaru* to the main string. It is tied to one extremity of the *lav*, at the other extremity of which is tied the team of oxen. The contraption which is tied to the shoulders of the animals to pull the *charas* is called the *pinjaro*. It is in the *pinjaro* that the neck of the animal is secured. Four types of wood are driven into this contraption and they each have a different name. The weighty wood, which is fixed length-wise in the upper portion, is *kokro*; the light wood fixed lower is *phat*. The first two slats that are fixed in the width are called *gata* and the other two, which are fixed inside are known as *ghusar*.

This rich diversity of names and tasks is slowly fading out as on some wells electric and diesel pumps are being fixed. These new pumps have none of the restraint of the *charas* or *kos*. Many *sathi* or *chautina* wells are today activated by pumps using ‘horse power’ instead of ‘ox power’. Of late many of the new and old settlements have had taps fixed. Yet the water that feeds them comes through pumps from the *sathi* or *chautina* wells of yore. Rajasthan’s water tradition is still flowing through the shining new taps. At places, though, this flow has stopped and the most painful example is that of the *sathi* well of Seth Sangidasji in the district of Jodhpur, in the town of Phalodi. It is not just a well; its proportions make it an architectural monument.

It is a big octagonal stone well which extends to the four directions; as if it is throwing its arms from four of its eight angles, in four long, raised platforms. And on each of these four platforms, there is a small octagonal *kotha* (chamber) which is extended by another deeper chamber. On the outer side of each *kotha*., at different levels, there were beautiful *kheliyans* for animals of different heights. From the middle of the four raised platforms, there ran four *sarans*, so that at one given time, in the four directions, four teams of oxen could draw water.



This *sathi* well of the 19th century had crossed half of the 20th century when in 1956 it went from the hands of the family of Sangidasji to the hands of the municipality. The run of the oxen on the four *sarans* thus came to an end. Right above the beautiful well an extremely ugly room was made, electricity was installed and from a depth of 305 feet a 15 horsepower pump was fixed to the well. Water was limited. If there was electricity for twenty-four hours in the town, it used to work day and night and pumped out a thousand gallons an hour. Then the motor of the pump was upgraded from 15 to 25 horsepower. No thought was given to maintenance with water being just pumped out. The water decreased somewhat: the well was giving a warning that it was being fully exploited yet no thought was being spared for its upkeep. The municipality decoded this warning in its own way and dug a boring of 70 feet, thus adding 70 feet to the 300 hands deep well. However, by 1990, the well got tired and yet the old, fatigued well carried on giving water to the town during four more years. In March 1994 the life of Seth Sangidasji’s well ebbed out.

Today, also, there is water inside it but for lack of upkeep, the source has silted. Who would descend so deep to clean it? In the very town where there were *kiniyas* capable of digging such a deep well and *gajdhars* capable of holding it with stones, today the Municipality is incapable of finding those who can clean it.

However in Bikaner, the magnificent *chautina* well built in the last century not only continues to supply sweet water but also houses the municipal office where the water and electricity bills of the neighbourhood are paid and where the union of the water department carries on its activities. In the past, 8 oxen used to tread the four *sarans* to draw the water but nowadays two big electrical pumps have been installed to draw water night and day; yet they cannot get to the bottom of the *chautina*. At any time one can find about 20 to 25 cycles, scooters or cars parked at the well. Holding all of them in its large heart, this well does not look like a well, whether from far or from near or from anywhere; it looks more like a lovely little railway station or bus stand or little palace.

And there are many more wells like this one, not only here but elsewhere too; there are *kuans*, *kuins*, *kunds* and *tankas*. There are also lakes, *bavris*, *pagbavs*, *nadis*, *khadeens*, *deibandh jagahs*, *bhes*; in all of them precious drops are carefully collected. This culture which knows how to propitiate earth, water and heat through its asceticism, also knows how to keep flowing water as well as still water pure; it regards each drop of *palar*, *rejani* and *patal* water as an ocean by itself and thus it turns the one hour of Indra, God of rains, into twelve months.

Today also *Hakdo*, which once undulated till the horizon, descends here fragmenting itself into a myriad particles.

8. The Commitment of Body, Soul and Wealth

In Rajasthan, more particularly in the desert, water work was never considered as work but came to be viewed as a moral duty; that is why it was able to rise far above what is today called community project, to take the beautiful shape of a *samagra jal darshan*, a perfect water philosophy.

My journey to understand this vision of water started quite by accident in 1987. A movement to protect the pastures of Bhinasar, a village of Bikaner, had been launched and some of us reached there to demonstrate our solidarity with the villagers.

A small, beautiful temple and garden were attached to the pastures of Bhinasar. In one angle of the garden there was a very clean, whitewashed courtyard, surrounded by a one hand high wall. In one corner, there was a reservoir like structure, covered with a wooden cover. Attached to the cover by a rope was a bucket. Our enquiries revealed that this was a *tanka*, into which rainwater is collected. We were made to remove our shoes outside the courtyard before being taken in. When the cover was opened we realised that it was actually a very big *kund* full of water.

This was my first *darshan* (vision) of the magnificent tradition of water collection in Rajasthan. Wherever I went on subsequent journeys, I had the good fortune of getting to understand this tradition better. Till then, whatever I read or learnt about Rajasthan had led me to believe that it was a land of severe famine and that its people were in dire misery. However when I saw some of the water collection work undertaken in the region, an altogether different picture of Rajasthan started emerging. I have even taken some photographs of these extraordinary ways of collecting water.

Then, with a lot of reticence, I presented to some social action groups of Rajasthan the dispersed knowledge that I had collected till then. I then discovered that the social action groups working in that region were as cut off from this expertise of their society as those outside Rajasthan. My reticence then subsided and I started disseminating this incomplete knowledge, whenever there was an opportunity to do so.

It was not within my capacity to understand the extent and depth of this work. Present throughout Rajasthan, this water culture has been quasi absent in the modern education system, books and bookshops. All the various governments of Rajasthan, and to top it all even new social action groups have almost erased from memory such a sophisticated work of their society. The realisation of this work now remains present only in the memory of people. They are the ones who have been transmitting, like *shrutis*, this memory down the generations. I have only been able to understand slowly, drop by drop this *smriti* (memory), *shruti* (revelation), and *kriti* (creation). To begin with, I could only perceive fragments of it and understand it in a rudimentary way. It took me almost a decade to be able to understand the spirit,

and the soul behind it during my visits to Jaisalmer and in the *satsang* (righteous company) of Shri Bhagwandas Maheshwari, Shri Deendayal Ojha and Shri Jethusingh Bhatti.

In matters of water, the depth and height which the people of Rajasthan have been able to achieve through several years of *sadhana* and through their own means, is a knowledge which must be given to regions of the country where even after good rainfall people remain thirsty. This work also seems relevant for the various deserts of the world. In this regard, I gathered some information about the desert regions of Asia and Africa.

Today desert regions exist in about 100 countries. If we do not take into consideration rich countries like America, Russia and Australia, and if we further leave the newly oil rich countries and Israel, even then in Asia, Africa and South America there are several desert regions where there is a scarcity of drinking water. In fact it seems unbelievable that the people of these regions, even after many years of living there, did not evolve water saving techniques as was undertaken by the people of Rajasthan. However the knowledgeable people of these places as well as social action groups say that there was no such tradition there. If it ever existed, it must have been dismantled and fragmented during the long colonial period of subjugation.

In these countries to stop the spread of desertification The United Nations Organisation has undertaken an important international project. Moreover about half a dozen aid agencies of countries like America, Canada, Sweden, Norway and Holland are spending millions of rupees to provide them with drinking water. All these millionaire aid agencies are investing into these countries the thoughts, science, material, counselling, technical personnel and even trained social worker of their own countries. Botswana has in fact become an unusual example of the international endeavours for providing drinking water.

Botswana is a republic, which is in the desert region of Africa. It has an area of 5, 61,000 Km² and a population of 8, 70,000. In comparison as we know, Rajasthan has an area of 3,42,000 km², which is far less than that of Botswana's and a population of 4 crores, five times more than Botswana's. Almost 80% of Botswana is in the Kalahari Desert. The rainfall of this country can be considered to be better than that of Rajasthan. The average rainfall here is of 45 cm and in the Kalahari Desert even though it goes down it is still at 30 cm. Let us remind ourselves that in the Thar Desert the average rainfall is between 16 to 25 cm. Even as regards temperature, Kalahari is better off than Thar; the maximum temperature is not more than 30° whereas in the Thar it can reach up to 50°.

In other words, Botswana has more space, less people, a little more rainfall and a lower temperature; the living conditions of Botswana's people are therefore slightly better. Yet today it suffers from a big scarcity of water. If ever there was an efficient tradition in water collection, today no signs of it are to be found. It is usually not right to compare two societies yet from the information available one can say that though Botswana has more water, no trace of a time-tested and autonomous tradition of water collection exists.

In Botswana, just as in Rajasthan, 75% of the people live in villages. Yet there is a difference, and it lies in the lack of water. The people of the villages do not stay in one house but change residence thrice in a year. They have one house in the village, one on the pastures and one in the cowshed. From July to September, the people stay in the village house, from October to January on the pastures and from February to June in the cowsheds.

No *kundis*, *kuins* or *tankas* are to found here as in Rajasthan. Water is mostly available from wells or, during the rainy season, from the natural ponds that form in the lower regions.

According to the available information, it is learnt that for the first time between 1975-81, with the help of an aid organisation located in Canada a structure of water collection resembling a *kundi* was established. In this connection, some high government officials, foreign engineers, water experts went around some villages and then they made a slope to the courtyard used for drying grains in the fields and dug a ditch in one corner so that the rainwater would be collected in it. About ten such *kundis* were made with 100% foreign aid and using material coming from very far. Each one of them was evaluated from all points of view, their input-output was finally calculated; moreover instead of giving them a round shape, they had been given a square one. In a square ditch, the pressure of the earth comes from all four sides that is why the possibility of its breaking always lurks. The surface of a square structure is more than that of a round one even though their capacities might be the same. That is why now the experts agree that instead of making a square *kundi* one should make a round one.

The villagers and users of these 'experimental' *kundis* are being educated in 'their own language' about their upkeep. In fact experiments are on to ensure that sand does not enter the *kundi* with water. To that effect a special sieve is being installed. But the experts foresee one problem: every year the sieve will have to be changed. Cracks have been noticed on the cement covers over the *kundis* aperture. And so, it is being advocated that round dome-like covers should be used.

Similarly in Ethiopia, about five agencies, coming from all over the world are busy digging small wells in some villages where there is water scarcity. In this region the water table is not very deep so that all these wells are not deeper than 20 metres. Yet the 'most important problem' these experts are facing is the lining of these wells as the soil is collapsing. Compare this with the *sathi* wells of Rajasthan, which are deeper than 60 metres and which have been lined using the straight, opposite and segment lining method since time immemorial.

In Ethiopia apart from these wells, several hand pumps have been installed. Good hand pumps come directly from America, England and other countries. A good hand pump costs Rs. 36,000 to Rs. 40,000. It is said that they are very strong and do not break or breakdown too often. But the problem is that to install so many pumps, even after taking loans, the Government does not have enough money. Thus it is also on the lookout for cheaper hand pumps. However these are not less than Rs. 20,000 and they break very easily.

The villages are very far away and there are no facilities to commute; that are why now the Government is asking the help of those very countries from where the pumps were obtained so that training centres for their proper maintenance are set up.

Even in the desert of Tanzania, many foreign aid organisations have put up projects for the supply of 'cheap and clean water'. A proper survey of the villages was done. The information thus obtained travelled from the level of the village to that of the district and from there to the centre and finally from the centre to Europe. Aerial views were taken; the water table was measured with very sensitive devices, and only after all these preliminaries,

2,000 wells were made. So as to protect the purity of the well's water no one is allowed to draw water straight from them. Hand pumps are being fitted on the wells. Children put little pebbles inside the hand pumps. Now, even here, village assemblies are being organised to teach the villages 'better' use of the hand pumps. To attend to the breakages fast, 'fast-routes' are being established between villages and the district so that the information travels fast and thus a new form of exchange is being set up.

Experiments are going on in the sandy regions of Kenya to collect rainwater from the roofs of houses. In international conferences on water, the representative of the Kenyan Government presents these experiments as a very good example of a partnership with people.

Will the desert countries, such as Botswana, Ethiopia, Tanzania, Malawi, Kenya, Swaziland and the Sahelian countries, have to collect water for their usage in this way? If all the work relating to water keeps coming from outside, how long will it be sustainable for the desert villages of the interiors? If the talent and the expertise of the village, emanating from its body, its spirit and its wealth, are not present in this work then how long will water be present?

Compare this picture of desert countries to that of Rajasthan where it is not only from 1975 to 1981 or 1995 but since centuries that the society has evolved a tradition for collecting and preserving precious drops of water. And thanks to this tradition thousands of *kundis* and *tankas*, thousands *oikuins* as well as small and big lakes have been made. For this work society invested its own body, spirit and wealth and never begged any one.

A thousand salutations to such a discerning and autonomous society.

AUTHOR'S NOTES

Welcome to *My Land*

The drying of *Hakdo*, the ocean which once upon a time undulated through the desert of Rajasthan, is captured in the Rajasthani psyche as *palakdaryav*. We can only understand this by recalling, the amplitude of Time, or eras, in the Indian consciousness. According to this philosophy, this *darshan* of Time, the 365 human days constitute one divine day. In turn, 300 divine days constitute a divine year. And the cosmic eras, the *Yugas*, are divided as follows: 4,800 divine years make the *Sat Yuga*, 3600 divine years, the *Treta Yuga*, 2400 divine years, the *Dwapar Yuga* and 1200 divine years the *Kali Yuga*. Converted into human years, the *Sat Yuga* lasts for 1728000 years, the *Treta Yuga* for 1296000 years, the *Dwapar Yuga* for 864000 years and the *Kali Yuga* for 432000 years. Shri Krishna belonged to the *Dwapar Yuga* and when he visited the region of *Hakdo*, the desert had already sprung up; in other words, the *palakdaryav* event had already happened.

According to a particular story, this event occurred in the *Treta Yuga*: it is related to the episode of the *Ramayana* when Shri Rama is setting out for Lanka. The ocean, which is between Shri Rama and Lanka, refuses to give way. For three days, Shri Rama has been fasting and praying: but when in spite of his entreaties and prayers, he still does not get a clear passage, he decides to dry up the ocean and to this effect, fits an arrow to his bow. At this stage, the Ocean God appears in front of him and begs his forgiveness; but the arrow was already mounted on the bow, ready to be shot; what could be done about it? It is said that on the advice of the Ocean God himself, the arrow was shot in the direction of *Hakdo*; and thus it is that, in the *Treta Yuga*, *Hakdo* was dried up.

In Persian, the soil bordering the sea is called *shikh*. Today a part of the desert is known as Shekhawati. It is said that once upon a time the sea stretched up to there. The book *Jhunjhuna Ka Itihaas*, (*The History of Jhunjhuna*), written by Yusuf Jhunjhunwiji gives a detailed account of this. Even in the epic work *Jaisalmer ki Khayat*, the word *Hakdo* occurs. Devisingh Mandawa's book, Shardul Singh Shakhawat and Parmeshwar Solanki's book *Marupradesh Ka Itivrittattmuk Vtvechan* (Historical Study of The Desert, 1st volume) also give a lot of information about the existence of an ocean in these parts. Fossils testifying to the same have also been found; there are also the names of the ocean and legends associated to it which tell the same tale.

In the various synonyms dictionaries of the ancient Dingal language there is a surge of names for the sea: to the eleven names given in this chapter, the reader can, at will, add several more, by referring to the list made by the poet Harraj, in Dingal, (*Dingal Namamala*), the one made by the poet Nagaraj Pingal in the thesaurus *Nagaraj Dingal Kosh*, the one made by the poet Hamirdan Ratana in *Hamir Nammala* and the one of Kaviraj Muraridan.

Thus, the spirit of the desert born of water has kept alive, till today, so many names for the ocean together with the belief that one day the ocean will come back here.

Afterwards, *Hakdo* changed itself from the *daryav* it was to merely a *darya* (river). It is even believed that *Hakdo* merged itself with Saraswati the invisible legendary river, which is said to have disappeared in this very region. Today this region is considered to have a rich resource of sweet underground water and the belief is that it comes from the seepage of these rivers. On the other side of the frontier, in the Pakistani district of Sakhar, there is a dam called Aror. One day this dam will break. The river Sind will dry up; the inhabited villages will be deserted and the deserted ones will be reinhabited; the rich will become poor and the poor, rich. Such a day will come.

I found the preliminary information regarding *Hakdo* as well as some names in Rajasthani for the ocean in the Rajasthani-Hindi dictionary edited by M.Badriparasad Sakaria and M.Bhupatiram Sakaria and published by Panchshil in Jaipur.

I got the opportunity to understand this concept properly through my conversations with Shri Dindayal Ojha (Keta Phada, Jaisalmer) and Shri Jethusingh Bhatti (Silavatpada, Jaisalmer). The latter is also the one who brought to my knowledge the saying, "*Ik din aisa awasi*", such a day will come. I came across the names of the sea/ocean in Dingal from the Rajasthani *Shodh Sansthan*, published from Chaupasini, Jodhpur and the Dingal dictionary edited by Shri Narayan Singh Bhatti.

The statistics about the rainfall of the state come from the book of M. Irfan Mehar, *Rajasthan Ka Bhugol*, (Rajasthan's Geography, published by Rajasthani Granthagar, Jodhpur).

| | | | |
|----------------|---------|----------------|---------|
| Jaisalmer | : 164 | Shriganganagar | : 253.7 |
| Bikaner | : 263.7 | Barmer | : 277.5 |
| Jodhpur | : 318.7 | Churu | : 325.5 |
| Nagaur | : 388.6 | Jalaur | : 421.6 |
| Jhunjhunu | : 444.5 | Sikar | : 466.1 |
| Pali | : 490.4 | Ajmer | : 577.3 |
| Jaipur | : 548.2 | Chithorgarh | : 582.1 |
| Alwar | : 616.1 | Tonk | : 613.6 |
| Udaipur | : 624.5 | Sirohi | : 635.4 |
| Baharatpur | : 671.4 | Dhaulapur | : 680 |
| Savai Madhopur | : 689.2 | Bhilwara | : 699 |

The figures for the newly constituted districts are not yet available. Jaisalmer, which receives only 164mm of rain annually, had been for several centuries an active centre trading with Iran, Afghanistan and several regions of Russia. What was then the renown of Jaisalmer, in the world, one can discover even today thanks to a map drawn on the wall of its Khadi Gramoday Parishat (Khadi Rural Upliftment Council). The names of Calcutta, Madras and Bombay did not even feature.

I heard initially about the desert *yatra* (journey) of the Lord of the Desert, Shri Krishna, in the booklet of Shri Narayanlal Sharma.

The ancient names of the state of Thar such as Marumadani, Marudhanva, Marukantar, Marudhar, Marumadal and Marav are taken from the following Sanskrit books: *Amara Kosha*, *Mahabharata*, *Prabandha Chintatnani*, *Hitopadesha*, *Niti Shataka* and Valmiki's *Ramayana*; their meaning refers more to the purity of the land than to its desert nature.

The Ascetic Ardour of Earth, Water and Heat.

Everywhere one can find the association between frogs and clouds. But here the frog, *dedariya*, does not just croak on seeing clouds, it holds in its heart the ardent wish to see the heavenly water (*parar pant*) filled up; that very same ardent wish is reflected in the hearts of the whole Rajasthani society, and how much water does this modest, ordinary looking frog wish to fill up? So much that by midnight the *neshta*, the spillway of the retention pool overflows, that the lake fills up to the brim.

While singing the third verse of the *dedariyo* song, the children replace the word *talayee*, which occurs then, by the name of the lake of their neighbourhood or their village. In the second verse, sometimes the wording *parar pant bbarun bbarun* (let us fill up the heavenly water) is replaced by *tnedbak thala thikar bharun, bharun*, (the frog says let the pots be bursting full).

It is Shri Jethusingh Bhatti of Jaisalmer who introduced me to the *dedariyo* rhymes, then Shri Dindayal Ojha, also of Jaisalmer, gave me further details about it: when the sky gets laden with clouds, while the children go around singing *dedariyo*, the adults prepare the sweetmeat *gugriya* in earthen vessels and then offer half of the preparation to the wind and rain by throwing it in the four directions. Doing so they try to appease the 'ire' of the rain, just in case, for some reason or the other, it is angry and sulking.

While carrying out this ritual, the people remove their turban and remain bareheaded in order to show the God of water that they are sorry and contrite. At the sight of his devotees steeped in sorrow, the rain has no other option but to cast away its anger and to fall.

In some places, during the festival *Akshay Tiritiya*, also known as *Akha Teej*, four earthen pots (*kulhad*) are kept on the ground, to symbolise the four months *Jeth*, *Asad*, *Sawan*, and *Bhadon*. These four pots are filled up with water and then people watch intently to see which one will melt first. If the pot symbolizing *Jeth* melts first, then it is believed the rain will be regular; if it is that of *Asad*, then the rain will be sparse; if it is either that of *Sawan* or *Bhadon*, then it is believed that it will rain cats and dogs. For modern people, this belief about four pots, symbolising four months will smack of superstitions but let me tell you for the ancient people the weather forecast of the meteorological centres is no better.

Society has always been able to fully appreciate the force of the lightning and thunder during the rainy season.

Tis kosri gaj, sau kosari khain: Thirty *kos* of thunder, hundred *kos* of lightning. This means that the thunder can be heard around thirty leagues, but the light of its lightning spreads around 100. It is Shri Jethusingh who made me wise to the fine distinction between sound and light.

The figures regarding the area of the state and other statistics come from the book of Mr Irfan Mehar, *Rajasthan Ka Bhugol* and those about the new districts formed subsequently were added on. Similarly the information about the modern geographical classification of Rajasthan as well as the information regarding the monsoon, come from the same book.

My first contact with saline soil was made during a visit to the Sambhar district. I could reach this place thanks to the good offices of Shri Lakshmi Narayan, Shri Lakshmansingh and Shrimati Ratandevi of Tilonia Centre of Social Work and Research based in Ajmer. The very name of Loonkaransar district in Bikaner is linked to salt, *lavan*. I was greatly helped in my understanding of this district by the Urmul Trust.

As for the terms and concepts regarding *anshpith*, *jalkundo*, *machlo* and the *Bhadli Pttrana*, I found the references in the Rajasthani dictionary of Badriprasad Sakaria and Bhupatiram Sakaria. It is Shri Dindayal Ojha and Shri Jethusingh who explained to me the significance of the sleeping (*suto*) and standing (*ubho*) position of the crescent moon as indicators of rain. Here are some sayings that can be added to the *Bhadli Purana*: if on the eighth day of the dark fortnight of *Margshtrsh* (November-December), there are both clouds and lightning, it will rain in the month of *Sawan* and the harvest will be excellent. If in the first or second fortnight of *Margshtrsh* or during the first fortnight of *Paush* (December-January), there is fog in the early morning, the rain will be good. If on the tenth day of the *Paush* fortnight, lightning streaks the clouds, it will rain throughout *Bhadon* and the women will celebrate *Teej* joyously...

If clouds are seen during the month of *Paush* and the moon is visible in the bright fortnight of the month of *Chaitr*; meaning there are no clouds, Dank says to *Bhadli* that the grains will be sold for a pittance. If on the second day of the dark fortnight of *Phalgun* no clouds and no lightning are seen, it will rain abundantly during the months of *Shravan* and *Bhadon* and so *Teej* will be grandly celebrated.

Where the clouds are the rarest we find the most names for them. The initial list of forty odd names has been taken from the Rajasthani Hindi dictionary; to this can be added several terms taken from various dictionaries or 'treasuries' of the Dingal language, in Dingal (namely the list given by Kavi Nagaraj, *the Hamir Nam Mala* made by Hamir Dan Rantu, the *Aradhan Mala* made by Udayram Barahath, sections of the *Dingal Kosh* composed by Kaviraj Muraridan and anonymous sections of the same book (*Dingal Kosh*, ed: by Narayan Singh Bhati, Rajasthani Shodh Sansthan, Chaupasni, Jodhpur, 1957).

It is from the Rajasthani-Hindi Dictionary that I obtained the first elements of information regarding the nature of clouds, their shape and colour, their race in various directions, the way they perch themselves on a mountain to rest a while.

Mr Om Thanvi, the editor of the daily Jansatta, 186 B, Industrial Area, explained to me the meaning the word *jamano* has today. In 1987, Mr Thanvi wrote the first comprehensive article on water harvesting in Rajasthan, in connection with a research project of the Centre for Science and Environment in New Delhi: in this article he drew a remarkable picture of this magnificent tradition. Thereafter, Shri Jethu Singh gave me further details regarding *jamano*. He is the one who pinpointed the importance of *Jeth*, the cowherd's songs of praise to *Jeth* as well as his supremacy in debating the other months.

The description of the complete process of rain from *thuthno* to *ubrelo*, that is till the retreat of the rain, comes from the Rajasthani - Hindi dictionary.

The Radiant Raindrops of Rajasthan

I have no hesitation whatsoever in admitting that it took me no less than seven to eight years to understand - that too partially - the philosophy of the *hum*, grounded in the *neti, neti* concept. It is in 1988 that, for the first time, I saw a *kuin* in the Taranagar *Zila*, of Chum district. However the preliminary information about how it operates, how in a milieu of salty water it offers sweet water, I obtained through my conversation with the village delegates who had come to attend a meeting of the Prorh Shikshan Samiti, the adult literacy program of Bikaner. I got acquainted to the *par*; a water body belonging to the *kuin* family, being built in Badmer, thanks to the coordinator of the Nehru Yuva Kendra, Shri Bhuvanesh Jain.

Shri Kishan Varma, who was once himself a water diviner, explained to me the delicate skill and difficulties involved in the *chejaro's* and *chelvanji's* work. He also revealed to me the astonishing method of reinforcing the *kuin* with the help of the *khimp* string, as well as the way of countering the lack of air inside the *kuin* by throwing fistfuls of sand from the top. His address is 1 Golden Park, Rampura, Delhi, 110034.

It is through the correspondence I exchanged with Shri Jethusingh and subsequently the conversations I had with him in Jaisalmer that I came to appreciate the intimate and enternal link that exists between the *kuin* and *rejani* water. The *rejani* water is secured and captured by the *bittu ro balliyo*, a rocky layer within the earth. *Bittu* is the layer formed by a mixture of the clay soil of Multan (*Multani mini*), also called *mett* and small pebbles or *murdiyo*. It can retain water, in the form of moisture for a long period, sometimes even upto one or two years. The gypsum layer too plays the same role of retaining moisture within the earth, but not for as long as the *bittu* layer. Exactly opposite to the *bittu* is the *dbiye ro balliyo*, a limestone layer: it cannot retain any water, making it impossible to access *rejani* water wherever it exists and thus no *kuins* can be built in such places.

It is again thanks to Shri Jethusingh that I obtained the information regarding the tying of a *par* with the help of the *coils* and stakes. I got to understand the 120 (*chha bisi*) *pars* of the Paliwal village, Khareron Ki Dhani, 25km from Jaisalmer, during my trip there, in the company of Shri Jethusingh and Shri Chainaramji who belongs to the village. Today most of these *pars* are buried under sand. There is a another village similar to this one called Chhatargarh where we can find vestiges of the over 300 *ktins* dating to the times of the Palival. Some of these *pars* still have water.

Several villages like Khareron Ki Dhani are today supplied with water through tubewells. The water comes from a distance of 60km through pipelines. As the tubewells have been installed where there is no electricity, they have to be operated with diesel. The diesel itself is brought in a tanker from far away.

Sometimes the driver of the tanker goes on leave and sometimes the tubewell operator. At times, it so happens that diesel itself is not available; even when it is available, it gets stolen. Sometimes the supply pipeline has leakages. There are so many such reasons because of which water does not reach these villages: the newly built tanks remain empty and the village gets its water from those very same ancient *pars*.

The press and organisations of Rajasthan should regularly update the information pertaining to the villages where such water supply devices have been or are being installed by the government. Everything must be recorded: is water really reaching through the modern devices? How much water is actually being supplied? It is only then that we will realise how backward are the new fangled devices for the desert.

The same fate is suffered by the villages which used to get their water from *kuins* but are now connected to the Indira Gandhi Canal. Buchawas, a village of the Churu district, had more than fifty *kuins* and when in the evening the whole village gathered around them to fetch their water, it seemed like a *tnela* was on. Today the village's supply of water conies from far, through a pipeline which feeds a round ciment reservoir fitted with taps all around. At this new *panghat* (water source) instead of the joyful crowd of a *mela*, it is a milling crowd that gathers. Fights take place, earthen water pots are broken. Moreover the reservoir does not receive water everyday and sometimes water is

available only once or twice in a week or a fortnight, which explains the fisticuffs. According to the schoolmaster of the village, if one were to calculate the average, it would be clear that the new water device gives as much water as what the *kuins* were giving, minus the fight. Many of the dilapidated *kuins* are being now restored.

In the light of what is happening, we can really say that the *kuins* have withstood the challenge of Time proving themselves to be self-fulfilling, that in fact they are both *sivayamsidh* and *samaysidh*.

Still Water, Pure Water

I got the first glimpse of the *kundi* which could contain running water and keep it pure the year long, during a trip from Delhi to Bikaner, which I undertook with Mr. Anil Agarwal and Ms Sunita Narain of the Centre for Science and Environment. It took me a long time to get to the bottom of it, as in the case of the *kuin*.

It is believed that the word *kitndi* comes from the word *kund* and *Yagna Kund*, (the sacrificial pit). In fact, in the district of Jaisalmer, there is a very ancient *baisakhi kund*, where people from the neighbouring region come to immerse the *asthis* (bones left after the cremation) of their departed one. It is said that during the full moon night of the month of *Baisakh*, the Ganga comes personally to visit this *kund*. Such legends are testimonies to the purity and sanctity of the *kund's* water.

No one can say for sure how old is the tradition of making *kunds*. One can find *kunds* and *tankas* that are two or three hundred years old in the Bikaner Jaisalmer region. In the Churn region we can find many *kunds* which bolster the hand pumps of the new technology. It is Shri Sudhir Jain who revealed to me the *stuyamsidh* and *samaystdh* nature of *kunds*, which are both self-fulfilling and Time-accomplished.

I got to see the *kundis* made of *phog* twigs in Jalvali, a village in the Bikaner district, on the Pakistani border, courtesy Shri Bhanvarlal Kothariji of the Rajasthan Go Seva Sangh, an organisation for the protection of cows. Shri Om Thanvi explained to me the importance of the *kundis* being whitewashed.

Kundis made of gypsum slabs are strewn all along the Bikaner-Jaisalmer road. In fact, on a trip to Bajju *Kshetra* with Shri Arvind Ojha of the Urmul Trust, I got to see such *kundis*. And it is on a trip to the Ramgarh district of Jaisalmer, in the company of Shri Jagdishji of the Rajasthan Go Seva Sangh that I was able to see the *kundis* made like artistically decorated raised platforms (*chowbutra*). In fact in the totally new village called *Kabir Bastt*, each house boasts of such a *kundi*. I got to know about it thanks to Shri Raju Prajapati of the Khadi Gramodoya Parishad of Jaisalmer. It is through the courtesy of Shri Om Thanvi of Phalodi, a town in the Jodhpur district, that I got to see the *tankas* which double their capacity of water harvesting by receiving water from two *agors*: the roof and the courtyard. I owe to Shri Jethu Singh the information regarding the *tankas* which judiciously store the water coming from every nook and cranny. Not so long ago, the *Sadhu*, Shri Santoshpuri, had some such *tankas* made near *Narsinhon Ki Dhani*, in Jaisalmer. Before renouncing the world, Shri Santoshpuri was a shepherd and he would see how the rainwater of his region was flowing off and getting lost. When he became a *Sadhu*, he decided that this water should be used. Today his disciples are carrying on the water work which he started. Shri Jethusingh explained to me in detail how hermits who have renounced this world have found spiritual realisation in being involved in the conservation of water.

It is through a poster put up in the museum of Jaipur that I first came to know about the vast *tankas* of the Jaigarh fort. They were being advertised as the world's biggest reservoir. I later visited the place in the company of Shri Sharad Joshi of the Chaksu Agro Action Organisation, who also gave me the preliminary information about the reservoir. In a nutshell here is what we can say about it: the *agor* of the Jaigarh *tanka* spreads over 4km in the hills. A whole network of small and big canals receive the rainwater and direct it to the well of the fort. The slope of these canals have been designed in such a way that instead of flowing down, the water they carry slowly 'flows up' leaving behind the mud and silt. All along the canals course, there are small *kunds* in which the water gets rid of the silt, flowing limpidly towards the main reservoir.

During the emergency period of 1975-76, in a bid to look for the 'hidden' treasure of the House of Jaipur, the Government undertook the heavy digging of these reservoir, this lasted for a few months. In fact the digging was carried out around the three *tankas* and their water was drained out with the help of very big pumps.

Whether or not the income tax department was successful in recovering the treasure, one does not know but what is certain is that the extraordinary treasure of harvested rainwater was definitely impaired because of the considerable digging. However, credit must go to the resistance capacity of these four hundred year *tankas* that, inspite of such an amazingly odd action, even today they continue to operate as efficiently.

The detailed information regarding the *tankas*, the raid and digging can be found in the book of Shri R.S. Khangarot and Shri P.-S. Nathawat, named *Jaygarh The Invisible Fort of Amer*, published by R.B.S.A Publishers, S.M.S highway, Jaipur.

Today it is very difficult for us to appreciate the value of the water collected in the service of society by these *kundis*, *tankas*, *kuins*, *pars*, and *talabs*, strewn all over Rajasthan just like radiant water drops. To carry out this water work in a centralised manner would not only have been almost impossible but, if at all it could be done, would have cost billions of rupees. From time to time the Public Health department of the Rajasthan State publishes in various newspapers some calls for tenders to set up water supply projects. In February of 1994, the daily *Jansatta*, published in Delhi, carried out one such call for tender in which a project to supply water to 250 villages belonging to the *tehsil* of Shiv, Pachpadra, Chauhattan, Badmer and Shivana of Badmed district was estimated at 400 millions of rupees. The same announcement gives an estimate of about 960 millions of rupees for the water project to be undertaken in the six hundred odd villages of the twelve *tehsils* of Bikaner district.

At the same time, in February 94, the Rajasthan newspapers carried out another call for tenders which deserves our attention. This was regarding a project for the Phalodi region of Jodhpur district for which the same department was planning to build reservoirs of 25,000 litres to 45,000 litres capacity to store water which would be brought by road from elsewhere. Their estimated cost was Rs. 43,000 to Rs. 86,000 and the cost of storing 1 litre of water was working out to Rs. 2, without counting the cost of transportation as the water was to be brought from elsewhere. This work was meant for only thirteen villages of Phalodi, at the total cost of Rs. 9 lakhs. Just compare this to the ‘department’ of Rajasthani society which, without planning, call for tenders, or contracting, set up a whole water work to supply pure water to almost thirty thousand villages, entirely on its own resources.

Like an Ocean in a Drop

At the time I wrote my earlier book *Aj Bhi Khare Main Talab* (The lakes are still pure), I gathered substantial information about that society which turned the saying “God, grant us so much” into “God, whatever you give let our families fructify by it”. The greater part of this chapter is based on the chapter of the above mentioned book, entitled: *The Lakes Which Belie Mirages*.

How are lakes made, who makes them, of what type and shape they are, what are the names given to them, what are the traditions that have patiently ensured their protection through the years, all these questions are answered in the book published by Gandhi Peace Foundation; the readers interested in the subject should consult it.

I obtained the initial information about the smallest and sweetest member of the big *talab* family, the *nadi* from Shri Surendramal Mohnot, the Director of the School of Desert Science, who has worked considerably on the great tradition of water harvesting in Jodhpur. His study shows that *nadis* have been built even in towns. One can find such *nadis* in Jodhpur even today; the important ones are *Jodha's nadi*, the *Go/ nadi* built in 1920, *Ganeshe's nadi*, the *Shyamgarh nadi*, *Narsingh's nadi* and *Bhutnath's nadi*. surrounding the *agor* of Sambhar lake during trips made in the company of Shri Lakshmi

I got acquainted with the sweet water *talae*, in the midst of the saline land Narayan of the Prayatna Institute, Shrimati Ratandevi and Shri Lakshman Singh of the Centre of Social Work and Research. Their addresses are as follows: Prayatna, Gram Sholavata, P. O. Shrirampura, Barasta, Naraina, Jaipur and Social “Work and Research Centre, Tilonia, Barasta, Madanganj, Ajmer.

In his book *Ajmer: Historical and Descriptive*, the social reformer Shri Haribilas Sharda, to whom we owe the law against child marriage, wrote extensively about Ajmer, Taragarh, Annasagar, Visalsar, Pushkar and others. In

October 1933, there was an All India Exhibition of Swadeshi Crafts in Ajmer and the President of the Organising Committee was none other than Shri Haribilas Sharda. Many people will be surprised to know that in an exhibition on crafts, substantial information was given about the lake Annasagar of Ajmer.

It is Shri Lakshmansingh Rajput, who works on water and cattle breeding related issues in this region itself, who initiated me about the *talaees* made by the *banjaras* in almost every village in the region; subsequently I got to see these *talaees* during the trips I made there with him. They are called *dand-talae* probably because they are surrounded by poles. Shri Lakshman Singh is also involved in the restoration of such damaged *talaees*. His address is as follows: Gram Vikas Navyuvak Mandal, Lapodiya Village, Barasta Dudu, Jaipur.

I obtained the statistics regarding Jaisalmer, Badmer, Bikaner from the Gazetteers of these districts and the census report of 1981. It is indeed in these documents that I came across the terrifying image of the desert which pervades so strongly the minds of the planners.

The initial list of the lakes of Jaisalmer was obtained from Shri Narayan Sharma's book *Jaisalmer*, published by Goyal Brothers, Suraj Pol, Udaipur. Later, every now and then, I added on a few names to that list. Even today I cannot claim to have the full list of the town. In this splendid desert town *talabs* were made for all sorts of activities. If there were *talabs* for the bigger animals there were also one for the younger calves; since they were not sent faraway to graze their *talabs* had to be closer to the town. At a particular place there were three *talaees* together and that is why it was named *Tin talai*. Today no trace of them remains as the Indira Gandhi Stadium stands where they once were.

Shri Bhagwandas Maheshwari, Shri Dindayal Ojha, Shri Om Thanvi and Shri Jethusingh Bhatti have been of tremendous help in making me understand the *talabs* of Jaisalmer. Infact Ojhaji and Bhattiji have literally held my finger and led me to discover the intricacies of these lakes.

Gharsisar, Gadsisar, Gadisar, - through the patina of Time the name takes on a new sheen. This *talab* permeates the soul of the local society, in the multiplicity of its names and forms, to become the honour and one could even say the pride of Jaisalmer. If someone achieves something that seems to be beyond his/her capacity, then normally the whole credit of the achievement is snatched from the achiever and entrusted to Gadisar; he/she is then asked: "Did you go and splash your face in the waters of Gadisar"? And if someone is boasting, to pull him/her back to earth he/she too will be told: "*Ja Garisar poni sa mando dho ya*, why don't you go and wash your face in Garisar's waters!"

Gadisar and its builder, Maharawal Gadsi, occupy such a special space in the hearts of people even today that on any given occasion, they come from far to make offerings of coconuts to the lake. The descendants of Maharana Gadsi may have forgotten the exact location on the *pal* of the *samadhi* where he expired, but the people remember it even today. It is said that till before Independence, the town maintained strict discipline regarding the usage of the lake: it was strictly prohibited to bathe and swim in it except on the occasion of the first rain, at which time people had the licence to bathe or swim in it. Throughout the remaining part of the year, swimming and bathing, which are pleasures of life, were curtailed in the interest of the lake's purity.

By the side of this lake of happiness, society forgot its hierarchical divides. If from far the women of Meghwal families spotted the first signs of preparation for the rains, they would come on their own to the dike of Gadisar and sing seductive songs to tempt Indra. So many stories abound around Indra who-is said to have sent God knows how many *apsaras* (nymphs) to seduce God knows how many mortals. But here, at Gadisar, Indra himself would get seduced. The Meghwal women did not accept any payment for singing these songs of enticement; nor would anyone even dare to offer them any remuneration or reward for their performance. Only the Maharawal himself would offer them holy food, *prasad*, after the songs. The *prasad* would be made of 10 kilos of wheat and jaggery and that too would get fully distributed on the dike itself.

It is indeed a very difficult task to understand from where and how much water reaches Gadisar. In order to stop each speck of sand and direct each drop of water towards Gadisar, an *arr*, which is many kilometres long was built; the *arr* is a sort of earth levee which diverts water in a particular direction. Below the lake many *betes* or *kuins* were built and there are Sanskrit and Persian verses written to eulogize them.

Today Gadisar is being filled up with canal water brought from far through pipes. While I am in the process of writing this description, I have been informed that the pipeline, which was damaged, has been repaired and the canal water is once more feeding the lake. But can one really trust a pipeline? If it got repaired while these lines were being written, it could well get damaged once more while these very lines are being read.

I was able to visit the *Bap* lake thanks to the good offices of Shri Arvind Ojha of the Urmul Trust of Bikaner. The story of *Bap* I owe to Ustad Nizamuddin whose address is as follows: Bal Bhawan, Kotla Road, New Delhi.

It is Shri Jethusingh Bhatti who sung the praise of Jaseri to me and again it is thanks to him that I was able to have the *darshan* of this splendid lake. In other places when the lakes dry up, the wells of the vicinity carry on giving water but in the case of Jaseri, it is the wells which dry up while Jaseri still has water nearby, the Forest Department has a nursery: when, in summer, its water system does not work, water is brought from Jaseri to keep the plants alive.

The love of the people for Jaseri is also boundless. Shri Chainaram is a Bhil who earns a living by taking tourists for camel or jeep rides. But if the opportunity to go to Jaseri presents itself, he is willing to drop everything to go there. He has deeply thought about how to repair the damaged portions of the lake; the blueprint of this enterprise is not on paper but in his mind.

The Gandhi Peace Centre of Hyderabad and the Gandhi Peace Foundation of Delhi have published a beautiful poster of Jaseri.

The Eternal Script of Water and Food.

The very first information regarding *khadeens* came to me during my visits of the villages abandoned by the Palival, in the company of Shri Kiran Nahta and Shri Raju Prajapat of the Khadi Rural Uplift Council of Jaisalmer district. This was further strengthened later by Shri Arun Kumar and Shri Shubhu Patwa of the Pani March. It is the perenial Gandhian Shri Bhagwandas Maheshwari who sent me the photographs of some famous *khadeens* of Jaisalmer. I was later able to understand this issue more completely thanks to the trips I undertook in the company of Shri Deendayal Ojha., Shri Jethusingh Bhatti and Shri Choithnal of the Khadi Rural Uplift Council.

In Jodhpur, new *kbadeens* have been built by The Institute for Rural Science the address of which is P.O. Jelu Gagadi, Jodhpur.

It is Jethuji who told me about the dialogue between the scholar and the simple herdsman. The following is the full version of the dialogue: The scholar says: “The ascetic heat (*tap*) of the sun excels, the water of the river excels, the strength of the brother excels and the milk of cows excels. These four things are ever excellent”.

The herdsman replies: “It is the *tap* of the eyes (in other words the intuition backed by experience) that excels, it is the water of the *karakh*, the earthen pot, which is carried on the shoulder, that excels, it is the strength of one’s own arm which excels as it is the milk of the mother which excels. These four things are ever excellent, brother, these for things are ever excellent”.

The modern agricultural *pandits* say that, according to the rainfall which the desert receives, it is unfit for growing wheat. It is the miracle of the *khadeen* builders, which made it possible for several hundreds of years, to obtain several hundreds of quintals of wheat. The Palival Brahmins have in fact for long turned the Kingdom of Jaisalmer into a granary of wheat and fodder.

It is Shri Jethusingh and Shri Bhagwandas Maheshwari who gave me the information regarding the *daibandh*, that is the *devibandh*.

Of all such places which Nature, the Goddess, has traced in the region, there is probably none that has escaped the *tap*, the experienced vision, of the local society. These eternal manuscripts have spread their leaves throughout the region. If today the literate society is not capable of deciphering them, it is another story.

The Twelve Months of The Pulley

I discovered for the first time the capacity of the Rajasthani society to convert the one moment of Indra into its twelve months thanks to the *sathi* well Ramsagar, built on the pastures of the village Bhinasar of Bikaner district. I was able to go there through the kind courtesy of Shubhu Patwa.

Regarding the relationship between the *bhun* and Indra, it is Shri Jethusingh who made me wise to it. Shri Dindayal Ojha informed me about the *sirvt* who is capable of seeing the invisible water of the underground as well as the *kiniya* who is capable of digging very deep wells. Shri Kishan Verma is the one who unraveled for me the mystery of the technique of digging by quarters as well as that of making the very fine mortar used for joints.

In this chapter I was not able to deal specifically about the stepwells, such as *bavris*, *pagbavs* and *jhalras* but just as wells they too have a very strong tradition. It is true that one can find *bavris* even in Connaught Place in New Delhi; but there is a whole stretch which cuts across the country like a belt and includes Gujarat, Madhya Pradesh and Rajasthan, where they can be found.

It is thanks to Shri Sharad Joshi of Chaksu that I was able to see for the first time this marvel in Rajasthan as also the *bavri* Toda Raisingh in the district of Taunk. Indeed, while standing on the steps of this *bavri* I was able to understand exactly the meaning of to stare wide-eyed. In fact the photograph of this *bavri*, has been turned into a poster by the Gandhi Peace Centre of Hyderabad and the Gandhi Peace Foundation of Delhi. Shri Sharad Joshi also made available to me all the information that exists on the stepwells built in various towns of Rajasthan, and almost all of which are today in a dilapidated state. The issue of 17th June 1989 of the weekly *Rasbtradoot* (Sudharma, M.I. Road Jaipur) features a list of stepwells of Rajasthan by Shri Ashok Atray.

Most of the information regarding the *charas*, *lav* and *barat* were provided to me by Shri Dindayal Ojha and Shri Narayansingh Parihar made me understand to what extent society shows respect to the *bariyo*. His address is as follows: P.O.Bhinasar, Bikaner. As far as the *sundiya* is concerned I got my information from Shri Maghatram who works in Bada Bag in Jaisalmer.

People used to be sensitive to the fact that the oxen and camels pulling the *charas* at the *saran* would get tired. Another smaller pulley, *ghirri*, used to be attached to the *bbun* and to this a long rope which would get rolled up at each of the turn taken by the oxen. Whenever the rope would get entirely rolled up, it meant that the team of oxen had to be changed. This practice which took such great care not to unduly tire animals perhaps no longer exists in the behaviour pattern but even then, the ancient dictionaries feature the name of this cord.

The initial information pertaining to the wells of Shri Sangidas of Phalodi town was obtained by me courtesy Shri Ramesh Thanvi of Jaipur; this information was further refined by Shri Murarilal Thanvi, whose father Shri Shivratn Thanvi told me the history of Seth Sangidas's family. The address of the Thanvi family is as follows: Mochi Gali, Phalodi, Jodhpur district. The best architects of today have the greatest difficulties in reproducing on paper these wells which the wonderful well diggers of yore built in stone. I was helped by Shri Anukul Mishra, a Delhi architect, to draw out the initial plan of the well. I owe the information regarding the splendid *chautani* well of Bikaner to Shri Shubhu Patwa and Shri Om Thanvi. There are other such wells, in the town, which have been giving sweet water for the past 200 to 250 years. They are normally of such huge proportions that the locality in which they are situated are named after them.

In the desert, there has always been extensive regions which were irrigated by wells. The 17th century historian Nainsi Muhnot has in his book thrown light on the conditions and situations of various wells. From his book one can come to know about the wells situated on the border of the village, about agriculture, the means of irrigation, the number of wells and lakes and the depth at which water could be found in them. In this book entitled *Pargana Ri Vigat* (The State of Regions), one can find the list of the various *parganas* of the Jodhpur Kingdom from 1658 to 1662. Moreover Shri Bhanvar Bhadani, Head of the History Department of Aligarh University, has done substantial research on the subject. More information on it can be found in the book of Shri Manoharsingh Ranavat, entitled *Itihaskar Muhnot Nainsi Aur Unke Itthas Granth*, (Historian Muhnot Nainsi and his history book), published at Rajasthan Sahitya Mandir, Sojti Darvaza, Jodhpur.

Often one can find a wooden container called *kathri* (from *kath* : wood) kept on the coping of a well. To have a *kathri* made and to keep it on the well is considered to be a pious act and inversely to steal or break a *kathri* is considered to be a highly impious one. These implicit definitions of piety and impiety are nowhere couched in a written text; yet they are deeply engraved in the very soul of the local society. Normally at the time of an auspicious occasion in the family, the head of the family has a *kathri* made and kept on the coping of a well. This can remain there for years. If, by chance, the wooden container happens to fall into the well, it does not sink, it floats up and can be used again. Let me add one more thing: wooden objects are not subjected to the untouchability syndrome: all castes can use the same wooden object.

And now compare this to the two *paise* plastic glasses which are chained on to water coolers in towns.

The Commitment of Body, Soul and Wealth

In Rajasthan, more specifically in the desert, society has undertaken the work on water with great pride: not as a challenge but indeed in a spirit of humility and duty. This has taken the visible (*sakar*) shape of *kuins*, *tankas*, *kundis*, *talabs* and others. But there is also an invisible (*nirakar*) form to it, a form which is not shaped by brick and mortar but by love and the legendary generosity of the water culture of this region. This invisible form has its *ager* in the heart and soul of people. Wherever, whenever the soul was ready to undertake the work of water, people did not spare their body and wealth for the task, and this was done in a very natural and effortless way. It is the devoted builders of the visible form as well as the invisible one who helped me to understand the nature of Rajasthan's water work.

I came to know about the efforts of Botswana, Ethiopia, Tanzania, Kenya, Malawi and others in harvesting water through the report of a congress which took place in 1980 in Jomba, Malawi. It is true that the report is somewhat outdated but it does not seem that the situation has improved in these countries. Any 'development' which may have taken place would have been in the wrong direction. The Congress had been organised by the Malawi Government and two Canadian Institutions, the International Development Research Centre and the Canadian International Development Agency.

The book *More Water for Arid Lands*, promising technologies and research opportunities, published by the National Academy of Sciences in "Washington, contributed to my understanding of the efforts undertaken to improve the water situation in the deserts of a hundred odd countries. It definitely mentions the wonderful traditional techniques, going back to one to two millennia, prevalent in the Negev desert (which is today in Israel); however no precision is given about their present status.

On the contrary, today there is only talk about computerised agriculture and drop irrigation so much so that our own leaders from Rajasthan and Gujarat as well as our social workers are rushing to Israel to get an understanding of this new science. Such books give enthusiastic descriptions of methods of spreading plastic sheets over catchment areas to collect rainwater. Sometimes it is declared that the method of spreading wax on the soil is more economical and 'better' than the use of plastic.

It would be terrible to say that no good method exists in these regions. In fact there is one method which exists in Iran and Iraq: it consists of having a sleeping well instead of a standing one. These wells are known as *quanat* and they are made to harvest the underground water of the slope of a hill with the means of an obliquely dug drainage gallery.

In Rajasthan all the water work has been the result of the spiritual commitment of the whole society which also enjoyed its fruits.

Here instead of cement, mortar and lime have been used for everything. Let us compare these two materials: a mortar construction does not need to be moistened; on the other hand a cement construction needs to be moistened twelve hours after being applied, for at least four continuous days, if not seven. If the humidifying process of the cement is not done then in all likelihood the cemented structure will crack.

It is true that both cement and mortar are made from the same stone quality but the difference in the way they are made changes their nature. To make cement the stone is crushed as finely as powder and a particular type of sand is added to it. To make lime mortar, on the contrary, instead of being crushed immediately the lime stone is baked in an oven first and then only crushed, with a mixture of millet and sand. Instead of shrinking this mixture expands.

So we see that by using the same stone quality differently, its nature also gets changed. As soon as cement is mixed with water it starts hardening. This is what is called the setting time and it can last between half an hour to one hour. If the cement is kept properly, it can still be used after two to three years, after which it starts losing its resistance. As it hardens and sets, cement starts shrinking. According to the books this process takes up-to thirty days but in practice it lasts three days. Once it has shrunk to its final dimension and has hardened, cement can last forty years according to books and in practice a maximum of hundred years.

On the contrary with mortar, we see that it sets slowly, patiently. Unlike cement it does set when it is mixed to water. It is left one or two days in the pit where it is being mixed. The setting and hardening process starts only between two to ten days; in the meantime it does not crack as it does not shrink but expands while setting. That is why it does not have to be laid at the time of setting itself, as in the case of cement. With time, it solidifies and takes on a sheen. If it is well laid, it can last for a period of two hundred to six hundred years or six to seven generations. More than cement which would have crumbled by then.

There is yet another difference between the two: any structure built in mortar does not allow for seepage of water whereas cement cannot stop water: this can be amply confirmed by the best constructions, private houses or public buildings or reservoir and water tanks of any town.

This is why *tankas* made of mortar do not suffer from water seepage. They proudly hold their own for two or three centuries, just like the *kunds* and *talabs* built in the same way. As far as building is concerned whether by the state or by communities, today also there is space for lime mortar, for masons who are well versed in the complexities of this work, for people who are able to commit body and soul to the success of this material culture.

Glossary

In an effort to retain as much of the flavour of the original text as possible and also because some words can only be incompletely translated, the English translation has maintained Hindi words followed by an explanation. This glossary features some of the more recurring words which are surrounded by a cluster of connotations and some words having a specific meaning.

A

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|----------------|--|
| adi | : etc; but also primal (e.g. adivasi: first inhabitants) |
| agor | : impluvium, catchment area; could be the roof of a house or a very large area |
| Ak | : <i>calotropis gigantea</i> |
| akar/nirakar | : form/formless, limited/limitless, again with spiritual resonance, referring to the manifest and unmanifest realisation of God |
| Akshay tritiya | : festival celebrated on the third (tritiya day) of the lunar fortnight, in the month of Sravan |
| algav/lagav | : separation, detachment, used here for particles that do not stick. Its opposite lagav connotes attachment, attraction; it is used here for soil where the particles are 'attached' to each other |

B

| | |
|-------------|--|
| babul | : indigenous acacia |
| bad | : banyan |
| baoli/bavri | : reservoir/manmade lake |
| baradari | : meeting place |
| beri | : step well |
| Bhima | : One of the five Pandava Brothers, in the <i>Mahabharata</i> , whose strength was legendary |
| bhun | : pulley |
| bindu | : a dot; also the focal point on which one concentrates during meditation |
| bitta | : measure corresponding to the length of a hand; the term "hand" as a measure, which is used in the text, corresponds to the ancient cubit, the length of a forearm, equivalent to 17 to 21 inches |

C

| | |
|-------------------|--|
| charas | : water skin; a receptacle made of coarse cloth or leather, with a heavy metal ring at the opening; used for drawing water |
| charkhi | : wheel |
| chelvanji/chejaro | : well maker; the word's etymology is from chela, disciple |

D

| | |
|---------|---|
| darshan | : literally fact of seeing; obtaining the vision of God or someone/something special; also philosophy |
| dharma | : that which unites, cohesive force; also principles to be followed for the integrity of all creation; often translated as religion |

| | |
|------------|-----------------|
| drishti | : gaze |
| drishtikon | : point of view |

G

| | |
|----------|--|
| ghrini | : pulley |
| Girdhari | : another name for Krishna, referring to the episode where he lifted a mountain on his finger (gir: mountain; dhari: holder), to save people from a deluge |

J

| | |
|------------|---|
| jaal | : salvadora persica |
| jal | : water in its religious and cultural connotation |
| Jeth | : the elder one to whom respect is due; the month of Jeth thus is the elder one, the most important in hierarchy |
| jharokha | : a latticed window or screen |
| jugalbandi | : duo recital; normally during a recital, the vocalist or instrumentalist enters into a playful competition, based on rhythm, with the percussion player; this is also part of the jugalbandi |

K

| | |
|----------|---|
| Kabir | : weaver poet saint |
| khadeen | : a kind of oasis; moist bed of seasonal rivers where cultivation is undertaken |
| khimp | : desert shrub (leptadenia pyro-technica) |
| kriti | : creation |
| kuan(m) | : classical well |
| kuin (f) | : narrow well |

kund : pond; also the sacrificial pit in which fire is lit during a religious ceremony

kundali : literally coils, reminiscent of the coiled serpent, symbol of the kundalini, energy coils present in every human, at the base of the spine

kundi : small pond

L

lakhpati : a person possessing 1,00,000 rupees, or any other currency

M

manthan : churning; here reference is made to the Samudra Manthan, churning of the Ocean by the Gods and Demons to obtain amrit, the elixir of eternity

mati : soil; with cultural connotation

N

navtapaa : nine days of ascetic combustion; nine has a very special significance in the Indian psyche; it refers to the nine planets as well as to a figure which announces renewal

Neelkanth : the one with a blue throat; another name for Shiva; it refers to the episode when he drank the poison which came up during the churning of the Ocean

neti...neti...neti... : neither this, nor that, not that... Upanishadic concept, describing in the negative the Absolute which escapes all qualifiers

O

om-gom : the Sun; the ardent heat it radiates; almost like an "inundation of heat", which will then trigger the inundating rain

P

pagbav : step well

pal : dike, or wall surrounding talaees or johads and other lakes

palar : celestial region, thus palar pani is rain water, coming from the celestial region and reaching the surface

pani : water in its quotidian aspect

patal : subterranean regions, with the connotation of infernal in the religious context; here patal pani refers to the subterranean ground water table

phog : desert shrub (calligonum polygonoides)

pol : monumental and ornamental doorway

prasad : edible offering to God, distributed amongst all, after a religious ceremony

R

rejani pani : capillary water, trapped in the surface before it reaches the salty water table

riti/voj : tradition; in voj the connotation of system and competence also come

S

sadhan : means, material or/and spiritual; e.g., apne tan, man, dhan ke sadhan: the commitment of body, mind and assets; this expression is a consecrated one in religious songs and has a strong religious and spiritual resonance

sadhana : daily practice done in the spirit of devotion; ascetic path leading to self-realisation, used metaphorically and literally in the context of the book

sadhu : religious renunciant, engaged in sadhana

samaysiddha : having achieved a realisation/perfection which defies Time

sangam : literally, union; this word normally refers to the confluence of rivers; some *sangams* (e.g. that of Ganga and Yamuna) are considered particularly holy sites

Savan/Shravan : the month of the Hindu calendar, during which rain falls;

savai : etymologically from *sava*, one and a quarter; metaphorically a person (could also be a collective) who surpasses himself

shram : labour

shramdan : concept of gift of labour, valorised by Gandhi

shruti : oral revelation;

siddha : a realised man, in spiritual terms

sindhu : the ocean

smriti : remembrance; refers to the transmission of oral knowledge/wisdom

svamitva visarjan : *svamitva* means ownership and *visarjan*, immersion of an icon after a ceremonial prayer; here the expression means an offering of one's ownership which, in a way, gets immersed into society

swayamsiddha : self-achieved empowerment/accomplishment, with spiritual resonance

T

taap : temperature

talab : lake; could be as vast as Ghadsisar, or quite small

tap : heat; also asceticism

tapasya : ascetic ardour or combustion, leading to purification

U

Uttung : literally elevated; here the play of words on the rishi Uttung is self evident