STEPWELLS
Subterranean Architecture in Western India

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In January 2008 my documentation extended to the Yemen which has an interesting bearing on another strand of water architecture now the subject of new work. Additional thanks to Ahmed Halim and Prof Hafiz Al-Nood and his family.

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Rajasthan Wales Arts Exchanges

The current geo-political events and developments despite a networked world, high light a recurring clash of civilizations as voices are raised against reckless generalization and denial of cultural identity. Tackling it through artistic and cultural links involving person to person contact for mutual understanding and gain, as has been the case with Rajasthan-Wales arts exchange set up in 1993 and personally led by Richard Cox, seems to be a way forward.

The regular two way flow of artists from historic landscape of Wales to incredibly rich culture of Rajasthan and vice versa has brought more than 35 creative people together in close encounters sharing each other's life experiences besides art and culture as reflected in a new body of work appearing on the scene in two different continents and contexts. Initially funded with institutional support including grants received from Arts Council of Wales, Charles Wallace India Trust and Rajasthan Government amongst others, the exchange now continues to grow under its own steam given the commitment that the two arts communities from such different regions have shown in this initiative.

I have known Richard since the early 90s when his love affair with India began as an arts organiser, then as a practising artist and finally it enlarged to include research and photography. In terms of subject matter too his work has been dynamic with a shift in its focus from contemporary art practise to heritage and sociology of culture and cultural studies around step wells that make him inter and cross-disciplinary man of many parts. Richard who is a veteran of many international exchanges including those that he was instrumental in setting up in Norway, Poland, the Ukraine, Georgia and the USA, says, "...the work in India has been the most interesting and continues to be so". His own geometric and somewhat minimalist work has also been impacted by his visits and study of step wells while the colours and vibrancy of Rajasthan seem to have left visible impressions on all those artists who have partaken of the exchange. And for the arts fraternity in Rajasthan there has been a noticeable impact of the encounters with more experimentation and a contemporary look in their work as windows to a new world view.

The unique cultural history and social significance behind the architecture of Indian step wells has been studied and researched by numerous scholars. What Richard brings forth in his work is a photographic record of some of the more remarkable ones that he has come across during his numerous sojourns in the region. Trekking through difficult terrains exposed to the heat and dust of desert area of Rajasthan and arid parts of Gujarat, his fascination with step wells has given him a fair understanding of their architecture, nature and social significance in a region where water has been a scarcity and of enormous religious and cultural significance both for the royals as well as the commoners. Since the turn of the last century, given the growing urbanisation, pollution and life threatening health hazards, as the State authorities introduced a system of tap water supply, step wells have fallen victim to disuse and disintegration. Richard’s photographs and documentation of the step wells assume a special significance in this changing scenario and context. I wish him all the best for his research and work and many more fruitful exchanges.

Sushma K Bahl MBE, arts consultant, writer and curator of cultural projects. She is a trustee and advisory panel member of select few cultural and educational institutions in India and abroad. Head Arts and Culture for British Council India until 2003, she was Guest Director for XI Triennale-India 2005 and has curated some seminal exhibitions on contemporary Indian art and authored/edited accompanying books/catalogues.
Subterranean Architecture. Stepwells in Western India

Since 1993 I have been a regular visitor to Western India working as an visual arts organiser and artist. The last three visits were to document Stepwells and Kunds, which are unusual aspects of traditional architecture little known outside of the Indian Sub Continent.

Stepwells have been constructed over the last 12 centuries in India to harvest and provide access to water in the arid and desert regions of Rajasthan and Gujarat where they can mostly be found. As the name suggests the water is approached by descending steps from ground level to reach water level. The combination of groundwater and rainwater would fill the wells during the Monsoon and as the dry season progressed the water level dropped. Wells could be as deep as 9 levels from ground level, as is the case with Neemrani Ki Baori, but most Stepwells were four or five stories deep with sheltered landings at each level. There is considerable diversity in their designs and Kunds (Stepped ponds) are distinctly different as the descent to the water level is without covered landings and these are open to the sky, Abhaneri Chand Baori and Panna Meena Ki Baori, are very fine examples of these types of well, or reservoirs. The Monsoon could not be relied upon and groundwater levels dropped rendering many wells dry. A recent drought in Udaipur lasted for seven years (1998-2005) in southern Rajasthan and almost dried out both lakes for which the city is famous.

The sites I have been visiting can be divided into distinct categories based upon conditions, architectural periods and designs. The breadth of this variety is governed by a number of factors: including the regions in which they were built, their age and the geology of the locations. The level of the water table when they were constructed, the nature of the patronage under which they were commissioned, (publicly, privately, Hindu or Mogul) and their religious significance.

Broadly speaking, publicly-accessible wells were constructed for the general good of the community. When built by royalty, rich merchants or monks, it was to the benefit of everyone who needed direct access to water, the crucial element in the lives of those living in desert regions.

The Hindu structures built through royal patronage are often more elaborate, with sculptures of deities, animals, and other finely sculpted devices. Patan Queens Well 1100 AD, in Gujarat has over 500 sculptures of Gods and is a very fine example of the Solanki period. Its state of preservation is exceptional because it was buried for 1000 years following a river overflow in 1126. The National Archaeological Survey of India (1980) restored it to its current state.

Of equal importance is Raniji Ki Baori in Bundi, Rajasthan. The City is said to contain over sixty or more Stepwells, although I have only seen and documented twelve. Raniji Ki Baori is one of the finest examples of its kind. It is fully restored and in exceptional condition. It was built in 1600 AD by Rani Natawati, wife of Rao Raja Anirudh Singh who was reported to have been responsible for building 21 additional wells in the area. Raniji is constructed around a single stone shaft and stairwell that is 46 metres deep, 40 metres long and 30 metres wide. Throughout, it has fine stone carvings of Ganesh, Saraswati and the ten incarnations of Matsya, Varaha and Narsingh. There is a repeating theme of elephant carvings, especially around the high arches, with the elephant trunks raised in the act of drinking, a powerful symbol of good luck in India Muslim and Mogul designs tend to be less decorative, but they did, to some extent, maintain the general design and scale of the Hindu wells, sometimes using Hindu engineers to assist building them between the 12th and 16th centuries.
The majority of wells I documented (in 2007 and 2008) were derelict. Palasa, the largest stepwell in Amer has three stories buried underground, Jagannata is still in good condition and Shahpura is in need of restoration. Despite this, many are genuinely impressive. The beautifully restored stepwells in Amer, Chomu, Hanuman, Ganga Das and Manji Ki Baori are very similar in size and design, were built around the 15th century and have very little surface decoration and/or sculpture. As part of the government’s restoration programme these wells are painted a distinctive saffron/turmeric yellow.

Other functions
In addition to providing water for drinking, irrigation, washing and bathing, stepwells provided other important functions and facilities. As a meeting place there were separate areas designated for men and women to bathe and for the women, who came to collect water for their households, it was an important opportunity to socialise and exchange news beyond their confinement at home. Descending below ground-level, sometimes to a depth of 200 feet, the ambient temperature drops, thus providing cool areas on the pavilion landings for travellers to rest during the intense heat of the summer (temperatures can rise to 50 degree C in April, May) for all but the lowest castes. This provided time to worship their Gods, socialise and enjoy recreational activities.

Most wells are adjacent to temples and the religious dimension is important, water being regarded as sacred and direct from the Ganges (symbolically). Waterborne deities often feature in the sculptures found in niches on either side of the pavilion verandas. Recreational bathing often took place, especially amongst royal families, while mourners in a very different context, would ritually cleanse their bodies after funerals. These social and religious aspects of the wells assisted community cohesion, something that was not well understood by the British Raj who banned their use in the 19th century as a health hazard. It was certainly the case that wells could, and did, harbour infectious agents and waterborne parasites. A genuine cause for concern was the Guinea Worm (Varo) that was transmitted to the human host via Cyclops a Water Flea, a subject in itself which is dealt with in Ann Allen’s text. However, many who used the wells had acquired immunities to some of these agents and water for drinking was usually separate from that used for other purposes.

Decline
The wells fell into disuse in the 19th century being replaced by water pumps. The changing level of groundwater and the unreliable nature of the Monsoon were also factors that led to the wells’ demise and, 150 years on, the majority are now dry. Although a great many of these wells are neglected and beyond repair, the decision by the Government to restore some important sites is an important recognition that stepwells are significant examples of traditional Indian architecture. Their preservation, even in a limited capacity, is an important initiative and very welcome.

This exhibition reflects the limitations of my experience, seeing only a relatively small proportion of these unusual and often very beautiful structures. India is a vast continent and I am aware that I have still a great deal to see and understand even within this specific category of architecture.

Richard Cox 2008
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**Waterborne Hazards**

It has already been mentioned that the British Raj’s strong disapproval of unhygienic stepwells led to their mass closure from the late nineteenth century. Popular use for bathing provided opportunities for disease transmission, caused by bacteria, viruses, and parasites such as Guinea Worm. Visiting India in 2007 I saw examples of these wells. A longstanding professional interest in water-borne diseases made them particularly fascinating to me.

In 1983 India launched the world’s first National Guinea Worm Eradication Programme in conjunction with the United Nations International Drinking Water Supply and Sanitation Decade (1981-1990). In 1947 India was estimated to have some 25 million cases. At the time of the launch nearly 40,000 cases occurred annually in more than 12,000 villages scattered over seven states. Sustained campaigns were launched at grassroots levels by agencies such as UNICEF and the WHO, with government collaboration.

Banwari Lal, a 25 year old man from the Jodhpur district in Rajasthan, was India’s last reported case of guinea worm disease, in July 1996. After a period of careful surveillance, WHO certified that India was Guinea Worm free in 2000. This painful and debilitating parasitic infection had been wiped out by simple measures for controlling transmission.

Transmission of the disease occurs through contamination of water with free-swimming larvae of Guinea Worm – also known as *Dracunculiasis medinensis*. These emerge from the ruptured uterus of mature female worms which lie visibly under the skin of infected individuals whilst they bathe in, or gather water from, shallow ponds, step-wells, or cisterns. This was graphically described by a doctor writing in *The Lancet* who at that time wrote: “Some have thought that bathing in the tanks might occasion it, but there does not appear sufficient ground to establish that as a cause.” [1851: 457]

A boil on the ankle or lower leg calls the “attention of the patient to the spot, and he seeks for medical aid, when the diagnosis is soon made out by the worm being distinctly traced with the finger in its course underneath the skin, and feeling hard like catgut. An incision is carefully made at the spot where it was first detected, and the worm being seized with the forceps, is drawn out . . . The operation sometimes causes great pain, according to the nervous sensibility of the part . . . The treatment . . . consists in extirpation of the worm entire, which is generally performed by native barbers, who are very expert; and in hospitals it is generally left for them to do by the surgeon . . . In going round the Poona native hospital, Dr. Deas, the chief surgeon, gave me a dracunculus, just extracted from the leg of a Brahmin by the native assistant. This specimen is three feet in length, about as thick as a crow’s quill, and not unlike white gutta percha in colour and texture. Both ends appear alike to the eye; the microscope probably would detect a difference. In the Sir Jamsetjee Jeejeebhoy Hospital, at Bombay, I noticed several cases for operation, and some recovering from it.

The thousands of tiny larvae (about 640 x 23 μm) with long spine-like tails spill into the water, where they uncoil and swim about, attracting cyclops (water fleas) which soon ingest them. Humans are infected when the infected cyclops are swallowed by people who obtain drinking water from shallow ponds, wells or cisterns, especially in the dry season when the surface water is low and the cyclops are concentrated in a smaller volume of water. The parasite then develops into the next phase of its incarnation as a male or female worm. The mated female worm migrates to shed her larvae about 8-10 months after the human became infected.

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FROM THE INTRODUCTION* TO THE SAKYI KUND AT AKHAJ

Water is one of the essential elements associated with human life. From time immemorial mankind needs water not only for drinking but for the purpose of cultivating food-grains.
In ancient times to meet these needs mankind was entirely dependent on rainfall that was either irregular or caused complete drought. They were, therefore, compelled to invent a system of irrigation, to dig out canals to divert water of rivers and natural lakes. This lead to the development of subterranean water storage and the sinking of deep wells.

In the region of Gujarat in the medieval period the problem of water supply became acute, as it is today. This deficiency has been recouped to some extent, by the construction of various types of artificial reservoirs similar to lakes (sara), ponds (tadaga, Kunds), wells (kupa, vavs) and stepwells (vapi and kunda).
A kunda, is a kind of reservoir, a construction of a well with flights of steps leading to the water source from either a single shaft or from up to four directions dependent upon the design.

Dr P C Parikh  
Dept of Archaeology, Gujarat State 1989  
*This extract has some paraphrasing.

There are at least fifteen different names for Stepwells. In Gujarat they are most commonly known as Vavs where as in Rajasthan they are usually known as Baoris or kunds.

O’R CYFLWYNIAD* I THE SAKYI KUND AT AKHAJ

Dŵr yw un o’r elfennau hanfodol sy’n gysylltiedig â bywyd dynol. Ers cyn cof bu dynolryw angen dŵr, nid yn unig er mwyn ei yfed ond at ddibenion tylu grawn-fwyd.

Yn yr hen amser, er mwyn cwredd â rhannu bywyd, roedd dynolryw’n dibynnu’r llwyd ar dŵr glaw oedd unai’n afreolaidd neu’n achosi sychder llwyd. Bu raid iddynt felly ddyfeisio system ddyfrio, a thorri camlesì i drio dŵr o afonydd a llynnoedd naturiol. Anwei’nidd hyn at ddathlygu systemau storio dŵr tanddaearol a suddo ffynhonau dyfion.

Yn ardal Gujarat ym yr oesoedd canol roedd y problem cyflenwad dŵr yn ddifrifol, fel y mae heddiw. Gwnaethpwyd yn iawn am y diffyg hwn, i ryw raddau, trwy adeiladu amrywiol fathau o gronfeydd dŵr artifisiaidd tebyg i llynnoedd (sara), pyllau dŵr (tadaga, kunds), ffynhonau (kupa, vavs) a ffynhonau grisiog (vapi a kunda).

Mae’r kunda, sef math o gronfa dŵr, yn ffynnon adeileddig gyda gрисiau’rn arwain at darddiad y dŵr o unai siaff unigol neu o hyd at bedwar ceifeiriad, yn dibynnu ar y cynllun.

Dr P C Parikh  
Adran Archeoleg, Talaith Gujarat 1989  
*Mae’r dyfyniad hwn yn cynnwys rhywfaint o aralleirio.

Ceir o leiaf bymtheg enw gwahanol am Ffynhonau Grisiog. Yn Gujarat yr enw mwyaif cyffredin arnynt yw Vavs, tra yn Rajasthan fe’i gelwir gan amlaf yn Baoris neu’n Kunds.