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Valuation of World Heritage

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'Heritage has been absent from the mainstream sustainable development debate despite its crucial importance to societies and the wide acknowledgment of its great potential to contribute to social, economic and environmental goals. World Heritage may provide a platform to develop and test new approaches that demonstrate the relevance of heritage for sustainable development, with a view to its integration in the UN post-2015 development agenda. (http://whc.unesco.org/en/sustainabledevelopment/)

1. Introduction

World Heritage sites are classified in two categories—cultural heritage, and natural heritage.[1] Outstanding Universal Value—the basis for identification of a World Heritage site implies that valuation, from a global perspective, might be sufficiently greater than the valuation of that site in its immediate location for the World Heritage tag to provide a significant incentive for the preservation of it. The rise in tourist traffic consequent upon recognition, statistically validated in several contexts, seemingly justifies that prior.

The common cliché of the historical structure allowed to fall into ruin, its stones prised out for constructing nearby dwellings, or the area within what remains of the structure put to base uses, conforms to that conception. Likewise, there are natural biodiversity reserves threatened by unregulated cutting of trees, where recognition as a World Heritage site may well be the statement of superior valuation needed to put a stop to such practices and preserve what remains.

This paper does not therefore argue that the World Heritage convention should be abandoned, and its sites de-recognised. What it does argue is that the basis of indigenous valuation should be investigated for its constituents, so as to bring about a better alignment between global and local valuation.

In recent years, as exemplified by the quote above, there has been an attempt to integrate heritage with sustainability, the new global watchword underlying post-Millennium Goals. In successive meetings of the World Heritage Committee going back to 1994, the operational guidelines increasingly pay attention to sustainable preservation of cultural and natural heritage. In the extended deliberations to mark

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the 40th anniversary of the World Heritage Convention in 2012, there was a Toyama proposal to mainstream heritage in sustainable policies, and sustainability in heritage policies and practices, but the proposal contains little beyond the need to manage the inevitable tension between preservation of biodiversity and forest wealth on the one hand and livelihoods of people in those environments on the other, and between tourism access to world heritage sites, and the destructive aspects of that access. The 2011 amendment by the World Heritage Committee of the definition of sustainable development in the operational guidelines (UNESCO 2011, para 119) does mention that World Heritage sites must advance the quality of life of local communities, but the specifics of what that may entail are not spelled out. Concern is also expressed about how best to convey decisions that might be taken on sustainable management of heritage, and the implementation of these policies on the ground in what now number a little over 1000 heritage sites. There are no cases so far of a site actually having been de-recognised on any grounds, although in India one natural site (Manas Natural Sanctuary, marked as endangered between 1992 and 2011) and one cultural site (Hampi) were listed as being in danger, but subsequently taken off the danger list.

In what follows, section 2 will look at indigenous valuation, and what that exploration leads us to. Section 3 looks at the all-important issue of funding for preservation. Section 4 looks at World Heritage sites in India against the background of the preceding sections. Section 5 looks at possible expansion of cultural recognition to traditional knowledge systems for preservation of water, where the physical structures submitted for consideration to the WH committee would consist of water network systems, distinguished by their ingenuity and functionality rather than any particular aesthetic quality. Section 6 concludes.

It is important to state upfront what this paper does not do. The notion of development as an aspirational ideal is not questioned, nor is it taken as necessary that development calls for the abandonment of traditional culture and values.[2] Choosing development is emphatically not seen as equivalent to choosing a particular strategy of development such as for instance that advanced by the Washington Consensus. Finally, the paper does not investigate the issue of whether WH recognition or classification might have mis-specified the categorisation or positioning of a site in a region's heritage (see Ray, 2012).

2. Indigenous Valuation of a Cultural or Natural site

This paper is limited to an examination of valuation, dealt with in the economist's sense of preferences between two binary alternatives *ceteris paribus,* which may

be single option choices (for example between having enough water for survival or not), or bundled options between cost-benefit packages. In single option choices, the paper assumes for simplicity that some choices can be made without reference to indigenous communities—in the example above, having water rather than not having it. It does not touch upon what is by now a fairly large literature on how valuation can be quantified through survey based assessments of contingent valuation (willingness to pay or rank orderings), or hedonic pricing models evaluating the impact on local real estate value of restoring World Heritage sites.[3] The focus instead is on the basis of traditional valuation, prior to restoration, and on context-specific valuation rather than any macro sense of the contribution of heritage or culture to well-being.

By definition, a cultural site which exists in the present day has survived, which is to say that the valuation of it as revealed by its existence is sufficiently non-negative for it not to have been demolished. This could be single-point valuation, as for instance by a government which has effective jurisdiction over an area, and might have legislation marking protected sites. Or there might be polycentric valuation, where at the limiting extreme, each individual living in the area could be one polycentric valuation centre. In the latter case, the existence of the cultural site could be thought of as an equilibrium outcome with non-negative valuations trumping negative valuations. This equilibrium could well be suddenly overturned, as for example in the case of the Bamiyan Buddhas, which were blasted out in 2001 when their very existence was an affront to a powerful subset of individuals residing in the area.

Cultural monuments had to have been conceived and executed by powerful individuals (kings or successful merchants) with access to large financial resources. Their motivations would have ranged from the usual projection of power and grandeur, to altruism at the other extreme—as in the case of forts or palaces constructed to provide public employment in times of famine. Whatever the motivation, the monument has to have had some intersection with the values of the local community for it to have been regarded with favour in its immediate vicinity, enough to ensure its survival in what was typically an unguarded state.

The value accorded by the local community to the site could be based on any or all of five bundles of rights ordered hierarchically (as conceptualised by Schlager and Ostrom, 1992). At the most basic level, there might be access rights, and withdrawal rights. Access could be access to water sources enabled by the site, or just access to an open space, or the perceived spiritual advantages of proximity to a structure with religious or political significance. The powers of benediction gained from an initial such site could then form the nucleus of multiple sites.[4]

Withdrawal could be traditionally assigned rights to renewable resources such as leaves, fruit, flowers or bark from the site (even cultural sites might have attached gardens or orchards), or even extraction of timber or firewood, in volumes that have been kept sustainable.

Three other bundles of rights at increasing levels of ordering to complete the Schlager-Ostrom set of five are management rights—the right to manage and regulate internal use; exclusion rights to decide who can exercise the rights of access, withdrawal or management; and alienation rights—the right to lease or sell any of the first four rights.

Typically, this last set of management, exclusion and alienation rights, even if assigned at the time the monument was constructed, might have been lost over time to powerful predators, leading to the commonly observed phenomena of overuse or active abuse. Where access and withdrawal rights are highly valued, as for example, access to water enabled by the construction of the monument, simultaneously with the loss of management and exclusion rights, one would see typically dense human settlements around the monument, where the water source itself might get depleted through overuse, or polluted and unusable through mis-use.

This circumstance, of defiled and encroached sites, is paradoxically not an indicator that the site carries no indigenous local valuation. On the contrary, it indicates that the site carried (and still does) very high value to the local community, enough to attract (and retain) human settlement. These settlements might have developed over the years cultural and craft traditions specific to them, perhaps dating from the time of construction. The restoration of the monument which is done to build candidacy for WH recognition has to recognise the basis of indigenous valuation, so that the resulting protected monument is not built on a platform of alienation from the surrounding community.

Tourism could result in creating a barrier between the site and the surrounding community, if the restored site has not succeeded in connecting with the local community by respecting what drew them to the site in the first place. The World Heritage Committee's sustainability criterion can be met by ensuring a local share in tourism revenue, or access to licensed service provision at the site, but there has to be a more fundamental alignment of global and local value for WH recognition to be sustainable.

Natural sites such as forests share the same fundamental preservation problems as cultural sites. They have traditionally carried access and withdrawal rights, extending

even to residence rights within the preserve, which typically go with management rights, in terms of control of internal use. What often happens with powerful outside groups seeking to appropriate the timber value of forests is that the traditional forest residents lose control over exclusion rights, and with that the degradation of forest cover sets in. In such cases, restoring control over exclusion rights to local residents, with external oversight to guard against capture by elites among local residents, may hold the key to preservation of these sites.

The state of forests is not thought to be crucially a function of the general type of forest governance by scholars who have studied forest conditions (Poteete, Janson and Ostrom, 2010). Rather, it is how a particular governance arrangement fits the local ecology, how specific rules are developed and adapted over time, and whether users consider the system to be legitimate and equitable. We come back once again to the issue of valuation by the local community as a key element in whether efforts at forest preservation succeed, either with WH recognition or independent of it.

It costs more to preserve traditional access and withdrawal rights, along with restoration of the monument or nature reserve. The funding issue for restoration therefore becomes paramount.

3. The Funding Issue

The WH tag carries no financing promise in the sense of a formal arrangement either before or after recognition. There is a small World Heritage Fund, financed by compulsory contributions by member countries, and by donations from private parties and government. There is a provision in principle for countries to seek assistance from the Fund, but the flows into and out of the Fund do not seem to be very transparent. In the case of India, in particular, the budgetary evidence suggests that India is a net contributor to the Fund, not a net recipient (at least in recent years).[5]

Even so, the prestige of WH recognition is so great, that large sums of money are expended on the process of applying to the WH committee. Since the value of WH recognition can be preserved only if the number of recognised sites is controlled, there is a large rejection percentage; the magnitude of this percentage is not known.

The insignificant provision for global funding is in itself indicative of the business model underlying WH recognition– recovery over time through tourism revenue of costs borne by national or subnational governments on restoration. The WH tag bestows commercial value by virtue of the enhanced tourist traffic that goes with the tag (for an econometric validation of this impact, see Kayahan and Van Blancom 2011),

and so raises the post-recognition local value of the structure. However, case studies of cultural sites in the Western world, show that even with enhanced traffic, tourism revenue covers only operating costs—and even that, never fully. Capital costs borne by national or subnational governments, are never recovered. [6]

The balance between costs and incremental tourist revenue may be more favourable in contexts like India, where wages of skilled craftspeople are low. So the business model of the WH tag may carry greater validity in terms of cost cover than in more developed countries, but only if the cost of restoration is narrowly confined to a ring-fenced site, without attention to the local community and its relationship to the pre-restoration site. Such a business model disincentivises any restoration costs extraneous to the bid to make the site a source of tourist revenue. And that is exactly what happens, alienating the local population, thereby destroying the place the site has in their scheme of things, and violating the sustainability concern expressed by the WH Committee.

There are additional problems in India with the way in which tourism receipts are fiscally structured. If the tourism revenue from a site is an increasing function of the level of maintenance, simple incentive compatibility requires that the revenue collected at a site be sequestered at the site. But formal accounting arrangements do not permit the tourism revenue from an archaeological site to accrue to the site. The Archaeological Survey of India (ASI), which is charged with maintaining WH sites, gets an annual budgetary expenditure allocation from the Government of India, unrelated to tourism receipts which go into the general non-tax revenue pool.[7] Site independence and fiscal autonomy are necessary elements in any accountability mechanism. At the same time, it is also necessary that ASI be reformed and more effectively monitored so that it is accountable for the budgetary allocation to it. The state of ASI monuments has been severely criticised by the Comptroller and Auditor General (CAG), the national auditor (CAG, 2013).

In order that WH recognition preserves indigenous valuation of the pre-restoration site, WH sites have to be restored in partnership with restoration of local surrounding human settlements, such that global and local valuation are fully aligned. New rights, such as assigning surrounding communities the space in which to demonstrate their craft traditions, where these might well date from the time of construction of the monument, will give them a further stake in the upkeep of the site.

The upgradation of surrounding human settlements is a task that can rightly seek fiscal assistance from local government, among whose functions is the provision of

local public goods such as sanitation and road access. These funding partnerships are legitimate and necessary, but will possibly require sharing of tourist revenue with them as well. Ultimately, incremental tourist revenue is unlikely to cover operating costs fully, let alone contribute towards recovery of capital cost. Traditional funding patterns for sites highly valued in their vicinity for their religious or spiritual worth may no longer be possible to resurrect. Alternative funding partnerships from commercial entities which could gain from a more widely defined notion of site preservation, resulting in visitors actually spending time in the vicinity of a site rather than just visiting a narrowly targeted monument, need to be explored.

In addition, there is need for a much larger global fund to provide supplementary grants for initial capital costs of restoration, to supplement local and national efforts. Recognition as a WH site could carry a grant towards the cost incurred by the country towards restoration, on the 'spend and reimburse' model.

In the federal structure in India, there is a within-country parallel of fiscal support from higher levels. There is a national value attached to forest preservation, resulting from the environmental externalities of standing forests. Subnational state governments may on the other hand see them as carrying an opportunity cost in terms of lost revenue from forest timber, and conversion of forest land to industrial use. In recent years therefore, there have been national grants going to states to compensate them for the economic burden of keeping their forest cover protected.

Finance Commissions in India are set up every five years to set states' shares of the tax revenues of the national government. The Thirteenth Finance Commission designed a forest grant over and above the tax share, to bridge the gap between national and state-level valuation, in the form of financial compensation for the opportunity cost of land preserved as forest and not converted to non-forest uses. Designed as a two-part absolute grant to states over its horizon 2010-15, it was pro-rated to forest cover (see Appendix 3).[8] The Thirteenth Finance Commission also had a non-formulaic grant that covered specific state needs, which included preservation of cultural and natural heritage. The details of these transfers, 60 per cent of which went for cultural heritage, 40 per cent for natural heritage, are also spelled out in Appendix 3. However, this second avenue of heritage funding does not really provide a template for international funding of heritage preservation, since it is not formulaic. Routine funding under a global provision, with formulaic allocation, is an imperative for heritage preservation going into the future.

How might the global fund be financed? The levy of a global Tobin tax on financial

transactions has been suggested as a possible global fund for financing climate change mitigation and adaptation (Rajaraman, 2016). It is yet to find acceptance, but without some such initiative, the prospects for heritage restoration remain limited to sites where successful funding partnerships with private donors have been forged.

4. World Heritage Sites in India

Out of 1052 WH sites in the world, there are 35 in India, 27 cultural, and 7 natural, and 1 mixed, listed in Appendix 2 along with the year of elevation to World Heritage status. Applications for 45 more are pending for recognition before the WH Committee.

Indigenous valuation of these sites will be a function of whether it is cultural or natural, and within cultural, the type of site.

Taking first the cultural sites, these are grouped in the table under four sub-categories (not formal sub-categories of the WH system). The basis of indigenous valuation will vary between these.

Caves, of which there are four recognised WH sites, are of their nature removed from human settlements. The positive gain of this is that they are not easily accessible for possible defilement, but by the same token there are no surrounding residents to protect them from external predators intent upon destruction. In the case of such sites, WH recognition could be wholly positive in its outcomes, in the sense of imposing more active efforts at preservation than what had been the case previously, with as always, the dangers posed by the enhanced tourist inflows consequent upon recognition.

Large archaeological sites were most often capital cities of erstwhile kingdoms, and fell into disuse owing to the shifting of the capital by the same or successor kingdoms. In most cases, as in the case also of single monuments, the very construction of these imposing structures could only have been possible if access to water was possible either from a pre-existing source, or from a newly enabled network of water channels connected to surface or underground collection points. Since access to water is what from time immemorial has enabled human settlement, it is entirely natural that the water brought in for the construction, and for the sustenance of the activity for which the site was constructed, would attract human settlements on its periphery. It is also the fundamental reason why the immediate neighbourhood values the site, as the enabler of livelihoods by virtue of access to water, in addition to any other reasons specific to the site.[9] These other reasons may be their religious value, or political pride in the power and sway of the kingdom which constructed it, or in the case of structures constructed (or extended) as an employment generation scheme during drought or famine, memory of what the structure signifies.

It should not be surprising therefore that large sites and single monuments are surrounded by areas with often quite dense human settlement. Indeed, the genesis of the move to declare them as sites of global value originates from the fear that these satellite settlements will defile the monument beyond redemption. However, the paradox is that density of settlement signals the basis of valuation of the site to its immediate neighbourhood, and is the very indicator that the basis of valuation still survives.

Fatehpur Sikri, the capital constructed by Akbar was abandoned for reasons of both water scarcity and political turbulence, and is not surrounded by dense habitation for the very reason of its abandonment. That is the central paradox—the worse the congestion surrounding a monument, the higher the local valuation of the site.

A single monument analogue of Fatehpur Sikri is Rani-ki-vav in Patan, Gujarat. Here is a structure built over a stepwell *(vav),* a traditional stepped well capturing subterranean potable water. Because the location of these was dictated by topology and subterranean water aquifers, they became communal water sources publicly accessible to all unconstrained by caste or other considerations, and so had important cultural implications as well. The selection of this as a World Heritage site has had to do with the beauty of the structure surrounding the steps leading into the water. The World Heritage inscription refers to the geotectonic shift in the thirteenth century which caused a shift of the Saraswati River feeding into the aquifer sources of the well, but the loss of the water took away with it the key cultural significance of the site. As a monument to celebrate a source of water in a water-scarce region, it might at one time have been surrounded by human settlements, which drifted away when the well ran dry. The monument itself remained well preserved in the desert. Here again is an example where the state of preservation is no indicator of its local value.

It is in sites such as these, with close to zero current local value, that the WH tag is perhaps most justified. But in cases where a site is surrounded by pressing human settlements, and is perhaps for that reason in a poorer state of preservation, recognition of the monument alone while neglecting the water source which was the aspect of the site of enduring value to the local population, is to negate local value and therefore to drive a wedge between global and local value.

A positive example of enhancement of local value is the restoration of Humayun's Tomb by the Aga Khan Foundation, as part of a much larger project involving renewal of a neighbouring urban slum.[10] Here is a documented instance where the water source near the site, a stepwell, has been rendered functional, as a part of the restoration effort. The source of local value was made even more valuable, the settlement response to

it rationalised, and the equating of global to local valuation done without reduction of the traditional basis of its local value.

5. Cultural Knowledge Heritage

Recognition of knowledge systems which have sustained life, foremost among which is preservation of traditional water systems, is in line with the bid to mainstream sustainability into heritage preservation. These knowledge systems may well have fallen into disuse, but the more predatory systems which have supplanted them are in danger of running dry. Resurrection of older systems whose hallmark was sustainability, from such documentation as might be available, or constructed from oral memory of people now living, is an urgent necessity. This process will be greatly enhanced if there is a knowledge plank in the World Heritage Convention, lending world recognition to traditional knowledge as a key component of human heritage. From a climate change perspective, this is now no longer an option so much as an imperative.

In the very nature of these systems, they are likely to have been in use in many parts of the world characterised by water scarcity, and would by the same token be replicable, so that recognition as World Knowledge Heritage is not merely a location-specific preservation of a monument or natural resource, but a live body of survival techniques applicable to other regions of the world similarly threatened by water scarcity. There is evidence that these knowledge systems were transmitted through the ancient world.

Recognition of World Knowledge Heritage qualifies on the grounds of both mitigation and adaptation-mitigation, if activation of these systems forestalls further predatory use of ground water, or preferably even reverses the damage that has already occurred. But recognition under this provision can only happen after establishing that the knowledge system can and has been reactivated, and that it has resulted in restoring water and enabling life.

What of other knowledge systems, such as traditional medicine? Pre-modern cures and prophylactics have over the years been authenticated and co-opted into modern medicine. Quinine as a prophylactic and cure for malaria was one such. Other systems such as acupuncture co-exist with modern medical systems, and do not need elevation to World Knowledge Heritage to get authenticated.

Preservation of water is in a different category. It is characterised by networks, which can get de-activated and ploughed into by a market in water that benefits a few at the expense of the collectivity that live in a region. It is this aspect of water as a collective resource, whose network features can be destroyed by agents outside the network,

that calls for external recognition and protection. In a future in which climate change will threaten water supplies in many parts of the world, traditional water preservation systems clearly carry the property of Outstanding Universal Value which is the basis for recognition under the World Heritage Convention.

There are six criteria by which physical sites can qualify for WH recognition. In the preceding sections, the access to water through which alone the construction of the site would have been made possible has been singled out as the likely basis for valuation of the structure locally. This thought can then be extended to cultural knowledge heritage, not manifested in large or aesthetically appealing structures, but nevertheless key to the survival of the human species in a wide variety of conditions. The integration of sustainability into heritage would be rendered complete if heritage could be recognised without a physical structure carrying aesthetic appeal.[11] Within the six criteria currently listed for recognition of cultural sites, there is one that might be the basis for such recognition.:

> *v) to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;*

Fortunately, there already exists a water system recognised under this criterion, in Iran. A WH site there, the Shushtar Historic Hydraulic System, was recognised in 2009, a system of water mills, dams, tunnels and canals constituting an irrigation system. Another Iranian WH site included in 2015, the Cultural Landscape of Maymand, preserves the landscape of a self-sufficient nomadic pastoral community, recognised for its water collection and preservation systems, and for its three-phase migration over the year between defined summer settlements with seasonal buildings newly constructed each season, and permanent cave dwellings for the winter.

Traditional systems of water networks in India as listed by the Centre for Science and Environment[12] are prevalent in all parts of India, some names indicating the particular ruler in whose reign they came into existence (see a listing in Appendix 4). These can be categorised under three broad heads taken in turn below. What distinguishes each is not just the difference in name, but the particular combination of land topology, and water source which enabled it. Not all may be fully or even partially functional today.

The first type of water system was for sourcing drinking water. There are many simple rainwater catchment tanks, known by different regional names; the preservation/

resuscitation of these is vital for the population of these regions, but these can qualify for the Water Knowledge Heritage recognition only when they carry some special feature, such as networks of collection points linked to underground aquifers, or gravitational percolation in mountainous terrain. Simple catchment ponds are not listed in Appendix 4. Stepwells (known as *vav/vavadi/baoli/bavadi* in different parts of the country) for drinking water tapped into underground aquifers, but were typically stand-alone structures not linked to a network. The aquifers flowing into them have been tapped for groundwater irrigation, and without an inflow, the water has either evaporated altogether, or become a collection point for drainage. The previous section has already detailed the case of Rani ki Vav, a stepwell in Gujarat selected as a World Heritage site on the strength of the structure surrounding it, but which has long since lost the water source which fed into it.

By the approach argued for in this paper, if a defunct network can be activated through application of a traditional knowledge system, and can actually become a source of potable water over a wide area, connectable to surrounding human habitations with modern methods of access, such a resuscitated water network could then apply for recognition as a World Heritage system, where its claim is based on preservation of traditional knowledge towards current usability, and usage. The idea is to recognise the engineering ingenuity in these traditional water networks which enabled sustainable life in inhospitable terrain, and whose abandonment on account of predatory tapping of groundwater has led to distress in these regions, and forced outmigration in many cases.

A second type of water system is for harvesting of excess floodwater from full rivers during the monsoon, an example being the *ahar/pyne* system in Bihar. The network was actively dismantled during the British colonial regime, and the lack of any subsequent effort to reactivate it has subjected Bihar to repeated and destructive floods in the absence of the old catchment structures. The *ahar* was the catchment basin where monsoon overflow was retained, for use towards a second crop season, and *pynes* were channels constructed to lead the river water into the *ahar.* One particular instance of the resurrection of this system in the village of Dihra, 28 kilometres south of Patna city, between 1995 and 2000, has been documented by the Centre for Science and Environment. Even if the old techniques for determining *ahar* catchments and *pyne* paths have been lost, the network could still be reactivated through historical documents from the nineteenth century, when the network was still in existence and functioning. Variants of this system for preservation of superfluous river water after the monsoon can be found all over the country, under different names, and with

patterns specific to the topology and soil of each region. What would make any of these systems qualify for World Heritage recognition would be the restoration of the entire network in the region where they were once operative, and the documentation of their functionality and sustainable usability from one monsoon to the next.

A third type of water preservation has to do not with preserving river overflow, but with harvesting rainwater on farmland with no supplementary sources of irrigation, such that the water saturates the land and enables successful sowing and harvesting. An example was *khadins/dhoras,* structures constructed in the 15th century in Jaisalmer, an arid region in west Rajasthan, said to be similar to methods used in ancient Ur in 4500 BC and later in the Negev desert, and more recently by Native Americans in southwestern Colorado. *Surangams* for capture of rock seepage in rocky terrain are still functional to some degree, and are said to be similar to *qanats* which once existed in Mesopotamia and Babylon around 700 BC.

Starting 1984, there has been a move to activate 3000 *johads,* a network of traditional earthen check dams, across more than 650 villages in Alwar district, Rajasthan. The general rise of the groundwater level by almost 6 metres and in the forest cover in the area by 33 per cent, was documented in Anil Agarwal's classic 1999 work titled *Dying Wisdom.* Five rivers that used to go dry immediately following the monsoon have now become perennial.

Although the water harvesting systems above have cited only examples in rural areas, there are a number of catchment networks that have been subsumed and severely disrupted by urban development. A number of recent episodes of severe monsoon season flooding in major urban centres like Mumbai (2012) and Chennai (2015), so severe that daily life was brought to a halt for a period of a week or more, are the result of blockage of natural rainwater runoff into catchment bodies, simultaneously causing the drying up of those water bodies and flooding the city. In these cases, the restoration of the original rainwater flow channels which might call for reversal of some urban developments that have taken place and resettlement of those affected, call for another possible category of WH recognition. These cases would only be feasible if the assertion of the high global valuation placed upon redemption of water bodies, signaled by WH recognition, is backed at least partially by global funding.

6. Conclusions

The business model underlying the World Heritage scheme is country funding of restoration against the promise of enhanced commercial value from higher tourist traffic consequent upon recognition. The model disincentivises any restoration costs

extraneous to the bid to make the site a source of tourist revenue. Cost minimisation requires that the site be ring-fenced from its immediate surroundings, at odds with access or withdrawal rights that may have been the traditional bases for local valuation, and running the risk therefore of local disengagement or worse, local hostility. The very density of human settlements around some of these sites is indicative of features such as water availability or other advantages of proximity which drew them. As for natural heritage sites such as forests, WH recognition without building on such access and withdrawal rights as made for (positive) local engagement with the site is not sustainable. It may actually serve to lower rather than raise the defences against external poaching and defilement.

The World Heritage scheme also needs to go beyond its present perimeters towards recognition of traditional knowledge systems which enabled life in ecologically challenging environments, and whose neglect poses grave problems of survival in the modern world. The key to identifying a traditional knowledge system has to be authenticity in resuscitation, and functionality in use in the modern world. Clause (v) of the ten criteria presently in place includes such a possible expansion in scope. Fortunately, two sites in Iran presently included in the WH list under this criterion, offer a precedent for recognition of water engineering ingenuity and human adaptation to harsh ecological environments.

The paper lists several indigenous water preservation networks in India characterised by ingenuity and effectiveness, based on documentation made available by the Centre for Science and Environment, which fell into disuse because of predatory external forces. Revival of these is critically necessary in the context of climate change, for both mitigation and adaptation, so that inclusion within the scope of World Heritage recognition will build sustainability into the very fabric of heritage preservation.

The key issue is funding. The paper covers a successful example of a World Heritage site in Delhi where preservation has been extended to urban settlements adjoining the site itself. This is one example, financed by private funding partnerships. Local government funding is a legitimate source to reach for in restoration of the wider area including human settlements surrounding a site, since many of the improvements call for attention to sanitation, road access and water—all local government functions. However, local governments are typically more weak fiscally than higher levels of government. Other funding partnerships, with hotels and other such service providers who would gain commercially from a wider approach to restoration, are clearly possible.

However, a more systemic solution calls for assistance from a global fund towards capital costs of restoration. There is a World Heritage Fund which is small, at around $4 million, financed by private donors and compulsory country contributions, but the operation of this fund is not transparent. The criteria for access to the fund do not seem to be objective or formulaic. Thus the first structural reforms needed if World Heritage preservation is to better serve the objective of sustainability are to raise the size of the World Heritage Fund, and to make its fund allocation mechanisms more transparent.

The paper provides an example of within country funding in India through formula for forest preservation. Allocation between WH sites by formula, whether for cultural or natural sites, will provide the seed funding needed to supplement the basic tourism based model. The size of the fund needs to be enhanced, for which the best source is a Tobin tax levied at a small rate on international capital flows.

Notes:

1　The distinction between the two may be somewhat artificial, as pointed out in Brancaccio (2016).

2　For a very effective survey of these ideas, see Labadi and Gould (2015). Other difficult issues are also not entered into in the paper, such as whether traditional values should necessarily be upheld, in cases where they violate internationally accepted norms.

3　O'Brien (2010) has a useful survey of these approaches.

4　The Humayun's Tomb complex is said to have been located in proximity to the burial ground of Hazrat Nizamuddin, a revered Muslim saint, for this reason.

5　Budget head 2061 for expenditures on external affairs including diplomatic missions abroad is where obligatory contributions to the United Nations and other international organisations are nested (budgeted at 3.86 billion rupees in 2015–16). The constituents of this are not routinely reported. The total budgeted expenditure of the Archaeological Survey of India, which is charged with maintaining WH sites, was 6.58 billion the same year. The budget row recording contributions from external assistance towards ASI shows zero receipts in the last three years.

6　The Val di Cornia archaeological park in Italy (not a WH site)is shown to have succeeded as it did because it operated as a commercial entity jointly owned by surrounding municipalities, which fully captured tourism revenue (Labadi and

Gould, 2015).Even so, it did not manage to recover operating costs fully; the capital costs were covered by grants from the European Union, and the Italian government.

7   Receipts under budget head 0202 cover education, sports, art and culture, and lump together tuition fees with entry fees at museums and all sites maintained by the Archaeological Survey of India. The total collection was budgeted at 1.32 billion rupees in 2015-16.

8   There was also a heritage grant; see Appendix 3.

9   There might also be withdrawal rights, in respect of fruit or other produce from trees found even within cultural sites. These might also be abused, as when the trees themselves have been cut down for firewood or for use as timber.

10   The project website is www.nizamuddinrenewal.org. Another instance of stepwell restoration (Lasania, 2016) is on the grounds of the Qutb Shahi tombs in Telengana state (not a WH site).

11   Culture is defined in economics literature as: 'Those customary beliefs and values that ethnic, religious and social groups transmit fairly unchanged from generation to generation' (Guiso, et al., 2006). The key is inter-generational transmission, updated slowly through the generations. There is no necessary link to physical sites of aesthetic beauty, although that is the particular emphasis given in the recognition of World Heritage sites.

12   http://www.rainwaterharvesting.org/Rural/Traditional2.htm)

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Appendix 1: Criteria for World Heritage recognition

For recognition as a cultural site, the World Heritage Committee must find that it meets one or more of the first six criteria, and for a natural site, one or more of the last four.

i.   to represent a masterpiece of human creative genius;

ii.   to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;

iii.   to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

iv.   to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

v.   to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

vi.   to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

For natural heritage sites, the following criteria are considered:

vii.   to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

viii.   to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes

in the development of landforms, or significant geomorphic or physiographic features;

ix. to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

x. to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Source:http://whc.unesco.org/en/146

Appendix 2: World Heritage sites in India

	Cultural	Year of WH status		Natural	Year of WH status
Caves					
1.	Ajanta, Maharashtra	1983	1.	Kaziranga Sanctuary, Assam	1985
2.	Ellora, Maharashtra	1983	2.	Manas Sanctuary, Assam	1985
3.	Elephanta, Maharashtra	1987	3.	Keoladeo National Park, Rajasthan	1985
4.	Bhimbetka Rock Shelters, Madhya Pradesh	2003	4.	Valley of Flowers, Uttarakhand	1988
Large sites, multiple structures			5.	Sunderbans Estuarine Mangroves, West Bengal	1987
5.	Mahabalipuram Rock Temples, Tamil Nadu	1984	6.	Western Ghats, 39 sites in four states	2012
6.	Hampi ruins of Vijayanagar kingdom, Karnataka	1986	7.	Great Himalayan National Park, Himachal Pradesh	2014
7.	Fatehpur Sikri, Uttar Pradesh	1986			
8.	Khajuraho temples	1986			
9.	Pattadakal Monuments, Karnataka	1987			
10.	Sanchi Buddhist Monuments, 1989	1989			
11.	Champaner-Pavagadh Archaeological Site, Gujarat	2004			
12.	Nalanda Mahavihara	2016			
				Cultural	
Single Monuments			Currently functioning		
13.	Humayun's Tomb, Delhi	1993	22.	Churches and Convents of Goa	1986
14.	Qutab Minar, Delhi	1993	23.	Mahabodhi Temple Complex, Bodh Gaya, Bihar	2002
15.	Agra Fort, Uttar Pradesh	1983	24.	Shivaji Railway Terminus, Maharashtra	2004
16.	Jantar Mantar, Rajasthan	2010	25.	Chola Temples, Tamil Nadu	1987
17.	Taj Mahal, Uttar Pradesh	1983	26.	Mountain Railways, three sites	1993-2008
18.	Hill Forts, Rajasthan	2013	27.	Le Corbusier structures at Chandigarh	2016
19.	Rani-ki-Vav, Gujarat	2014			
20.	Konarak Sun Temple, Orissa	1984		Mixed Cultural and Natural	
21.	Red Fort, Delhi	2007	28.	Khangchendzonga National Park	2016

Source: http://whc.unesco.org/en/list/

Appendix 3: Funding of forest grant from national to state governments in India, 2010–15

Green grants: Forest Protection [Rs. 5,000 crore (2010-2015)]

A reward in the structure of statutory federal transfers from the national government to state governments for the ecological and biodiversity externalities generated by standing forests falling within their jurisdictions. It was designed as compensation to states who perceive very few benefits internal to their jurisdictions relative to the economic disability of area under forests. The formula:

Where G_i is the share for state i in the forest grant, is:

$$G_i = [Num_i] / \sum_{i=1}^{n} [Num_i], \text{ where } Num_i = [\{\frac{F_i}{\sum F_i} + R_i\} * \{1 + ((M_i + 2 H_i)/A_i)\}]$$

Where

F_i, M_i, H_i are total, moderately dense, and highly dense, forest area of state i

A_i is the total area of state i

$$R_i = max [0, \{\frac{F_i}{A_i} - \frac{\sum F_i}{\sum A_i}\} / 100]$$

The total grant accruing to each state was to flow as follows:

● 25% over 2010-12, to cover costs of making working plans for all forest divisions within the state.

● 75% over 2012-15, pro-rated to the number of forest divisions with approved working plans. In terms of usage of the amount released, 25 per cent is earmarked for forests, with the rest usable for any developmental purpose.

The source for area under forests used to define state shares were all from the State of the Forest Report 2009, whose data pertained to the year 2007.

Specific grants: Preservation of cultural and natural heritage

In addition to the forest protection grant, the Finance Commission recommended state-specific grants, not determined by formula, but prescribed for states as absolutes and not as a percentage of any targeted sum. The state-specific purposes varied from improving water quality to skill development, police upgradation, health infrastructure

deficiencies, problems along international borders and preservation of particular water bodies and wildlife reserves to upkeep of heritage sites and archaeological properties not under the purview of the Archaeological Society of India. The table below lists the amounts and purposes for which states got grants under the last two heads; the amounts are for the entire period 2010-15. Summing across natural and cultural heritage, the total sums to 1924 crore, of which around 60 per cent was for cultural heritage, and 40 per cent for natural heritage.

State	Rs. cr	Preservation	State	Rs. cr	Preservation
Andhra	40	The composite culture of India	Meghalaya	30	Heritage sites and caves
	20	Shilparamam centres in four cities	Mizoram	19	Hliappui Village and other heritage
Arunachal	10	Archaeological sites	Orissa	50	Chilika Lake
Assam	40	Archaeological sites		65	Buddhist
Chhattisgarh	45	Conservation and training	Punjab	100	Archaeological sites
Gujarat	48	Gir lions	Sikkim	9	Heritage
Jammu&Kashmir	120	Freshwater Wullar lake	Tamil Nadu	200	525 Traditional Water Bodies
Jharkhand	100	18 antiquarian remains		100	Ancient Temples
Karnataka	100	Monuments	Uttar Pradesh	100	Museums and Monuments
Kuttanad	300	Kuttanad wetland ecosystem	Uttarakhand	45	Museum of antiquities
Madhya Pradesh	175	3 WH and other sites	West Bengal	100	Archives and archaeological sites
Maharashtra	100	Forts and monuments	Total	718	Natural reserves
Manipur	8	Kangla Fort	Total	1206	Cultural heritage

Source: Report of the Thirteenth Finance Commission, December 2009.

Appendix 4: Types of traditional water systems in India

Drinking Water		Flood water collection		Rainwater/ groundwater seepage/channels	
Vav, Vavali, Baoli, Bavadi – underground fed	Rajasthan, Gujarat	Ahar/pyne	South Bihar	Bamboo - drop irrigation	Meghalaya
Khatri – rock seepage	Hamirpur, Kangra and Mandi districts, Himachal	Inundation channels	Bengal	Apatani -merger of ground and surface water	Subansiri district, Arunachal
Virda – separation of fresh from salt water	Rann of Kutch, Gujarat	Bandharas, Phad, Ramtek network	Maharashtra	Katas, mundas, bandhas – rainwater smoothing between monsoons	Gond tribal lands, Orissa and Madhya Pradesh
Jackwells – bamboo conduits	Great Nicobar Islands	Zabo/ruza	Nagaland	Surangam – capture of rock seepage	Kasargod district, Kerala
				Khadins/dohras – rainwater saturation of farmland	Jaisalmer, Rajasthan
				Johads – earthen check dams	Alwar district, Rajasthan

Source: http://www.rainwaterharvesting.org/Rural/Traditional2.htm

Notes: In the case of some though not all of these systems, their structure is documented, as for example Bengal's Inundation Channels by Sir William Willcocks, an irrigation expert who had prior experience in Egypt and Iraq. Regional names for simple capture and storage of rain water, like *tankas* in Bikaner, Rajasthan, and Dwarka, Gujarat; *kunds* or *kundlis* in the Thar desert areas of Rajasthan; *kuis* or *beris* in Jaisalmer district, Rajasthan; *kohli* tanks in Bhandara district, Maharashtra; or *zings* for capture of glacier melt in Ladakh are not listed here unless, like *virdas,* there are special features in the location of these collection points separating captured freshwater from the saltwater permeating the coastal soil. Likewise, canal systems like the *kuhl* system for diverting water from natural streams *(khuds)* in Himachal, which have no storage or other preservation property are not listed here, although they have survived because of the traditional prescription for lining of the canals.

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