The Nature of Culture: the disintegrating landscape of Petra
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Note: This is the author’s version of the paper by the same title presented at MESA 2008. Some of the administrative details have changed since the paper was written – e.g., PRA is now PDTRA, etc. I have also replaced some of the original slides with what I feel are better images. Please cite as Addison, E., 2008. The Nature of Culture: the disintegrating landscape of Petra. Paper presented at the annual meeting of the Middle East Studies Association (MESA), 2008. For those interested in a detailed elaboration of the deforestation problem discussed here, please see Addison, E. 2011. Documenting Deforestation in Petra Region: Sadd al-Ahmar, 1924-2011. Berlin: Lambert Academic Press.

Culture is never disembodied from the physical context in which it takes place: a landscape, whether urban or rural or (more dubiously) “wilderness.” When cultural heritage conservation takes place, then, there is an implicit decision made, consciously or unconsciously, to conserve a landscape. Sometimes it is tempting to “leave” the landscape...
in its "natural" condition – but the landscape, too, undergoes changes over time and is subject to greater or lesser degrees of human intervention.

Frequently the object of conservation and its landscape context are anachronistic in relationship to one another: ancient cultural remains exist in a contemporary landscape; in this century so-called "wilderness" is only conserved by humans in the context of contemporary institutions (if in fact it, wilderness, exists at all – but that is another paper). Thus, frequently, the conservation of cultural remains is in one way or another at odds with – if not actually in conflict with – the conservation of the landscape in which it occurs.

Slide 2: Façade of the Nabataean monument al-Khaznah ("The Treasury"), in the main city of ancient Petra. The city is typically approached and experienced in its context as a modern tourist site.

This paper focuses on the example of Petra Archaeological Park, in Jordan, where agencies concerned primarily with the conservation of antiquities have been instrumental in "conserving" a landscape context which is not only anachronistic, but environmentally degraded and threatened. The object lesson today is the Wadi Musa Wastewater Re-Use
Project, a USAID-funded water treatment plant and demonstration farming project which were established within the boundaries of the Petra Archaeological Park.

Petra is a UNESCO World Heritage Monument and world-famous tourist venue – the remains of a 2000 year-old Nabataean and Roman city carved into the spectacular sandstone mountains of southern Jordan. Since the peace treaty between Israel and Jordan was signed in 1994, tourism has increased significantly: in 2004 Petra alone was estimated to have generated some 11% of Jordan's GDP.\(^1\) Since Petra's selection last year as one of the "New Seven Wonders" of the world, the area's 3-, 4- and 5-star hotels are fully booked through 2010. Petra's value as a cultural heritage site and an income generator for Jordan cannot be underestimated.

Slide 3: The first glimpse of al-Deir ("The Monastery") from the west trail, which yields a very different sense of the ancient city in its landscape context.

The Wadi Musa Wastewater Re-Use Project (slide 4, below) was initiated in 1996 in an effort to handle the sewage generated both by Petra tourism and by the rapidly expanding local population in the villages around the Archaeological Park. A state-of-the-art treatment facility was built in the late 1990's, and in 2002 the farming project was brought online to demonstrate the use of treated wastewater and to generate income for the relatively poor pastoralist communities in the surrounding area. Thus, at the north end of the Park, one comes suddenly upon great swathes of green alfalfa, fruit trees, and miles of purple wastewater pipe spread across a red valley called Sadd al-Ahmar. In 2003 I joined the project as a landscape architect tasked with designing first a masterplan for interpreting the Re-Use Project, and later a garden around a small interpretive center, using plants native to

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the Petra region. Sadd al-Ahmar and its surrounding watershed were also the study site for my masters thesis on deforestation in the Petra region.

Although in many ways an excellent project addressing a pressing waste management problem, the “Re-Use Project” encountered its share of implementation challenges. Amongst many other bureaucratic snafus was the odd fact that the implementing agencies of the farming project seem not have copped to the fact that it lay within the boundaries of the Park. The Park is technically the property of the Jordanian Department of Antiquities, though it lies within a larger administrative area called the Petra Regional Authority (PRA). At the same time certain tribal groups lay traditional claim to the use of the land. The original agreement to implement the farming project was signed in 2002 by the representative of an َ`Amariin tribal sheikh, representatives of USAID & their implementing agency and the then-Director General of PRA. No one from the Department of Antiquities, however, was represented.

Over the course of 2002-2003, the Department of Antiquities on three separate occasions declined – in writing – the permission to proceed with the farming project. Nonetheless,
Millions of USAID dollars were poured into the project, and no fewer than six different agencies were involved in its implementation.

However, I knew none of this when I started working on the masterplan in the fall of 2003. Part of my work as a landscape architect is to make sure that the title to the land and zoning are in order – it is indeed illegal in many countries, including Jordan, to design on land without the express permission of its owner. Another aspect of my work as a landscape architect was to do presentations of design concepts to various stakeholders.

Meanwhile, wearing my research hat, I was trying to understand the impact of various factors – fuelwood gathering, agriculture, and tourism – on the remaining juniper forest of the Sadd al-Ahmar watershed.

Actually I had three hats: I was also running focus groups with stakeholders on wastewater issues for two of the implementing agencies. So I was getting a lot of input, here, and wearing a lot of hats. I kept bothering people about the paperwork on the permitting, and various people who should know kept assuring me that it was “on file,” that there was no problem, and so on. After all, I was apprised again and again, millions of USAID dollars were being poured into the project, and no fewer than six different agencies were involved in its implementation!

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2 PRA; International Arid Lands Consortium (IALC); Badia Research and Development Center (BRDC); USAID; CDM; Water Authority of Jordan (WAJ)
So imagine my surprise when I was told, early in 2004, that UNESCO was calling a halt to the landscape masterplan until after they conducted a fact-finding mission, heard a presentation from the implementing agency (read, ME), wrote a report, and made a recommendation. While we waited through the spring and into the summer on the UNESCO report, the Re-Use Project — if not the landscape design — generally continued to move forward. Imagine my further surprise when a few months later a PRA official appears in my makeshift office at the implementing agency, nearly shouting at me, in frenzied dismay because the project was generally continuing to move forward — without permits.

Meanwhile I had been mostly wearing the green research hat and immersing myself wholeheartedly in the secret life — and death — of trees. I was trying to document long-term vegetation change in the Petra region, and to find a way to quantify the rate of deforestation.

Slide 6: Northern edge of Hisheh Forest and Ras al-Hadid village, the “Head of the Tracks” used to bring felled hardwoods to Ma3an to supply the Hijaz Railway.

Fairly recently — just after the turn of the 20th century — the landscape of Jordan, and particularly northern Petra, was massively altered by the building of the Hijaz railway. There is still a very distinct line where the Hisheh forest ends at the village still called Ras al-Hadid — “the head of the steel tracks.” The name refers to the spur line which brought hardwoods, mainly pistachio and oak, to the `Unayza station to feed the steam engines of the Hijaz railway.

But it is too easy to lay deforestation entirely at the Ottoman doorstep: trees were cleared extensively for agriculture and construction. The `Amariin were involved in the charcoal trade with Egypt as recently as the early 20th century — trading hardwoods, probably mainly

3 *Pistacia atlantica, P. palaestina, Quercus coccifera*
pistachio, from the Petra region. Pistachio hardwood was so valuable that until the 1950's my husband's grandfather used to fell a pistachio tree, break it down into two donkey loads, and cart it to Nablus, where he would sell the hardwood in exchange for soap, tea, sugar, rice and cash. He would then load the donkeys up and head back to Wadi Musa, hunting his way back across Wadi 'Araba and arriving with enough food and cash to support the family for several months.

Today the Sa3idiyiin – the tribe with the most full-time tent dwellers in the Petra region – still heat their tents and cook their food on gathered fuelwood. Even many semi-nomadic bedouin depend to a large extent on wood for heating and cooking. The winters in Petra are bitterly cold and windy. In the winter of 2006-2007 there was snow on the ground in Hisheh forest from Dec. 28-March 30. If I had been living in a tent at Sadd al-Ahmar that winter I guarantee you that I would have been tearing down trees with the best of them.

This pressure on the forests is exacerbated every weekend by local picnickers – in the springtime it is possible to count as many as a thousand picnickers at Sadd al-Ahmar on a fine weekend. These picnics, called hash-u-nash, are highly formulaic: an extended family group drives to a shady area nearby Wadi Musa and spends the afternoon grilling meat – often slaughtered on the spot – over an open fire. A colleague and I conducted interviews of
over a 100 picnic groups to determine, among other things, their firewood preferences and gathering practices. 83.5% of the picnickers collected their firewood from around the site, though 30% supplemented that with wood collected on the way or around their homes. Preferred woods are hardwoods – oak and pistachio – followed by juniper and a large local shrub called rattam (*Retama raetam*).

A recent and increasing threat is tour operators, offering wilderness "bedouin" feasts to their clients. The tour operators are far more industrious and damaging even than the bedouin or the picnickers: they head off-road in 4WDs with chainsaws and take down whole trees. On the first sunny weekend of March, 2005, at least 18 giant junipers were sawed down on one afternoon.

The understory vegetation of the region has been decimated by grazing and firewood gathering as well. In an arid ecosystem such as Petra's, the loss of each tree means the loss of a microclimate: loss of shade cover, loss of ambient humidity, loss of organic matter for the soil, exposure to erosion, and the loss of the understory nourished by that microclimate.

*Slide 8:* A home in Rajif village, Petra Region, with a winter’s store of sheeh (*Artemisia herba-alba*) piled against the wall for kindling (center).
To make a very long story short: after the Ottoman calamity, from 1924 and 2002, my study area (which falls within the "protected area" of Petra Archaeological Park) experienced a 58% decline in forest cover – averaging approximately .75% decline per year – no doubt lower in the early years and speeding up after 1994. From 2003-2006 the forest remains declined a further 4.23% -- over 1% per year. Even if the rate of decline were not to increase, every tree in the region will be gone in about 40 years.

For many reasons, then, the landscape masterplan I was proposing focused on reforestation: on using the farming project in part to propagate native trees from locally sourced seed; on replacing the invasive Australian acacias and eucalyptus windbreaks with...
native trees; on growing fuelwoods – especially the fast growing, slow-burning, drought-resistant rattam; on developing a managed picnic area for hash-u-nash.

In September the UNESCO report was returned, and it was not very positive. It recommended that the whole farming project be more or less shut down – especially this onerous landscape masterplan. During the passing months Petra National Trust, a Jordanian NGO manned mainly by the Amman elite, had also allied itself with the Department of Antiquities and UNESCO, and was vociferously denouncing any "intervention" whatsoever at Sadd al-Ahmar.
What were their strenuous objections to the proposed design?

Apart from well-founded concerns about permits and institutional communication, UNESCO stated that "no new constructions or modification of the landscape is admitted within Park boundaries" (11).\(^4\) Particular concern was expressed regarding the "landscaping," "opening paths and campgrounds" and planting trees – whether for crops, windbreaks, erosion control or reforestation. The UNESCO staff further stated that "stricter control must be exercised towards proposals that may affect the integrity of the Park landscape" (13). In short – despite quantifiable evidence of intensive deforestation, reforestation is perceived as intervention in the "integrity" of the landscape.

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Indeed, the landscape plantings, interpretive paths and picnic areas became the focal issue of the following two years of meetings, hearings and visits by UNESCO and others. The language that developed to refer to all these proposed activities was "interventions" – "intervention in the landscape." Petra National Trust became a vocal participant in the process, maintaining that no planting – except the cultivation of barley – could be introduced within the Park boundaries or, for that matter, its viewsheds. No waste management, firewood supplements or, especially, the development of a picnic area (Lord a'mighty) could be allowed because – don't miss this – it would encourage picnicking.

By way of addressing these concerns, let us ask ourselves – not to mention UNESCO and Petra National Trust – what landscape are we talking about? what integrity? and whose picnicking?

Petra itself was built little over 2,000 years ago, but Beidha – about 3km from Sadd al-Ahmar – was probably settled close to 10,000 years ago. The trio of neo- to meso-lithic sites called Ba`aja, one of which is actually at Sadd al-Ahmar, are probably only about 7,000 years old. Beidha was one of the earliest venues for the cultivation of barley and the domestication of sheep and goats. There is evidence of nearly continuous habitation in the Petra region since then – Sadd al-Ahmar is pocked and grooved with neolithic, mesolithic, chalcolithic, merely ancient, and recent tribal terraces, channels, cisterns, reservoirs, graves, and houses. So it is fair to say that human "intervention" in the landscape isn't news around here.

*Slide 13: neolithic Ba3aja village, on Siq Ba3aja, Sadd al-Ahmar*
The depletion of forest cover by the Ottomans for the Hijaz railway and by one hundred or so centuries of deforestation for fuelwood and construction, is ongoing. The understory vegetation also supplies heating fuel and forage for livestock. The region's denuded soils are exposed to erosion by wind, water, road construction, and the traffic of off-road vehicles, livestock and millions of tourists annually. The water table has dropped hundreds of meters over the past half-century – which, combined with the loss of organic matter to deforestation, overgrazing and erosion, has robbed the soils of their ability to bank rainwater. Precipitation rates have fallen steadily for fifty years – likely due to deforestation.

Slide 14: Junipers (*Juniperus phoenicia*) first killed by fuelwood harvesting, their bark then stripped for picnic kindling. Sudd al-Ahmar, 2005.

Wadi Musa has doubled in size in one generation: over two-thirds of its population is under the age of 15. In 1994 there were no five-star hotels in Wadi Musa: today there are six, and dozens of 3- and 4-star. As a direct result of being designated a UNESCO World Heritage Site, the World Bank, among others, has financed the construction of a highway into and out of Wadi Musa, capable of handling hundreds of tour buses a day. The Wastewater Re-Use Project itself is a response to the dire problem created by all these extra excreting humans *intervening* in the landscape that UNESCO and PNT are so intent on protecting.

Petra became a National Park in 1985 and World Heritage Site in 2003, by which time it seems fair to say that the landscape had already experienced a fair share of "human intervention." So effectively UNESCO is trying to preserve the "integrity" of the landscape that they perceive as the context for the World Heritage Site. It is worth wondering what "intervention" even means in such a context: humans *inhabit* the landscape; they eat it, burn it, farm it, live in it, build it, destroy it, and to a great extent humans *are* the landscape. The landscape is not some separate entity that humans can dip into and out of.
But, such philosophical quibbling aside, and recognizing that human participation in the landscape is an exponentially heavier shaping force than, say, ibex participation or Kermes oak participation – one might still reasonably ask, why 1985?

The landscape whose integrity is being protected here was already degraded – from a biological point of view – in 1985, and it's getting rapidly worse. What is the inherent value, then, of preserving its condition as it was in 1985? (much less 2004)?

The Archaeological Park is obviously concerned with the antiquities – the cultural heritage remains. And the landscape of the Petra region is famously bizarre and beautiful – a significant aspect of Petra's attraction. But that landscape has no integrity – it is disintegrating – it is loaded with trash, desiccated, overgrazed, eroding and deforested. There is a considerable body of evidence to suggest that Petra's landscape doesn't look anything like it did 2,000 years ago – much less 10,000 years ago. Petra has been grazed and cultivated for 10,000 years – water has been harvested here, humans have been building, cooking, picnicking and excreting – *intervening in the landscape* – for 10,000 years.

In fact, there is considerable body of evidence to suggest that, given the realities of climate change and the extent of the deforestation, Petra's landscape could never be restored to the glory of 2,000 years ago, even if archaeologists could reconstruct what that was.

But – why 1985?

Was there ever a considered discussion of what landscape was being conserved along with all those buildings? With all the methodological rigor that has been brought to bear on the
conservation of cultural remains, where has comparable rigor been brought to bear on decisions about their landscape context?

And, while we are exploring this – isn't cultural heritage conservation itself an "intervention in the landscape?" Not to mention the massive intrusion of millions of tourists coming to see the "New Seventh Wonder of the World," and the infrastructure to handle them – including, of course, the wastewater treatment plant, the treated wastewater it produces, the crops it waters, the livestock for whom the crops are grown, the owners of the livestock, who butcher their stock in order to grill them over firewood harvested from... the landscape...

And we should leave for another paper the matter of why Petra National Trust is so concerned about improving "the Petra experience" for international tourists that local weekend picnickers constitute a threat to, um, tourism...

For what it's worth, these conundras of landscape conservation are not unique to Petra. For example – hundreds, if not thousands of state and county and national parks specify the conservation of "native" plants and the removal of "exotics." In a country like Jordan or Italy – where people and plants have been interacting and traveling around together for
thousands of years – how do we decide what a "native" plant is? How long does a plant have to hang around before it gets citizenship in our bio-nation?

The problem of anachronism in landscape also faces small town revitalization projects which restore "historic" downtowns in order to draw in new businesses. The aesthetic of such projects is methodologically parallel to habitat recreation projects which restore wetlands whose genetic resources vanished decades ago – what is being recreated but a place defined mainly by a cultural nostalgia for a landscape that no longer exists biologically?

The same questions apply to "wilderness reserves." Outside the deepest Amazon or perhaps Antarctica, where is "wilderness?" What is wilderness, beyond a romantic confabulation of what was here before "we" were? (whoever "we" are)?

Hisheh-Beidha Road leads out of the protected Hisheh forest and into the almost completely deforested Petra area.

Slide 16: View of Beidha area, Petra Region, as the Hisheh-Beidha road reaches the edge of Hisheh forest. Deforested for decades, why is this considered a standard for the environmental (or cultural) conservation of the area?

Archaeologists take careful measures, these post-modern days, not to suggest that conservation efforts be mistaken for original structures, that restored mosaics not be mistaken for the intact originals, that replicas not be taken for the real thing. Where does UNESCO mention that the landscape "integrity" they are so carefully protecting probably bears almost no resemblance to its 2,000 year old forebear? And why is PNT obsessed with archaeological conservation of Petra's cultural remains, but intransigent in their opposition to environmental conservation of the biotic entity?

By asking these questions I am not suggesting that humans should be unleashed, unzoned, across every landscape. What I am suggesting is that "natural heritage" conservation, or
what I prefer to call landscape conservation, and cultural heritage conservation are integrally linked, and that the conservation of landscape deserves the same rigorous methodological consideration that cultural heritage conservation does.

Finally, in fact, the environment is cultural – it is not "out there," separate from cultural heritage. By now, over the vastest share of the planet, humans have made the landscape, we are the landscape. The landscape is not something separate from us, into which we may choose or choose not to "intervene." Our participation in the landscape should be as thoughtful, scholarly and constructive as our work on any other wonder of the world.