Institution: University of Leicester

Unit of Assessment: 17: Geography, Environmental Studies and Archaeology

Title of case study:
Libyan Desert Archaeological Heritage: Research helps to shape governmental policy and preserve cultural heritage

1. Summary of the impact (indicative maximum 100 words)

This research in Libya has had several significant impacts with wide reach for a range of different groups, both national and international. It has made fundamental contributions to the archaeological mapping of Libya (a country of extraordinary archaeological richness but still poorly recorded), to the development of typologies of sites and artefacts, and to dating frameworks. This has delivered major related impacts for management of cultural heritage by the Libyan Department of Antiquities (DoA), and for Environmental Impact Assessment (EIA) and archaeological mitigation work by oil companies in the Libyan desert. There have been additional benefits through dissemination of new historical models, as well as protection of heritage sites during the 2011 conflict.

2. Underpinning research (indicative maximum 500 words)

The archaeological work in the UoA was by teams led by Professor Graeme Barker (1993-2002) and Professor Mattingly (1993-present). It has made pioneering contributions to the mapping and classification of Libya's desert heritage over the last 20 years, though this impact case study focuses only on impacts derived from the work within the REF period. The body of research includes: detailed regional archaeological surveys in the Tripolitanian (western) predesert zone (**1** in publication list in section 3) and in the large southwestern area of Fazzan (**4**). Primary publication of these large datasets is complemented by regional syntheses (**2**); period maps of Classical archaeology at 1:1,000,000 scale for the whole of Libya (**3**) and overviews of preservation issues of desert heritage (**5**). The total area covered by the regional surveys is c.140,000 sq km (comprising 87,500 sq km for the UNESCO Libyan Valleys Survey (ULVS), 52,500 sq km for the Fazzan Project (FP)) with a notably rich but previously poorly mapped heritage comprising 1000s of archaeological sites and spanning 100,000s of years of history. The results of many months of fieldwork and follow up analysis illuminate a range of key questions relating to Libya's desert heritage.

Where? The work has produced not only regional-scale mapping of site locations, but also the first detailed record and interpretation of extensive palimpsest archaeological landscapes, revealing a previously unsuspected scale of desert farming communities. In the absence of a national sites and monuments register in Libya, these publications provide the foundational record of this large element of Libya's archaeological heritage. **When?** The contribution is particularly strong for the record of historical civilisations of the last three millennia, but prehistory is also well represented in terms of lithic scatters, rock art and camp sites. The dating frameworks established by these projects (with pottery study also involving some external staff, but supported by extensive use of AMS dates) are of wide applicability in western and southern Libya and neighbouring areas of the Sahara and Maghreb. **What?** The research has also created standard typologies for morphological classification of sites, as well as for a range of structural features and artefacts, especially pottery. The site gazetteers and finds publications will be the essential reference material for anyone working in or dealing with the archaeology of these areas for many years to come and are of particular value because of their broad diachronic coverage. **How?** The means by which human communities have been able to farm the desert have also been illuminated through these studies, whether exploiting groundwater in oases (**4**) or using floodwater farming technology to utilise irregular rainfall (**1**). In the case of the work on the Garamantes of the central Saharan region of southern Libya, the prior assumption that the Garamantes were a barbaric nomadic tribe has been overturned in favour of recognising a sedentary, urban and village dwelling, agricultural society, with the markers of an advanced civilisation (giving them a new importance in Libya's cultural history).

All combined, the mapping of sites (to reveal the number of heritage assets), the establishment of typology (to organise this mass of data in terms of their individual character and form) and creation of new dating frameworks (to place the data within a coherent chronology) have transformed understanding and set new parameters for the management and protection of Libya's heritage.

The results are also a fundamental contribution for future research initiatives and for realising the potential of Libya's heritage in the fields of education and tourism.

3. References to the research (indicative maximum of six references)

Awards

- Publication of item (**1**) was supported by a grant of £40,000 from the Society for Libyan Studies in 1993-94.
- The FP fieldwork (1997-2002) and post-excavation work (2002-11) (PI Mattingly) (**4)** supported by grants totalling £540K (from: the Society for Libyan Studies (£130K), British Academy (£55K), Leverhulme Trust (£220K), AHRB/C (£70K), NERC (£65K)
- The Desert Migrations Project (**DMP** – PI Mattingly) (2007-2011) funded mainly by the Society for Libyan Studies (£160,000) with additional grants from National Geographic, OXY, RPS, British Academy worth £70,000

Publications

1. G.W.W. Barker, D.D. Gilbertson, G.D.B. Jones and D.J. Mattingly. *Farming the Desert. The UNESCO Libyan Valleys Archaeological Survey. Volume 1, Synthesis.* (principal editor, G. Barker), *Volume 2, Gazetteer and Pottery* (principal editor, D.J. Mattingly), Paris/London (1996). Pp. xx and 404 and pp. xxii and 394. Winner of the James Wiseman book Award of the Archaeological Institute of America (AIA).
2. D.J. Mattingly, *Tripolitania*. Batsford, London (1995). Pp. xxii and 266. [Arabic translation, Tripoli 2009, pp. 608]
3. D.J. Mattingly, 'Tripolitana', 'Garama', 'Syrtica', 'Cyrene', 'Ammon'. In R. Talbert (ed), *Barrington Atlas of the Greek and Roman World*, Princeton (2000): maps 35-38 and 73 and Map-by-Map Directory p. 529-69, 1108-16.
4. D.J. Mattingly, C.M. Daniels, J.N. Dore, D. Edwards and J. Hawthorne. *The Archaeology of Fazzan. Volume 1, Synthesis*. London (2003). Pp. xxvi and 430, 460 figures. *Volume 2, Site Gazetteer, Pottery and Other Survey Finds*. Pp xxx and 522. *Volume 3, Excavations carried out by C.M. Daniels*. London, 2010. Pp. xxvi and 574. *Volume 4 Excavations at Old Jarma*. London, 2013. (edited by D. Mattingly). Publication of the volumes was supported by grants worth £80,000 from Shell, OXY and BP, indicating the high esteem for the work in the Oil sector.
5. D.J. Mattingly, S. McLaren, E. Savage, Y. al-Fasatwi and K. Gadgood. *The Libyan Desert: Natural Resources and Cultural Heritage*. London (2006). Pp. x and 338.

4. Details of the impact (indicative maximum 750 words)

Impacts (detailed below) have been multiple for several specified groups, including both individual and closely focused examples as well as cumulative and wide-ranging ones.

REACH:

The impacts have had relevance both **nationally** (in terms of heritage documentation, protection and management; education; capacity building within Libya) and **internationally** (with regard to the management and exploitation of desert environments and mitigation practices involved in oil industry prospection and extraction). Through public lectures, TV broadcasts and other media exposure, the research has informed Libyans about their regional and national cultural heritage and underpinned popular dissemination of key results to a global audience of many millions; it has provided the DoA and foreign consultants carrying out archaeological mitigation work with fundamental archaeological datasets and dating and typological frameworks; it has presented Libya's desert heritage to a large global audience and helped international organisations like Blue Shield (an international body charged with the protection of cultural property during armed conflict) to preserve that heritage during the 2011 civil war by contributing to the 'no strike' list of sites and monuments supplied to NATO command.

SIGNIFICANCE:

Mapping heritage sites in Libya: A major problem for the DoA is their lack of a national monuments record (**E1 - E numbers relate to evidence listed in section 5**). For the Tripolitanian pre-desert zone and Fazzan, the results of the Leicester surveys provide the fullest current listing and mapping of sites. The dating frameworks and site typologies have been widely adopted by others working in these regions (a recent World Bank report included a catalogue of Libya's most significant heritage sites, c.36% of which identified the Leicester surveys as the primary reference

point). The wider mapping of Classical sites across Libya published in the Barrington Atlas (item 3 above) has subsequently been adopted as the basis for the primary online mapping facility and digests dealing with the Classical World (Pleiades) (**E2**). After the Libyan civil war broke out in February 2011, the US Committee for Blue Shield enlisted the assistance of archaeologists with Libyan expertise (including Mattingly) to compile a list of the co-ordinate locations and brief descriptions of Libya's most significant heritage sites (**E3**). The eventual key list of c.250 sites was largely based on Mattingly's mapping work (sites included in Pleiades and regional surveys) and he was one of two main contributors of site descriptions (**E3**). The list was passed to NATO and other interested parties. Subsequent Blue Shield inspection and reports have confirmed that war damage to monuments by the NATO bombing mission was largely avoided in contrast to what happened in Iraq (**E4**).

Classifying heritage sites in Libya: the typologies devised by the Leicester-based projects have been adopted, or influenced the descriptive categories used, by other archaeologists. The Libyan DoA calls it "one of the best studies in the field of documentation, researching and protection of the Libyan Saharan heritage" (**E5**). In addition, oil industry related archaeological mitigation work (**E1** and **E5**) has made use of these typological frameworks in designing their own surveys (Mattingly has worked both through consultancy and unpaid advocacy with OXY 2008-2009; Shell 2008-2009; BP 2010-11). The Principal Historic Environment Consultant for RPS (one of the major players in Environmental Impact Assessment and Archaeological Mitigation work in the oil sector in Libya) confirms that the "methodological template … archaeological datasets, typologies and chronologies of UL's Fazzan project provided an essential basis for the research and recording methodologies used during our surveys in Libya" (**E1**).

Economic Benefits: RPS has carried out work for oil companies (worth £330K to RPS) utilising the Leicester site data and typologies and notes that "the results of the research carried out by UL in the Fazzan under Professor Mattingly were instrumental in making our work effective and successful, and have had a significant beneficial longer-term effect on our business and methods" (**E1**). Oil companies operating in Libya have a legal responsibility to mitigate damage to heritage, with potentially serious financial liabilities for non-compliance. Completion of such mitigation work on schedule also effectively saves oil companies multi-million dollar sums in costs. As well as helping preserve vital information on heritage that would be lost or damaged in exploration and field development, the raising of the standard of mitigation work has also enabled oil companies to fulfil better their community engagement responsibilities, as in the case of BP's Ghadames heritage project (**E5**).

On a different note, book sales within the REF period of the publications cited in section 3 above, plus subsidies received from commercial partners for several of them, totalled c. £67,000 for the Society for Libyan Studies (a significant proportion of its publications-related income in the period). Contributions to several TV programmes have likewise given important support to the profits of UK broadcasters such as the BBC (**E10**).

Educational impacts: Mattingly delivered 12 lectures in Libya to a combined audience of c.600 people (expat and Libyan: al-Graifa, Fazzan 2009, OXY camp Fazzan 2008, OXY offices Tripoli 2008, 2009, other Tripoli 2010 (x 4), Ghadames 2010, 2011, BP offices Tripoli 2010). He was interviewed by Libyan media in 2010 following two lectures to 200 invited Libyan and VIP guests in Tripoli on his work on the Garamantes (**E6**). At the British Foreign & Commonwealth Office (FCO)'s invitation, he made a briefing presentation on Libya's heritage to the incoming British ambassador, Richard Northern, in May 2010. In July 2011, Mattingly provided an interview to a newly founded archaeological online journal in Benghazi highlighting key educational possibilities for the new era (**E7**).

Protecting heritage sites in Libya: An important result of a conference on Desert Heritage organised by Mattingly and held in Tripoli in 2002 was the drafting of a Sahara Code (like UK Country Code) to promote sustainable use of the Sahara and preservation of its culture and environment (publication (**6**)). This has been adopted and printed on tourist maps and in guidebooks (**E8**). The letter from the DoA notes that the publications mentioned in this case study "drew the attention of the oil companies working in the area and obligated them to respect heritage of the areas of their concessions and they started contacting the Department asking for

archaeological surveys prior to the start of their work" (**E5**).

TV programmes and magazine/web dissemination: The 2008-13 Libyan work of the Leicester team has featured in >100 media outlets in >30 countries worldwide (TV and radio news, newspapers and magazines - including Science Magazine, Nature Magazine, National Geographic Magazine, New Scientist, Current World Archaeology (**E9**). TV programmes include Jeremy Keenan's Sahara trilogy, BBC2/Iain Stewart, How Earth Made Us (water episode with 3.1 million and a 12.5% share of viewing in UK and many more than that for worldwide version) and Rome's Lost empire (4.3 million UK audience) (**E10**). In 2000 there were c. 300 weblinks to "Garamantes" on Google, there are now 118,000+, largely linking to the work of the Leicester team.

Capacity building in Libya: The most recent President of the DoA was a Leicester graduate and two more of Libya's most prominent archaeologists also did postgraduate study at Leicester; one is setting up Libya's first Centre for Archaeological Data Collection. The UoA's Fazzan Project/Desert Migrations Project and British Petroleum (BP) projects have provided enhanced skills training for c.40 Libyan archaeologists and another 12 have been trained on oil company surveys led by Mattingly. The significance of the training work is attested in the letters from the Department of Antiquities and from BP (**E5**).

5. Sources to corroborate the impact (indicative maximum of 10 references)

E1. Letter from Principal Historic Environment Consultant, RPS relating to importance of University of Leicester work in shaping archaeological mitigation work carried out by his company.
E2. http://pleiades.stoa.org/ for the open access mapping of Classical archaeology in Libya derived from Leicester work
E3. Emails requesting help in compiling no strike list for US Defence Department Analysts acknowledging key role of Mattingly.
E4. NATO and Blue Shield reports on effectiveness of the 'no strike' list in averting accidental damage to sites during NATO airborne action:
http://www.nato.int/cps/en/natolive/news_82441.htm
http://www.blueshield.at/libya_2011/11-2011/mission_report_libya_11-2011.pdf &
http://blueshield.de/libya2-report.html
There is a good account of Blue Shield's 'no strike' list in J. Kila and J. Zeidler. Cultural Heritage in the Crosshairs: Protecting Cultural Property (2013), p. 24-28 (p. 24 names Mattingly amongst those responsible for compiling no strike list).
E5. Letters from British Petroleum (BP) & the Libyan Department of Antiquities relating to significance of University of Leicester site dossiers, typologies and methodologies and training initiatives, especially in relation to oil industry mitigation work.
E6. http://tripolipost.com/articledetail.asp?c=7&i=5152 reporting on public presentation in Tripoli in October 2010 of archaeological results of work on Garamantes.
E7. Presentation (in Arabic) of Mattingly's work on Libyan heritage in issue 1 (August 2011) of a new archaeological magazine, http://www.afaqatherya.com/
E8. Scans showing publication in non-academic forums of the Saharan Code - from Tourist map (2008) and P. Kenrick. Tripolitania. Guidebook (2009). The code is also reprinted in Kenrick's Cyrenaica (2013).
E9. List of media hits for story of discovery of Garamantian civilisation 2011.
E10. Broadcast figures for TV work and Society for Libyan Studies publication sales.