



RAPID MAPPING AND VISUAL NOISE: RECORDING FOR THE VISITOR, RESIDENT, PILGRIM AND TOURIST; AJMER, INDIA (WORK IN PROGRESS)

LA CARTOGRAFÍA RÁPIDA Y RUIDO VISUAL: GRABACIÓN PARA EL VISITANTE, RESIDENTE, PEREGRINO Y TURÍSTICO; AJMER, INDIA (TRABAJO EN CURSO)

Oriel Prizeman*, Adam Hardy

Welsh School of Architecture, Cardiff University, Bute Building, King Edward VII Avenue, CF72 9NR Cardiff, UK. prizemano@cf.ac.uk; HardyA@cardiff.ac.uk

Abstract:

This paper examines issues arising from an inter-disciplinary work in progress involving ethnographers, architects, historians and conservators. The aim is to develop a digital model through which information relating to the history, ritual use, religious significance and cultural habits of a mixed community can be accessed for the purpose of more responsive conservation planning. The case study site is the walled city of Ajmer in Rajasthan, India, a populous pilgrimage centre that holds tangible and intangible cultural value for many diverse groups of residents and visitors but which remains largely unmapped in conventional terms.

Key words: mapping public space, digital pilgrimage, conservation planning, cultural heritage, documentation, rapid urbanisation

Resumen:

Este artículo examina los problemas que surgen a partir de un proyecto de investigación interdisciplinario en curso, que involucra etnógrafos, historiadores, arquitectos y conservadores del patrimonio. El objetivo del trabajo es desarrollar una modelo digital que hace disponible la información que corresponde a la historia, el uso ritual, el significado religioso y los hábitos culturales de una comunidad mixta, para permitir una planificación de la conservación más sensible. El sitio del caso de estudio es la ciudad amurallada de Ajmer en Rajasthan, India, un centro de peregrinaje muy poblado que tiene un valor cultural tangible e intangible para muchos diversos grupos de residentes y visitantes, pero lo que sigue siendo en gran parte sin cartografía en términos convencionales.

Palabras clave: mapeo de espacio público, peregrinación digital, planificación de la conservación, el patrimonio cultural, la documentación, la urbanización rápida

1. Introduction

The potential for interactive interfaces to contribute to better planning decisions has been a long held ambition. Today, the greater availability and access to handheld digital media offers the opportunity to play out such ambitions. The models envisaged here might potentially suggest a prototypical "Serious Game" interface for the contemplation of planning decisions in certain environments. The emphasis of the research here, is however, not on developing the technology, but on developing the methodology and upon testing the actual value of pursuing such lines of inquiry for the implementation of design decisions. The technology deployed is already in common usage, however, the dialogue between citizens and planning authorities remains fractured.

It is well documented that the roots of the conservation movement lay in the mobilisation of vociferous and historically, privileged non-governmental organisations and amenity societies (Jokilehto 2002, Glendinning 2013). As these groups have multiplied and movements against 'top down' practices have been prioritised, the significance of intangible cultural heritage has been driven to the fore of ICOMOS and UNESCO declarations. The imperative to democratise cultural identity, to make tourism and heritage protection more intelligent and better at recognising diversity is challenging and demands focus in terms of both construction and communication. The project anticipates increasing digital accessibility but cannot presume it.

The potential for the better communication and deliberation of both historic and current practices to

* Corresponding Author: Oriel Prizeman, prozemano@cf.ac.uk

contribute to the formulation of better strategic decisions should be obvious. Nevertheless, it can be inestimably difficult to balance or take account of such factors given the restricted periods for consideration and restricted channels for consultation (Waterton and Smith 2010). This project is a pilot and as such its aim is to develop a prototypical approach, the successes and failures of which have potential to be transformative in the context of these complex contexts but also as exemplars for deployment in parallel conditions of multifaceted urban conditions.

The case study city of Ajmer (Fig. 1) is described as never having been “static” – a place in which the “political and spiritual co-exist” and a “constant space of interaction” (Hooja 2016). Government of India National Programmes HRIDAY (Heritage Rejuvenation Development and Augmentation Yojana) and PRASAD (Pilgrimage Rejuvenation and Spiritual Augmentation Drive) both relate to the city of Ajmer. Surrounded by the Aravalli mountains, it has a population of around 550,000. Founded in the 7th century, its mutual religious significance for both Hindus and Muslims is rare in India. The shrine of the Sufi Saint Khwaja Moinuddin Chishti in Ajmer attracts millions of Muslim pilgrims each year whereas the Bramah temple at Pushkah is the only one of its kind in India and is an ancient Hindu pilgrimage site. Heritage zones of the Dargah, Brahma Temple and lakefronts were identified in consultation with local residents (DRONAH 2016).

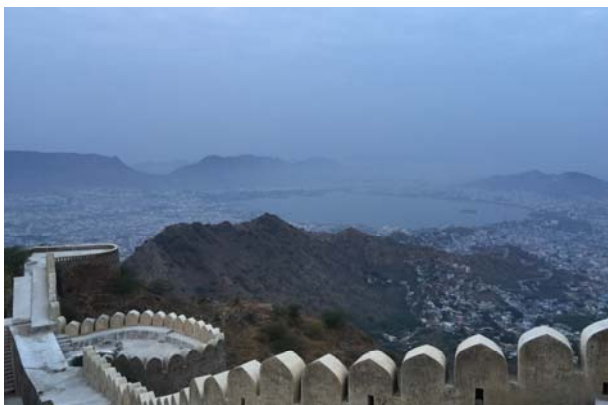


Figure 1: Overview of Ajmer from Taragarh Fort (OP).

2. Method

The concept of a historical model, typified by Italo Gismondi's 1933 'plastico di Roma Imperiali' in EUR in Rome to transmit a history in a didactic form is well established. The facility for modern museums and cultural heritage sites to use digital interfaces is rapidly increasing but the provision of a virtual model of an urban room that can be written upon by multiple contributors is new. The need to include a physical as well as a digital interface is evident. In 2014 only 18% of people in India were estimated to have had access to the internet in the past twelve months (World Bank 2016). An interactive tool cannot claim to be accessible at such a rate.

The aim here is twofold – on the one hand it presents a means to present soft data to statutory authorities, on the other, it has potential to enable greater interaction with intangible cultural heritage for both inhabitants and

visitors. It is not part of this project's anticipated outcome that both will be delivered, rather that the potential will be developed, tested and designed. The primary objective remains to create a tool to inform planning authorities, however, the additional capacity to contribute to intergenerational and intercultural dialogue will be an ambition for the future development of the scheme.

The initial intention was to carry out a terrestrial laser scan (Böhler 2002) using a terrestrial phase comparison laser scanner- Faro Focus 3D X130 using targets and spheres for registration. Point Density As recommended by Historic England for cultural heritage features >100mm, was set at a minimum point density of 5mm (English Heritage 2011). Scan data was to be registered and combined with the use of Scene software to provide geo-referenced point clouds for each 'block'. Point clouds were to be cleaned of unnecessary peripheral data (Barber 2003). Scan data deliverables were to be shared with colleagues at DRONAH using Autodesk ReCap 360 and 3D surfaces point clouds are to be meshed to provide OBJ, STL, PLY formats for incorporating into the final model. Presentation 'orbit' V.R. / GIF / AVI files were to be supplied to illustrate the form of each block. In order to construct 3d physical models, point clouds were to be manipulated to share multiple orthoimages which could later be combined with hand measured site surveys.

In addition to TLS, photographs were taken by students along the street to enable creation of a Structure-From-Motion photogrammetric model using Agisoft Photoscan and dimensional data using conventional measuring tools to corroborate measurements from the scan.

All initial scan data will be securely stored through both cloud based and terrestrial methods. Datasets relating to information garnered from surveys and field research including workshops will be organised to reflect a temporal cycle which can be used to peg out the potential animation sequence of the model's interface.

3. Unanticipated results, emerging challenges and questions

The initial aim was to scan and model the intersection of streets immediately in front of the Dargah Sharif. Students for SPA Bhopal had already mapped the buildings and their uses along the whole street from the Dargah to the Delhi Gate. Notwithstanding the practical challenges of setting up a tripod for any length of time at this spot, it was agreed that the straightened street and twentieth century buildings were in fact uncharacteristic of the surrounding bazaar based network. A more geometrically complex 'chowk' or public intersection, was chosen. The students of SPA Bhopal set out to record the final approach to the Dargah (Fig. 2) using less intrusive structure-from-motion techniques. The aim is to tie these later to their existing GIS surveys.

Laxmi Chowk (Fig. 3) lies further along the pilgrimage route and provided the opportunity to model a complete transition from public to private. Two nineteenth century havelis (courtyard houses) adjoin the space. One opens on to it and through a sequence of thresholds leads to a small shrine at the rear. The other, built in 1840 in Jaisalmeri style, backs onto the street with many 'jarohkas' or perforated projecting windows at first floor level and above. Orthophotos of the site are being used

to start the interactive dialogue of the ethnographic team. They intend to create a physical model from them with which to consult residents, pilgrims, visitors and tourists. At the same time, local historians will be providing new narratives to underpin the wider context. The aim is to then add these oral and written testimonies to a digital model based on a 3d scan.



Figure 2: Main Entrance to the Dargah Sharif, Ajmer (OP).

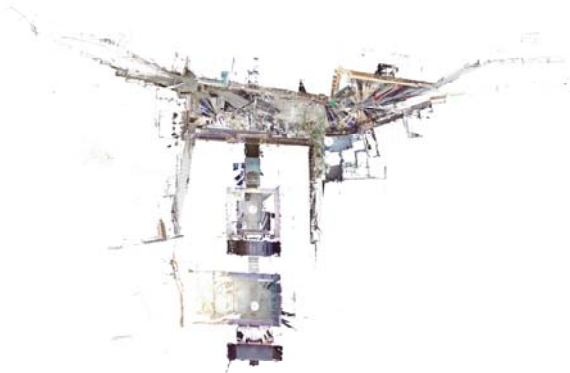


Figure 3: Laxmi Chowk orthophoto plan receding into haveli.

Our intention to carry out a terrestrial laser scan at Laxmi Chowk was still a challenging task. The 15 scans were taken early in the morning with the central part of the road blocked by a bench and a motorbike. This did not of course stop the remaining bustle of human, vehicular and animal traffic past the scene. The scans therefore are full of visual noise. The unintended consequence of which is to step up the potential interpretative value of the model.

The maps accrued from the students of SPA Bhopal, the HIRIDAY project and other historical sources will be overlaid. The intention here is to animate the maps with temporal data across the year. These data are very varied: a ritual calendar, an itinerary of festivals, a legacy of seasonal weather conditions, historic extreme weather events, the opening and closing times of shops, offices and schools, meal times, prayer times. These two prototypical models will be made available online for discussion and comment.

4. Conclusion

The indifference of orthophotos effortlessly reveals the visual transition from calm interior courtyard to ebullient

street (Fig. 4). The aim of maintaining a flexibility to learn and adjust in this project inspires a willingness to allow the chaotic nature of activity to infect and inform the clarity of the geometrical space depicted. The result is open to more detailed inspection and suggests an overlaying even within the moments of its data capture. We aim to seize this scattering of occlusions as an opportunity for more diverse forms of representation. During the course of its development, it will be possible to test the feasibility and efficacy of the model both locally and remotely. The use of digital and physical means of communication will be explored. Governmental and statutory stakeholders will have potential to critique the output, as will users from remote web locations and on site. The interface and model produced in this project has potential to generate significant interest if further iterations were to be created for other urban contexts. However, the need to consider the representation of visual noise presents new opportunities and paths for consideration.



Figure 4: Laxmi Chowk animated orthophoto street elevation.

Acknowledgements

This work was supported by the Newton-Bhabha fund through a collaboration of the Arts and Humanities Research Council (UK) and the Indian Council for Historical Research (India) Networking Grant for Culture Heritage and Rapid Urbanisation in India. The project is titled "The historic city of Ajmer-Pushkar: mapping layers of history, use and meaning for sustainable planning and conservation". The core collaborators are the Welsh School of Architecture (WSA), Cardiff University (Prof. Adam Hardy, Principal Investigator; Dr. Oriel Prizeman, Co-investigator), the School of Planning and Architecture (SPA), Bhopal (Prof. Ajay Khare, Co-Investigator), and DRONAH Foundation, the not-for-profit wing of the heritage NGO (Dr. Shikha Jain, Co-Investigator).

The work builds on a workshop held in Ajmer in February 2016 involving all parties. It includes the GPS survey and occupancy investigation work of students from the MArch Conservation of the School of Planning and Architecture, Bhopal led by Dr. Vishakha Kawathekar and laser scans made on site with their assistance. It also rests upon the reports of DRONAH's contribution to the National Heritage City Development and Augmentation Yojana (HRIDAY) scheme for Ajmer.

References

- BARBER, D., MILLS, J. and BRYAN, P., 2003. Towards a standard specification for terrestrial laser scanning of cultural heritage. CIPA International Archives for Documentation of Cultural Heritage, 19, 619-624.
- BÖHLER, W.M., 2002. '3D Scanning Instruments'. Proceedings of CIPA WG6 Scanning for Cultural Heritage Recording, 2002 September 1–2, Corfu, Greece.
- DEVELOPMENT AND RESEARCH ORGANISATION FOR NATURE, ARTS AND HERITAGE IN INDIA (DRONAH), 2016. Draft Report for City HIRIDAY plan for Ajmer
- ENGLISH HERITAGE, 2011. 3D Laser Scanning for Heritage (2nd ed.) Advice and guidance to users on laser scanning in archaeology and architecture. . In: HERITAGE, E. (ed.).
- GLENDINNING, M., 2013. The Conservation Movement: A History of Architectural Preservation: Antiquity to Modernity. Routledge, 530 pages
- HOOJA, R., 2016. Historic Layers of Ajmer/Pushkar. The Historic City of Ajmer Pushkar AHRC ICHR Workshop, Ajmer, India Feb18-19
- JOKILEHTO, J., 2002. A History of Architectural Conservation. Butterworth-Heinemann, 354 pages
- WATERTON, E and SMITH, L, 2010. The recognition and misrecognition of community heritage in International Journal of Heritage Studies, 16(1-2), pp.4-15 DOI:10.1080/13527250903441671
- WORLD BANK, 2016. Internet users (per 100 people) International Telecommunication Union, World Telecommunication/ICT Development Report and database, and World Bank estimates. Available: http://data.worldbank.org/indicator/IT.NET.USER.P2?cid=GPD_44 [3/11,2016]